Psychology as a Social Science

NOBA

Copyright

Contact Information:

Noba Project
www.nobaproject.com
info@nobaproject.com

Contents

About Noba

The Diener Education Fund (DEF) is a non-profit organization founded with the mission of re-inventing higher education to serve the changing needs of students and professors. The initial focus of the DEF is on making information, especially of the type found in textbooks, widely available to people of all backgrounds. This mission is embodied in the Noba project.

Noba is an open and free online platform that provides high-quality, flexibly structured textbooks and educational materials. The goals of Noba are three-fold:

- To reduce financial burden on students by providing access to free educational content
- To provide instructors with a platform to customize educational content to better suit their curriculum
- To present material written by a collection of experts and authorities in the field

The Diener Education Fund was co-founded by Drs. Ed and Carol Diener. Ed was a professor emeritus at the University of Illinois, Urbana Champaign, and a professor at University of Virginia and the University of Utah, and a senior scientist at the Gallup Organization but passed away in April 2021. For more information, please see **http://noba.to/78vdj2x5**. Carol Diener is the former director of the Mental Health Worker and the Juvenile Justice Programs at the University of Illinois. Both Ed and Carol are award- winning university teachers.

Acknowledgements

The Diener Education Fund would like to acknowledge the following individuals and companies for their contribution to the Noba Project: Robert Biswas-Diener as Managing Editor, Peter Lindberg as the former Operations Manager, and Nadezhda Lyubchik as the current Operations Manager; The Other Firm for user experience design and web development; Sockeye Creative for their work on brand and identity development; Arthur Mount for illustrations; Chad Hurst for photography; EEI Communications for manuscript proofreading; Marissa Diener, Shigehiro Oishi, Daniel Simons, Robert Levine, Lorin Lachs and Thomas Sander for their feedback and suggestions in the early stages of the project.

Psychology as Science

1
Why Science?

Edward Diener

Scientific research has been one of the great drivers of progress in human history, and the dramatic changes we have seen during the past century are due primarily to scientific findings —modern medicine, electronics, automobiles and jets, birth control, and a host of other helpful inventions. Psychologists believe that scientific methods can be used in the behavioral domain to understand and improve the world. Although psychology trails the biological and physical sciences in terms of progress, we are optimistic based on discoveries to date that scientific psychology will make many important discoveries that can benefit humanity. This module outlines the characteristics of the science, and the promises it holds for understanding behavior. The ethics that guide psychological research are briefly described. It concludes with the reasons you should learn about scientific psychology

Learning Objectives

- Describe how scientific research has changed the world.
- Describe the key characteristics of the scientific approach.
- Discuss a few of the benefits, as well as problems that have been created by science.
- Describe several ways that psychological science has improved the world.
- Describe a number of the ethical guidelines that psychologists follow.

Scientific Advances and World Progress

There are many people who have made positive contributions to humanity in modern times.

Take a careful look at the names on the following list. Which of these individuals do you think has helped humanity the most?

1. Mother Teresa
2. Albert Schweitzer
3. Edward Jenner
4. Norman Borlaug
5. Fritz Haber

The usual response to this question is "Who on earth are Jenner, Borlaug, and Haber?" Many people know that Mother Teresa helped thousands of people living in the slums of Kolkata (Calcutta). Others recall that Albert Schweitzer opened his famous hospital in Africa and went on to earn the Nobel Peace Prize. The other three historical figures, on the other hand, are far less well known. Jenner, Borlaug, and Haber were scientists whose research discoveries saved millions, and even billions, of lives. Dr. Edward Jenner is often considered the "father of immunology" because he was among the first to conceive of and test vaccinations. His pioneering work led directly to the eradication of smallpox. Many other diseases have been greatly reduced because of vaccines discovered using science—measles, pertussis, diphtheria, tetanus, typhoid, cholera, polio, hepatitis—and all are the legacy of Jenner. Fritz Haber and Norman Borlaug saved more than a billion human lives. They created the "Green Revolution" by producing hybrid agricultural crops and synthetic fertilizer. Humanity can now produce food for the seven billion people on the planet, and the starvation that does occur is related to political and economic factors rather than our collective ability to produce food.

Due to the breakthrough work of Dr. Edward Jenner, millions of vaccinations are now administered around the world every year preventing the spread of many treatable diseases while saving the lives of people of all ages. [Image: CDC Global Health, https://goo.gl/hokiWz, CC BY 2.0, https://goo.gl/9uSnqN]

If you examine major social and technological changes over the past century most of them can be directly attributed to science. The world in 1914 was very different than the one we see

today (Easterbrook, 2003). There were few cars and most people traveled by foot, horseback, or carriage. There were no radios, televisions, birth control pills, artificial hearts or antibiotics. Only a small portion of the world had telephones, refrigeration or electricity. These days we find that 80% of all households have television and 84% have electricity. It is estimated that three quarters of the world's population has access to a mobile phone! Life expectancy was 47 years in 1900 and 79 years in 2010. The percentage of hungry and malnourished people in the world has dropped substantially across the globe. Even average levels of I.Q. have risen dramatically over the past century due to better nutrition and schooling.

All of these medical advances and technological innovations are the direct result of scientific research and understanding. In the modern age it is easy to grow complacent about the advances of science but make no mistake about it—science has made fantastic discoveries, and continues to do so. These discoveries have completely changed our world.

What Is Science?

What is this process we call "science," which has so dramatically changed the world? Ancient people were more likely to believe in magical and supernatural explanations for natural phenomena such as solar eclipses or thunderstorms. By contrast, scientifically minded people try to figure out the natural world through testing and observation. Specifically, science is the use of **systematic observation** in order to acquire knowledge. For example, children in a science class might combine vinegar and baking soda to observe the bubbly chemical reaction. These **empirical methods** are wonderful ways to learn about the physical and biological world. Science is not magic—it will not solve all human problems, and might not answer all our questions about behavior. Nevertheless, it appears to be the most powerful method we have for acquiring knowledge about the observable world. The essential elements of science are as follows:

1. *Systematic observation is the core of science*. Scientists observe the world, in a very organized way. We often measure the phenomenon we are observing. We record our observations so that memory biases are less likely to enter in to our conclusions. We are systematic in that we try to observe under controlled conditions, and also systematically vary the conditions of our observations so that we can see variations in the phenomena and understand when they occur and do not occur.
2. *Observation leads to hypotheses we can test*. When we develop **hypotheses**and **theories**, we state them in a way that can be tested. For example, you might make the claim that candles made of paraffin wax burn more slowly than do candles of the exact same size and shape made from bee's wax. This claim can be readily tested by timing the burning speed of

candles made from these materials.

3. *Science is democratic*. People in ancient times may have been willing to accept the views of their kings or pharaohs as absolute truth. These days, however, people are more likely to want to be able to form their own opinions and debate conclusions. Scientists are skeptical and have open discussions about their observations and theories. These debates often occur as scientists publish competing findings with the idea that the best data will win the argument.

Systematic observation is the core of science. [Image: Cvl Neuro, https://goo.gl/Avbju7, CC BY-SA 3.0, https://goo.gl/uhHola]

4. *Science is cumulative*. We can learn the important truths discovered by earlier scientists and build on them. Any physics student today knows more about physics than Sir Isaac Newton did even though Newton was possibly the most brilliant physicist of all time. A crucial aspect of scientific progress is that after we learn of earlier advances, we can build upon them and move farther along the path of knowledge.

Psychology as a Science

Even in modern times many people are skeptical that psychology is really a science. To some degree this doubt stems from the fact that many psychological phenomena such as depression, intelligence, and prejudice do not seem to be directly observable in the same way that we can observe the changes in ocean tides or the speed of light. Because thoughts and feelings are invisible many early psychological researchers chose to focus on behavior. You might have noticed that some people act in a friendly and outgoing way while others appear to be shy and withdrawn. If you have made these types of observations then you are acting just like early psychologists who used behavior to draw inferences about various types of personality. By using behavioral measures and rating scales it is possible to measure thoughts and feelings. This is similar to how other researchers explore “invisible” phenomena such as the way that educators measure academic performance or economists measure quality of life.

One important pioneering researcher was Francis Galton, a cousin of Charles Darwin who lived in England during the late 1800s. Galton used patches of color to test people’s ability to distinguish between them. He also invented the self-report questionnaire, in which people

offered their own expressed judgments or opinions on various matters. Galton was able to use self-reports to examine—among other things—people's differing ability to accurately judge distances.

In 1875 Francis Galton did pioneering studies of twins to determine how much the similarities and differences in twins were affected by their life experiences. In the course of this work he coined the phrase "Nature versus Nurture". [Image: XT Inc., https://goo.gl/F1Wvu7, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Although he lacked a modern understanding of genetics Galton also had the idea that scientists could look at the behaviors of identical and fraternal twins to estimate the degree to which genetic and social factors contribute to personality; a puzzling issue we currently refer to as the "nature-nurture question."

In modern times psychology has become more sophisticated. Researchers now use better measures, more sophisticated study designs and better statistical analyses to explore human nature. Simply take the example of studying the emotion of happiness. How would you go about studying happiness? One straightforward method is to simply ask people about their happiness and to have them use a numbered scale to indicate their feelings. There are, of course, several problems with this. People might lie about their happiness, might not be able to accurately report on their own happiness, or might not use the numerical scale in the same way. With these limitations in mind modern psychologists employ a wide range of methods to assess happiness. They use, for instance, "peer report measures" in which they ask close friends and family members about the happiness of a target individual. Researchers can then compare these ratings to the self-report ratings and check for discrepancies. Researchers also use memory measures, with the idea that dispositionally positive people have an easier time recalling pleasant events and negative people have an easier time recalling unpleasant events. Modern psychologists even use biological measures such as saliva cortisol samples (cortisol is a stress related hormone) or fMRI images of brain activation (the left pre-frontal cortex is one area of brain activity associated with good moods).

Despite our various methodological advances it is true that psychology is still a very young science. While physics and chemistry are hundreds of years old psychology is barely a hundred

and fifty years old and most of our major findings have occurred only in the last 60 years. There are legitimate limits to psychological science but it is a science nonetheless.

Psychological Science is Useful

Psychological science is useful for creating interventions that help people live better lives. A growing body of research is concerned with determining which therapies are the most and least effective for the treatment of psychological disorders.

For example, many studies have shown that cognitive behavioral therapy can help many people suffering from depression and anxiety disorders (Butler, Chapman, Forman, & Beck, 2006; Hoffman & Smits, 2008). In contrast, research reveals that some types of therapies actually might be harmful on average (Lilienfeld, 2007).

Cognitive Behavioral Therapy has shown to be effective in treating a variety of conditions, including depression. [Image: SalFalco, https://goo.gl/3knLoJ, CC BY-NC 2.0, https://goo.gl/HEXbAA]

In organizational psychology, a number of psychological interventions have been found by researchers to produce greater productivity and satisfaction in the workplace (e.g., Guzzo, Jette, & Katzell, 1985). Human factor engineers have greatly increased the safety and utility of the products we use. For example, the human factors psychologist Alphonse Chapanis and other researchers redesigned the cockpit controls of aircraft to make them less confusing and easier to respond to, and this led to a decrease in pilot errors and crashes.

Forensic sciences have made courtroom decisions more valid. We all know of the famous cases of imprisoned persons who have been exonerated because of DNA evidence. Equally dramatic cases hinge on psychological findings. For instance, psychologist Elizabeth Loftus has conducted research demonstrating the limits and unreliability of eyewitness testimony and memory. Thus, psychological findings are having practical importance in the world outside the laboratory. Psychological science has experienced enough success to demonstrate that it works, but there remains a huge amount yet to be learned.

Ethics of Scientific Psychology

Psychology differs somewhat from the natural sciences such as chemistry in that researchers conduct studies with human research participants. Because of this there is a natural tendency to want to guard research participants against potential psychological harm. For example, it might be interesting to see how people handle ridicule but it might not be advisable to ridicule research participants.

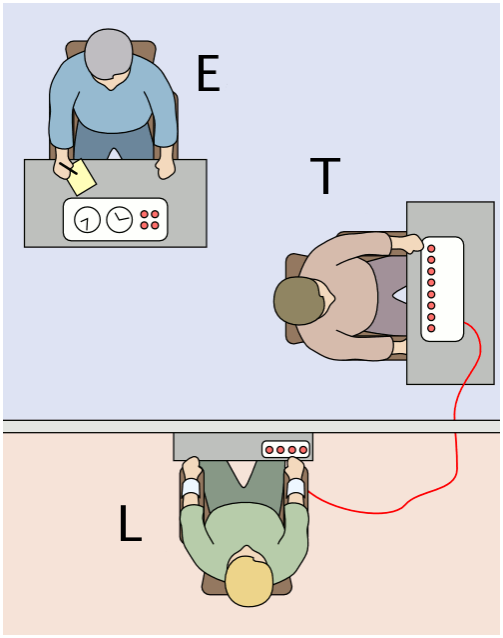


Diagram of the Milgram Experiment in which the "teacher" (T) was asked to deliver a (supposedly) painful electric shock to the "learner"(L). Would this experiment be approved by a review board today? [Image: Fred the Oyster, https://goo.gl/ZIbQz1, CC BY-SA 4.0, https://goo.gl/X3i0tq]

Scientific psychologists follow a specific set of guidelines for research known as a code of **ethics**. There are extensive ethical guidelines for how human participants should be treated in psychological research (Diener & Crandall, 1978; Sales & Folkman, 2000). Following are a few highlights:

1. *Informed consent*. In general, people should know when they are involved in research, and understand what will happen to them during the study. They should then be given a free choice as to whether to participate.
2. *Confidentiality*. Information that researchers learn about individual participants should not be made public without the consent of the individual.
3. *Privacy*. Researchers should not make observations of people in private places such as their bedrooms without their knowledge and consent. Researchers should not seek confidential information from others, such as school authorities, without consent of the participant or his or her guardian.
4. *Benefits*. Researchers should consider the benefits of their proposed research and weigh these against potential risks to the participants. People who participate in psychological studies should be exposed to risk only if they fully understand these risks and only if the likely benefits clearly outweigh the risks.
5. *Deception*. Some researchers need to deceive participants in order to hide the true nature of the study. This is typically done to prevent participants from modifying their behavior

in unnatural ways. Researchers are required to "debrief" their participants after they have completed the study. Debriefing is an opportunity to educate participants about the true nature of the study.

Why Learn About Scientific Psychology?

I once had a psychology professor who asked my class why we were taking a psychology course. Our responses give the range of reasons that people want to learn about psychology:

1. To understand ourselves
2. To understand other people and groups
3. To be better able to influence others, for example, in socializing children or motivating employees
4. To learn how to better help others and improve the world, for example, by doing effective psychotherapy
5. To learn a skill that will lead to a profession such as being a social worker or a professor
6. To learn how to evaluate the research claims you hear or read about
7. Because it is interesting, challenging, and fun! People want to learn about psychology because this is exciting in itself, regardless of other positive outcomes it might have. Why do we see movies? Because they are fun and exciting, and we need no other reason. Thus, one good reason to study psychology is that it can be rewarding in itself.

Conclusions

The science of psychology is an exciting adventure. Whether you will become a scientific psychologist, an applied psychologist, or an educated person who knows about psychological research, this field can influence your life and provide fun, rewards, and understanding. My hope is that you learn a lot from the modules in this e-text, and also that you enjoy the experience! I love learning about psychology and neuroscience, and hope you will too!

Outside Resources

Web: Science Heroes- A celebration of people who have made lifesaving discoveries.
http://www.scienceheroes.com/index.php?option=com_content&view=article&id=258&Itemid=27

Discussion Questions

1. Some claim that science has done more harm than good. What do you think?
2. Humanity is faced with many challenges and problems. Which of these are due to human behavior, and which are external to human actions?
3. If you were a research psychologist, what phenomena or behaviors would most interest you?
4. Will psychological scientists be able to help with the current challenges humanity faces, such as global warming, war, inequality, and mental illness?
5. What can science study and what is outside the realm of science? What questions are impossible for scientists to study?
6. Some claim that science will replace religion by providing sound knowledge instead of myths to explain the world. They claim that science is a much more reliable source of solutions to problems such as disease than is religion. What do you think? Will science replace religion, and should it?
7. Are there human behaviors that should not be studied? Are some things so sacred or dangerous that we should not study them?

Vocabulary

Empirical methods
Approaches to inquiry that are tied to actual measurement and observation.

Ethics
Professional guidelines that offer researchers a template for making decisions that protect research participants from potential harm and that help steer scientists away from conflicts of interest or other situations that might compromise the integrity of their research.

Hypotheses
A logical idea that can be tested.

Systematic observation
The careful observation of the natural world with the aim of better understanding it. Observations provide the basic data that allow scientists to track, tally, or otherwise organize information about the natural world.

Theories
Groups of closely related phenomena or observations.

References

Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*, 17–31.

Diener, E., & Crandall, R. (1978). *Ethics in social and behavioral research.* Chicago, IL: University of Chicago Press.

Easterbrook, G. (2003). *The progress paradox*. New York, NY: Random House.

Guzzo, R. A., Jette, R. D., & Katzell, R. A. (1985). The effects of psychologically based intervention programs on worker productivity: A meta-analysis. *Personnel Psychology, 38*, 275.291.

Hoffman, S. G., & Smits, J. A. J. (2008). Cognitive-behavioral therapy for adult anxiety disorders. *Journal of Clinical Psychiatry, 69*, 621–32.

Lilienfeld, S. O. (2007). Psychological treatments that cause harm. *Perspectives on Psychological Science, 2*, 53–70.

Moore, D. (2003). Public lukewarm on animal rights. Gallup News Service, May 21. http://www.gallup.com/poll/8461/public-lukewarm-animal-rights.aspx

Sales, B. D., & Folkman, S. (Eds.). (2000). *Ethics in research with human participants.* Washington, DC: American Psychological Association.

2
Research Designs

Christie Napa Scollon

Psychologists test research questions using a variety of methods. Most research relies on either correlations or experiments. With correlations, researchers measure variables as they naturally occur in people and compute the degree to which two variables go together. With experiments, researchers actively make changes in one variable and watch for changes in another variable. Experiments allow researchers to make causal inferences. Other types of methods include longitudinal and quasi-experimental designs. Many factors, including practical constraints, determine the type of methods researchers use. Often researchers survey people even though it would be better, but more expensive and time consuming, to track them longitudinally.

Learning Objectives

- Articulate the difference between correlational and experimental designs.
- Understand how to interpret correlations.
- Understand how experiments help us to infer causality.
- Understand how surveys relate to correlational and experimental research.
- Explain what a longitudinal study is.
- List a strength and weakness of different research designs.

Research Designs

In the early 1970's, a man named Uri Geller tricked the world: he convinced hundreds of thousands of people that he could bend spoons and slow watches using only the power of his mind. In fact, if you were in the audience, you would have likely believed he had psychic powers. Everything looked authentic—this man had to have paranormal abilities! So, why have you probably never heard of him before? Because when Uri was asked to perform his miracles in line with scientific experimentation, he was no longer able to do them. That is, even though it seemed like he was doing the impossible, when he was tested by science, he proved to be nothing more than a clever magician.

When we look at dinosaur bones to make educated guesses about extinct life, or systematically chart the heavens to learn about the relationships between stars and planets, or study magicians to figure out how they perform their tricks, we are forming observations—the foundation of science. Although we are all familiar with the saying "seeing is believing," conducting science is more than just what your eyes perceive. Science is the result of systematic and intentional study of the natural world. And psychology is no different. In the movie *Jerry Maguire*, Cuba Gooding, Jr. became famous for using the phrase, "Show me the money!" In psychology, as in all sciences, we might say, "Show me the data!"

One of the important steps in scientific inquiry is to test our research questions, otherwise known as hypotheses. However, there are many ways to test hypotheses in psychological research. Which method you choose will depend on the type of questions you are asking, as well as what resources are available to you. All methods have limitations, which is why the best research uses a variety of methods.

Most psychological research can be divided into two types: experimental and correlational research.

Experimental Research

If somebody gave you $20 that absolutely had to be spent today, how would you choose to spend it? Would you spend it on an item you've been eyeing for weeks, or would you donate the money to charity? Which option do you think would bring you the most happiness? If you're like most people, you'd choose to spend the money on yourself (duh, right?). Our intuition is that we'd be happier if we spent the money on ourselves.

Knowing that our intuition can sometimes be wrong, Professor Elizabeth Dunn (2008) at the University of British Columbia set out to conduct an experiment on spending and happiness. She gave each of the participants in her experiment $20 and then told them they had to spend

At the Corner Perk Cafe customers routinely pay for the drinks of strangers. Is this the way to get the most happiness out of a cup of coffee? Elizabeth Dunn's research shows that spending money on others may affect our happiness differently than spending money on ourselves. [Image: The Island Packet, https://goo.gl/DMxA5n]

the money by the end of the day. Some of the participants were told they must spend the money on themselves. Some students were told they must spend the money on others, such as a charity or a gift for someone. At the end of the day she measured participants' levels of happiness using a self-report questionnaire. (But wait, how do you measure something like happiness when you can't really see it? Psychologists measure many abstract concepts, such as happiness and intelligence, by beginning with operational definitions of the concepts. See the Noba modules on Intelligence [**http://noba.to/ncb2h79v**] and Happiness [**http://noba.to/qnw7g32t**], respectively, for more information on specific measurement strategies.)

In an experiment, researchers manipulate, or cause changes, in the independent variable, and observe or measure any impact of those changes in the dependent variable. The independent variable is the one under the experimenter's control, or the variable that is intentionally altered between groups. In the case of Dunn's experiment, the independent variable was whether participants spent the money on themselves or on others. The dependent variable is the variable that is not manipulated at all, or the one where the effect happens. One way to help remember this is that the dependent variable "depends" on what happens to the independent variable. In our example, the participants' happiness (the dependent variable in this experiment) depends on how the participants spend their money (the independent variable). Thus, any observed changes or group differences in happiness can be attributed to whom the money was spent on. What Dunn and her colleagues found was that, after all the spending had been done, the people who had spent the money on others were happier than those who had spent the money on themselves. In other words, spending on others causes us to be happier than spending on ourselves. Do you find this surprising?

But wait! Doesn't happiness depend on a lot of different factors—for instance, a person's upbringing or life circumstances? What if some people had happy childhoods and that's why they're happier? Or what if some people dropped their toast that morning and it fell jam-side down and ruined their whole day? It is correct to recognize that these factors and many more

can easily affect a person's level of happiness. So how can we accurately conclude that spending money on others causes happiness, as in the case of Dunn's experiment?

The most important thing about experiments is **random assignment**. Participants don't get to pick which condition they are in (e.g., participants didn't choose whether they were supposed to spend the money on themselves versus others). The experimenter assigns them to a particular condition based on the flip of a coin or the roll of a die or any other random method. Why do researchers do this? With Dunn's study, there is the obvious reason: you can imagine which condition most people would choose to be in, if given the choice. But another equally important reason is that random assignment makes it so the groups, on average, are similar on all characteristics except what the experimenter manipulates.

By randomly assigning people to conditions (self-spending versus other-spending), some people with happy childhoods should end up in each condition. Likewise, some people who had dropped their toast that morning (or experienced some other disappointment) should end up in each condition. As a result, the distribution of all these factors will generally be consistent across the two groups, and this means that on average the two groups will be relatively equivalent on all these factors. Random assignment is critical to experimentation because if the only difference between the two groups is the independent variable, we can infer that the independent variable is the cause of any observable difference (e.g., in the amount of happiness they feel at the end of the day).

Here's another example of the importance of random assignment: Let's say your class is going to form two basketball teams, and you get to be the captain of one team. The class is to be divided evenly between the two teams. If you get to pick the players for your team first, whom will you pick? You'll probably pick the tallest members of the class or the most athletic. You probably won't pick the short, uncoordinated people, unless there are no other options. As a result, your team will be taller and more athletic than the other team. But what if we want the teams to be fair? How can we do this when we have people of varying height and ability? All we have to do is randomly assign players to the two teams. Most likely, some tall and some short people will end up on your team, and some tall and some short people will end up on the other team. The average height of the teams will be approximately the same. That is the power of random assignment!

Other considerations

In addition to using random assignment, you should avoid introducing confounds into your experiments. **Confounds** are things that could undermine your ability to draw causal

inferences. For example, if you wanted to test if a new happy pill will make people happier, you could randomly assign participants to take the happy pill or not (the independent variable) and compare these two groups on their self-reported happiness (the dependent variable). However, if some participants know they are getting the happy pill, they might develop expectations that influence their self-reported happiness. This is sometimes known as a **placebo effect**. Sometimes a person just knowing that he or she is receiving special treatment or something new is enough to actually cause changes in behavior or perception: In other words, even if the participants in the happy pill condition were to report being happier, we wouldn't know if the pill was actually making them happier or if it was the placebo effect—an example of a confound. A related idea is **participant demand**. This occurs when participants try to behave in a way they think the experimenter wants them to behave. Placebo effects and participant demand often occur unintentionally. Even **experimenter expectations** can influence the outcome of a study. For example, if the experimenter knows who took the happy pill and who did not, and the dependent variable is the experimenter's observations of people's happiness, then the experimenter might perceive improvements in the happy pill group that are not really there.

One way to prevent these confounds from affecting the results of a study is to use a double-blind procedure. In a double-blind procedure, neither the participant nor the experimenter knows which condition the participant is in. For example, when participants are given the happy pill or the fake pill, they don't know which one they are receiving. This way, the participants are less likely to be influenced by any researcher expectations (called "participant demand"). Likewise, the researcher doesn't know which pill each participant is taking (at least in the beginning—later, the researcher will get the results for data-analysis purposes), which means the researcher's expectations can't influence his or her observations. Therefore, because both parties are "blind" to the condition, neither will be able to behave in a way that introduces a confound. At the end of the day, the only difference between groups will be which pills the participants received, allowing the researcher to determine if the happy pill actually caused people to be happier.

Correlational Designs

When scientists passively observe and measure phenomena it is called correlational research. Here, we do not intervene and change behavior, as we do in experiments. In correlational research, we identify patterns of relationships, but we usually cannot infer what causes what. Importantly, with correlational research, you can examine only two variables at a time, no more and no less.

So, what if you wanted to test whether spending on others is related to happiness, but you don't have $20 to give to each participant? You could use a correlational design—which is exactly what Professor Dunn did, too. She asked people how much of their income they spent on others or donated to charity, and later she asked them how happy they were. Do you think these two variables were related? Yes, they were! The more money people reported spending on others, the happier they were.

More details about the correlation

To find out how well two variables correspond, we can plot the relation between the two scores on what is known as a scatterplot (Figure 1). In the scatterplot, each dot represents a data point. (In this case it's individuals, but it could be some other unit.) Importantly, each dot provides us with two pieces of information—in this case, information about how good the person rated the past month (x-axis) and how happy the person felt in the past month (y-axis). Which variable is plotted on which axis does not matter.

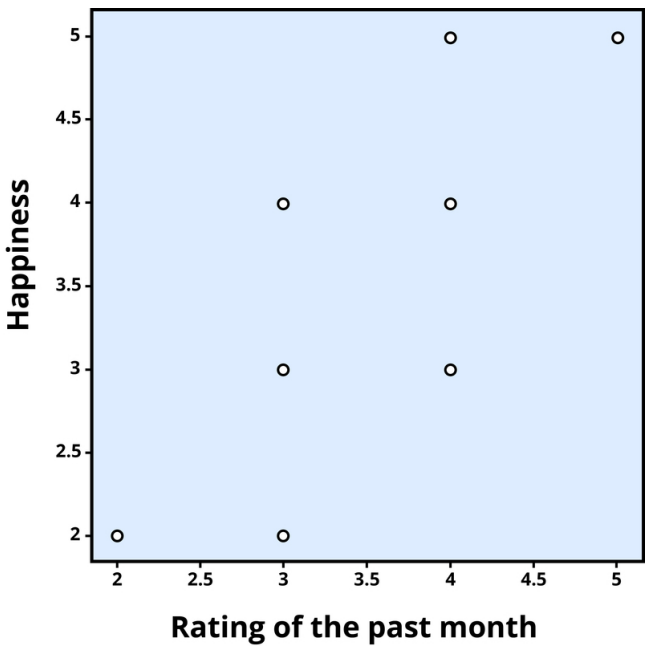


Figure 1. Scatterplot of the association between happiness and ratings of the past month, a positive correlation (r = .81). Each dot represents an individual.

The association between two variables can be summarized statistically using the correlation coefficient (abbreviated as *r*). A correlation coefficient provides information about the direction and strength of the association between two variables. For the example above, the direction of the association is positive. This means that people who perceived the past month as being good reported feeling more happy, whereas people who perceived the month as being bad reported feeling less happy.

With a positive correlation, the two variables go up or down together. In a scatterplot, the dots form a pattern that extends from the bottom left to the upper right (just as they do in Figure 1). The *r* value for a positive correlation is indicated by a positive number (although, the positive sign is usually omitted). Here, the *r* value is .81.

A negative correlation is one in which the two variables move in opposite directions. That is, as one variable goes up, the other goes down. Figure 2 shows the association between the average height of males in a country (y-axis) and the pathogen prevalence (or commonness of disease; x-axis) of that country. In this scatterplot, each dot represents a country. Notice how the dots extend from the top left to the bottom right. What does this mean in real-world terms? It means that people are shorter in parts of the world where there is more disease. The *r* value for a negative correlation is indicated by a negative number—that is, it has a minus (–) sign in front of it. Here, it is –.83.

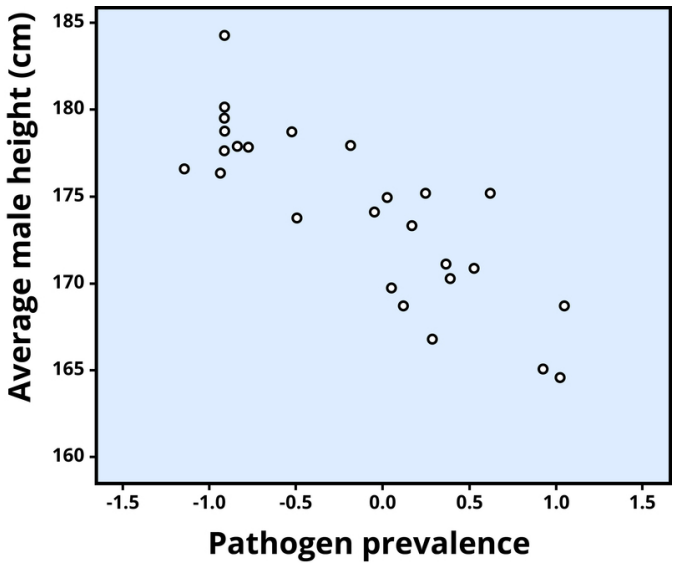


Figure 2. Scatterplot showing the association between average male height and pathogen prevalence, a negative correlation (r = –.83). Each dot represents a country. (Chiao, 2009)

The strength of a correlation has to do with how well the two variables align. Recall that in Professor Dunn's correlational study, spending on others positively correlated with happiness: The more money people reported spending on others, the happier they reported to be. At this point you may be thinking to yourself, I know a very generous person who gave away lots of money to other people but is miserable! Or maybe you know of a very stingy person who is happy as can be. Yes, there might be exceptions. If an association has many exceptions, it is considered a weak correlation. If an association has few or no exceptions, it is considered a strong correlation. A strong correlation is one in which the two variables always, or almost always, go together. In the example of happiness and how good the month has been, the association is strong. The stronger a correlation is, the tighter the dots in the scatterplot will be arranged along a sloped line.

The *r* value of a strong correlation will have a high absolute value. In other words, you disregard whether there is a negative sign in front of the r value, and just consider the size of the numerical value itself. If the absolute value is large, it is a strong correlation. A weak correlation is one in which the two variables correspond some of the time, but not most of the time. Figure 3 shows the relation between valuing happiness and grade point average (GPA). People who valued happiness more tended to earn slightly lower grades, but there were lots of exceptions to this. The *r* value for a weak correlation will have a low absolute value. If two variables are so weakly related as to be unrelated, we say they are uncorrelated, and the *r*

value will be zero or very close to zero. In the previous example, is the correlation between height and pathogen prevalence strong? Compared to Figure 3, the dots in Figure 2 are tighter and less dispersed. The absolute value of –.83 is large. Therefore, it is a strong negative correlation.

Figure 3. Scatterplot showing the association between valuing happiness and GPA, a weak negative correlation (r = –.32). Each dot represents an individual.

Can you guess the strength and direction of the correlation between age and year of birth? If you said this is a strong negative correlation, you are correct! Older people always have lower years of birth than younger people (e.g., 1950 vs. 1995), but at the same time, the older people will have a higher age (e.g., 65 vs. 20). In fact, this is a perfect correlation because there are no exceptions to this pattern. I challenge you to find a 10-year-old born before 2003! You can't.

Problems with the correlation

If generosity and happiness are positively correlated, should we conclude that being generous causes happiness? Similarly, if height and pathogen prevalence are negatively correlated, should we conclude that disease causes shortness? From a correlation alone, we can't be certain. For example, in the first case it may be that happiness causes generosity, or that generosity causes happiness. Or, a third variable might cause both happiness *and* generosity, creating the illusion of a direct link between the two. For example, wealth could be the third variable that causes both greater happiness and greater generosity. This is why correlation does not mean causation—an often repeated phrase among psychologists.

Qualitative Designs

Just as correlational research allows us to study topics we can't experimentally manipulate (e.g., whether you have a large or small income), there are other types of research designs that allow us to investigate these harder-to-study topics. Qualitative designs, including participant observation, case studies, and narrative analysis are examples of such methodologies. Although something as simple as "observation" may seem like it would be a part of all research

methods, participant observation is a distinct methodology that involves the researcher embedding him- or herself into a group in order to study its dynamics. For example, Festinger, Riecken, and Shacter (1956) were very interested in the psychology of a particular cult. However, this cult was very secretive and wouldn't grant interviews to outside members. So, in order to study these people, Festinger and his colleagues pretended to be cult members, allowing them access to the behavior and psychology of the cult. Despite this example, it should be noted that the people being observed in a participant observation study usually know that the researcher is there to study them.

Another qualitative method for research is the case study, which involves an intensive examination of specific individuals or specific contexts. Sigmund Freud, the father of psychoanalysis, was famous for using this type of methodology; however, more current examples of case studies usually involve brain injuries. For instance, imagine that researchers want to know how a very specific brain injury affects people's experience of happiness. Obviously, the researchers can't conduct experimental research that involves inflicting this type of injury on people. At the same time, there are too few people who have this type of injury to conduct correlational research. In such an instance, the researcher may examine only one person with this brain injury, but in doing so, the researcher will put the participant through a very extensive round of tests. Hopefully what is learned from this one person can be applied to others; however, even with thorough tests, there is the chance that something unique about this individual (other than the brain injury) will affect his or her happiness. But with such a limited number of possible participants, a case study is really the only type of methodology suitable for researching this brain injury.

The final qualitative method to be discussed in this section is narrative analysis. Narrative analysis centers around the study of stories and personal accounts of people, groups, or cultures. In this methodology, rather than engaging with participants directly, or quantifying their responses or behaviors, researchers will analyze the themes, structure, and dialogue of each person's narrative. That is, a researcher will examine people's personal testimonies in order to learn more about the psychology of those individuals or groups. These stories may be written, audio-recorded, or video-recorded, and allow the researcher not only to study *what* the participant says but *how* he or she says it. Every person has a unique perspective on the world, and studying the way he or she conveys a story can provide insight into that perspective.

Quasi-Experimental Designs

What if you want to study the effects of marriage on a variable? For example, does marriage

make people happier? Can you randomly assign some people to get married and others to remain single? Of course not. So how can you study these important variables? You can use a **quasi-experimental design**.

A quasi-experimental design is similar to experimental research, except that random assignment to conditions is not used. Instead, we rely on existing group memberships (e.g., married vs. single). We treat these as the independent variables, even though we don't assign people to the conditions and don't manipulate the variables. As a result, with quasi-experimental designs causal inference is more difficult. For example, married people might differ on a variety of characteristics from unmarried people. If we find that married participants are happier than single participants, it will be hard to say that marriage causes happiness, because the people who got married might have already been happier than the people who have remained single.

What is a reasonable way to study the effects of marriage on happiness? [Image: Nina Matthews Photography, https://goo.gl/IcmLqg, CC BY-NC-SA, https://goo.gl/HSisdg]

Because experimental and quasi-experimental designs can seem pretty similar, let's take another example to distinguish them. Imagine you want to know who is a better professor: Dr. Smith or Dr. Khan. To judge their ability, you're going to look at their students' final grades. Here, the independent variable is the professor (Dr. Smith vs. Dr. Khan) and the dependent variable is the students' grades. In an experimental design, you would randomly assign students to one of the two professors and then compare the students' final grades. However, in real life, researchers can't randomly force students to take one professor over the other; instead, the researchers would just have to use the preexisting classes and study them as-is (quasi-experimental design). Again, the key difference is random assignment to the conditions of the independent variable. Although the quasi-experimental design (where the students choose which professor they want) may seem random, it's most likely not. For example, maybe students heard Dr. Smith sets low expectations, so slackers prefer this class, whereas Dr. Khan sets higher expectations, so smarter students prefer that one. This now introduces a confounding variable (student intelligence) that will almost certainly have an effect on students' final grades, regardless of how skilled the professor is. So, even though a quasi-

experimental design is similar to an experimental design (i.e., both have independent and dependent variables), because there's no random assignment, you can't reasonably draw the same conclusions that you would with an experimental design.

Longitudinal Studies

Another powerful research design is the **longitudinal study**. Longitudinal studies track the same people over time. Some longitudinal studies last a few weeks, some a few months, some a year or more. Some studies that have contributed a lot to psychology followed the same people over decades. For example, one study followed more than 20,000 Germans for two decades. From these longitudinal data, psychologist Rich Lucas (2003) was able to determine that people who end up getting married indeed start off a bit happier than their peers who never marry. Longitudinal studies like this provide valuable evidence for testing many theories in psychology, but they can be quite costly to conduct, especially if they follow many people for many years.

Surveys

A survey is a way of gathering information, using old-fashioned questionnaires or the Internet. Compared to a study conducted in a psychology laboratory, surveys can reach a larger number of participants at a much lower cost. Although surveys are typically used for correlational research, this is not always the case. An experiment can be carried out using surveys as well. For example, King and Napa (1998) presented participants with different types of stimuli on paper: either a survey completed by a happy person or a survey completed by an unhappy person. They wanted to see whether happy people were judged as more likely to get into heaven compared to unhappy people. Can you figure out the independent and dependent variables in this study? Can you guess what the results were? Happy people (vs. unhappy people; the independent variable) were

Surveys provide researchers with some significant advantages in gathering data. They make it possible to reach large numbers of people while keeping costs to the researchers and the time commitments of participants relatively low.

judged as more likely to go to heaven (the dependent variable) compared to unhappy people!

Likewise, correlational research can be conducted without the use of surveys. For instance, psychologists LeeAnn Harker and Dacher Keltner (2001) examined the smile intensity of women's college yearbook photos. Smiling in the photos was correlated with being married 10 years later!

Tradeoffs in Research

Even though there are serious limitations to correlational and quasi-experimental research, they are not poor cousins to experiments and longitudinal designs. In addition to selecting a method that is appropriate to the question, many practical concerns may influence the decision to use one method over another. One of these factors is simply resource availability—how much time and money do you have to invest in the research? (Tip: If you're doing a senior honor's thesis, do not embark on a lengthy longitudinal study unless you are prepared to delay graduation!) Often, we survey people even though it would be more precise—but much more difficult—to track them longitudinally. Especially in the case of exploratory research, it may make sense to opt for a cheaper and faster method first. Then, if results from the initial study are promising, the researcher can follow up with a more intensive method.

Beyond these practical concerns, another consideration in selecting a research design is the ethics of the study. For example, in cases of brain injury or other neurological abnormalities, it would be unethical for researchers to inflict these impairments on healthy participants. Nonetheless, studying people with these injuries can provide great insight into human psychology (e.g., if we learn that damage to a particular region of the brain interferes with emotions, we may be able to develop treatments for emotional irregularities). In addition to brain injuries, there are numerous other areas of research that could be useful in understanding the human mind but which pose challenges to a true experimental design—such as the experiences of war, long-term isolation, abusive parenting, or prolonged drug use. However, none of these are conditions we could ethically experimentally manipulate and randomly assign people to. Therefore, ethical considerations are another crucial factor in determining an appropriate research design.

Research Methods: Why You Need Them

Just look at any major news outlet and you'll find research routinely being reported. Sometimes the journalist understands the research methodology, sometimes not (e.g., correlational evidence is often incorrectly represented as causal evidence). Often, the media are quick to

draw a conclusion for you. After reading this module, you should recognize that the strength of a scientific finding lies in the strength of its methodology. Therefore, in order to be a savvy consumer of research, you need to understand the pros and cons of different methods and the distinctions among them. Plus, understanding how psychologists systematically go about answering research questions will help you to solve problems in other domains, both personal and professional, not just in psychology.

Outside Resources

Article: Harker and Keltner study of yearbook photographs and marriage
http://psycnet.apa.org/journals/psp/80/1/112/

Article: Rich Lucas's longitudinal study on the effects of marriage on happiness
http://psycnet.apa.org/journals/psp/84/3/527/

Article: Spending money on others promotes happiness. Elizabeth Dunn's research
https://www.sciencemag.org/content/319/5870/1687.abstract

Article: What makes a life good?
http://psycnet.apa.org/journals/psp/75/1/156/

Discussion Questions

1. What are some key differences between experimental and correlational research?
2. Why might researchers sometimes use methods other than experiments?
3. How do surveys relate to correlational and experimental designs?

Vocabulary

Confounds
Factors that undermine the ability to draw causal inferences from an experiment.

Correlation
Measures the association between two variables, or how they go together.

Dependent variable
The variable the researcher measures but does not manipulate in an experiment.

Experimenter expectations
When the experimenter's expectations influence the outcome of a study.

Independent variable
The variable the researcher manipulates and controls in an experiment.

Longitudinal study
A study that follows the same group of individuals over time.

Operational definitions
How researchers specifically measure a concept.

Participant demand
When participants behave in a way that they think the experimenter wants them to behave.

Placebo effect
When receiving special treatment or something new affects human behavior.

Quasi-experimental design
An experiment that does not require random assignment to conditions.

Random assignment
Assigning participants to receive different conditions of an experiment by chance.

References

Chiao, J. (2009). Culture–gene coevolution of individualism – collectivism and the serotonin transporter gene. *Proceedings of the Royal Society B, 277*, 529-537. doi: 10.1098/rspb.2009.1650

Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. Science, 319(5870), 1687–1688. doi:10.1126/science.1150952

Festinger, L., Riecken, H.W., & Schachter, S. (1956). When prophecy fails. Minneapolis, MN: University of Minnesota Press.

Harker, L. A., & Keltner, D. (2001). Expressions of positive emotion in women\'s college yearbook pictures and their relationship to personality and life outcomes across adulthood. Journal of Personality and Social Psychology, 80, 112–124.

King, L. A., & Napa, C. K. (1998). What makes a life good? Journal of Personality and Social Psychology, 75, 156–165.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Re-examining adaptation and the setpoint model of happiness: Reactions to changes in marital status. Journal of Personality and Social Psychology, 84, 527–539.

3

Conducting Psychology Research in the Real World

Matthias R. Mehl

Because of its ability to determine cause-and-effect relationships, the laboratory experiment is traditionally considered the method of choice for psychological science. One downside, however, is that as it carefully controls conditions and their effects, it can yield findings that are out of touch with reality and have limited use when trying to understand real-world behavior. This module highlights the importance of also conducting research outside the psychology laboratory, within participants' natural, everyday environments, and reviews existing methodologies for studying daily life

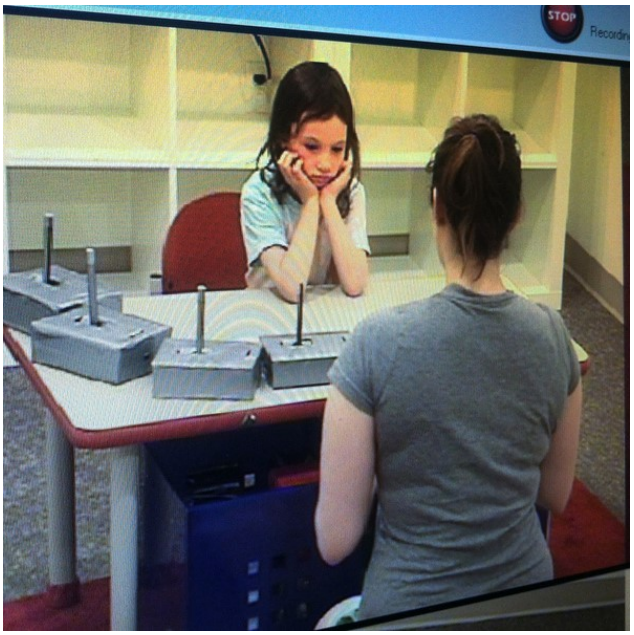
Learning Objectives

- Identify limitations of the traditional laboratory experiment.
- Explain ways in which daily life research can further psychological science.
- Know what methods exist for conducting psychological research in the real world.

Introduction

The laboratory experiment is traditionally considered the "gold standard" in psychology research. This is because only laboratory experiments can clearly separate cause from effect and therefore establish causality. Despite this unique strength, it is also clear that a scientific field that is mainly based on controlled laboratory studies ends up lopsided. Specifically, it

accumulates a lot of knowledge on what *can* happen—under carefully isolated and controlled circumstances—but it has little to say about what actually *does* happen under the circumstances that people actually encounter in their daily lives.



Do the research results obtained in isolated, carefully controlled laboratory conditions generalize into the real world? [Image: Nessen Marshall, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

For example, imagine you are a participant in an experiment that looks at the effect of being in a good mood on generosity, a topic that may have a good deal of practical application. Researchers create an internally-valid, carefully-controlled experiment where they randomly assign you to watch either a happy movie or a neutral movie, and then you are given the opportunity to help the researcher out by staying longer and participating in another study. If people in a good mood are more willing to stay and help out, the researchers can feel confident that – since everything else was held constant – your positive mood led you to be more helpful. However, what does this tell us about helping behaviors in the real world? Does it generalize to other kinds of helping, such as donating money to a charitable cause? Would all kinds of happy movies produce this behavior, or only this one? What about other positive experiences that might boost mood, like receiving a compliment or a good grade? And what if you were watching the movie with friends, in a crowded theatre, rather than in a sterile research lab? Taking research out into the real world can help answer some of these sorts of important questions.

As one of the founding fathers of social psychology remarked, "Experimentation in the laboratory occurs, socially speaking, on an island quite isolated from the life of society" (Lewin, 1944, p. 286). This module highlights the importance of going beyond experimentation and also conducting research outside the laboratory (Reis & Gosling, 2010), directly within participants' natural environments, and reviews existing methodologies for studying daily life.

Rationale for Conducting Psychology Research in the Real World

One important challenge researchers face when designing a study is to find the right balance

between ensuring **internal validity**, or the degree to which a study allows unambiguous causal inferences, and **external validity**, or the degree to which a study ensures that potential findings apply to settings and samples other than the ones being studied (Brewer, 2000). Unfortunately, these two kinds of validity tend to be difficult to achieve at the same time, in one study. This is because creating a controlled setting, in which all potentially influential factors (other than the experimentally-manipulated variable) are controlled, is bound to create an environment that is quite different from what people naturally encounter (e.g., using a happy movie clip to promote helpful behavior). However, it is the degree to which an experimental situation is comparable to the corresponding real-world situation of interest that determines how generalizable potential findings will be. In other words, if an experiment is very far-off from what a person might normally experience in everyday life, you might reasonably question just how useful its findings are.

Because of the incompatibility of the two types of validity, one is often—by design—prioritized over the other. Due to the importance of identifying true causal relationships, psychology has traditionally emphasized internal over external validity. However, in order to make claims about human behavior that apply across populations and environments, researchers complement traditional laboratory research, where participants are brought into the lab, with field research where, in essence, the psychological laboratory is brought to participants. Field studies allow for the important test of how psychological variables and processes of interest "behave" under real-world circumstances (i.e., what *actually does happen* rather than what *can happen*). They can also facilitate "downstream" operationalizations of constructs that measure life outcomes of interest *directly* rather than indirectly.

Take, for example, the fascinating field of psychoneuroimmunology, where the goal is to understand the interplay of psychological factors - such as personality traits or one's stress level - and the immune system. Highly sophisticated and carefully controlled experiments offer ways to isolate the variety of neural, hormonal, and cellular mechanisms that link psychological variables such as chronic stress to biological outcomes such as immunosuppression (a state of impaired immune functioning; Sapolsky, 2004). Although these studies demonstrate impressively how psychological factors can affect health-relevant biological processes, they—because of their research design—remain mute about the degree to which these factors actually do undermine people's everyday health in real life. It is certainly important to show that laboratory stress can alter the number of natural killer cells in the blood. But it is equally important to test to what extent the levels of stress that people experience on a day-to-day basis result in them catching a cold more often or taking longer to recover from one. The goal for researchers, therefore, must be to complement traditional laboratory experiments with less controlled studies under real-world circumstances. The term **ecological validity** is used to refer the degree to which an effect has been obtained under

conditions that are typical for what happens in everyday life (Brewer, 2000). In this example, then, people might keep a careful daily log of how much stress they are under as well as noting physical symptoms such as headaches or nausea. Although many factors beyond stress level may be responsible for these symptoms, this more correlational approach can shed light on how the relationship between stress and health plays out outside of the laboratory.

An Overview of Research Methods for Studying Daily Life

Capturing "life as it is lived" has been a strong goal for some researchers for a long time. Wilhelm and his colleagues recently published a comprehensive review of early attempts to systematically document daily life (Wilhelm, Perrez, & Pawlik, 2012). Building onto these original methods, researchers have, over the past decades, developed a broad toolbox for measuring experiences, behavior, and physiology directly in participants' daily lives (Mehl & Conner, 2012). Figure 1 provides a schematic overview of the methodologies described below.

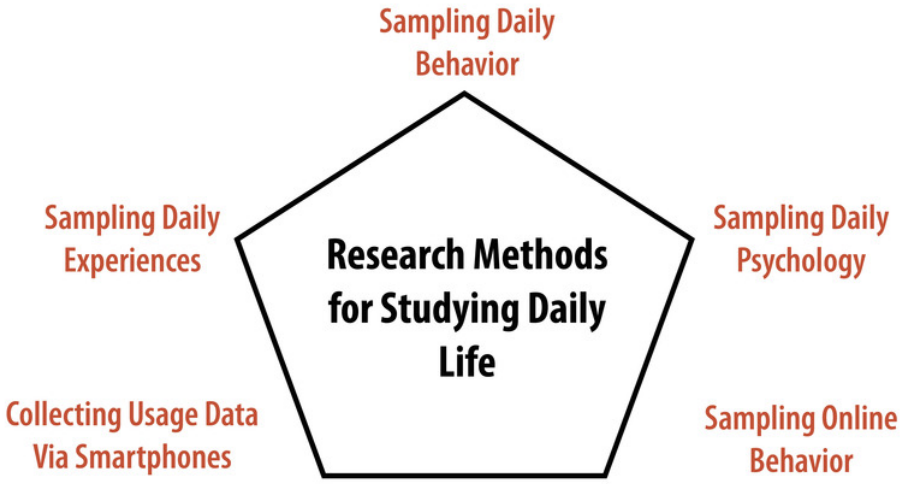


Figure 1. Schematic Overview of Research Methods for Studying Daily Life

Studying Daily Experiences

Starting in the mid-1970s, motivated by a growing skepticism toward highly-controlled laboratory studies, a few groups of researchers developed a set of new methods that are now commonly known as the experience-sampling method (Hektner, Schmidt, & Csikszentmihalyi, 2007), ecological momentary assessment (Stone & Shiffman, 1994), or the

diary method (Bolger & Rafaeli, 2003). Although variations within this set of methods exist, the basic idea behind all of them is to collect in-the-moment (or, close-to-the-moment) self-report data directly from people as they go about their daily lives. This is typically accomplished by asking participants' repeatedly (e.g., five times per day) over a period of time (e.g., a week) to report on their current thoughts and feelings. The momentary questionnaires often ask about their location (e.g., "Where are you now?"), social environment (e.g., "With whom are you now?"), activity (e.g., "What are you currently doing?"), and experiences (e.g., "How are you feeling?"). That way, researchers get a snapshot of what was going on in participants' lives at the time at which they were asked to report.

Technology has made this sort of research possible, and recent technological advances have altered the different tools researchers are able to easily use. Initially, participants wore electronic wristwatches that beeped at preprogrammed but seemingly random times, at which they completed one of a stack of provided paper questionnaires. With the mobile computing revolution, both the prompting and the questionnaire completion were gradually replaced by handheld devices such as smartphones. Being able to collect the momentary questionnaires digitally and time-stamped (i.e., having a record of exactly when participants responded) had major methodological and practical advantages and contributed to experience sampling going mainstream (Conner, Tennen, Fleeson, & Barrett, 2009).

Over time, experience sampling and related momentary self-report methods have become very popular, and, by now, they are effectively the gold standard for studying daily life. They have helped make progress in almost all areas of psychology (Mehl & Conner, 2012). These methods ensure receiving many measurements from many participants, and has further inspired the development of novel statistical methods (Bolger & Laurenceau, 2013). Finally, and maybe most importantly, they accomplished what they sought out to accomplish: to bring attention to what psychology ultimately wants and needs to know about, namely "what people actually do, think, and feel in the various contexts of their lives" (Funder, 2001, p. 213). In short, these approaches have allowed researchers to do research that

Using modern technology like smartphones allows for more widespread experience sampling of research participants. Whether at home, work, or just sitting in a coffee shop technology makes it easier than ever to participate in psychology research. [Image: Vladimir Yaitskiy, https://goo.gl/7sjXfq, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

is more externally valid, or more generalizable to real life, than the traditional laboratory experiment.

To illustrate these techniques, consider a classic study, Stone, Reed, and Neale (1987), who tracked positive and negative experiences surrounding a respiratory infection using daily experience sampling. They found that undesirable experiences peaked and desirable ones dipped about four to five days prior to participants coming down with the cold. More recently, Killingsworth and Gilbert (2010) collected momentary self-reports from more than 2,000 participants via a smartphone app. They found that participants were less happy when their mind was in an idling, mind-wandering state, such as surfing the Internet or multitasking at work, than when it was in an engaged, task-focused one, such as working diligently on a paper. These are just two examples that illustrate how experience-sampling studies have yielded findings that could not be obtained with traditional laboratory methods.

Recently, the **day reconstruction method (DRM)** (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) has been developed to obtain information about a person's daily experiences without going through the burden of collecting momentary experience-sampling data. In the DRM, participants report their experiences of a given day retrospectively after engaging in a systematic, experiential reconstruction of the day on the following day. As a participant in this type of study, you might look back on yesterday, divide it up into a series of episodes such as "made breakfast," "drove to work," "had a meeting," etc. You might then report who you were with in each episode and how you felt in each. This approach has shed light on what situations lead to moments of positive and negative mood throughout the course of a normal day.

Studying Daily Behavior

Experience sampling is often used to study everyday behavior (i.e., daily social interactions and activities). In the laboratory, behavior is best studied using direct behavioral observation (e.g., video recordings). In the real world, this is, of course, much more difficult. As Funder put it, it seems it would require a "detective's report [that] would specify in exact detail everything the participant said and did, and with whom, in all of the contexts of the participant's life" (Funder, 2007, p. 41).

As difficult as this may seem, Mehl and colleagues have developed a naturalistic observation methodology that is similar in spirit. Rather than following participants—like a detective—with a video camera (see Craik, 2000), they equip participants with a portable audio recorder that is programmed to periodically record brief snippets of ambient sounds (e.g., 30 seconds every 12 minutes). Participants carry the recorder (originally a microcassette recorder, now a

smartphone app) on them as they go about their days and return it at the end of the study. The recorder provides researchers with a series of sound bites that, together, amount to an acoustic diary of participants' days as they naturally unfold—and that constitute a representative sample of their daily activities and social encounters. Because it is somewhat similar to having the researcher's ear at the participant's lapel, they called their method the **electronically activated recorder, or EAR** (Mehl, Pennebaker, Crow, Dabbs, & Price, 2001). The ambient sound recordings can be coded for many things, including participants' locations (e.g., at school, in a coffee shop), activities (e.g., watching TV, eating), interactions (e.g., in a group, on the phone), and emotional expressions (e.g., laughing, sighing). As unnatural or intrusive as it might seem, participants report that they quickly grow accustomed to the EAR and say they soon find themselves behaving as they normally would.

In a cross-cultural study, Ramírez-Esparza and her colleagues used the EAR method to study sociability in the United States and Mexico. Interestingly, they found that although American participants rated themselves significantly higher than Mexicans on the question, "I see myself as a person who is talkative," they actually spent almost 10 percent less time talking than Mexicans did (Ramírez-Esparza, Mehl, Álvarez Bermúdez, & Pennebaker, 2009). In a similar way, Mehl and his colleagues used the EAR method to debunk the long-standing myth that women are considerably more talkative than men. Using data from six different studies, they showed that both sexes use on average about 16,000 words per day. The estimated sex difference of 546 words was trivial compared to the immense range of more than 46,000 words between the least and most talkative individual (695 versus 47,016 words; Mehl, Vazire, Ramírez-Esparza, Slatcher, & Pennebaker, 2007). Together, these studies demonstrate how naturalistic observation can be used to study objective aspects of daily behavior and how it can yield findings quite different from what other methods yield (Mehl, Robbins, & Deters, 2012).

A series of other methods and creative ways for assessing behavior directly and unobtrusively in the real world are described in a seminal book on real-world, subtle measures (Webb, Campbell, Schwartz, Sechrest, & Grove, 1981). For example, researchers have used time-lapse photography to study the flow of people and the use of space in urban public places (Whyte, 1980). More recently, they have observed people's personal (e.g., dorm rooms) and professional (e.g., offices) spaces to understand how personality is expressed and detected in everyday environments (Gosling, Ko, Mannarelli, & Morris, 2002). They have even systematically collected and analyzed people's garbage to measure what people actually consume (e.g., empty alcohol bottles or cigarette boxes) rather than what they *say* they consume (Rathje & Murphy, 2001). Because people often cannot and sometimes may not want to accurately report what they do, the direct—and ideally nonreactive—assessment of real-world behavior is of high importance for psychological research (Baumeister, Vohs, &

Funder, 2007).

Studying Daily Physiology

In addition to studying how people think, feel, and behave in the real world, researchers are also interested in how our bodies respond to the fluctuating demands of our lives. What are the daily experiences that make our "blood boil"? How do our neurotransmitters and hormones respond to the stressors we encounter in our lives? What physiological reactions do we show to being loved—or getting ostracized? You can see how studying these powerful experiences in real life, as they actually happen, may provide more rich and informative data than one might obtain in an artificial laboratory setting that merely mimics these experiences.

Real world stressors may result in very different physiological responses than the same stressors simulated in a lab environment. [Image: State Farm, https://goo.gl/FGYyVz, CC BY 2.0, https://goo.gl/9uSnqN]

Also, in pursuing these questions, it is important to keep in mind that what is stressful, engaging, or boring for one person might not be so for another. It is, in part, for this reason that researchers have found only limited correspondence between how people respond physiologically to a standardized laboratory stressor (e.g., giving a speech) and how they respond to stressful experiences in their lives. To give an example, Wilhelm and Grossman (2010) describe a participant who showed rather minimal heart rate increases in response to a laboratory stressor (about five to 10 beats per minute) but quite dramatic increases (almost 50 beats per minute) later in the afternoon while watching a soccer game. Of course, the reverse pattern can happen as well, such as when patients have high blood pressure in the doctor's office but not in their home environment—the so-called white coat hypertension (White, Schulman, McCabe, & Dey, 1989).

Ambulatory physiological monitoring – that is, monitoring physiological reactions as people go about their daily lives - has a long history in biomedical research and an array of monitoring devices exist (Fahrenberg & Myrtek, 1996). Among the biological signals that can now be

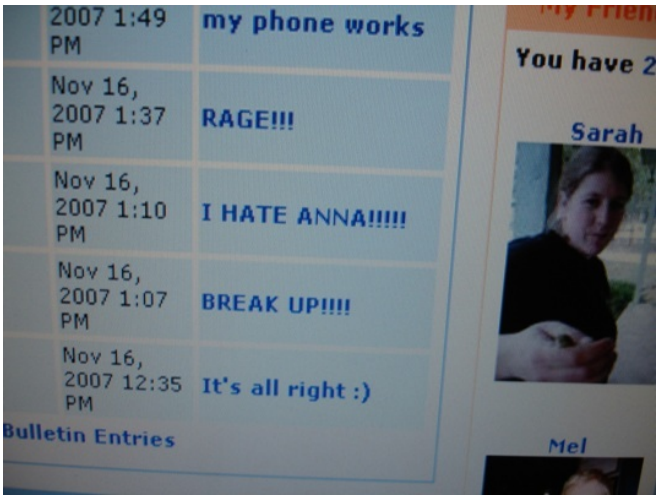
measured in daily life with portable signal recording devices are the electrocardiogram (ECG), blood pressure, electrodermal activity (or "sweat response"), body temperature, and even the electroencephalogram (EEG) (Wilhelm & Grossman, 2010). Most recently, researchers have added **ambulatory assessment** of hormones (e.g., cortisol) and other biomarkers (e.g., immune markers) to the list (Schlotz, 2012). The development of ever more sophisticated ways to track what goes on underneath our skins as we go about our lives is a fascinating and rapidly advancing field.

In a recent study, Lane, Zareba, Reis, Peterson, and Moss (2011) used experience sampling combined with ambulatory electrocardiography (a so-called Holter monitor) to study how emotional experiences can alter cardiac function in patients with a congenital heart abnormality (e.g., long QT syndrome). Consistent with the idea that emotions may, in some cases, be able to trigger a cardiac event, they found that typical—in most cases even relatively low intensity— daily emotions had a measurable effect on ventricular repolarization, an important cardiac indicator that, in these patients, is linked to risk of a cardiac event. In another study, Smyth and colleagues (1998) combined experience sampling with momentary assessment of cortisol, a stress hormone. They found that momentary reports of current or even anticipated stress predicted increased cortisol secretion 20 minutes later. Further, and independent of that, the experience of other kinds of negative affect (e.g., anger, frustration) also predicted higher levels of cortisol and the experience of positive affect (e.g., happy, joyful) predicted lower levels of this important stress hormone. Taken together, these studies illustrate how researchers can use ambulatory physiological monitoring to study how the little —and seemingly trivial or inconsequential—experiences in our lives leave objective, measurable traces in our bodily systems.

Studying Online Behavior

Another domain of daily life that has only recently emerged is virtual daily behavior or how people act and interact with others on the Internet. Irrespective of whether social media will turn out to be humanity's blessing or curse (both scientists and laypeople are currently divided over this question), the fact is that people are spending an ever increasing amount of time online. In light of that, researchers are beginning to think of virtual behavior as being as serious as "actual" behavior and seek to make it a legitimate target of their investigations (Gosling & Johnson, 2010).

One way to study virtual behavior is to make use of the fact that most of what people do on the Web—emailing, chatting, tweeting, blogging, posting— leaves direct (and permanent) verbal traces. For example, differences in the ways in which people use words (e.g., subtle



Online activity reveals a lot of psychological information to researchers. [Image: Sarah C. Frey, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

preferences in word choice) have been found to carry a lot of psychological information (Pennebaker, Mehl, & Niederhoffer, 2003). Therefore, a good way to study virtual social behavior is to study virtual language behavior. Researchers can download people's—often public—verbal expressions and communications and analyze them using modern text analysis programs (e.g., Pennebaker, Booth, & Francis, 2007).

For example, Cohn, Mehl, and Pennebaker (2004) downloaded blogs of more than a thousand users of lifejournal.com, one of the first Internet blogging sites, to study how people responded socially and emotionally to the attacks of September 11, 2001. In going "the online route," they could bypass a critical limitation of coping research, the inability to obtain baseline information; that is, how people were doing *before* the traumatic event occurred. Through access to the database of public blogs, they downloaded entries from two months prior to two months after the attacks. Their linguistic analyses revealed that in the first days after the attacks, participants expectedly expressed more negative emotions and were more cognitively and socially engaged, asking questions and sending messages of support. Already after two weeks, though, their moods and social engagement returned to baseline, and, interestingly, their use of cognitive-analytic words (e.g., "think," "question") even dropped below their normal level. Over the next six weeks, their mood hovered around their pre-9/11 baseline, but both their social engagement and cognitive-analytic processing stayed remarkably low. This suggests a social and cognitive weariness in the aftermath of the attacks. In using virtual verbal behavior as a marker of psychological functioning, this study was able to draw a fine timeline of how humans cope with disasters.

Reflecting their rapidly growing real-world importance, researchers are now beginning to investigate behavior on social networking sites such as Facebook (Wilson, Gosling, & Graham, 2012). Most research looks at psychological correlates of online behavior such as personality traits and the quality of one's social life but, importantly, there are also first attempts to export traditional experimental research designs into an online setting. In a pioneering study of online social influence, Bond and colleagues (2012) experimentally tested the effects that peer feedback has on voting behavior. Remarkably, their sample consisted of 16 million (!) Facebook users. They found that online political-mobilization messages (e.g., "I voted" accompanied by

selected pictures of their Facebook friends) influenced real-world voting behavior. This was true not just for users who saw the messages but also for their friends and friends of their friends. Although the intervention effect on a single user was very small, through the enormous number of users and indirect social contagion effects, it resulted cumulatively in an estimated 340,000 additional votes—enough to tilt a close election. In short, although still in its infancy, research on virtual daily behavior is bound to change social science, and it has already helped us better understand both virtual and "actual" behavior.

"Smartphone Psychology" ?

A review of research methods for studying daily life would not be complete without a vision of "what's next." Given how common they have become, it is safe to predict that smartphones will not just remain devices for everyday online communication but will also become devices for scientific data collection and intervention (Kaplan & Stone, 2013; Yarkoni, 2012). These devices automatically store vast amounts of real-world user interaction data, and, in addition, they are equipped with sensors to track the physical (e. g., location, position) and social (e.g., wireless connections around the phone) context of these interactions. Miller (2012, p. 234) states, "The question is not whether smartphones will revolutionize psychology but how, when, and where the revolution will happen." Obviously, their immense potential for data collection also brings with it big new challenges for researchers (e.g., privacy protection, data analysis, and synthesis). Yet it is clear that many of the methods described in this module—and many still to be developed ways of collecting real-world data—will, in the future, become integrated into the devices that people naturally and happily carry with them from the moment they get up in the morning to the moment they go to bed.

Conclusion

This module sought to make a case for psychology research conducted outside the lab. If the ultimate goal of the social and behavioral sciences is to explain human behavior, then researchers must also—in addition to conducting carefully controlled lab studies—deal with the "messy" real world and find ways to capture life as it naturally happens.

Mortensen and Cialdini (2010) refer to the dynamic give-and-take between laboratory and field research as "full-cycle psychology". Going full cycle, they suggest, means that "researchers use naturalistic observation to determine an effect's presence in the real world, theory to determine what processes underlie the effect, experimentation to verify the effect and its underlying processes, and a return to the natural environment to corroborate the experimental findings" (Mortensen & Cialdini, 2010, p. 53). To accomplish this, researchers

have access to a toolbox of research methods for studying daily life that is now more diverse and more versatile than it has ever been before. So, all it takes is to go ahead and—literally—bring science to life.

Outside Resources

Website: Society for Ambulatory Assessment
http://www.ambulatory-assessment.org

Discussion Questions

1. What do you think about the tradeoff between unambiguously establishing cause and effect (internal validity) and ensuring that research findings apply to people's everyday lives (external validity)? Which one of these would you prioritize as a researcher? Why?
2. What challenges do you see that daily-life researchers may face in their studies? How can they be overcome?
3. What ethical issues can come up in daily-life studies? How can (or should) they be addressed?
4. How do you think smartphones and other mobile electronic devices will change psychological research? What are their promises for the field? And what are their pitfalls?

Vocabulary

Ambulatory assessment
An overarching term to describe methodologies that assess the behavior, physiology, experience, and environments of humans in naturalistic settings.

Daily Diary method
A methodology where participants complete a questionnaire about their thoughts, feelings, and behavior of the day at the end of the day.

Day reconstruction method (DRM)
A methodology where participants describe their experiences and behavior of a given day retrospectively upon a systematic reconstruction on the following day.

Ecological momentary assessment
An overarching term to describe methodologies that repeatedly sample participants' real-world experiences, behavior, and physiology in real time.

Ecological validity
The degree to which a study finding has been obtained under conditions that are typical for what happens in everyday life.

Electronically activated recorder, or EAR
A methodology where participants wear a small, portable audio recorder that intermittently records snippets of ambient sounds around them.

Experience-sampling method
A methodology where participants report on their momentary thoughts, feelings, and behaviors at different points in time over the course of a day.

External validity
The degree to which a finding generalizes from the specific sample and context of a study to some larger population and broader settings.

Full-cycle psychology
A scientific approach whereby researchers start with an observational field study to identify an effect in the real world, follow up with laboratory experimentation to verify the effect and isolate the causal mechanisms, and return to field research to corroborate their experimental

findings.

Generalize
Generalizing, in science, refers to the ability to arrive at broad conclusions based on a smaller sample of observations. For these conclusions to be true the sample should accurately represent the larger population from which it is drawn.

Internal validity
The degree to which a cause-effect relationship between two variables has been unambiguously established.

Linguistic inquiry and word count
A quantitative text analysis methodology that automatically extracts grammatical and psychological information from a text by counting word frequencies.

Lived day analysis
A methodology where a research team follows an individual around with a video camera to objectively document a person's daily life as it is lived.

White coat hypertension
A phenomenon in which patients exhibit elevated blood pressure in the hospital or doctor's office but not in their everyday lives.

References

Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science, 2*, 396–403.

Bolger, N., & Laurenceau, J-P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research*. New York, NY: Guilford Press.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. Annual Review of Psychology, 54, 579–616.

Bond, R. M., Jones, J. J., Kramer, A. D., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61 million-person experiment in social influence and political mobilization. *Nature*, 489, 295–298.

Brewer, M. B. (2000). Research design and issues of validity. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social psychology* (pp. 3–16). New York, NY: Cambridge University Press.

Cohn, M. A., Mehl, M. R., & Pennebaker, J. W. (2004). Linguistic indicators of psychological change after September 11, 2001. Psychological Science, 15, 687–693.

Conner, T. S., Tennen, H., Fleeson, W., & Barrett, L. F. (2009). Experience sampling methods: A modern idiographic approach to personality research. *Social and Personality Psychology Compass, 3*, 292–313.

Craik, K. H. (2000). The lived day of an individual: A person-environment perspective. In W. B. Walsh, K. H. Craik, & R. H. Price (Eds.), *Person-environment psychology: New directions and perspectives* (pp. 233–266). Mahwah, NJ: Lawrence Erlbaum Associates.

Fahrenberg, J., &. Myrtek, M. (Eds.) (1996). *Ambulatory assessment: Computer-assisted psychological and psychophysiological methods in monitoring and field studies*. Seattle, WA: Hogrefe & Huber.

Funder, D. C. (2007). *The personality puzzle*. New York, NY: W. W. Norton & Co.

Funder, D. C. (2001). Personality. Review of Psychology, 52, 197–221.

Gosling, S. D., & Johnson, J. A. (2010). *Advanced methods for conducting online behavioral research*. Washington, DC: American Psychological Association.

Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). A room with a cue: Personality judgments based on offices and bedrooms. *Journal of Personality and Social Psychology, 82*, 379–398.

Hektner, J. M., Schmidt, J. A., & Csikszentmihalyi, M. (2007). *Experience sampling method: Measuring the quality of everyday life*. Thousand Oaks, CA: Sage.

Kahneman, D., Krueger, A., Schkade, D., Schwarz, N., and Stone, A. (2004). A survey method for characterizing daily life experience: The Day Reconstruction Method. *Science*, 306, 1776–780.

Kaplan, R. M., & Stone A. A. (2013). Bringing the laboratory and clinic to the community: Mobile technologies for health promotion and disease prevention. *Annual Review of Psychology, 64*, 471-498.

Killingsworth, M. A., & Gilbert, D. T. (2010). A wandering mind is an unhappy mind. *Science*, 330, 932.

Lane, R. D., Zareba, W., Reis, H., Peterson, D., &, Moss, A. (2011). Changes in ventricular repolarization duration during typical daily emotion in patients with Long QT Syndrome. *Psychosomatic Medicine, 73*, 98–105.

Lewin, K. (1944) *Constructs in psychology and psychological ecology*. University of Iowa Studies in Child Welfare, 20, 23–27.

Mehl, M. R., & Conner, T. S. (Eds.) (2012). *Handbook of research methods for studying daily life*. New York, NY: Guilford Press.

Mehl, M. R., Pennebaker, J. W., Crow, M., Dabbs, J., & Price, J. (2001). The electronically activated recorder (EAR): A device for sampling naturalistic daily activities and conversations. *Behavior Research Methods, Instruments, and Computers, 33*, 517–523.

Mehl, M. R., Robbins, M. L., & Deters, G. F. (2012). Naturalistic observation of health-relevant social processes: The electronically activated recorder (EAR) methodology in psychosomatics. *Psychosomatic Medicine, 74*, 410–417.

Mehl, M. R., Vazire, S., Ramírez-Esparza, N., Slatcher, R. B., & Pennebaker, J. W. (2007). Are women really more talkative than men? *Science, 317*, 82.

Miller, G. (2012). The smartphone psychology manifesto. *Perspectives in Psychological Science*, 7, 221–237.

Mortenson, C. R., & Cialdini, R. B. (2010). Full-cycle social psychology for theory and application. Social and Personality Psychology Compass, 4, 53–63.

Pennebaker, J. W., Mehl, M. R., Niederhoffer, K. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*, 547–577.

Ramírez-Esparza, N., Mehl, M. R., Álvarez Bermúdez, J., & Pennebaker, J. W. (2009). Are Mexicans more or less sociable than Americans? Insights from a naturalistic observation study. *Journal of Research in Personality, 43*, 1–7.

Rathje, W., & Murphy, C. (2001). *Rubbish! The archaeology of garbage*. New York, NY: Harper Collins.

Reis, H. T., & Gosling, S. D. (2010). Social psychological methods outside the laboratory. In S. T. Fiske, D. T. Gilbert, & G. Lindzey, (Eds.), *Handbook of social psychology* (5th ed., Vol. 1, pp. 82–114). New York, NY: Wiley.

Sapolsky, R. (2004). *Why zebras don't get ulcers: A guide to stress, stress-related diseases and coping*. New York, NY: Henry Holt and Co.

Schlotz, W. (2012). Ambulatory psychoneuroendocrinology: Assessing salivary cortisol and other hormones in daily life. In M.R. Mehl & T.S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 193–209). New York, NY: Guilford Press.

Smyth, J., Ockenfels, M. C., Porter, L., Kirschbaum, C., Hellhammer, D. H., & Stone, A. A. (1998). Stressors and mood measured on a momentary basis are associated with salivary cortisol secretion. *Psychoneuroendocrinology, 23*, 353–370.

Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine, 16*, 199–202.

Stone, A. A., Reed, B. R., Neale, J. M. (1987). Changes in daily event frequency precede episodes of physical symptoms. *Journal of Human Stress, 13*, 70–74.

Webb, E. J., Campbell, D. T., Schwartz, R. D., Sechrest, L., & Grove, J. B. (1981). *Nonreactive measures in the social sciences*. Boston, MA: Houghton Mifflin Co.

White, W. B., Schulman, P., McCabe, E. J., & Dey, H. M. (1989). Average daily blood pressure, not office blood pressure, determines cardiac function in patients with hypertension. *Journal of the American Medical Association, 261*, 873–877.

Whyte, W. H. (1980). *The social life of small urban spaces*. Washington, DC: The Conservation Foundation.

Wilhelm, F.H., & Grossman, P. (2010). Emotions beyond the laboratory: Theoretical fundaments, study design, and analytic strategies for advanced ambulatory assessment. *Biological Psychology, 84*, 552–569.

Wilhelm, P., Perrez, M., & Pawlik, K. (2012). Conducting research in daily life: A historical review. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life*. New York, NY: Guilford Press.

Wilson, R., & Gosling, S. D., & Graham, L. (2012). A review of Facebook research in the social sciences. *Perspectives on Psychological Science, 7*, 203–220.

Yarkoni, T. (2012). Psychoinformatics: New horizons at the interface of the psychological and computing sciences. *Current Directions in Psychological Science, 21*, 391–397.

4
Statistical Thinking

Beth Chance & Allan Rossman

As our society increasingly calls for evidence-based decision making, it is important to consider how and when we can draw valid inferences from data. This module will use four recent research studies to highlight key elements of a statistical investigation.

Learning Objectives

- Define basic elements of a statistical investigation.
- Describe the role of p-values and confidence intervals in statistical inference.
- Describe the role of random sampling in generalizing conclusions from a sample to a population.
- Describe the role of random assignment in drawing cause-and-effect conclusions.
- Critique statistical studies.

Introduction

Does drinking coffee actually increase your life expectancy? A recent study (Freedman, Park, Abnet, Hollenbeck, & Sinha, 2012) found that men who drank at least six cups of coffee a day had a 10% lower chance of dying (women 15% lower) than those who drank none. Does this mean you should pick up or increase your own coffee habit?

Modern society has become awash in studies such as this; you can read about several such studies in the news every day. Moreover, data abound everywhere in modern life. Conducting

such a study well, and interpreting the results of such studies well for making informed decisions or setting policies, requires understanding basic ideas of statistics, the science of gaining insight from data. Rather than relying on anecdote and intuition, statistics allows us to systematically study phenomena of interest.

People around the world differ in their preferences for drinking coffee versus drinking tea. Would the results of the coffee study be the same in Canada as in China? [Image: Duncan, https://goo.gl/vbMyTm, CC BY-NC 2.0, https://goo.gl/l8UUGY]

Key components to a statistical investigation are:

- Planning the study: Start by asking a testable research question and deciding how to collect data. For example, how long was the study period of the coffee study? How many people were recruited for the study, how were they recruited, and from where? How old were they? What other variables were recorded about the individuals, such as smoking habits, on the comprehensive lifestyle questionnaires? Were changes made to the participants' coffee habits during the course of the study?
- Examining the data: What are appropriate ways to examine the data? What graphs are relevant, and what do they reveal? What descriptive statistics can be calculated to summarize relevant aspects of the data, and what do they reveal? What patterns do you see in the data? Are there any individual observations that deviate from the overall pattern, and what do they reveal? For example, in the coffee study, did the proportions differ when we compared the smokers to the non-smokers?
- Inferring from the data: What are valid statistical methods for drawing inferences "beyond" the data you collected? In the coffee study, is the 10%–15% reduction in risk of death

something that could have happened just by chance?

- Drawing conclusions: Based on what you learned from your data, what conclusions can you draw? Who do you think these conclusions apply to? (Were the people in the coffee study older? Healthy? Living in cities?) Can you draw a cause-and-effect conclusion about your treatments? (Are scientists now saying that the coffee drinking is the cause of the decreased risk of death?)

Notice that the numerical analysis ("crunching numbers" on the computer) comprises only a small part of overall statistical investigation. In this module, you will see how we can answer some of these questions and what questions you should be asking about any statistical investigation you read about.

Distributional Thinking

When data are collected to address a particular question, an important first step is to think of meaningful ways to organize and examine the data. The most fundamental principle of statistics is that data vary. The pattern of that variation is crucial to capture and to understand. Often, careful presentation of the data will address many of the research questions without requiring more sophisticated analyses. It may, however, point to additional questions that need to be examined in more detail.

Example 1: Researchers investigated whether cancer pamphlets are written at an appropriate level to be read and understood by cancer patients (Short, Moriarty, & Cooley, 1995). Tests of reading ability were given to 63 patients. In addition, readability level was determined for a sample of 30 pamphlets, based on characteristics such as the lengths of words and sentences in the pamphlet. The results, reported in terms of grade levels, are displayed in Table 1.

Patients' reading levels	< 3	3	4	5	6	7	8	9	10	11	12	> 12	**Total**
Count (number of patients)	6	4	4	3	3	2	6	5	4	7	2	17	**63**

Pamphlet's readability levels	6	7	8	9	10	11	12	13	14	15	16	**Total**
Count (number of pamphlets)	3	3	8	4	1	1	4	2	1	2	1	**30**

Table 1. Frequency tables of patient reading levels and pamphlet readability levels.

These two variables reveal two fundamental aspects of statistical thinking:

- Data *vary*. More specifically, values of a variable (such as reading level of a cancer patient or readability level of a cancer pamphlet) vary.
- Analyzing the pattern of variation, called the **distribution** of the variable, often reveals insights.

Addressing the research question of whether the cancer pamphlets are written at appropriate levels for the cancer patients requires comparing the two distributions. A naïve comparison might focus only on the centers of the distributions. Both medians turn out to be ninth grade, but considering only medians ignores the variability and the overall distributions of these data. A more illuminating approach is to compare the entire distributions, for example with a graph, as in Figure 1.

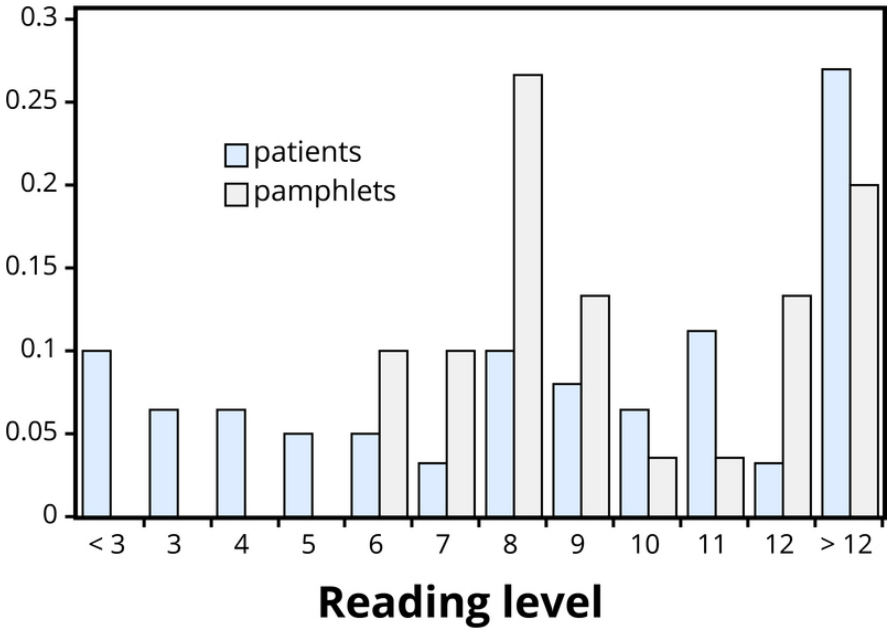


Figure 1: Comparison of patient reading levels and pamphlet readability levels.

Figure 1 makes clear that the two distributions are not well aligned at all. The most glaring discrepancy is that many patients (17/63, or 27%, to be precise) have a reading level below that of the most readable pamphlet. These patients will need help to understand the information provided in the cancer pamphlets. Notice that this conclusion follows from considering the distributions as a whole, not simply measures of center or variability, and that the graph contrasts those distributions more immediately than the frequency tables.

Statistical Significance

Even when we find patterns in data, often there is still uncertainty in various aspects of the data. For example, there may be potential for measurement errors (even your own body temperature can fluctuate by almost 1 °F over the course of the day). Or we may only have a "snapshot" of observations from a more long-term process or only a small subset of individuals from the population of interest. In such cases, how can we determine whether patterns we see in our small set of data is convincing evidence of a systematic phenomenon in the larger process or population?

Example 2: In a study reported in the November 2007 issue of *Nature*, researchers investigated whether pre-verbal infants take into account an individual's actions toward others in evaluating that individual as appealing or aversive (Hamlin, Wynn, & Bloom, 2007). In one component of the study, 10-month-old infants were shown a "climber" character (a piece of wood with "googly" eyes glued onto it) that could not make it up a hill in two tries. Then the infants were shown two scenarios for the climber's next try, one where the climber was pushed to the top of the hill by another character ("helper"), and one where the climber was pushed back down the hill by another character ("hinderer"). The infant was alternately shown these two scenarios several times. Then the infant was presented with two pieces of wood (representing the helper and the hinderer characters) and asked to pick one to play with. The researchers found that of the 16 infants who made a clear choice, 14 chose to play with the helper toy.

Correlation does not equal causation: When babies get their first teeth their saliva production increases but this does not mean that increased saliva causes them to get their teeth. [Image: Ben McLeod, https://goo.gl/0EkXpV, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

One possible explanation for this clear majority result is that the helping behavior of the one toy increases the infants' likelihood of choosing that toy. But are there other possible explanations? What about the color of the toy? Well, prior to collecting the data, the researchers arranged so that each color and shape (red square and blue circle) would be seen by the same number of infants. Or maybe the infants had right-handed tendencies and so picked whichever toy was closer to their right hand? Well, prior to collecting the data, the researchers arranged it so half the infants saw the helper toy on the right and half on the left. Or, maybe the shapes of these wooden characters (square, triangle, circle) had an effect? Perhaps, but again, the researchers controlled for this

by rotating which shape was the helper toy, the hinderer toy, and the climber. When designing experiments, it is important to *control* for as many variables as might affect the responses as possible.

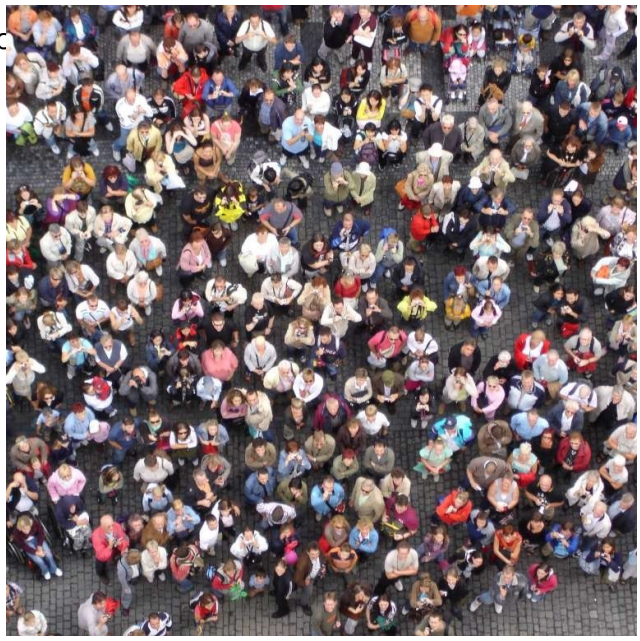
It is beginning to appear that the researchers accounted for all the other plausible explanations. But there is one more important consideration that cannot be controlled—if we did the study again with these 16 infants, they might not make the same choices. In other words, there is some *randomness* inherent in their selection process. Maybe each infant had no genuine preference at all, and it was simply "random luck" that led to 14 infants picking the helper toy. Although this random component cannot be controlled, we can apply a *probability model* to investigate the pattern of results that would occur in the long run if random chance were the only factor.

If the infants were equally likely to pick between the two toys, then each infant had a 50% chance of picking the helper toy. It's like each infant tossed a coin, and if it landed heads, the infant picked the helper toy. So if we tossed a coin 16 times, could it land heads 14 times? Sure, it's possible, but it turns out to be very unlikely. Getting 14 (or more) heads in 16 tosses is about as likely as tossing a coin and getting 9 heads in a row. This probability is referred to as a **p-value**. The p-value tells you how often a random process would give a result at least as extreme as what was found in the actual study, assuming there was nothing other than random chance at play. So, if we assume that each infant was choosing equally, then the probability that 14 or more out of 16 infants would choose the helper toy is found to be 0.0021. We have only two logical possibilities: either the infants have a genuine preference for the helper toy, or the infants have no preference (50/50) and an outcome that would occur only 2 times in 1,000 iterations happened in this study. Because this p-value of 0.0021 is quite small, we conclude that the study provides very strong evidence that these infants have a genuine preference for the helper toy. We often compare the p-value to some cut-off value (called the level of **significance**, typically around 0.05). If the p-value is smaller than that cut-off value, then we reject the hypothesis that only random chance was at play here. In this case, these researchers would conclude that *significantly* more than half of the infants in the study chose the helper toy, giving strong evidence of a genuine preference for the toy with the helping behavior.

Generalizability

One limitation to the previous study is that the conclusion only applies to the 16 infants in the study. We don't know much about how those 16 infants were selected. Suppose we want to select a subset of individuals (a **sample**) from a much larger group of individuals (the

population) in such a way that conclusions fr
population. This is the question faced by pollsters every day.



Generalizability is an important research consideration: The results of studies with widely representative samples are more likely to generalize to the population. [Image: Mike PD, https://goo.gl/ynFCMC, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Example 3: The General Social Survey (GSS) is a survey on societal trends conducted every other year in the United States. Based on a sample of about 2,000 adult Americans, researchers make claims about what percentage of the U.S. population consider themselves to be "liberal," what percentage consider themselves "happy," what percentage feel "rushed" in their daily lives, and many other issues. The key to making these claims about the larger population of all American adults lies in how the sample is selected. The goal is to select a sample that is representative of the population, and a common way to achieve this goal is to select a random sample that gives every member of the population an equal chance of being selected for the sample. In its simplest form, random sampling involves numbering every member of the population and then using a computer to randomly select the subset to be surveyed. Most polls don't operate exactly like this, but they do use probability-based sampling methods to select individuals from nationally representative panels.

In 2004, the GSS reported that 817 of 977 respondents (or 83.6%) indicated that they always or sometimes feel rushed. This is a clear majority, but we again need to consider variation due to *random sampling*. Fortunately, we can use the same probability model we did in the previous example to investigate the probable size of this error. (Note, we can use the coin-tossing model when the actual population size is much, much larger than the sample size, as then we can still consider the probability to be the same for every individual in the sample.) This probability model predicts that the sample result will be within 3 percentage points of the population value (roughly 1 over the square root of the sample size, the margin of error). A statistician would conclude, with 95% confidence, that between 80.6% and 86.6% of all adult Americans in 2004 would have responded that they sometimes or always feel rushed.

The key to the margin of error is that when we use a probability sampling method, we can make claims about how often (in the long run, with repeated random sampling) the sample

result would fall within a certain distance from the unknown population value by chance (meaning by random sampling variation) alone. Conversely, non-random samples are often suspect to bias, meaning the sampling method systematically over-represents some segments of the population and under-represents others. We also still need to consider other sources of bias, such as individuals not responding honestly. These sources of error are not measured by the margin of error.

Cause and Effect Conclusions

In many research studies, the primary question of interest concerns differences between groups. Then the question becomes how were the groups formed (e.g., selecting people who already drink coffee vs. those who don't). In some studies, the researchers actively form the groups themselves. But then we have a similar question—could any differences we observe in the groups be an artifact of that group-formation process? Or maybe the difference we observe in the groups is so large that we can discount a "fluke" in the group-formation process as a reasonable explanation for what we find?

Example 4: A psychology study investigated whether people tend to display more creativity when they are thinking about intrinsic or extrinsic motivations (Ramsey & Schafer, 2002, based on a study by Amabile, 1985). The subjects were 47 people with extensive experience with creative writing. Subjects began by answering survey questions about either intrinsic motivations for writing (such as the pleasure of self-expression) or extrinsic motivations (such as public recognition). Then all subjects were instructed to write a haiku, and those poems were evaluated for creativity by a panel of judges. The researchers conjectured beforehand that subjects who were thinking about intrinsic motivations would display more creativity than subjects who were thinking about extrinsic motivations. The creativity scores from the 47 subjects in this study are displayed in Figure 2, where higher scores indicate more creativity.

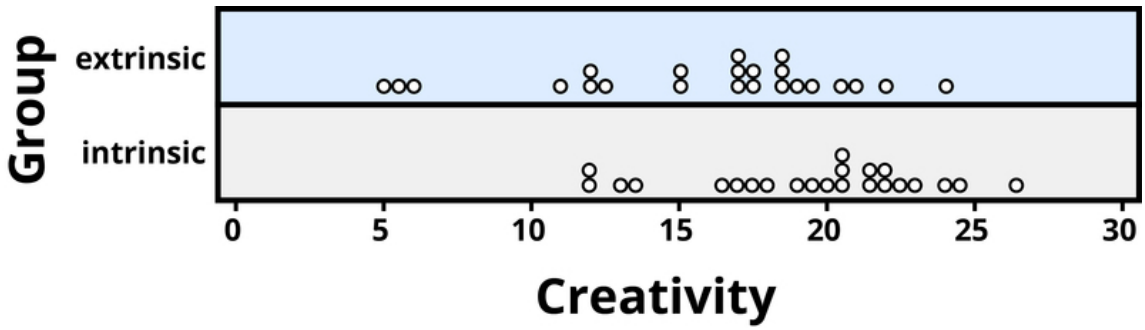


Figure 2. Creativity scores separated by type of motivation.

In this example, the key question is whether the type of motivation *affects* creativity scores. In particular, do subjects who were asked about intrinsic motivations tend to have higher creativity scores than subjects who were asked about extrinsic motivations?

Figure 2 reveals that both motivation groups saw considerable variability in creativity scores, and these scores have considerable overlap between the groups. In other words, it's certainly not always the case that those with extrinsic motivations have higher creativity than those with intrinsic motivations, but there may still be a statistical *tendency* in this direction. (Psychologist Keith Stanovich (2013) refers to people's difficulties with thinking about such probabilistic tendencies as "the Achilles heel of human cognition.")

The mean creativity score is 19.88 for the intrinsic group, compared to 15.74 for the extrinsic group, which supports the researchers' conjecture. Yet comparing only the means of the two groups fails to consider the variability of creativity scores in the groups. We can measure variability with statistics using, for instance, the standard deviation: 5.25 for the extrinsic group and 4.40 for the intrinsic group. The standard deviations tell us that most of the creativity scores are within about 5 points of the mean score in each group. We see that the mean score for the intrinsic group lies within one standard deviation of the mean score for extrinsic group. So, although there is a tendency for the creativity scores to be higher in the intrinsic group, on average, the difference is not extremely large.

We again want to consider possible explanations for this difference. The study only involved individuals with extensive creative writing experience. Although this limits the population to which we can generalize, it does not explain why the mean creativity score was a bit larger for the intrinsic group than for the extrinsic group. Maybe women tend to receive higher creativity scores? Here is where we need to focus on how the individuals were assigned to the motivation groups. If only women were in the intrinsic motivation group and only men in the extrinsic group, then this would present a problem because we wouldn't know if the intrinsic group did better because of the different type of motivation or because they were women. However, the researchers guarded against such a problem by **randomly assigning** the individuals to the motivation groups. Like flipping a coin, each individual was just as likely to be assigned to either type of motivation. Why is this helpful? Because this random assignment tends to balance out all the variables related to creativity we can think of, and even those we don't think of in advance, between the two groups. So we should have a similar male/female split between the two groups; we should have a similar age distribution between the two groups; we should have a similar distribution of educational background between the two groups; and so on. Random assignment should produce groups that are as similar as possible except for the type of motivation, which presumably eliminates all those other variables as possible explanations for the observed tendency for higher scores in the intrinsic group.

But does this always work? No, so by "luck of the draw" the groups may be a little different prior to answering the motivation survey. So then the question is, is it possible that an unlucky random assignment is responsible for the observed difference in creativity scores between the groups? In other words, suppose each individual's poem was going to get the same creativity score no matter which group they were assigned to, that the type of motivation in no way impacted their score. Then how often would the random-assignment process alone lead to a difference in mean creativity scores as large (or larger) than 19.88 – 15.74 = 4.14 points?

We again want to apply to a probability model to approximate a p-value, but this time the model will be a bit different. Think of writing everyone's creativity scores on an index card, shuffling up the index cards, and then dealing out 23 to the extrinsic motivation group and 24 to the intrinsic motivation group, and finding the difference in the group means. We (better yet, the computer) can repeat this process over and over to see how often, when the scores don't change, random assignment leads to a difference in means at least as large as 4.41. Figure 3 shows the results from 1,000 such hypothetical random assignments for these scores.

Only 2 of the 1,000 simulated random assignments produced a difference in group means of 4.41 or larger. In other words, the approximate p-value is 2/1000 = 0.002. This small p-value indicates that it would be very surprising for the random assignment process alone to produce such a large difference in group means. Therefore, as with Example 2, we have strong evidence that focusing on intrinsic motivations tends to increase creativity scores, as compared to thinking about extrinsic motivations.

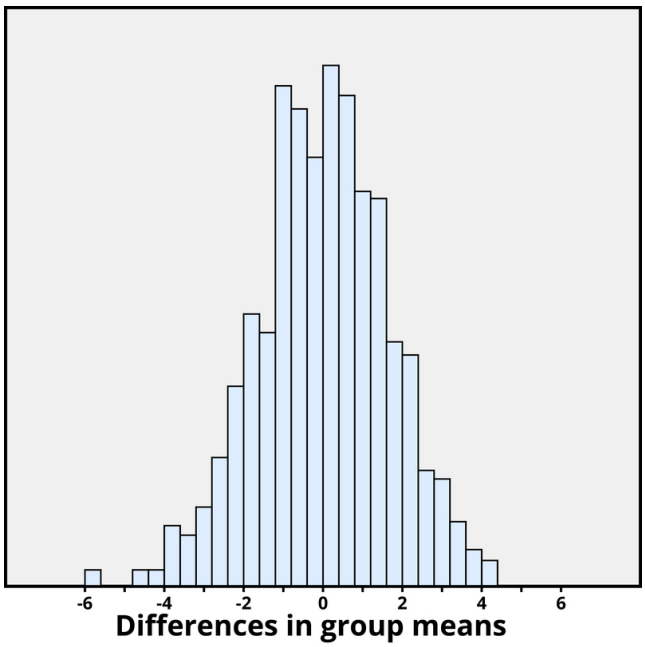


Figure 3. Differences in group means under random assignment alone.

Notice that the previous statement implies a cause-and-effect relationship between motivation and creativity score; is such a strong conclusion justified? Yes, because of the random assignment used in the study. That should have balanced out any other variables between the two groups, so now that the small p-value convinces us that the higher mean in the intrinsic group wasn't just a coincidence, the only reasonable explanation left is the difference in the type of motivation. Can we generalize this conclusion to everyone?

Not necessarily—we could cautiously generalize this conclusion to individuals with extensive experience in creative writing similar the individuals in this study, but we would still want to know more about how these individuals were selected to participate.

Conclusion

Researchers employ the scientific method that involves a great deal of statistical thinking: generate a hypothesis --> design a study to test that hypothesis --> conduct the study --> analyze the data --> report the results. [Image: widdowquinn, https://goo.gl/9l8Dht, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Statistical thinking involves the careful design of a study to collect meaningful data to answer a focused research question, detailed analysis of patterns in the data, and drawing conclusions that go beyond the observed data. Random sampling is paramount to generalizing results from our sample to a larger population, and random assignment is key to drawing cause-and-effect conclusions. With both kinds of randomness, probability models help us assess how much random variation we can expect in our results, in order to determine whether our results could happen by chance alone and to estimate a margin of error.

So where does this leave us with regard to the coffee study mentioned at the beginning of this module? We can answer many of the questions:

- This was a 14-year study conducted by researchers at the National Cancer Institute.
- The results were published in the June issue of the *New England Journal of Medicine*, a respected, peer-reviewed journal.
- The study reviewed coffee habits of more than 402,000 people ages 50 to 71 from six states and two metropolitan areas. Those with cancer, heart disease, and stroke were excluded at the start of the study. Coffee consumption was assessed once at the start of the study.
- About 52,000 people died during the course of the study.
- People who drank between two and five cups of coffee daily showed a lower risk as well, but the amount of reduction increased for those drinking six or more cups.

- The sample sizes were fairly large and so the p-values are quite small, even though percent reduction in risk was not extremely large (dropping from a 12% chance to about 10%–11%).
- Whether coffee was caffeinated or decaffeinated did not appear to affect the results.
- This was an observational study, so no cause-and-effect conclusions can be drawn between coffee drinking and increased longevity, contrary to the impression conveyed by many news headlines about this study. In particular, it's possible that those with chronic diseases don't tend to drink coffee.

This study needs to be reviewed in the larger context of similar studies and consistency of results across studies, with the constant caution that this was not a randomized experiment. Whereas a statistical analysis can still "adjust" for other potential confounding variables, we are not yet convinced that researchers have identified them all or completely isolated why this decrease in death risk is evident. Researchers can now take the findings of this study and develop more focused studies that address new questions.

Outside Resources

Apps: Interactive web applets for teaching and learning statistics include the collection at
http://www.rossmanchance.com/applets/

P-Value extravaganza
https://www.youtube.com/watch?v=bVMVGHkt2cg&feature=youtube_gdata_player

Web: Inter-university Consortium for Political and Social Research
http://www.icpsr.umich.edu/index.html

Web: The Consortium for the Advancement of Undergraduate Statistics
https://www.causeweb.org/

Discussion Questions

1. Find a recent research article in your field and answer the following: What was the primary research question? How were individuals selected to participate in the study? Were summary results provided? How strong is the evidence presented in favor or against the research question? Was random assignment used? Summarize the main conclusions from the study, addressing the issues of statistical significance, statistical confidence, generalizability, and cause and effect. Do you agree with the conclusions drawn from this study, based on the study design and the results presented?
2. Is it reasonable to use a random sample of 1,000 individuals to draw conclusions about all U.S. adults? Explain why or why not.

Vocabulary

Cause-and-effect
Related to whether we say one variable is causing changes in the other variable, versus other variables that may be related to these two variables.

Confidence interval
An interval of plausible values for a population parameter; the interval of values within the margin of error of a statistic.

Distribution
The pattern of variation in data.

Generalizability
Related to whether the results from the sample can be generalized to a larger population.

Margin of error
The expected amount of random variation in a statistic; often defined for 95% confidence level.

Parameter
A numerical result summarizing a population (e.g., mean, proportion).

Population
A larger collection of individuals that we would like to generalize our results to.

P-value
The probability of observing a particular outcome in a sample, or more extreme, under a conjecture about the larger population or process.

Random assignment
Using a probability-based method to divide a sample into treatment groups.

Random sampling
Using a probability-based method to select a subset of individuals for the sample from the population.

Sample
The collection of individuals on which we collect data.

Statistic
A numerical result computed from a sample (e.g., mean, proportion).

Statistical significance
A result is statistically significant if it is unlikely to arise by chance alone.

References

Amabile, T. (1985). Motivation and creativity: Effects of motivational orientation on creative writers. *Journal of Personality and Social Psychology*, 48(2), 393–399.

Freedman, N. D., Park, Y., Abnet, C. C., Hollenbeck, A. R., & Sinha, R. (2012). Association of coffee drinking with total and cause-specific mortality. *New England Journal of Medicine*, 366, 1891–1904.

Hamlin, J. K., Wynn, K., & Bloom, P. (2007). Social evaluation by preverbal infants. *Nature*, 452 (22), 557–560.

Ramsey, F., & Schafer, D. (2002). *The statistical sleuth: A course in methods of data analysis*. Belmont, CA: Duxbury.

Short, T., Moriarty, H., & Cooley, M. E. (1995). Readability of educational materials for patients with cancer. *Journal of Statistics Education*, 3(2).

Stanovich, K. (2013). *How to think straight about psychology* (10th ed.). Upper Saddle River, NJ: Pearson.

5

History of Psychology

David B. Baker & Heather Sperry

This module provides an introduction and overview of the historical development of the science and practice of psychology in America. Ever-increasing specialization within the field often makes it difficult to discern the common roots from which the field of psychology has evolved. By exploring this shared past, students will be better able to understand how psychology has developed into the discipline we know today.

Learning Objectives

- Describe the precursors to the establishment of the science of psychology.
- Identify key individuals and events in the history of American psychology.
- Describe the rise of professional psychology in America.
- Develop a basic understanding of the processes of scientific development and change.
- Recognize the role of women and people of color in the history of American psychology.

Introduction

It is always a difficult question to ask, where to begin to tell the story of the history of psychology. Some would start with ancient Greece; others would look to a demarcation in the late 19th century when the science of psychology was formally proposed and instituted. These two perspectives, and all that is in between, are appropriate for describing a history of psychology. The interested student will have no trouble finding an abundance of resources on all of these time frames and perspectives (Goodwin, 2011; Leahey, 2012; Schultz & Schultz,

2007). For the purposes of this module, we will examine the development of psychology in America and use the mid-19th century as our starting point. For the sake of convenience, we refer to this as a history of modern psychology.

The earliest records of a psychological experiment go all the way back to the Pharaoh Psamtik I of Egypt in the 7th Century B.C. [Image: Neithsabes, CC0 Public Domain, https://goo.gl/m25gce]

Psychology is an exciting field and the history of psychology offers the opportunity to make sense of how it has grown and developed. The history of psychology also provides perspective. Rather than a dry collection of names and dates, the history of psychology tells us about the important intersection of time and place that defines who we are. Consider what happens when you meet someone for the first time. The conversation usually begins with a series of questions such as, "Where did you grow up?" "How long have you lived here?" "Where did you go to school?" The importance of history in defining who we are cannot be overstated. Whether you are seeing a physician, talking with a counselor, or applying for a job, everything begins with a history. The same is true for studying the history of psychology; getting a history of the field helps to make sense of where we are and how we got here.

A Prehistory of Psychology

Precursors to American psychology can be found in philosophy and physiology. Philosophers such as John Locke (1632–1704) and Thomas Reid (1710–1796) promoted **empiricism**, the idea that all knowledge comes from experience. The work of Locke, Reid, and others emphasized the role of the human observer and the primacy of the senses in defining how the mind comes to acquire knowledge. In American colleges and universities in the early 1800s, these principles were taught as courses on mental and moral philosophy. Most often these courses taught about the mind based on the faculties of intellect, will, and the senses (Fuchs, 2000).

Physiology and Psychophysics

Philosophical questions about the nature of mind and knowledge were matched in the 19th century by physiological investigations of the sensory systems of the human observer. German physiologist Hermann von Helmholtz (1821–1894) measured the speed of the **neural impulse** and explored the physiology of hearing and vision. His work indicated that our senses can deceive us and are not a mirror of the external world. Such work showed that even though the human senses were fallible, the mind could be measured using the methods of science. In all, it suggested that a science of psychology was feasible.

An important implication of Helmholtz's work was that there is a psychological reality and a physical reality and that the two are not identical. This was not a new idea; philosophers like John Locke had written extensively on the topic, and in the 19th century, philosophical speculation about the nature of mind became subject to the rigors of science.

The question of the relationship between the mental (experiences of the senses) and the material (external reality) was investigated by a number of German researchers including Ernst Weber and Gustav Fechner. Their work was called **psychophysics**, and it introduced methods for measuring the relationship between physical stimuli and human perception that would serve as the basis for the new science of psychology (Fancher & Rutherford, 2011).

The formal development of modern psychology is usually credited to the work of German physician, physiologist, and philosopher Wilhelm Wundt (1832–1920). Wundt helped to establish the field of experimental psychology by serving as a strong promoter of the idea that psychology could be an experimental field and by providing classes, textbooks, and a laboratory for training students. In 1875, he joined the faculty at the University of Leipzig and quickly began to make plans for the creation of a program of experimental psychology. In 1879, he complemented his lectures on experimental psychology with a laboratory experience: an event that has served as the popular date for the establishment of the science of psychology.

Wilhelm Wundt is considered one of the founding figures of modern psychology. [CC0 Public Domain, https://goo.gl/m25gce]

The response to the new science was immediate and global. Wundt attracted students from

around the world to study the new experimental psychology and work in his lab. Students were trained to offer detailed self-reports of their reactions to various stimuli, a procedure known as **introspection**. The goal was to identify the elements of **consciousness**. In addition to the study of sensation and perception, research was done on mental chronometry, more commonly known as reaction time. The work of Wundt and his students demonstrated that the mind could be measured and the nature of consciousness could be revealed through scientific means. It was an exciting proposition, and one that found great interest in America. After the opening of Wundt's lab in 1879, it took just four years for the first psychology laboratory to open in the United States (Benjamin, 2007).

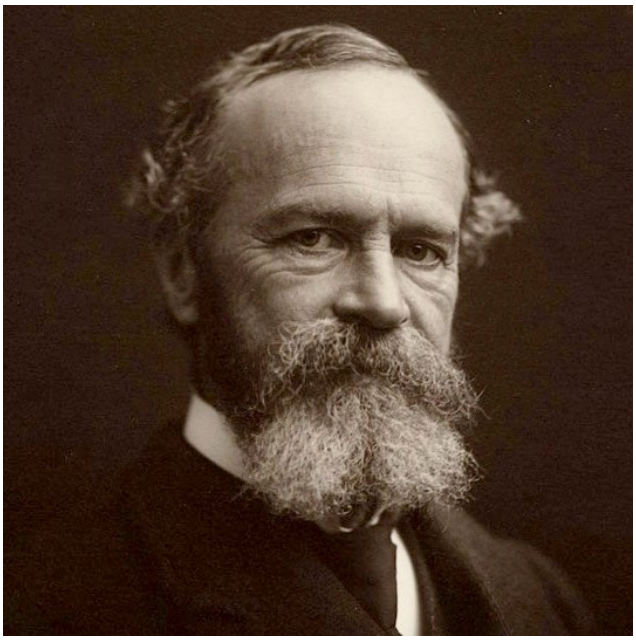
Scientific Psychology Comes to the United States

Wundt's version of psychology arrived in America most visibly through the work of Edward Bradford Titchener (1867–1927). A student of Wundt's, Titchener brought to America a brand of experimental psychology referred to as "**structuralism**." Structuralists were interested in the contents of the mind—what the mind is. For Titchener, the general adult mind was the proper focus for the new psychology, and he excluded from study those with mental deficiencies, children, and animals (Evans, 1972; Titchener, 1909).

Experimental psychology spread rather rapidly throughout North America. By 1900, there were more than 40 laboratories in the United States and Canada (Benjamin, 2000). Psychology in America also organized early with the establishment of the American Psychological Association (APA) in 1892. Titchener felt that this new organization did not adequately represent the interests of experimental psychology, so, in 1904, he organized a group of colleagues to create what is now known as the Society of Experimental Psychologists (Goodwin, 1985). The group met annually to discuss research in experimental psychology. Reflecting the times, women researchers were not invited (or welcome). It is interesting to note that Titchener's first doctoral student was a woman, Margaret Floy Washburn (1871–1939). Despite many barriers, in 1894, Washburn became the first woman in America to earn a Ph.D. in psychology and, in 1921, only the second woman to be elected president of the American Psychological Association (Scarborough & Furumoto, 1987).

Striking a balance between the science and practice of psychology continues to this day. In 1988, the American Psychological Society (now known as the Association for Psychological Science) was founded with the central mission of advancing psychological science.

Toward a Functional Psychology



William James was one of the leading figures in a new perspective on psychology called functionalism. [Image: Notman Studios, CC0 Public Domain, https://goo.gl/m25gce]

While Titchener and his followers adhered to a structural psychology, others in America were pursuing different approaches. William James, G. Stanley Hall, and James McKeen Cattell were among a group that became identified with "**functionalism**." Influenced by Darwin's evolutionary theory, functionalists were interested in the activities of the mind—what the mind does. An interest in functionalism opened the way for the study of a wide range of approaches, including animal and comparative psychology (Benjamin, 2007).

William James (1842–1910) is regarded as writing perhaps the most influential and important book in the field of psychology, *Principles of Psychology,* published in 1890. Opposed to the reductionist ideas of Titchener, James proposed that consciousness is ongoing and continuous; it cannot be isolated and reduced to elements. For James, consciousness helped us adapt to our environment in such ways as allowing us to make choices and have personal responsibility over those choices.

At Harvard, James occupied a position of authority and respect in psychology and philosophy. Through his teaching and writing, he influenced psychology for generations. One of his students, Mary Whiton Calkins (1863–1930), faced many of the challenges that confronted Margaret Floy Washburn and other women interested in pursuing graduate education in psychology. With much persistence, Calkins was able to study with James at Harvard. She eventually completed all the requirements for the doctoral degree, but Harvard refused to grant her a diploma because she was a woman. Despite these challenges, Calkins went on to become an accomplished researcher and the first woman elected president of the American Psychological Association in 1905 (Scarborough & Furumoto, 1987).

G. Stanley Hall (1844–1924) made substantial and lasting contributions to the establishment of psychology in the United States. At Johns Hopkins University, he founded the first psychological laboratory in America in 1883. In 1887, he created the first journal of psychology in America, *American Journal of Psychology*. In 1892, he founded the American Psychological Association (APA); in 1909, he invited and hosted Freud at Clark University (the only time Freud visited America). Influenced by evolutionary theory, Hall was interested in the process of

adaptation and human development. Using surveys and questionnaires to study children, Hall wrote extensively on child development and education. While graduate education in psychology was restricted for women in Hall's time, it was all but non-existent for African Americans. In another first, Hall mentored Francis Cecil Sumner (1895–1954) who, in 1920, became the first African American to earn a Ph.D. in psychology in America (Guthrie, 2003).

James McKeen Cattell (1860–1944) received his Ph.D. with Wundt but quickly turned his interests to the assessment of **individual differences**. Influenced by the work of Darwin's cousin, Frances Galton, Cattell believed that mental abilities such as intelligence were inherited and could be measured using mental tests. Like Galton, he believed society was better served by identifying those with superior intelligence and supported efforts to encourage them to reproduce. Such beliefs were associated with **eugenics** (the promotion of selective breeding) and fueled early debates about the contributions of heredity and environment in defining who we are. At Columbia University, Cattell developed a department of psychology that became world famous also promoting psychological science through advocacy and as a publisher of scientific journals and reference works (Fancher, 1987; Sokal, 1980).

The Growth of Psychology

Throughout the first half of the 20th century, psychology continued to grow and flourish in America. It was large enough to accommodate varying points of view on the nature of mind and behavior. **Gestalt psychology** is a good example. The Gestalt movement began in Germany with the work of Max Wertheimer (1880–1943). Opposed to the reductionist approach of Wundt's laboratory psychology, Wertheimer and his colleagues Kurt Koffka (1886–1941), Wolfgang Kohler (1887–1967), and Kurt Lewin (1890–1947) believed that studying the whole of any experience was richer than studying individual aspects of that experience. The saying "the whole is greater than the sum of its parts" is a Gestalt perspective. Consider that a melody is an additional element beyond the collection of notes that comprise it. The Gestalt psychologists proposed that the mind often processes information simultaneously rather than sequentially. For instance, when you look at a photograph, you see a whole image, not just a collection of pixels of color. Using Gestalt principles, Wertheimer and his colleagues also explored the nature of learning and thinking. Most of the German Gestalt psychologists were Jewish and were forced to flee the Nazi regime due to the threats posed on both academic and personal freedoms. In America, they were able to introduce a new audience to the Gestalt perspective, demonstrating how it could be applied to perception and learning (Wertheimer, 1938). In many ways, the work of the Gestalt psychologists served as a precursor to the rise of **cognitive psychology** in America (Benjamin, 2007).

Behaviorism emerged early in the 20th century and became a major force in American psychology. Championed by psychologists such as John B. Watson (1878–1958) and B. F. Skinner (1904–1990), behaviorism rejected any reference to mind and viewed overt and observable behavior as the proper subject matter of psychology. Through the scientific study of behavior, it was hoped that laws of learning could be derived that would promote the prediction and control of behavior. Russian physiologist Ivan Pavlov (1849–1936) influenced early behaviorism in America. His work on conditioned learning, popularly referred to as classical conditioning, provided support for the notion that learning and behavior were controlled by events in the environment and could be explained with no reference to mind or consciousness (Fancher, 1987).

For decades, behaviorism dominated American psychology. By the 1960s, psychologists began to recognize that behaviorism was unable to fully explain human behavior because it neglected mental processes. The turn toward a cognitive psychology was not new. In the 1930s, British psychologist Frederic C. Bartlett (1886–1969) explored the idea of the constructive mind, recognizing that people use their past experiences to construct frameworks in which to understand new experiences. Some of the major pioneers in American cognitive psychology include Jerome Bruner (1915–), Roger Brown (1925–1997), and George Miller (1920–2012). In the 1950s, Bruner conducted pioneering studies on cognitive aspects of sensation and perception. Brown conducted original research on language and memory, coined the term "**flashbulb memory**," and figured out how to study the **tip-of-the-tongue phenomenon** (Benjamin, 2007). Miller's research on working memory is legendary. His 1956 paper "The Magic Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information"is one of the most highly cited papers in psychology. A popular interpretation of Miller's research was that the number of bits of information an average human can hold in **working memory** is 7 ± 2. Around the same time, the study of computer science was growing and was used as an analogy to explore and understand how the mind works. The work of Miller and others in the 1950s and 1960s has inspired tremendous interest in cognition and neuroscience, both of which dominate much of contemporary American psychology.

Applied Psychology in America

In America, there has always been an interest in the application of psychology to everyday life. Mental testing is an important example. Modern intelligence tests were developed by the French psychologist Alfred Binet (1857–1911). His goal was to develop a test that would identify schoolchildren in need of educational support. His test, which included tasks of reasoning and problem solving, was introduced in the United States by Henry Goddard (1866–1957) and later standardized by Lewis Terman (1877–1956) at Stanford University. The assessment and

meaning of intelligence has fueled debates in American psychology and society for nearly 100 years. Much of this is captured in the nature-nurture debate that raises questions about the relative contributions of heredity and environment in determining intelligence (Fancher, 1987).

Applied psychology was not limited to mental testing. What psychologists were learning in their laboratories was applied in many settings including the military, business, industry, and education. The early 20th century was witness to rapid advances in applied psychology. Hugo Munsterberg (1863–1916) of Harvard University made contributions to such areas as employee selection, eyewitness testimony, and psychotherapy. Walter D. Scott (1869–1955) and Harry Hollingworth (1880–1956) produced original work on the psychology of advertising and marketing. Lillian Gilbreth (1878–1972) was a pioneer in industrial psychology and engineering psychology. Working with her husband, Frank, they promoted the use of time and motion studies to improve efficiency in industry. Lillian also brought the efficiency movement to the home, designing kitchens and appliances including the pop-up trashcan and refrigerator door shelving. Their psychology of efficiency also found plenty of applications at home with their 12 children. The experience served as the inspiration for the movie *Cheaper by the Dozen* (Benjamin, 2007).

Clinical psychology was also an early application of experimental psychology in America. Lightner Witmer (1867–1956) received his Ph.D. in experimental psychology with Wilhelm Wundt and returned to the University of Pennsylvania, where he opened a psychological clinic in 1896. Witmer believed that because psychology dealt with the study of sensation and perception, it should be of value in treating children with learning and behavioral problems. He is credited as the founder of both clinical and school psychology (Benjamin & Baker, 2004).

Although this is what most people see in their mind's eye when asked to envision a "psychologist" the APA recognizes as many as 58 different divisions of psychology. [Image: Bliusa, https://goo.gl/yrSUCr, CC BY-SA 4.0, https://goo.gl/6pvNbx]

Psychology as a Profession

As the roles of psychologists and the needs of the public continued to change, it was necessary for psychology to begin to define itself as a profession. Without standards for training and practice, anyone could use the title psychologist and offer services to the public. As early as 1917, applied

psychologists organized to create standards for education, training, and licensure. By the 1930s, these efforts led to the creation of the American Association for Applied Psychology (AAAP). While the American Psychological Association (APA) represented the interests of academic psychologists, AAAP served those in education, industry, consulting, and clinical work.

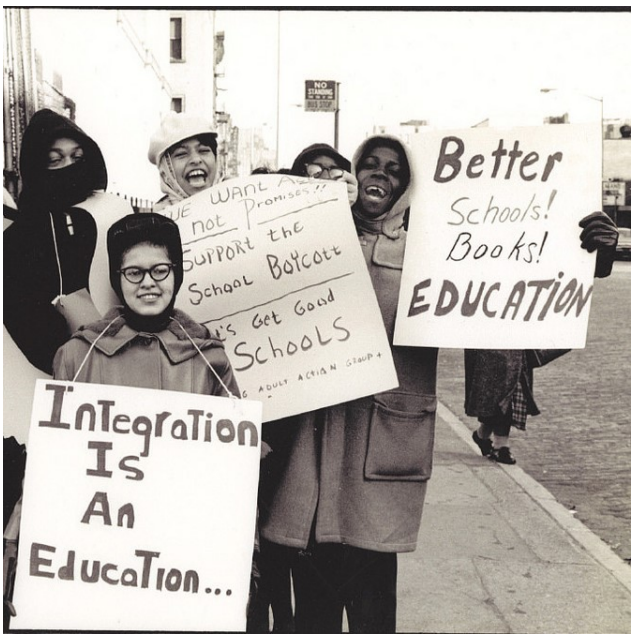
The advent of WWII changed everything. The psychiatric casualties of war were staggering, and there were simply not enough mental health professionals to meet the need. Recognizing the shortage, the federal government urged the AAAP and APA to work together to meet the mental health needs of the nation. The result was the merging of the AAAP and the APA and a focus on the training of professional psychologists. Through the provisions of National Mental Health Act of 1946, funding was made available that allowed the APA, the Veterans Administration, and the Public Health Service to work together to develop training programs that would produce clinical psychologists. These efforts led to the convening of the Boulder Conference on Graduate Education in Clinical Psychology in 1949 in Boulder, Colorado. The meeting launched doctoral training in psychology and gave us the **scientist-practitioner model** of training. Similar meetings also helped launch doctoral training programs in counseling and school psychology. Throughout the second half of the 20th century, alternatives to Boulder have been debated. In 1973, the Vail Conference on Professional Training in Psychology proposed the **scholar-practitioner model** and the Psy.D. degree (Doctor of Psychology). It is a training model that emphasizes clinical training and practice that has become more common (Cautin & Baker, in press).

Psychology and Society

Given that psychology deals with the human condition, it is not surprising that psychologists would involve themselves in social issues. For more than a century, psychology and psychologists have been agents of social action and change. Using the methods and tools of science, psychologists have challenged assumptions, stereotypes, and stigma. Founded in 1936, the Society for the Psychological Study of Social Issues (SPSSI) has supported research and action on a wide range of social issues. Individually, there have been many psychologists whose efforts have promoted social change. Helen Thompson Woolley (1874–1947) and Leta S. Hollingworth (1886–1939) were pioneers in research on the psychology of sex differences. Working in the early 20th century, when women's rights were marginalized, Thompson examined the assumption that women were overemotional compared to men and found that emotion did not influence women's decisions any more than it did men's. Hollingworth found that menstruation did not negatively impact women's cognitive or motor abilities. Such work combatted harmful stereotypes and showed that psychological research could contribute to

social change (Scarborough & Furumoto, 1987).

Among the first generation of African American psychologists, Mamie Phipps Clark (1917–1983) and her husband Kenneth Clark (1914–2005) studied the psychology of race and demonstrated the ways in which school segregation negatively impacted the self-esteem of African American children. Their research was influential in the 1954 Supreme Court ruling in the case of *Brown v. Board of Education,* which ended school segregation (Guthrie, 2003). In psychology, greater advocacy for issues impacting the African American community were advanced by the creation of the Association of Black Psychologists (ABPsi) in 1968.



Mamie Phipps Clark and Kenneth Clark studied the negative impacts of segregated education on African-American children. [Image: Penn State Special Collection, https://goo.gl/WP7Dgc, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

In 1957, psychologist Evelyn Hooker (1907–1996) published the paper "The Adjustment of the Male Overt Homosexual," reporting on her research that showed no significant differences in psychological adjustment between homosexual and heterosexual men. Her research helped to de-pathologize homosexuality and contributed to the decision by the American Psychiatric Association to remove homosexuality from the Diagnostic and Statistical Manual of Mental Disorders in 1973 (Garnets & Kimmel, 2003).

Conclusion

Growth and expansion have been a constant in American psychology. In the latter part of the 20th century, areas such as social, developmental, and personality psychology made major contributions to our understanding of what it means to be human. Today neuroscience is enjoying tremendous interest and growth.

As mentioned at the beginning of the module, it is a challenge to cover all the history of psychology in such a short space. Errors of omission and commission are likely in such a selective review. The history of psychology helps to set a stage upon which the story of

psychology can be told. This brief summary provides some glimpse into the depth and rich content offered by the history of psychology. The learning modules in the Noba psychology collection are all elaborations on the foundation created by our shared past. It is hoped that you will be able to see these connections and have a greater understanding and appreciation for both the unity and diversity of the field of psychology.

Timeline

1600s – Rise of empiricism emphasizing centrality of human observer in acquiring knowledge

1850s - Helmholz measures neural impulse / Psychophysics studied by Weber & Fechner

1859 - Publication of Darwin's *Origin of Species*

1879 - Wundt opens lab for experimental psychology

1883 - First psychology lab opens in the United States

1887 – First American psychology journal is published: *American Journal of Psychology*

1890 – James publishes *Principles of Psychology*

1892 – APA established

1894 – Margaret Floy Washburn is first U.S. woman to earn Ph.D. in psychology

1904 - Founding of Titchener's experimentalists

1905 - Mary Whiton Calkins is first woman president of APA

1909 – Freud’s only visit to the United States

1913 - John Watson calls for a psychology of behavior

1920 – Francis Cecil Sumner is first African American to earn Ph.D. in psychology

1921 – Margaret Floy Washburn is second woman president of APA

1930s – Creation and growth of the American Association for Applied Psychology (AAAP) / Gestalt psychology comes to America

1936- Founding of The Society for the Psychological Study of Social Issues

1940s – Behaviorism dominates American psychology

1946 – National Mental Health Act

1949 – Boulder Conference on Graduate Education in Clinical Psychology

1950s – Cognitive psychology gains popularity

1954 – *Brown v. Board of Education*

1957 – Evelyn Hooker publishes T*he Adjustment of the Male Overt Homosexual*

1968 – Founding of the Association of Black Psychologists

1973 – Psy.D. proposed at the Vail Conference on Professional Training in Psychology

1988 – Founding of the American Psychological Society (now known as the Association for Psychological Science)

Outside Resources

Podcast: History of Psychology Podcast Series
http://www.yorku.ca/christo/podcasts/

Web: Advances in the History of Psychology
http://ahp.apps01.yorku.ca/

Web: Center for the History of Psychology
http://www.uakron.edu/chp

Web: Classics in the History of Psychology
http://psychclassics.yorku.ca/

Web: Psychology's Feminist Voices
http://www.feministvoices.com/

Web: This Week in the History of Psychology
http://www.yorku.ca/christo/podcasts/

Discussion Questions

1. Why was psychophysics important to the development of psychology as a science?
2. How have psychologists participated in the advancement of social issues?
3. Name some ways in which psychology began to be applied to the general public and everyday problems.
4. Describe functionalism and structuralism and their influences on behaviorism and cognitive psychology.

Vocabulary

Behaviorism
The study of behavior.

Cognitive psychology
The study of mental processes.

Consciousness
Awareness of ourselves and our environment.

Empiricism
The belief that knowledge comes from experience.

Eugenics
The practice of selective breeding to promote desired traits.

Flashbulb memory
A highly detailed and vivid memory of an emotionally significant event.

Functionalism
A school of American psychology that focused on the utility of consciousness.

Gestalt psychology
An attempt to study the unity of experience.

Individual differences
Ways in which people differ in terms of their behavior, emotion, cognition, and development.

Introspection
A method of focusing on internal processes.

Neural impulse
An electro-chemical signal that enables neurons to communicate.

Practitioner-Scholar Model
A model of training of professional psychologists that emphasizes clinical practice.

Psychophysics
Study of the relationships between physical stimuli and the perception of those stimuli.

Realism
A point of view that emphasizes the importance of the senses in providing knowledge of the external world.

Scientist-practitioner model
A model of training of professional psychologists that emphasizes the development of both research and clinical skills.

Structuralism
A school of American psychology that sought to describe the elements of conscious experience.

Tip-of-the-tongue phenomenon
The inability to pull a word from memory even though there is the sensation that that word is available.

References

Benjamin, L. T. (2007). *A brief history of modern psychology*. Malden, MA: Blackwell Publishing.

Benjamin, L. T. (2000). The psychology laboratory at the turn of the 20th century. *American Psychologist*, 55, 318–321.

Benjamin, L. T., & Baker, D. B. (2004). *From séance to science: A history of the profession of psychology in America*. Belmont, CA: Wadsworth/Thomson Learning.

Cautin, R., & Baker, D. B. (in press). A history of education and training in professional psychology. In B. Johnson & N. Kaslow (Eds.), *Oxford handbook of education and training in professional psychology*. New York, NY: Oxford University Press.

Evans, R. B. (1972). E. B. Titchener and his lost system. Journal of the History of the Behavioral Sciences, 8, 168–180.

Fancher, R. E. (1987). *The intelligence men: Makers of the IQ controversy*. New York, NY: W.W. Norton & Company.

Fancher, R. E., & Rutherford, A. (2011). *Pioneers of psychology: A history* (4th ed.). New York, NY: W.W. Norton & Company.

Fuchs, A. H. (2000). Contributions of American mental philosophers to psychology in the United States. *History of Psychology*, 3, 3–19.

Garnets, L., & Kimmel, D. C. (2003). What a light it shed: The life of Evelyn Hooker. In L. Garnets & D. C. Kimmel (Eds.), *Psychological perspectives on gay, lesbian, and bisexual experiences* (2nd ed., pp. 31–49). New York, NY: Columbia University Press.

Goodwin, C. J. (2011). *A history of modern psychology* (4th ed.). Hoboken, NJ: Wiley.

Goodwin, C. J. (1985). On the origins of Titchener's experimentalists. *Journal of the History of the Behavioral Sciences*, 21, 383–389.

Guthrie, R. V. (2003). *Even the rat was white: A historical view of psychology* (2nd ed.). Boston, MA: Allyn & Bacon.

Leahey, T. H. (2012). *A history of psychology: From antiquity to modernity* (7th ed.). Upper Saddle River, NJ: Pearson Education.

Scarborough, E. & Furumoto, L. (1987). *The untold lives: The first generation of American women psychologists*. New York, NY: Columbia University Press.

Shultz, D. P., & Schultz, S. E. (2007). *A history of modern psychology* (9th ed.). Stanford, CT: Cengage Learning.

Sokal, M. M. (1980). Science and James McKeen Cattell. *Science*, 209, 43–52.

Titchener, E. B. (1909). *A text-book of psychology*. New York, NY: Macmillan.

Wertheimer, M. (1938). Gestalt theory. In W. D. Ellis (Ed.), *A source book of Gestalt psychology* (1-11). New York, NY: Harcourt.

Biological Basis of Behavior

6

Evolutionary Theories in Psychology

David M. Buss

Evolution or change over time occurs through the processes of natural and sexual selection. In response to problems in our environment, we adapt both physically and psychologically to ensure our survival and reproduction. Sexual selection theory describes how evolution has shaped us to provide a mating advantage rather than just a survival advantage and occurs through two distinct pathways: intrasexual competition and intersexual selection. Gene selection theory, the modern explanation behind evolutionary biology, occurs through the desire for gene replication. Evolutionary psychology connects evolutionary principles with modern psychology and focuses primarily on psychological adaptations: changes in the way we think in order to improve our survival. Two major evolutionary psychological theories are described: Sexual strategies theory describes the psychology of human mating strategies and the ways in which women and men differ in those strategies. Error management theory describes the evolution of biases in the way we think about everything.

Learning Objectives

- Learn what “evolution” means.
- Define the primary mechanisms by which evolution takes place.
- Identify the two major classes of adaptations.
- Define sexual selection and its two primary processes.
- Define gene selection theory.
- Understand psychological adaptations.
- Identify the core premises of sexual strategies theory.
- Identify the core premises of error management theory, and provide two empirical examples of adaptive cognitive biases.

Introduction

It may seem like just a casual date, but don't doubt that the forces of evolution are hard at work below the surface. [Image: Best Couples, https://goo.gl/aBMY6W, CC BY-SA 2.0, https://goo.gl/jSSrcO]

If you have ever been on a first date, you're probably familiar with the anxiety of trying to figure out what clothes to wear or what perfume or cologne to put on. In fact, you may even consider flossing your teeth for the first time all year. When considering why you put in all this work, you probably recognize that you're doing it to impress the other person. But how did you learn these particular behaviors? Where did you get the idea that a first date should be at a nice restaurant or someplace unique? It is possible that we have been taught these behaviors by observing others. It is also possible, however, that these behaviors—the fancy clothes, the expensive restaurant—are biologically programmed into us. That is, just as peacocks display their feathers to show how attractive they are, or some lizards do push-ups to show how strong they are, when we style our hair or bring a gift to a date, we're trying to communicate to the other person: "Hey, I'm a good mate! Choose me! Choose me!"

However, we all know that our ancestors hundreds of thousands of years ago weren't driving sports cars or wearing designer clothes to attract mates. So how could someone ever say that such behaviors are "biologically programmed" into us? Well, even though our ancestors might not have been doing these specific actions, these behaviors are the result of the same driving force: the powerful influence of **evolution**. Yes, evolution—certain traits and behaviors developing over time because they are advantageous to our survival. In the case of dating, doing something like offering a gift might represent more than a nice gesture. Just as chimpanzees will give food to mates to show they can provide for them, when you offer gifts to your dates, you are communicating that you have the money or "resources" to help take care of them. And even though the person receiving the gift may not realize it, the same evolutionary forces are influencing his or her behavior as well. The receiver of the gift evaluates not only the gift but also the gift-giver's clothes, physical appearance, and many other qualities, to determine whether the individual is a suitable mate. But because these evolutionary

processes are hardwired into us, it is easy to overlook their influence.

To broaden your understanding of evolutionary processes, this module will present some of the most important elements of evolution as they impact psychology. Evolutionary theory helps us piece together the story of how we humans have prospered. It also helps to explain why we behave as we do on a daily basis in our modern world: why we bring gifts on dates, why we get jealous, why we crave our favorite foods, why we protect our children, and so on. Evolution may seem like a historical concept that applies only to our ancient ancestors but, in truth, it is still very much a part of our modern daily lives.

Basics of Evolutionary Theory

Evolution simply means change over time. Many think of evolution as the development of traits and behaviors that allow us to survive this "dog-eat-dog" world, like strong leg muscles to run fast, or fists to punch and defend ourselves. However, physical survival is only important if it eventually contributes to successful reproduction. That is, even if you live to be a 100-year-old, if you fail to mate and produce children, your genes will die with your body. Thus, *reproductive* success, not *survival* success, is the engine of evolution by **natural selection**. Every mating success by one person means the loss of a mating opportunity for another. Yet every living human being is an evolutionary success story. Each of us is descended from a long and unbroken line of ancestors who triumphed over others in the struggle to survive (at least long enough to mate) and reproduce. However, in order for our genes to endure over time—to survive harsh climates, to defeat predators—we have inherited adaptive, psychological processes designed to ensure success.

At the broadest level, we can think of organisms, including humans, as having two large classes of **adaptations**—or traits and behaviors that evolved over time to increase our reproductive success. The first class of adaptations are called survival adaptations: mechanisms that helped our ancestors handle the "hostile forces of nature." For example, in order to survive very hot temperatures, we developed sweat glands to cool ourselves. In order to survive very cold temperatures, we developed shivering mechanisms (the speedy contraction and expansion of muscles to produce warmth). Other examples of survival adaptations include developing a craving for fats and sugars, encouraging us to seek out particular foods rich in fats and sugars that keep us going longer during food shortages. Some threats, such as snakes, spiders, darkness, heights, and strangers, often produce fear in us, which encourages us to avoid them and thereby stay safe. These are also examples of survival adaptations. However, all of these adaptations are for physical *survival,* whereas the second class of adaptations are for *reproduction*, and help us compete for mates. These adaptations are described in an

evolutionary theory proposed by Charles Darwin, called **sexual selection** theory.

Sexual Selection Theory

Darwin noticed that there were many traits and behaviors of organisms that could not be explained by "survival selection." For example, the brilliant plumage of peacocks should actually lower their rates of survival. That is, the peacocks' feathers act like a neon sign to predators, advertising "Easy, delicious dinner here!" But if these bright feathers only lower peacocks' chances at survival, why do they have them? The same can be asked of similar characteristics of other animals, such as the large antlers of male stags or the wattles of roosters, which also seem to be unfavorable to survival. Again, if these traits only make the animals less likely to survive, why did they develop in the first place? And how have these animals continued to survive with these traits over thousands and thousands of years? Darwin's answer to this conundrum was the theory of sexual selection: the evolution of characteristics, not because of survival advantage, but because of *mating* advantage.

Modern sports like boxing can be seen as modified/stylized versions of the evolutionary behavior of intrasexual competition. [Image: Dave Hogg, https://goo.gl/fL5U2Z, CC BY 2.0, https://goo.gl/9uSnqN]

Sexual selection occurs through two processes. The first, intrasexual competition, occurs when members of one sex compete against each other, and the winner gets to mate with a member of the opposite sex. Male stags, for example, battle with their antlers, and the winner (often the stronger one with larger antlers) gains mating access to the female. That is, even though large antlers make it harder for the stags to run through the forest and evade predators (which lowers their survival success), they provide the stags with a better chance of attracting a mate (which increases their reproductive success). Similarly, human males sometimes also compete against each other in physical contests: boxing, wrestling, karate, or group-on-group sports, such as football. Even though engaging in these activities poses a "threat" to their survival success, as with the stag, the victors are often more attractive to potential mates, increasing their reproductive success. Thus, whatever qualities lead to success in **intrasexual competition** are then passed on with greater frequency

due to their association with greater mating success.

The second process of sexual selection is preferential mate choice, also called **intersexual selection**. In this process, if members of one sex are attracted to certain qualities in mates—such as brilliant plumage, signs of good health, or even intelligence—those desired qualities get passed on in greater numbers, simply because their possessors mate more often. For example, the colorful plumage of peacocks exists due to a long evolutionary history of peahens' (the term for female peacocks) attraction to males with brilliantly colored feathers.

In all sexually-reproducing species, adaptations in both sexes (males and females) exist due to survival selection and sexual selection. However, unlike other animals where one sex has dominant control over mate choice, humans have "mutual mate choice." That is, both women and men typically have a say in choosing their mates. And both mates value qualities such as kindness, intelligence, and dependability that are beneficial to long-term relationships—qualities that make good partners and good parents.

Gene Selection Theory

In modern evolutionary theory, all evolutionary processes boil down to an organism's genes. Genes are the basic "units of heredity," or the information that is passed along in DNA that tells the cells and molecules how to "build" the organism and how that organism should behave. Genes that are better able to encourage the organism to reproduce, and thus replicate themselves in the organism's offspring, have an advantage over competing genes that are less able. For example, take female sloths: In order to attract a mate, they will scream as loudly as they can, to let potential mates know where they are in the thick jungle. Now, consider two types of genes in female sloths: one gene that allows them to scream extremely loudly, and another that only allows them to scream moderately loudly. In this case, the sloth with the gene that allows her to shout louder will attract more mates—increasing reproductive success—which ensures that her genes are more readily passed on than those of the quieter sloth.

Essentially, genes can boost their own replicative success in two basic ways. First, they can influence the odds for survival and reproduction of the organism they are in (individual reproductive success or fitness—as in the example with the sloths). Second, genes can also influence the organism to help other organisms who also likely contain those genes—known as "genetic relatives"—to survive and reproduce (which is called inclusive fitness). For example, why do human parents tend to help their own kids with the financial burdens of a college education and not the kids next door? Well, having a college education increases one's attractiveness to other mates, which increases one's likelihood for reproducing and passing

on genes. And because parents' genes are in their own children (and not the neighborhood children), funding their children's educations increases the likelihood that the parents' genes will be passed on.

Understanding gene replication is the key to understanding modern evolutionary theory. It also fits well with many evolutionary psychological theories. However, for the time being, we'll ignore genes and focus primarily on actual adaptations that evolved because they helped our ancestors survive and/or reproduce.

Evolutionary Psychology

Evolutionary psychology aims the lens of modern evolutionary theory on the workings of the human mind. It focuses primarily on **psychological adaptations**: mechanisms of the mind that have evolved to solve specific problems of survival or reproduction. These kinds of adaptations are in contrast to *physiological* adaptations, which are adaptations that occur in the body as a consequence of one's environment. One example of a physiological adaptation is how our skin makes calluses. First, there is an "input," such as repeated friction to the skin on the bottom of our feet from walking. Second, there is a "procedure," in which the skin grows new skin cells at the afflicted area. Third, an actual callus forms as an "output" to protect the underlying tissue—the final outcome of the physiological adaptation (i.e., tougher skin to protect repeatedly scraped areas). On the other hand, a *psychological* adaptation is a development or change of a mechanism in the mind. For example, take sexual jealousy. First, there is an "input," such as a romantic partner flirting with a rival. Second, there is a "procedure," in which the person evaluates the threat the rival poses to the romantic relationship. Third, there is a behavioral output, which might range from vigilance (e.g., snooping through a partner's email) to violence (e.g., threatening the rival). Although such behaviors serve a purpose for the jealous person, they can be harmful to others.

Evolutionary psychology is fundamentally an *interactionist* framework, or a theory that takes into account multiple factors when determining the outcome. For example, jealousy, like a callus, doesn't simply pop up out of nowhere. There is an "interaction" between the environmental trigger (e.g., the flirting; the repeated rubbing of the skin) and the initial response (e.g., evaluation of the flirter's threat; the forming of new skin cells) to produce the outcome.

In evolutionary psychology, culture also has a major effect on psychological adaptations. For

example, status within one's group is important in all cultures for achieving reproductive success, because higher status makes someone more attractive to mates. In individualistic cultures, such as the United States, status is heavily determined by individual accomplishments. But in more collectivist cultures, such as Japan, status is more heavily determined by contributions to the group and by that group's success. For example, consider a group project. If you were to put in most of the effort on a successful group project, the culture in the United States reinforces the psychological adaptation to try to claim that success for yourself (because individual achievements are rewarded with higher status). However, the culture in Japan reinforces the psychological adaptation to attribute that success to the whole group (because collective achievements are rewarded with higher status). Another example of cultural input is the importance of virginity as a desirable quality for a mate. Cultural norms that advise against premarital sex persuade people to ignore their own basic interests because they know that virginity will make them more attractive marriage partners. Evolutionary psychology, in short, does not predict rigid robotic-like "instincts." That is, there isn't one rule that works all the time. Rather, evolutionary psychology studies flexible, environmentally-connected and culturally-influenced adaptations that vary according to the situation.

Psychological adaptations are hypothesized to be wide-ranging, and include food preferences, habitat preferences, mate preferences, and specialized fears. These psychological adaptations also include many traits that improve people's ability to live in groups, such as the desire to cooperate and make friends, or the inclination to spot and avoid frauds, punish rivals, establish status hierarchies, nurture children, and help genetic relatives. Research programs in evolutionary psychology develop and empirically test predictions about the nature of psychological adaptations. Below, we highlight a few evolutionary psychological theories and their associated research approaches.

Sexual Strategies Theory

Sexual strategies theory is based on sexual selection theory. It proposes that humans have evolved a list of different mating strategies, both short-term and long-term, that vary depending on culture, social context, parental influence, and personal mate value (desirability in the "mating market").

In its initial formulation, sexual strategies theory focused on the differences between men and women in mating preferences and strategies (Buss & Schmitt, 1993). It started by looking at the minimum parental investment needed to produce a child. For women, even the minimum investment is significant: after becoming pregnant, they have to carry that child for nine months inside of them. For men, on the other hand, the minimum investment to produce

the same child is considerably smaller—simply the act of sex.

Because women bear responsibility for pregnancy, they may use different sexual selection strategies than men do. [Image: CC0 Public Domain, https://goo.gl/m25gce]

These differences in parental investment have an enormous impact on sexual strategies. For a woman, the risks associated with making a poor mating choice is high. She might get pregnant by a man who will not help to support her and her children, or who might have poor-quality genes. And because the stakes are higher for a woman, *wise* mating decisions for her are much more valuable. For men, on the other hand, the need to focus on making wise mating decisions isn't as important. That is, unlike women, men 1) don't biologically have the child growing inside of them for nine months, and 2) do not have as high a cultural expectation to raise the child. This logic leads to a powerful set of predictions: In short-term mating, women will likely be choosier than men (because the costs of getting pregnant are so high), while men, on average, will likely engage in more casual sexual activities (because this cost is greatly lessened). Due to this, men will sometimes deceive women about their long-term intentions for the benefit of short-term sex, and men are more likely than women to lower their mating standards for short-term mating situations.

An extensive body of empirical evidence supports these and related predictions (Buss & Schmitt, 2011). Men express a desire for a larger number of sex partners than women do. They let less time elapse before seeking sex. They are more willing to consent to sex with strangers and are less likely to require emotional involvement with their sex partners. They have more frequent sexual fantasies and fantasize about a larger variety of sex partners. They are more likely to regret missed sexual opportunities. And they lower their standards in short-term mating, showing a willingness to mate with a larger variety of women as long as the costs and risks are low.

However, in situations where both the man and woman are interested in long-term mating, both sexes tend to invest substantially in the relationship and in their children. In these cases, the theory predicts that both sexes will be extremely choosy when pursuing a long-term mating strategy. Much empirical research supports this prediction, as well. In fact, the qualities women

and men generally look for when choosing long-term mates are very similar: both want mates who are intelligent, kind, understanding, healthy, dependable, honest, loyal, loving, and adaptable.

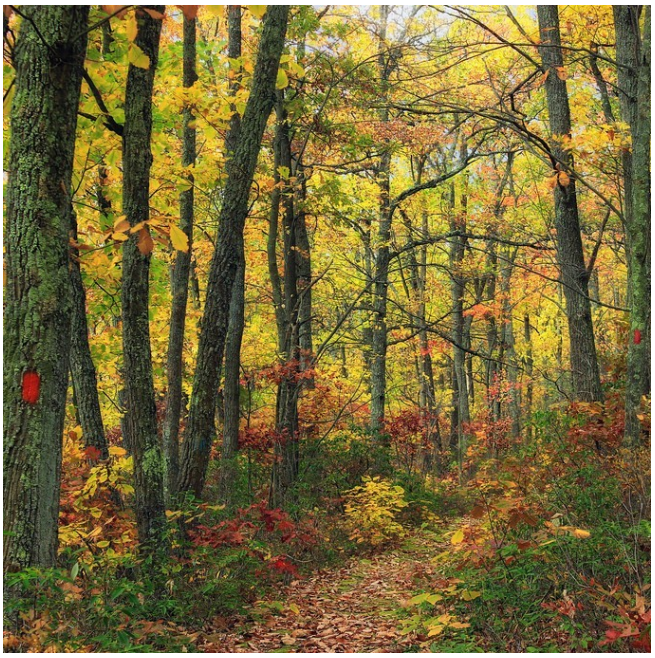
Nonetheless, women and men do differ in their preferences for a few key qualities in long-term mating, because of somewhat distinct adaptive problems. Modern women have inherited the evolutionary trait to desire mates who possess resources, have qualities linked with acquiring resources (e.g., ambition, wealth, industriousness), and are willing to share those resources with them. On the other hand, men more strongly desire youth and health in women, as both are cues to fertility. These male and female differences are universal in humans. They were first documented in 37 different cultures, from Australia to Zambia (Buss, 1989), and have been replicated by dozens of researchers in dozens of additional cultures (for summaries, see Buss, 2012).

As we know, though, just because we have these mating preferences (e.g., men with resources; fertile women), people don't always get what they want. There are countless other factors which influence who people ultimately select as their mate. For example, the sex ratio (the percentage of men to women in the mating pool), cultural practices (such as arranged marriages, which inhibit individuals' freedom to act on their preferred mating strategies), the strategies of others (e.g., if everyone else is pursuing short-term sex, it's more difficult to pursue a long-term mating strategy), and many others all influence who we select as our mates.

Sexual strategies theory—anchored in sexual selection theory— predicts specific similarities and differences in men and women's mating preferences and strategies. Whether we seek short-term or long-term relationships, many personality, social, cultural, and ecological factors will all influence who our partners will be.

Error Management Theory

Error management theory (EMT) deals with the evolution of how we think, make decisions, and evaluate uncertain situations—that is, situations where there's no clear answer how we should behave. (Haselton & Buss, 2000; Haselton, Nettle, & Andrews, 2005). Consider, for example, walking through the woods at dusk. You hear a rustle in the leaves on the path in front of you. It could be a snake. Or, it could just be the wind blowing the leaves. Because you can't really tell why the leaves rustled, it's an uncertain situation. The important question then is, what are the costs of errors in judgment? That is, if you conclude that it's a dangerous snake so you avoid the leaves, the costs are minimal (i.e., you simply make a short detour around them). However, if you assume the leaves are safe and simply walk over them—when in fact



If you were walking in the woods and heard a sound in the bushes you might be startled and act on the worst case scenario—such as the threat of a wild animal—by moving in the opposite direction. This is evolutionary psychology at work, keeping you safe so you can survive and reproduce. [Image: Nicholas T, https://goo.gl/gZ3zEL, CC BY 2.0, https://goo.gl/9uSnqN]

it *is* a dangerous snake—the decision could cost you your life.

Now, think about our evolutionary history and how generation after generation was confronted with similar decisions, where one option had low cost but great reward (walking around the leaves and not getting bitten) and the other had a low reward but high cost (walking through the leaves and getting bitten). These kinds of choices are called "cost asymmetries." If during our evolutionary history we encountered decisions like these generation after generation, over time an adaptive bias would be created: we would make sure to err in favor of the least costly (in this case, least dangerous) option (e.g., walking around the leaves). To put it another way, EMT predicts that whenever uncertain situations present us with a safer versus more dangerous decision, we will psychologically adapt to prefer choices that minimize the cost of errors.

EMT is a general evolutionary psychological theory that can be applied to many different domains of our lives, but a specific example of it is the *visual descent illusion*. To illustrate: Have you ever thought it would be no problem to jump off of a ledge, but as soon as you stood up there, it suddenly looked much higher than you thought? The visual descent illusion (Jackson & Cormack, 2008) states that people will overestimate the distance when looking down from a height (compared to looking up) so that people will be especially wary of falling from great heights—which would result in injury or death. Another example of EMT is the *auditory looming bias*: Have you ever noticed how an ambulance seems closer when it's coming toward you, but suddenly seems far away once it's immediately passed? With the auditory looming bias, people overestimate how close objects are when the sound is moving toward them compared to when it is moving away from them. From our evolutionary history, humans learned, "It's better to be safe than sorry." Therefore, if we think that a threat is closer to us when it's moving toward us (because it seems louder), we will be quicker to act and escape. In this regard, there may be times we ran away when we didn't need to (a false alarm), but wasting that time is a less costly mistake than not acting in the first place when a real threat does exist.

EMT has also been used to predict adaptive biases in the domain of mating. Consider something as simple as a smile. In one case, a smile from a potential mate could be a sign of sexual or romantic interest. On the other hand, it may just signal friendliness. Because of the costs to men of missing out on chances for reproduction, EMT predicts that men have a *sexual overperception bias*: they often misread sexual interest from a woman, when really it's just a friendly smile or touch. In the mating domain, the sexual overperception bias is one of the best-documented phenomena. It's been shown in studies in which men and women rated the sexual interest between people in photographs and videotaped interactions. As well, it's been shown in the laboratory with participants engaging in actual "speed dating," where the men interpret sexual interest from the women more often than the women actually intended it (Perilloux, Easton, & Buss, 2012). In short, EMT predicts that men, more than women, will over-infer sexual interest based on minimal cues, and empirical research confirms this adaptive mating bias.

Conclusion

Sexual strategies theory and error management theory are two evolutionary psychological theories that have received much empirical support from dozens of independent researchers. But, there are many other evolutionary psychological theories, such as social exchange theory for example, that also make predictions about our modern day behavior and preferences, too. The merits of each evolutionary psychological theory, however, must be evaluated separately and treated like any scientific theory. That is, we should only trust their predictions and claims to the extent they are supported by scientific studies. However, even if the theory is scientifically grounded, just because a psychological adaptation was advantageous in our history, it doesn't mean it's still useful today. For example, even though women may have preferred men with resources in generations ago, our modern society has advanced such that these preferences are no longer apt or necessary. Nonetheless, it's important to consider how our evolutionary history has shaped our automatic or "instinctual" desires and reflexes of today, so that we can better shape them for the future ahead.

Outside Resources

FAQs
http://www.anth.ucsb.edu/projects/human/evpsychfaq.html

Web: Articles and books on evolutionary psychology
http://homepage.psy.utexas.edu/homepage/Group/BussLAB/

Web: Main international scientific organization for the study of evolution and human behavior, HBES
http://www.hbes.com/

Discussion Questions

1. How does change take place over time in the living world?
2. Which two potential psychological adaptations to problems of survival are not discussed in this module?
3. What are the psychological and behavioral implications of the fact that women bear heavier costs to produce a child than men do?
4. Can you formulate a hypothesis about an error management bias in the domain of social interaction?

Vocabulary

Adaptations
Evolved solutions to problems that historically contributed to reproductive success.

Error management theory (EMT)
A theory of selection under conditions of uncertainty in which recurrent cost asymmetries of judgment or inference favor the evolution of adaptive cognitive biases that function to minimize the more costly errors.

Evolution
Change over time. Is the definition changing?

Gene Selection Theory
The modern theory of evolution by selection by which differential gene replication is the defining process of evolutionary change.

Intersexual selection
A process of sexual selection by which evolution (change) occurs as a consequences of the mate preferences of one sex exerting selection pressure on members of the opposite sex.

Intrasexual competition
A process of sexual selection by which members of one sex compete with each other, and the victors gain preferential mating access to members of the opposite sex.

Natural selection
Differential reproductive success as a consequence of differences in heritable attributes.

Psychological adaptations
Mechanisms of the mind that evolved to solve specific problems of survival or reproduction; conceptualized as information processing devices.

Sexual selection
The evolution of characteristics because of the mating advantage they give organisms.

Sexual strategies theory
A comprehensive evolutionary theory of human mating that defines the menu of mating strategies humans pursue (e.g., short-term casual sex, long-term committed mating), the

adaptive problems women and men face when pursuing these strategies, and the evolved solutions to these mating problems.

References

Buss, D. M. (2012). Evolutionary psychology: The new science of the mind (4th ed.). Boston, MA: Allyn & Bacon.

Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. Behavioral & Brain Sciences, 12, 1–49.

Buss, D. M., & Schmitt, D. P. (2011). Evolutionary psychology and feminism. Sex Roles, 64, 768–787.

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. Psychological Review, 100, 204–232.

Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. Journal of Personality and Social Psychology, 78, 81–91.

Haselton, M. G., Nettle, D., & Andrews, P. W. (2005). The evolution of cognitive bias. In D. M. Buss (Ed.), The handbook of evolutionary psychology (pp. 724–746). New York, NY: Wiley.

Jackson, R. E., & Cormack, J. K. (2008). Evolved navigation theory and the environmental vertical illusion. Evolution and Human Behavior, 29, 299–304.

Perilloux, C., Easton, J. A., & Buss, D. M. (2012). The misperception of sexual interest. Psychological Science, 23, 146–151.

7
Epigenetics in Psychology

Ian Weaver

Early life experiences exert a profound and long-lasting influence on physical and mental health throughout life. The efforts to identify the primary causes of this have significantly benefited from studies of the epigenome—a dynamic layer of information associated with DNA that differs between individuals and can be altered through various experiences and environments. The epigenome has been heralded as a key "missing piece" of the etiological puzzle for understanding how development of psychological disorders may be influenced by the surrounding environment, in concordance with the genome. Understanding the mechanisms involved in the initiation, maintenance, and heritability of epigenetic states is thus an important aspect of research in current biology, particularly in the study of learning and memory, emotion, and social behavior in humans. Moreover, epigenetics in psychology provides a framework for understanding how the expression of genes is influenced by experiences and the environment to produce individual differences in behavior, cognition, personality, and mental health. In this module, we survey recent developments revealing epigenetic aspects of mental health and review some of the challenges of epigenetic approaches in psychology to help explain how nurture shapes nature.

Learning Objectives

- Explain what the term epigenetics means and the molecular machinery involved.
- Name and discuss important neural and developmental pathways that are regulated by epigenetic factors, and provide examples of epigenetic effects on personality traits and cognitive behavior.
- Understand how misregulation of epigenetic mechanisms can lead to disease states, and be able to discuss examples.
- Recognize how epigenetic machinery can be targets for therapeutic agents, and discuss

examples.

Introduction

DNA stands for Deoxyribonucleic Acid, and although each person's DNA is unique to that individual, it is 99.9% similar to every other human on the planet. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Early childhood is not only a period of physical growth; it is also a time of mental development related to changes in the anatomy, physiology, and chemistry of the nervous system that influence mental health throughout life. Cognitive abilities associated with learning and memory, reasoning, problem solving, and developing relationships continue to emerge during childhood. Brain development is more rapid during this critical or sensitive period than at any other, with more than 700 neural connections created each second. Herein, complex gene–environment interactions (or genotype–environment interactions, G×E) serve to increase the number of possible contacts between neurons, as they hone their adult synaptic properties and excitability. Many weak connections form to different neuronal targets; subsequently, they undergo remodeling in which most connections vanish and a few stable connections remain. These structural changes (or plasticity) may be crucial for the development of mature neural networks that support emotional, cognitive, and social behavior. The generation of different morphology, physiology, and behavioral outcomes from a single genome in response to changes in the environment forms the basis for "phenotypic plasticity," which is fundamental to the way organisms cope with environmental variation, navigate the present world, and solve future problems.

The challenge for psychology has been to integrate findings from genetics and environmental (social, biological, chemical) factors, including the quality of infant–mother attachments, into the study of personality and our understanding of the emergence of mental illness. These studies have demonstrated that common DNA sequence variation and rare mutations account

for only a small fraction (1%–2%) of the total risk for inheritance of personality traits and mental disorders (Dick, Riley, & Kendler, 2010; Gershon, Alliey-Rodriguez, & Liu, 2011). Additionally, studies that have attempted to examine the mechanisms and conditions under which DNA sequence variation influences brain development and function have been confounded by complex cause-and-effect relationships (Petronis, 2010). The large unaccounted heritability of personality traits and mental health suggests that additional molecular and cellular mechanisms are involved.

Epigenetics has the potential to provide answers to these important questions and refers to the transmission of **phenotype** in terms of gene expression in the absence of changes in DNA sequence—hence the name epi- (Greek: επί- over, above) genetics (Waddington, 1942; Wolffe & Matzke, 1999). The advent of high-throughput techniques such as sequencing-based approaches to study the distributions of regulators of gene expression throughout the genome led to the collective description of the "epigenome." In contrast to the genome sequence, which is static and the same in almost all cells, the **epigenome** is highly dynamic, differing among cell types, tissues, and brain regions (Gregg et al., 2010). Recent studies have provided insights into epigenetic regulation of developmental pathways in response to a range of external environmental factors (Dolinoy, Weidman, & Jirtle, 2007). These environmental factors during early childhood and adolescence can cause changes in expression of genes conferring risk of mental health and chronic physical conditions. Thus, the examination of genetic–epigenetic–environment interactions from a developmental perspective may determine the nature of gene misregulation in psychological disorders.

This module will provide an overview of the main components of the epigenome and review themes in recent epigenetic research that have relevance for psychology, to form the biological basis for the interplay between environmental signals and the genome in the regulation of individual differences in physiology, emotion, cognition, and behavior.

Molecular control of gene expression: the dynamic epigenome

Almost all the cells in our body are genetically identical, yet our body generates many different cell types, organized into different tissues and organs, and expresses different proteins. Within each type of mammalian cell, about 2 meters of genomic DNA is divided into nuclear chromosomes. Yet the nucleus of a human cell, which contains the chromosomes, is only about 2 μm in diameter. To achieve this 1,000,000-fold compaction, DNA is wrapped around a group of 8 proteins called histones. This combination of DNA and histone proteins forms a special structure called a "nucleosome," the basic unit of chromatin, which represents a structural solution for maintaining and accessing the tightly compacted genome. These factors

alter the likelihood that a gene will be expressed or silenced. Cellular functions such as gene expression, DNA replication, and the generation of specific cell types are therefore influenced by distinct patterns of chromatin structure, involving covalent modification of both histones (Kadonaga, 1998) and DNA (Razin, 1998).

Identical twins are the perfect example of epigenetics. Although they share exactly the same DNA, their unique experiences in life will cause some genes (and not others) to express themselves. This is why, over time, identical twins come to look and behave differently. [Image: M., https://goo.gl/VU5iJv, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

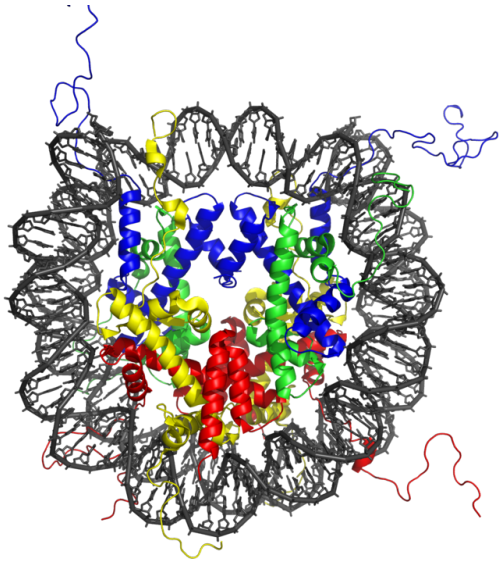
Importantly, epigenetic variation also emerges across the lifespan. For example, although **identical twins** share a common **genotype** and are genetically identical and epigenetically similar when they are young, as they age they become more dissimilar in their epigenetic patterns and often display behavioral, personality, or even physical differences, and have different risk levels for serious illness. Thus, understanding the structure of the nucleosome is key to understanding the precise and stable control of gene expression and regulation, providing a molecular interface between genes and environmentally induced changes in cellular activity.

The primary epigenetic mark: DNA modification

DNA methylation is the best-understood epigenetic modification influencing gene expression. DNA is composed of four types of naturally occurring nitrogenous bases: adenine (A), thymine (T), guanine (G), and cytosine (C). In mammalian genomes, **DNA methylation** occurs primarily at cytosine residues in the context of cytosines that are followed by guanines (CpG dinucleotides), to form 5-methylcytosine in a cell-specific pattern (Goll & Bestor, 2005; Law & Jacobsen, 2010; Suzuki & Bird, 2008). The enzymes that perform DNA methylation are called **DNA methyltransferases (DNMTs)**, which catalyze the transfer of a methyl group to the cytosine (Adams, McKay, Craig, & Burdon, 1979). These enzymes are all expressed in the central nervous system and are dynamically regulated during development (Feng, Chang, Li, & Fan, 2005; Goto et al., 1994). The effect of DNA methylation on gene function varies depending on the period of development during which the methylation occurs and location of the methylated cytosine. Methylation of DNA in gene regulatory regions (promoter and enhancer

regions) usually results in gene silencing and reduced gene expression (Ooi, O'Donnell, & Bestor, 2009; Suzuki & Bird, 2008; Sutter and Doerfler, 1980; Vardimon et al., 1982). This is a powerful regulatory mechanism that ensures that genes are expressed only when needed. Thus DNA methylation may broadly impact human brain development, and age-related misregulation of DNA methylation is associated with the molecular pathogenesis of neurodevelopmental disorders.

Histone modification and the histone code



Life experiences, like a stressful event in childhood, can cause the modification of histone proteins (pictured) to help adapt to one's environment. For example, in response to a stressful event, histone modification of one's DNA might occur to encourage a more cautions personality—in order to avoid future, stressful encounters. [Image: Zephyris, https://goo.gl/gGrSQd, CC BY-SA 3.0, https://goo.gl/kB1Ogc]

The modification of histone proteins comprises an important epigenetic mark related to gene expression. One of the most thoroughly studied modifications is histone acetylation, which is associated with gene activation and increased gene expression (Wade, Pruss, & Wolffe, 1997). Acetylation on histone tails is mediated by the opposing enzymatic activities of histone acetyltransferases (HATs) and histone deacetylases (HDACs) (Kuo & Allis, 1998). For example, acetylation of histone in gene regulatory regions by HAT enzymes is generally associated with DNA demethylation, gene activation, and increased gene expression (Hong, Schroth, Matthews, Yau, & Bradbury, 1993; Sealy & Chalkley, 1978). On the other hand, removal of the acetyl group (deacetylation) by HDAC enzymes is generally associated with DNA methylation, gene silencing, and decreased gene expression (Davie & Chadee, 1998). The relationship between patterns of histone modifications and gene activity provides evidence for the existence of a "histone code" for determining cell-specific gene expression programs (Jenuwein & Allis, 2001). Interestingly, recent research using animal models has demonstrated that histone modifications and DNA methylation of certain genes mediates the long-term behavioral effects of the level of care experienced during infancy.

Early childhood experience

The development of an individual is an active process of adaptation that occurs within a social and economic context. For example, the closeness or degree of positive attachment of the parent (typically mother)–infant bond and parental investment (including nutrient supply provided by the parent) that define early childhood experience also program the development of individual differences in stress responses in the brain, which then affect memory, attention, and emotion. In terms of evolution, this process provides the offspring with the ability to physiologically adjust gene expression profiles contributing to the organization and function of neural circuits and molecular pathways that support (1) biological defensive systems for survival (e.g., stress resilience), (2) reproductive success to promote establishment and persistence in the present environment, and (3) adequate parenting in the next generation (Bradshaw, 1965).

Parental investment and programming of stress responses in the offspring

The most comprehensive study to date of variations in parental investment and epigenetic inheritance in mammals is that of the maternally transmitted responses to stress in rats. In rat pups, maternal nurturing (licking and grooming) during the first week of life is associated with long-term programming of individual differences in stress responsiveness, emotionality, cognitive performance, and reproductive behavior (Caldji et al., 1998; Francis, Diorio, Liu, & Meaney, 1999; Liu et al., 1997; Myers, Brunelli, Shair, Squire, & Hofer, 1989; Stern, 1997). In adulthood, the offspring of mothers that exhibit increased levels of pup licking and grooming over the first week of life show increased expression of the glucocorticoid receptor in the hippocampus (a brain structure associated with stress responsivity as well as learning and memory) and a lower hormonal response to stress compared with adult animals reared by low licking and grooming mothers (Francis et al., 1999; Liu et al., 1997). Moreover, rat pups that received low levels of maternal licking and grooming during the first week of life showed decreased histone acetylation and increased DNA methylation of a neuron-specific promoter of the glucocorticoid receptor gene (Weaver et al., 2004). The expression of this gene is then reduced, the number of glucocorticoid receptors in the brain is decreased, and the animals show a higher hormonal response to stress throughout their life. The effects of maternal care on stress hormone responses and behaviour in the offspring can be eliminated in adulthood by pharmacological treatment (HDAC inhibitor trichostatin A, TSA) or dietary amino acid supplementation (methyl donor L-methionine), treatments that influence histone acetylation, DNA methylation, and expression of the glucocorticoid receptor gene (Weaver et al., 2004; Weaver et al., 2005). This series of experiments shows that histone acetylation and DNA methylation of the glucocorticoid receptor gene promoter is a necessary link in the process leading to the long-term physiological and behavioral sequelae of poor maternal care. This

points to a possible molecular target for treatments that may reverse or ameliorate the traces of childhood maltreatment.

Parental care during one's childhood has important and consequential effects on the development of an individual, effects that persist even into adulthood. [Image: The White Ribbon Alliance, https://goo.gl/KgY6N5, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Several studies have attempted to determine to what extent the findings from model animals are transferable to humans. Examination of post-mortem brain tissue from healthy human subjects found that the human equivalent of the glucocorticoid receptor gene promoter (NR3C1 exon 1F promoter) is also unique to the individual (Turner, Pelascini, Macedo, & Muller, 2008). A similar study examining newborns showed that methylation of the glucocorticoid receptor gene promoter maybe an early epigenetic marker of maternal mood and risk of increased hormonal responses to stress in infants 3 months of age (Oberlander et al., 2008). Although further studies are required to examine the functional consequence of this DNA methylation, these findings are consistent with our studies in the neonate and adult offspring of low licking and grooming mothers that show increased DNA methylation of the promoter of the glucocorticoid receptor gene, decreased glucocorticoid receptor gene expression, and increased hormonal responses to stress (Weaver et al., 2004). Examination of brain tissue from suicide victims found that the human glucocorticoid receptor gene promoter is also more methylated in the brains of individuals who had experienced maltreatment during childhood (McGowan et al., 2009). These finding suggests that DNA methylation mediates the effects of early environment in both rodents and humans and points to the possibility of new therapeutic approaches stemming from translational epigenetic research. Indeed, similar processes at comparable epigenetic labile regions could explain why the adult offspring of high and low licking/grooming mothers exhibit widespread differences in hippocampal gene expression and cognitive function (Weaver, Meaney, & Szyf, 2006).

However, this type of research is limited by the inaccessibility of human brain samples. The translational potential of this finding would be greatly enhanced if the relevant epigenetic modification can be measured in an accessible tissue. Examination of blood samples from

adult patients with bipolar disorder, who also retrospectively reported on their experiences of childhood abuse and neglect, found that the degree of DNA methylation of the human glucocorticoid receptor gene promoter was strongly positively related to the reported experience of childhood maltreatment decades earlier. For a relationship between a molecular measure and reported historical exposure, the effects size is extraordinarily large. This opens a range of new possibilities: given the large effect size and consistency of this association, measurement of the GR promoter methylation may effectively become a blood test measuring the physiological traces left on the genome by early experiences. Although this blood test cannot replace current methods of diagnosis, this unique and addition information adds to our knowledge of how disease may arise and be manifested throughout life. Near-future research will examine whether this measure adds value over and above simple reporting of early adversities when it comes to predicting important outcomes, such as response to treatment or suicide.

Child nutrition and the epigenome

Whether or not your parents knew the science behind it, telling you to eat your veggies as a kid really does make you healthier and stronger—at least your DNA, that is. [Image: U.S. Department of Agriculture, https://goo.gl/tpyYzA, CC BY 2.0, https://goo.gl/BRvSA7]

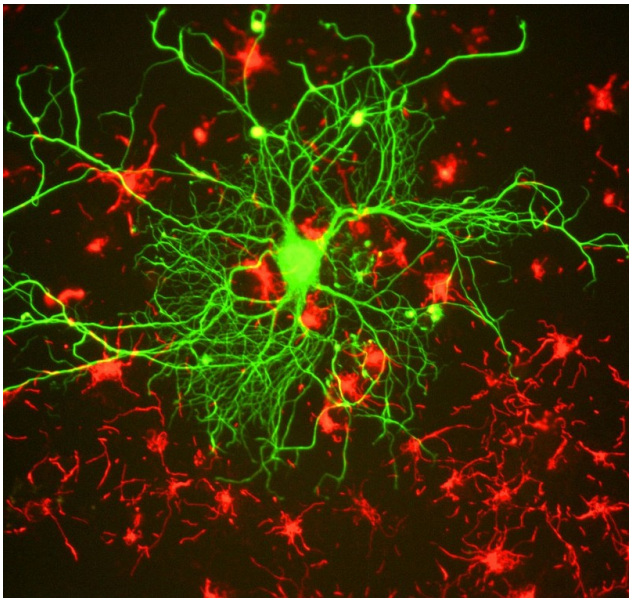
The old adage "you are what you eat" might be true on more than just a physical level: The food you choose (and even what your parents and grandparents chose) is reflected in your own personal development and risk for disease in adult life (Wells, 2003). Nutrients can reverse or change DNA methylation and histone modifications, thereby modifying the expression of critical genes associated with physiologic and pathologic processes, including embryonic development, aging, and carcinogenesis. It appears that nutrients can influence the epigenome either by directly inhibiting enzymes that catalyze DNA methylation or histone modifications, or by altering the availability of substrates necessary for those enzymatic reactions. For example, rat mothers fed a diet low in methyl group donors during pregnancy produce offspring with reduced DNMT-1 expression, decreased DNA methylation, and increased histone acetylation at promoter regions of specific genes, including the glucocorticoid receptor, and

increased gene expression in the liver of juvenile offspring (Lillycrop, Phillips, Jackson, Hanson, & Burdge, 2005) and adult offspring (Lillycrop et al., 2007). These data suggest that early life nutrition has the potential to influence epigenetic programming in the brain not only during early development but also in adult life, thereby modulating health throughout life. In this regard, nutritional epigenetics has been viewed as an attractive tool to prevent pediatric developmental diseases and cancer, as well as to delay aging-associated processes.

The best evidence relating to the impact of adverse environmental conditions development and health comes from studies of the children of women who were pregnant during two civilian famines of World War II: the Siege of Leningrad (1941–44) (Bateson, 2001) and the Dutch Hunger Winter (1944–1945) (Stanner et al., 1997). In the Netherlands famine, women who were previously well nourished were subjected to low caloric intake and associated environmental stressors. Women who endured the famine in the late stages of pregnancy gave birth to smaller babies (Lumey & Stein, 1997) and these children had an increased risk of insulin resistance later in life (Painter, Roseboom, & Bleker, 2005). In addition, offspring who were starved prenatally later experienced impaired glucose tolerance in adulthood, even when food was more abundant (Stanner et al., 1997). Famine exposure at various stages of gestation was associated with a wide range of risks such as increased obesity, higher rates of coronary heart disease, and lower birth weight (Lumey & Stein, 1997). Interestingly, when examined 60 years later, people exposed to famine prenatally showed reduced DNA methylation compared with their unexposed same-sex siblings (Heijmans et al., 2008).

Epigenetic regulation of learning and memory

Memories are recollections of actual events stored within our brains. But how is our brain able to form and store these memories? Epigenetic mechanisms influence genomic activities in the brain to produce long-term changes in synaptic signaling, organization, and morphology, which in turn support learning and memory (Day & Sweatt, 2011).



Neural plasticity is the change of neural pathways and synapses which allows for our ability to learn new things and remember them. [Image: Gerry Shaw, https://goo.gl/JBqlY7, CC BY-SA 3.0, https://goo.gl/eLCn2O]

Neuronal activity in the hippocampus of mice is associated with changes in DNA

methylation (Guo et al., 2011), and disruption to genes encoding the DNA methylation machinery cause learning and memory impairments (Feng et al., 2010). DNA methylation has also been implicated in the maintenance of long-term memories, as pharmacological inhibition of DNA methylation and impaired memory (Day & Sweatt, 2011; Miller et al., 2010). These findings indicate the importance of DNA methylation in mediating synaptic plasticity and cognitive functions, both of which are disturbed in psychological illness.

Changes in histone modifications can also influence long-term memory formation by altering chromatin accessibility and the expression of genes relevant to learning and memory. Memory formation and the associated enhancements in synaptic transmission are accompanied by increases in histone acetylation (Guan et al., 2002) and alterations in histone methylation (Schaefer et al., 2009), which promote gene expression. Conversely, a neuronal increase in histone deacetylase activity, which promotes gene silencing, results in reduced synaptic plasticity and impairs memory (Guan et al., 2009). Pharmacological inhibition of histone deacetylases augments memory formation (Guan et al., 2009; Levenson et al., 2004), further suggesting that histone (de)acetylation regulates this process.

In humans genetic defects in genes encoding the DNA methylation and chromatin machinery exhibit profound effects on cognitive function and mental health (Jiang, Bressler, & Beaudet, 2004). The two best-characterized examples are Rett syndrome (Amir et al., 1999) and Rubinstein-Taybi syndrome (RTS) (Alarcon et al., 2004), which are profound intellectual disability disorders. Both MECP2 and CBP are highly expressed in neurons and are involved in regulating neural gene expression (Chen et al., 2003; Martinowich et al., 2003).

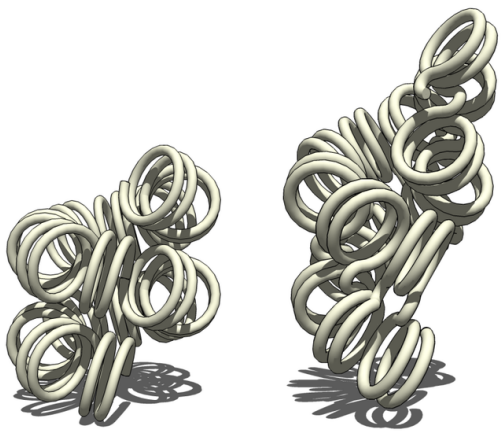
Rett syndrome patients have a mutation in their DNA sequence in a gene called MECP2. MECP2 plays many important roles within the cell: One of these roles is to read the DNA sequence, checking for DNA methylation, and to bind to areas that contain methylation, thereby preventing the wrong proteins from being present. Other roles for MECP2 include promoting the presence of particular, necessary, proteins, ensuring that DNA is packaged properly within the cell and assisting with the production of proteins. MECP2 function also influences gene expression that supports dendritic and synaptic development and hippocampus-dependent memory (Li, Zhong, Chau, Williams, & Chang, 2011; Skene et al., 2010). Mice with altered MECP2 expression exhibit genome-wide increases in histone acetylation, neuron cell death, increased anxiety, cognitive deficits, and social withdrawal (Shahbazian et al., 2002). These findings support a model in which DNA methylation and MECP2 constitute a cell-specific epigenetic mechanism for regulation of histone modification and gene expression, which may be disrupted in Rett syndrome.

RTS patients have a mutation in their DNA sequence in a gene called CBP. One of these roles

of CBP is to bind to specific histones and promote histone acetylation, thereby promoting gene expression. Consistent with this function, RTS patients exhibit a genome-wide decrease in histone acetylation and cognitive dysfunction in adulthood (Kalkhoven et al., 2003). The learning and memory deficits are attributed to disrupted neural plasticity (Korzus, Rosenfeld, & Mayford, 2004). Similar to RTS in humans, mice with a mutation of CBP perform poorly in cognitive tasks and show decreased genome-wide histone acetylation (for review, see Josselyn, 2005). In the mouse brain CBP was found to act as an epigenetic switch to promote the birth of new neurons in the brain. Interestingly, this epigenetic mechanism is disrupted in the fetal brains of mice with a mutation of CBP, which, as pups, exhibit early behavioral deficits following removal and separation from their mother (Wang et al., 2010). These findings provide a novel mechanism whereby environmental cues, acting through histone modifying enzymes, can regulate epigenetic status and thereby directly promote neurogenesis, which regulates neurobehavioral development.

Together, these studies demonstrate that misregulation of epigenetic modifications and their regulatory enzymes is capable of orchestrating prominent deficits in neuronal plasticity and cognitive function. Knowledge from these studies may provide greater insight into other mental disorders such as depression and suicidal behaviors.

Epigenetic mechanisms in psychological disorders



Pictured above is a chromatin, the spiral-looking macromolecule involved in depression. [Image: Zephyris, https://goo.gl/6DBQ1g, CC BY-SA 3.0, https://goo.gl/eLCn2O]

Epigenome-wide studies have identified several dozen sites with DNA methylation alterations in genes involved in brain development and neurotransmitter pathways, which had previously been associated with mental illness (Mill et al., 2008). These disorders are complex and typically start at a young age and cause lifelong disability. Often, limited benefits from treatment make these diseases some of the most burdensome disorders for individuals, families, and society. It has become evident that the efforts to identify the primary causes of complex psychiatric disorders may significantly benefit from studies linking environmental effects with changes observed within the individual cells.

Epigenetic events that alter chromatin structure to regulate programs of gene expression have been associated with depression-related behavior and action of antidepressant medications, with increasing evidence for similar mechanisms occurring in post-mortem brains of depressed individuals. In mice, social avoidance resulted in decreased expression of hippocampal genes important in mediating depressive responses (Tsankova et al., 2006). Similarly, chronic social defeat stress was found to decrease expression of genes implicated in normal emotion processing (Lutter et al., 2008). Consistent with these findings, levels of histone markers of increased gene expression were down regulated in human post-mortem brain samples from individuals with a history of clinical depression (Covington et al., 2009).

Administration of antidepressants increased histone markers of increased gene expression and reversed the gene repression induced by defeat stress (Lee, Wynder, Schmidt, McCafferty, & Shiekhattar, 2006; Tsankova et al., 2006; Wilkinson et al., 2009). These results provide support for the use of HDAC inhibitors against depression. Accordingly, several HDAC inhibitors have been found to exert antidepressant effects by each modifying distinct cellular targets (Cassel et al., 2006; Schroeder, Lin, Crusio, & Akbarian, 2007).

There is also increasing evidence that aberrant gene expression resulting from altered epigenetic regulation is associated with the pathophysiology of suicide (McGowan et al., 2008; Poulter et al., 2008). Thus, it is tempting to speculate that there is an epigenetically determined reduced capacity for gene expression, which is required for learning and memory, in the brains of suicide victims.

Although there is some evidence that a dysfunctional upbringing can increase one's likelihood for schizophrenia (an epigenetically inherited disease), some people who have both the predisposition and the stressful environment never develop the mental illness. [Image: Steve White, CC0 Public Domain, https://goo.gl/m25gce]

Epigenetic strategy to understanding gene-environment interactions

While the cellular and molecular mechanisms that influence on physical and mental health have long been a central focus of neuroscience, only in recent years has attention turned to the epigenetic mechanisms behind the dynamic changes in gene expression responsible for normal cognitive function and increased risk for

mental illness. The links between early environment and epigenetic modifications suggest a mechanism underlying gene-environment interactions. Early environmental adversity alone is not a sufficient cause of mental illness, because many individuals with a history of severe childhood maltreatment or trauma remain healthy. It is increasingly becoming evident that inherited differences in the segments of specific genes may moderate the effects of adversity and determine who is sensitive and who is resilient through a gene-environment interplay. Genes such as the glucocorticoid receptor appear to moderate the effects of childhood adversity on mental illness. Remarkably, epigenetic DNA modifications have been identified that may underlie the long-lasting effects of environment on biological functions. This new epigenetic research is pointing to a new strategy to understanding gene-environment interactions.

The next decade of research will show if this potential can be exploited in the development of new therapeutic options that may alter the traces that early environment leaves on the genome. However, as discussed in this module, the epigenome is not static and can be molded by developmental signals, environmental perturbations, and disease states, which present an experimental challenge in the search for epigenetic risk factors in psychological disorders (Rakyan, Down, Balding, & Beck, 2011). The sample size and epigenomic assay required is dependent on the number of tissues affected, as well as the type and distribution of epigenetic modifications. The combination of genetic association maps studies with epigenome-wide developmental studies may help identify novel molecular mechanisms to explain features of inheritance of personality traits and transform our understanding of the biological basis of psychology. Importantly, these epigenetic studies may lead to identification of novel therapeutic targets and enable the development of improved strategies for early diagnosis, prevention, and better treatment of psychological and behavioral disorders.

Outside Resources

Reference: The "Encyclopedia of DNA Elements" (ENCODE) project
http://encodeproject.org/ENCODE/

Reference: THREADS - A new way to explore the ENCODE Project
http://www.nature.com/encode/#/threads

Web: NOVA ScienceNOW - Introduction to Epigenetics
http://www.pbs.org/wgbh/nova/genes

Web: The University of Utah\'s Genetic Science Learning Center
http://learn.genetics.utah.edu/content/epigenetics/

Discussion Questions

1. Describe the physical state of the genome when genes are active and inactive.
2. Often, the physical characteristics of genetically identical twins become increasingly different as they age, even at the molecular level. Explain why this is so (use the terms "environment" and "epigenome").
3. Name 3–4 environmental factors that influence the epigenome and describe their effects.
4. The rat nurturing example shows us how parental behavior can shape the behavior of offspring on a biochemical level. Discuss how this relates to humans and include the personal and social implications.
5. Explain how the food we eat affects gene expression.
6. Can the diets of parents affect their offspring's epigenome?
7. Why is converging evidence the best kind of evidence in the study of brain function?
8. If you were interested in whether a particular brain area was involved in a specific behavior, what neuroscience methods could you use?
9. If you were interested in the precise time in which a particular brain process occurred, which neuroscience methods could you use?

Vocabulary

DNA methylation
Covalent modifications of mammalian DNA occurring via the methylation of cytosine, typically in the context of the CpG dinucleotide.

DNA methyltransferases (DNMTs)
Enzymes that establish and maintain DNA methylation using methyl-group donor compounds or cofactors. The main mammalian DNMTs are DNMT1, which maintains methylation state across DNA replication, and DNMT3a and DNMT3b, which perform de novo methylation.

Epigenetics
The study of heritable changes in gene expression or cellular phenotype caused by mechanisms other than changes in the underlying DNA sequence. Epigenetic marks include covalent DNA modifications and posttranslational histone modifications.

Epigenome
The genome-wide distribution of epigenetic marks.

Gene
A specific deoxyribonucleic acid (DNA) sequence that codes for a specific polypeptide or protein or an observable inherited trait.

Genome-wide association study (GWAS)
A study that maps DNA polymorphisms in affected individuals and controls matched for age, sex, and ethnic background with the aim of identifying causal genetic variants.

Genotype
The DNA content of a cell's nucleus, whether a trait is externally observable or not.

Histone acetyltransferases (HATs) and histone deacetylases (HDACs)
HATs are enzymes that transfer acetyl groups to specific positions on histone tails, promoting an "open" chromatin state and transcriptional activation. HDACs remove these acetyl groups, resulting in a "closed" chromatin state and transcriptional repression.

Histone modifications
Posttranslational modifications of the N-terminal "tails" of histone proteins that serve as a major mode of epigenetic regulation. These modifications include acetylation,

phosphorylation, methylation, sumoylation, ubiquitination, and ADP-ribosylation.

Identical twins
Two individual organisms that originated from the same zygote and therefore are genetically identical or very similar. The epigenetic profiling of identical twins discordant for disease is a unique experimental design as it eliminates the DNA sequence-, age-, and sex-differences from consideration.

Phenotype
The pattern of expression of the genotype or the magnitude or extent to which it is observably expressed—an observable characteristic or trait of an organism, such as its morphology, development, biochemical or physiological properties, or behavior.

References

Adams, R. L., McKay, E. L., Craig, L. M., & Burdon, R. H. (1979). Mouse DNA methylase: methylation of native DNA. *Biochimica et Biophysica Acta, 561*(2), 345–357.

Alarcon, J. M., Malleret, G., Touzani, K., Vronskaya, S., Ishii, S., Kandel, E. R., & Barco, A. (2004). Chromatin acetylation, memory, and LTP are impaired in CBP+/- mice: a model for the cognitive deficit in Rubinstein-Taybi syndrome and its amelioration. *Neuron, 42*(6), 947–959. doi: 10.1016/j.neuron.2004.05.021, S0896627304003022 [pii]

Amir, R. E., Van den Veyver, I. B., Wan, M., Tran, C. Q., Francke, U., & Zoghbi, H. Y. (1999). Rett syndrome is caused by mutations in X-linked MECP2, encoding methyl-CpG-binding protein 2. *Nature Genetics, 23*(2), 185–188.

Bateson, P. (2001). Fetal experience and good adult design. *International Journal of Epidemiology, 30*(5), 928–934.

Bradshaw, A.D. (1965). Evolutionary significance of phenotypic plasticity in plants. *Advances in Genetics, 13*, 115–155.

Caldji, C., Tannenbaum, B., Sharma, S., Francis, D., Plotsky, P. M., & Meaney, M. J. (1998). Maternal care during infancy regulates the development of neural systems mediating the expression of fearfulness in the rat. *Proceedings of the National Academy of Sciences U S A, 95*(9), 5335–5340.

Cassel, S., Carouge, D., Gensburger, C., Anglard, P., Burgun, C., Dietrich, J. B., . . . Zwiller, J. (2006). Fluoxetine and cocaine induce the epigenetic factors MeCP2 and MBD1 in adult rat brain. *Molecular Pharmacology, 70*(2), 487–492. doi: 10.1124/mol.106.022301

Chen, W. G., Chang, Q., Lin, Y., Meissner, A., West, A. E., Griffith, E. C., . . . Greenberg, M. E. (2003). Derepression of BDNF transcription involves calcium-dependent phosphorylation of MeCP2. *Science, 302*(5646), 885–889.

Covington, H. E., 3rd, Maze, I., LaPlant, Q. C., Vialou, V. F., Ohnishi, Y. N., Berton, O., . . . Nestler, E. J. (2009). Antidepressant actions of histone deacetylase inhibitors. *Journal of Neuroscience, 29*(37), 11451–11460. doi: 10.1523/JNEUROSCI.1758-09.2009

Davie, J. R., & Chadee, D. N. (1998). Regulation and regulatory parameters of histone modifications. *Journal of Cellular Biochemistry Suppl, 30–31 *, 203–213.

Day, J. J., & Sweatt, J. D. (2011). Epigenetic mechanisms in cognition. *Neuron, 70*(5), 813–829. doi: 10.1016/j.neuron.2011.05.019

Dick, D. M., Riley, B., & Kendler, K. S. (2010). Nature and nurture in neuropsychiatric genetics: where do we stand? *Dialogues in Clinical Neuroscience, 12*(1), 7–23.

Dolinoy, D. C., Weidman, J. R., & Jirtle, R. L. (2007). Epigenetic gene regulation: linking early developmental environment to adult disease. *Reproductive Toxicology, 23*(3), 297–307. doi: S0890-6238(06)00197-3 [pii], 10.1016/j.reprotox.2006.08.012

Feng, J., Chang, H., Li, E., & Fan, G. (2005). Dynamic expression of de novo DNA methyltransferases Dnmt3a and Dnmt3b in the central nervous system. *Journal of Neuroscience Research, 79*(6), 734–746. doi: 10.1002/jnr.20404

Feng, J., Zhou, Y., Campbell, S. L., Le, T., Li, E., Sweatt, J. D., . . . Fan, G. (2010). Dnmt1 and Dnmt3a maintain DNA methylation and regulate synaptic function in adult forebrain neurons. *Nature Neuroscience, 13*(4), 423–430. doi: 10.1038/nn.2514

Francis, D., Diorio, J., Liu, D., & Meaney, M. J. (1999). Nongenomic transmission across generations of maternal behavior and stress responses in the rat. *Science, 286*(5442), 1155–1158.

Gershon, E. S., Alliey-Rodriguez, N., & Liu, C. (2011). After GWAS: searching for genetic risk for schizophrenia and bipolar disorder. *American Journal of Psychiatry, 168*(3), 253–256. doi: 10.1176/appi.ajp.2010.10091340

Goll, M. G., & Bestor, T. H. (2005). Eukaryotic cytosine methyltransferases. *Annual Review of Biochemistry, 74*, 481–514. doi: 10.1146/annurev.biochem.74.010904.153721

Goto, K., Numata, M., Komura, J. I., Ono, T., Bestor, T. H., & Kondo, H. (1994). Expression of DNA methyltransferase gene in mature and immature neurons as well as proliferating cells in mice. *Differentiation, 56*(1–2), 39–44.

Gregg, C., Zhang, J., Weissbourd, B., Luo, S., Schroth, G. P., Haig, D., & Dulac, C. (2010). High-resolution analysis of parent-of-origin allelic expression in the mouse brain. *Science, 329* (5992), 643–648. doi: 10.1126/science.1190830

Guan, J. S., Haggarty, S. J., Giacometti, E., Dannenberg, J. H., Joseph, N., Gao, J., . . . Tsai, L. H. (2009). HDAC2 negatively regulates memory formation and synaptic plasticity. *Nature, 459* (7243), 55-60. doi: 10.1038/nature07925

Guan, Z., Giustetto, M., Lomvardas, S., Kim, J. H., Miniaci, M. C., Schwartz, J. H., . . . Kandel, E. R. (2002). Integration of long-term-memory-related synaptic plasticity involves bidirectional regulation of gene expression and chromatin structure. *Cell, 111*(4), 483–493.

Guo, J. U., Ma, D. K., Mo, H., Ball, M. P., Jang, M. H., Bonaguidi, M. A., . . . Song, H. (2011). Neuronal activity modifies the DNA methylation landscape in the adult brain. *Nature Neuroscience, 14*(10), 1345–1351. doi: 10.1038/nn.2900

Heijmans, B. T., Tobi, E. W., Stein, A. D., Putter, H., Blauw, G. J., Susser, E. S., . . . Lumey, L. H. (2008). Persistent epigenetic differences associated with prenatal exposure to famine in humans. *Proceedings of the National Academy of Sciences U S A, 105*(44), 17046–17049. doi:

0806560105 [pii]10.1073/pnas.0806560105

Hong, L., Schroth, G. P., Matthews, H. R., Yau, P., & Bradbury, E. M. (1993). Studies of the DNA binding properties of histone H4 amino terminus. Thermal denaturation studies reveal that acetylation markedly reduces the binding constant of the H4 "tail" to DNA. *Journal of Biological Chemistry, 268*(1), 305–314.

Jenuwein, T., & Allis, C. D. (2001). Translating the histone code. *Science, 293*(5532), 1074–1080. doi: 10.1126/Science.1063127293/5532/1074 [pii]

Jiang, Y. H., Bressler, J., & Beaudet, A. L. (2004). Epigenetics and human disease. *Annual Review of Genomics and Human Genetics, 5*, 479–510. doi: 10.1146/annurev.genom.5.061903.180014

Josselyn, S. A. (2005). What's right with my mouse model? New insights into the molecular and cellular basis of cognition from mouse models of Rubinstein-Taybi Syndrome. *Learning & Memory, 12*(2), 80–83. doi: 12/2/80 [pii]10.1101/lm.93505

Kadonaga, J. T. (1998). Eukaryotic transcription: an interlaced network of transcription factors and chromatin-modifying machines. *Cell, 92*(3), 307–313.

Kalkhoven, E., Roelfsema, J. H., Teunissen, H., den Boer, A., Ariyurek, Y., Zantema, A., . . . Peters, D. J. (2003). Loss of CBP acetyltransferase activity by PHD finger mutations in Rubinstein-Taybi syndrome. *Human Molecular Genetics, 12*(4), 441–450.

Korzus, E., Rosenfeld, M. G., & Mayford, M. (2004). CBP histone acetyltransferase activity is a critical component of memory consolidation. *Neuron, 42*(6), 961–972. doi: 10.1016/j.neuron.2004.06.002S0896627304003526 [pii]

Kuo, M. H., & Allis, C. D. (1998). *Roles of histone acetyltransferases and deacetylases in gene regulation*. Bioessays, 20(8), 615–626. doi: 10.1002/(SICI)1521–1878(199808)20:8<615::AID-BIES4>3.0.CO;2-H [pii] 10.1002/(SICI)1521-1878(199808)20:8<615::AID-BIES4>3.0.CO;2-H

Law, J. A., & Jacobsen, S. E. (2010). Establishing, maintaining and modifying DNA methylation patterns in plants and animals. *Nature Reviews Genetics, 11*(3), 204–220. doi: nrg2719 [pii] 10.1038/nrg2719

Lee, M. G., Wynder, C., Schmidt, D. M., McCafferty, D. G., & Shiekhattar, R. (2006). Histone H3 lysine 4 demethylation is a target of nonselective antidepressive medications. *Chemistry & Biology, 13*(6), 563–567. doi: 10.1016/j.chembiol.2006.05.004

Levenson, J. M., O'Riordan, K. J., Brown, K. D., Trinh, M. A., Molfese, D. L., & Sweatt, J. D. (2004). Regulation of histone acetylation during memory formation in the hippocampus. *Journal of Biological Chemistry, 279*(39), 40545–40559.

Li, H., Zhong, X., Chau, K. F., Williams, E. C., & Chang, Q. (2011). Loss of activity-induced phosphorylation of MeCP2 enhances synaptogenesis, LTP and spatial memory. *Nature Neuroscience, 14*(8), 1001–1008. doi: 10.1038/nn.2866

Lillycrop, K. A., Phillips, E. S., Jackson, A. A., Hanson, M. A., & Burdge, G. C. (2005). Dietary protein restriction of pregnant rats induces and folic acid supplementation prevents epigenetic modification of hepatic gene expression in the offspring. *Journal of Nutrition, 135*(6), 1382–1386. doi: 135/6/1382 [pii]

Lillycrop, K. A., Slater-Jefferies, J. L., Hanson, M. A., Godfrey, K. M., Jackson, A. A., & Burdge, G. C. (2007). Induction of altered epigenetic regulation of the hepatic glucocorticoid receptor in the offspring of rats fed a protein-restricted diet during pregnancy suggests that reduced DNA methyltransferase-1 expression is involved in impaired DNA methylation and changes in histone modifications. *British Journal of Nutrition, 97*(6), 1064–1073. doi: S000711450769196X [pii]10.1017/S000711450769196X

Liu, D., Diorio, J., Tannenbaum, B., Caldji, C., Francis, D., Freedman, A., . . . Meaney, M. J. (1997). Maternal care, hippocampal glucocorticoid receptors, and hypothalamic- pituitary-adrenal responses to stress [see comments]. *Science, 277*(5332), 1659–1662.

Lumey, L. H., & Stein, A. D. (1997). Offspring birth weights after maternal intrauterine undernutrition: a comparison within sibships. *American Journal of Epidemiology, 146*(10), 810–819.

Lutter, M., Krishnan, V., Russo, S. J., Jung, S., McClung, C. A., & Nestler, E. J. (2008). Orexin signaling mediates the antidepressant-like effect of calorie restriction. *Journal of Neuroscience, 28*(12), 3071–3075. doi: 10.1523/JNEUROSCI.5584-07.2008

Martinowich, K., Hattori, D., Wu, H., Fouse, S., He, F., Hu, Y., . . . Sun, Y. E. (2003). DNA methylation-related chromatin remodeling in activity-dependent BDNF gene regulation. *Science, 302* (5646), 890–893.

McGowan, P. O., Sasaki, A., D'Alessio, A. C., Dymov, S., Labonte, B., Szyf, M., . . . Meaney, M. J. (2009). Epigenetic regulation of the glucocorticoid receptor in human brain associates with childhood abuse. *Nature Neuroscience, 12*(3), 342–348. doi: nn.2270 [pii]10.1038/nn.2270

McGowan, P. O., Sasaki, A., Huang, T. C., Unterberger, A., Suderman, M., Ernst, C., . . . Szyf, M. (2008). Promoter-wide hypermethylation of the ribosomal RNA gene promoter in the suicide brain. *PLoS ONE, 3*(5), e2085. doi: 10.1371/journal.pone.0002085

Mill, J., Tang, T., Kaminsky, Z., Khare, T., Yazdanpanah, S., Bouchard, L., . . . Petronis, A. (2008). Epigenomic profiling reveals DNA-methylation changes associated with major psychosis. *American Journal of Human Genetics, 82*(3), 696–711. doi: 10.1016/j.ajhg.2008.01.008

Miller, C. A., Gavin, C. F., White, J. A., Parrish, R. R., Honasoge, A., Yancey, C. R., . . . Sweatt, J. D. (2010). Cortical DNA methylation maintains remote memory. *Nature Neuroscience, 13*(6), 664–666. doi: 10.1038/nn.2560

Myers, M. M., Brunelli, S. A., Shair, H. N., Squire, J. M., & Hofer, M. A. (1989). Relationships

between maternal behavior of SHR and WKY dams and adult blood pressures of cross-fostered F1 pups. *Developmental Psychobiology, 22*(1), 55–67.

Oberlander, T. F., Weinberg, J., Papsdorf, M., Grunau, R., Misri, S., & Devlin, A. M. (2008). Prenatal exposure to maternal depression, neonatal methylation of human glucocorticoid receptor gene (NR3C1) and infant cortisol stress responses. *Epigenetics, 3*(2), 97–106. doi: 6034 [pii]

Ooi, S. K., O'Donnell, A. H., & Bestor, T. H. (2009). Mammalian cytosine methylation at a glance. *Journal of Cell Science, 122*(Pt 16), 2787–2791. doi: 122/16/2787 [pii]10.1242/jcs.015123

Painter, R. C., Roseboom, T. J., & Bleker, O. P. (2005). Prenatal exposure to the Dutch famine and disease in later life: an overview. *Reproductive Toxicology, 20*(3), 345–352. doi: S0890-6238(05)00088-2 [pii]10.1016/j. Reproductive Toxicology.2005.04.005

Petronis, A. (2010). Epigenetics as a unifying principle in the aetiology of complex traits and diseases. *Nature, 465*(7299), 721–727. doi: 10.1038/nature09230

Poulter, M. O., Du, L., Weaver, I. C., Palkovits, M., Faludi, G., Merali, Z., . . . Anisman, H. (2008). GABAA receptor promoter hypermethylation in suicide brain: implications for the involvement of epigenetic processes. *Biological Psychiatry, 64*(8), 645–652. doi: 10.1016/j. biopsych.2008.05.028

Rakyan, V. K., Down, T. A., Balding, D. J., & Beck, S. (2011). Epigenome-wide association studies for common human diseases. *Nature Reviews Genetics, 12*(8), 529–541. doi: 10.1038/nrg3000

Razin, A. (1998). CpG methylation, chromatin structure and gene silencing-a three-way connection. *European Molecular Biology Organization, 17*(17), 4905–4908.

Schaefer, A., Sampath, S. C., Intrator, A., Min, A., Gertler, T. S., Surmeier, D. J., . . . Greengard, P. (2009). Control of cognition and adaptive behavior by the GLP/G9a epigenetic suppressor complex. *Neuron, 64*(5), 678–691. doi: 10.1016/j.neuron.2009.11.019

Schroeder, F. A., Lin, C. L., Crusio, W. E., & Akbarian, S. (2007). Antidepressant-like effects of the histone deacetylase inhibitor, sodium butyrate, in the mouse. *Biological Psychiatry, 62* (1), 55-64. doi: 10.1016/j.biopsych.2006.06.036

Sealy, L., & Chalkley, R. (1978). DNA associated with hyperacetylated histone is preferentially digested by DNase I. *Nucleic Acids Research, 5*(6), 1863–1876.

Shahbazian, M., Young, J., Yuva-Paylor, L., Spencer, C., Antalffy, B., Noebels, J., . . . Zoghbi, H. (2002). Mice with truncated MeCP2 recapitulate many Rett syndrome features and display hyperacetylation of histone H3. *Neuron, 35*(2), 243–254.

Skene, P. J., Illingworth, R. S., Webb, S., Kerr, A. R., James, K. D., Turner, D. J., . . . Bird, A. P. (2010). Neuronal MeCP2 is expressed at near histone-octamer levels and globally alters the chromatin state. *Molecular Cell, 37*(4), 457–468. doi: 10.1016/j.molcel.2010.01.030

Stanner, S. A., Bulmer, K., Andres, C., Lantseva, O. E., Borodina, V., Poteen, V. V., & Yudkin, J. S. (1997). Does malnutrition in utero determine diabetes and coronary heart disease in adulthood? Results from the Leningrad siege study, a cross sectional study. *British Medical Journal, 315*(7119), 1342–1348.

Stern, J. M. (1997). Offspring-induced nurturance: animal-human parallels. *Developmental Psychobiololgy, 31*(1), 19–37.

Sutter, D., Doerfler, W., 1980. Methylation of integrated adenovirus type 12 DNA sequences in transformed cells is inversely correlated with viral gene expression. *Proceedings of the National Academy of Sciences U S A. 77*, 253–256.

Suzuki, M. M., & Bird, A. (2008). DNA methylation landscapes: provocative insights from epigenomics. *Nature Reviews Genetics, 9*(6), 465–476. doi: nrg2341 [pii]10.1038/nrg2341

Tsankova, N. M., Berton, O., Renthal, W., Kumar, A., Neve, R. L., & Nestler, E. J. (2006). Sustained hippocampal chromatin regulation in a mouse model of depression and antidepressant action. *Nature Neuroscience. 9*(4): 519–525. doi:10.1038/nn1659

Turner, J. D., Pelascini, L. P., Macedo, J. A., & Muller, C. P. (2008). Highly individual methylation patterns of alternative glucocorticoid receptor promoters suggest individualized epigenetic regulatory mechanisms. *Nucleic Acids Research, 36*(22), 7207–7218. doi: gkn897 [pii] 10.1093/nar/gkn897

Vardimon, L., Kressmann, A., Cedar, H., Maechler, M., Doerfler, W., 1982. Expression of a cloned adenovirus gene is inhibited by in vitro methylation. *Proceedings of the National Academy of Sciences U S A. 79*, 1073–1077.

Waddington, C. H. (1942). Epigenotype. *Endeavour*(1), 18–21.

Wade, P. A., Pruss, D., & Wolffe, A. P. (1997). Histone acetylation: chromatin in action. *Trends in Biochemical Sciences, 22*(4), 128–132. doi: S0968000497010165 [pii]

Wang, J., Weaver, I. C., Gauthier-Fisher, A., Wang, H., He, L., Yeomans, J., . . . Miller, F. D. (2010). CBP histone acetyltransferase activity regulates embryonic neural differentiation in the normal and Rubinstein-Taybi syndrome brain. *Developmental Cell, 18*(1), 114–125. doi: 10.1016/j.devcel.2009.10.023

Weaver, I. C., Cervoni, N., Champagne, F. A., D'Alessio, A. C., Sharma, S., Seckl, J. R., . . . Meaney, M. J. (2004). Epigenetic programming by maternal behavior. *Nature Neuroscience, 7*(8), 847–854. doi: 10.1038/nn1276

Weaver, I. C., Champagne, F. A., Brown, S. E., Dymov, S., Sharma, S., Meaney, M. J., & Szyf, M. (2005). Reversal of maternal programming of stress responses in adult offspring through methyl supplementation: altering epigenetic marking later in life. *Journal of Neuroscience, 25*(47), 11045–11054. doi: 10.1523/JNEUROSCI.3652-05.2005

Weaver, I. C., Meaney, M. J., & Szyf, M. (2006). Maternal care effects on the hippocampal transcriptome and anxiety-mediated behaviors in the offspring that are reversible in adulthood. *Proceedings of the National Academy of Sciences U S A, 103*(9), 3480–3485. doi: 10.1073/pnas.0507526103

Wells, J. C. (2003). The thrifty phenotype hypothesis: thrifty offspring or thrifty mother? *Journal of Theoretical Biology, 221*(1), 143–161.

Wilkinson, M. B., Xiao, G., Kumar, A., LaPlant, Q., Renthal, W., Sikder, D., . . . Nestler, E. J. (2009). Imipramine treatment and resiliency exhibit similar chromatin regulation in the mouse nucleus accumbens in depression models. *Journal of Neuroscience, 29*(24), 7820–7832. doi: 10.1523/JNEUROSCI.0932-09.2009

Wolffe, A. P., & Matzke, M. A. (1999). Epigenetics: regulation through repression. *Science, 286* (5439), 481–486.

8

The Nature-Nurture Question

Eric Turkheimer

People have a deep intuition about what has been called the "nature–nurture question." Some aspects of our behavior feel as though they originate in our genetic makeup, while others feel like the result of our upbringing or our own hard work. The scientific field of behavior genetics attempts to study these differences empirically, either by examining similarities among family members with different degrees of genetic relatedness, or, more recently, by studying differences in the DNA of people with different behavioral traits. The scientific methods that have been developed are ingenious, but often inconclusive. Many of the difficulties encountered in the empirical science of behavior genetics turn out to be conceptual, and our intuitions about nature and nurture get more complicated the harder we think about them. In the end, it is an oversimplification to ask how "genetic" some particular behavior is. Genes and environments always combine to produce behavior, and the real science is in the discovery of how they combine for a given behavior.

Learning Objectives

- Understand what the nature–nurture debate is and why the problem fascinates us.
- Understand why nature–nurture questions are difficult to study empirically.
- Know the major research designs that can be used to study nature–nurture questions.
- Appreciate the complexities of nature–nurture and why questions that seem simple turn out not to have simple answers.

Introduction

There are three related problems at the intersection of philosophy and science that are fundamental to our understanding of our relationship to the natural world: the mind–body problem, the free will problem, and the nature–nurture problem. These great questions have a lot in common. Everyone, even those without much knowledge of science or philosophy, has opinions about the answers to these questions that come simply from observing the world we live in. Our feelings about our relationship with the physical and biological world often seem incomplete. We are in control of our actions in some ways, but at the mercy of our bodies in others; it feels obvious that our consciousness is some kind of creation of our physical brains, at the same time we sense that our awareness must go beyond just the physical. This incomplete knowledge of our relationship with nature leaves us fascinated and a little obsessed, like a cat that climbs into a paper bag and then out again, over and over, mystified every time by a relationship between inner and outer that it can see but can't quite understand.

It may seem obvious that we are born with certain characteristics while others are acquired, and yet of the three great questions about humans' relationship with the natural world, only nature–nurture gets referred to as a "debate." In the history of psychology, no other question has caused so much controversy and offense: We are so concerned with nature–nurture because our very sense of moral character seems to depend on it. While we may admire the athletic skills of a great basketball player, we think of his height as simply a gift, a payoff in the "genetic lottery." For the same reason, no one blames a short person for his height or someone's congenital disability on poor decisions: To state the obvious, it's "not their fault." But we do praise the concert violinist (and perhaps her parents and teachers as well) for her dedication, just as we condemn cheaters, slackers, and bullies for their bad behavior.

The problem is, most human characteristics aren't usually as clear-cut as height or instrument-mastery, affirming our nature–nurture expectations strongly one way or the other. In fact, even the great violinist might have some inborn qualities—perfect pitch, or long, nimble fingers—that support and reward her hard work. And the basketball player might have eaten a diet while growing up that promoted his genetic tendency for being tall. When we think about our own qualities, they seem under our control in some respects, yet beyond our control in others. And often the traits that don't seem to have an obvious cause are the ones that concern us the most and are far more personally significant. What about how much we drink or worry? What about our honesty, or religiosity, or sexual orientation? They all come from that uncertain zone, neither fixed by nature nor totally under our own control.

One major problem with answering nature-nurture questions about people is, how do you set up an experiment? In nonhuman animals, there are relatively straightforward experiments for tackling nature–nurture questions. Say, for example, you are interested in aggressiveness

Researchers have learned a great deal about the nature-nurture dynamic by working with animals. But of course many of the techniques used to study animals cannot be applied to people. Separating these two influences in human subjects is a greater research challenge. [Image: Sebastián Dario, https://goo.gl/OPiIWd, CC BY-NC 2.0, https://goo.gl/FIlc2e]

in dogs. You want to test for the more important determinant of aggression: being born to aggressive dogs or being raised by them. You could mate two aggressive dogs—angry Chihuahuas—together, and mate two nonaggressive dogs—happy beagles—together, then switch half the puppies from each litter between the different sets of parents to raise. You would then have puppies born to aggressive parents (the Chihuahuas) but being raised by nonaggressive parents (the Beagles), and vice versa, in litters that mirror each other in puppy distribution. The big questions are: Would the Chihuahua parents raise aggressive beagle puppies? Would the beagle parents raise *non*aggressive Chihuahua puppies? Would the puppies' *nature* win out, regardless of who raised them? Or… would the result be a combination of nature *and* nurture? Much of the most significant nature–nurture research has been done in this way (Scott & Fuller, 1998), and animal breeders have been doing it successfully for thousands of years. In fact, it is fairly easy to breed animals for behavioral traits.

With people, however, we can't assign babies to parents at random, or select parents with certain behavioral characteristics to mate, merely in the interest of science (though history does include horrific examples of such practices, in misguided attempts at "eugenics," the shaping of human characteristics through intentional breeding). In typical human families, children's biological parents raise them, so it is very difficult to know whether children act like their parents due to genetic (nature) or environmental (nurture) reasons. Nevertheless, despite our restrictions on setting up human-based experiments, we do see real-world examples of nature-nurture at work in the human sphere—though they only provide partial answers to our many questions.

The science of how genes and environments work together to influence behavior is called **behavioral genetics**. The easiest opportunity we have to observe this is the **adoption study**. When children are put up for adoption, the parents who give birth to them are no longer the parents who raise them. This setup isn't quite the same as the experiments with dogs (children

aren't assigned to random adoptive parents in order to suit the particular interests of a scientist) but adoption still tells us some interesting things, or at least confirms some basic expectations. For instance, if the biological child of tall parents were adopted into a family of short people, do you suppose the child's growth would be affected? What about the biological child of a Spanish-speaking family adopted at birth into an English-speaking family? What language would you expect the child to speak? And what might these outcomes tell you about the difference between height and language in terms of nature-nurture?

Another option for observing nature-nurture in humans involves **twin studies**. There are two types of twins: monozygotic (MZ) and dizygotic (DZ). Monozygotic twins, also called "identical" twins, result from a single zygote (fertilized egg) and have the same DNA. They are essentially clones. Dizygotic twins, also known as "fraternal" twins, develop from two zygotes and share 50% of their DNA. Fraternal twins are ordinary siblings who happen to have been born at the same time. To analyze nature–nurture using twins, we compare the similarity of MZ and DZ pairs. Sticking with the features of height and spoken language, let's take a look at how nature and nurture apply: Identical twins, unsurprisingly, are almost perfectly similar for height. The heights of fraternal twins, however, are like any other sibling pairs: more similar to each other than to people from other families, but hardly identical. This contrast between twin types gives us a clue about the role genetics plays in determining height. Now consider spoken language. If one identical twin speaks Spanish at home, the co-twin with whom she is raised almost certainly does too. But the same would be true for a pair of fraternal twins raised together. In terms of spoken language, fraternal twins are just as similar as identical twins, so it appears that the genetic match of identical twins doesn't make much difference.

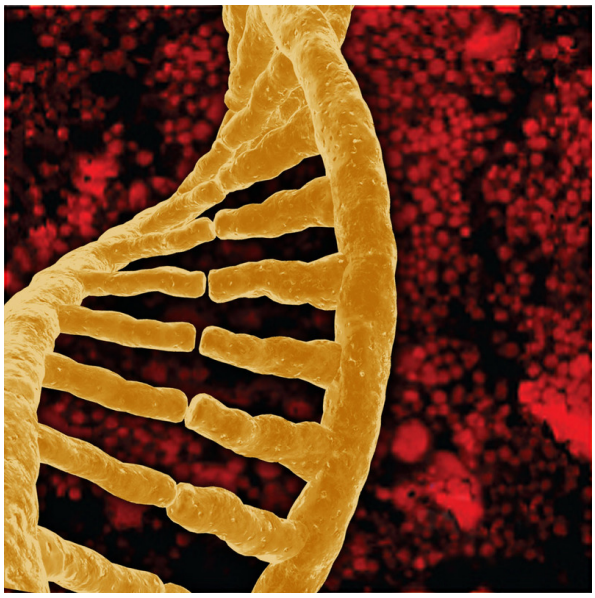
Studies focused on twins have led to important insights about the biological origins of many personality characteristics.

Twin and adoption studies are two instances of a much broader class of methods for observing nature-nurture called **quantitative genetics**, the scientific discipline in which similarities among individuals are analyzed based on how biologically related they are. We can do these studies with siblings and half-siblings, cousins, twins who have been separated at birth and

raised separately (Bouchard, Lykken, McGue, & Segal, 1990; such twins are very rare and play a smaller role than is commonly believed in the science of nature–nurture), or with entire extended families (see Plomin, DeFries, Knopik, & Neiderhiser, 2012, for a complete introduction to research methods relevant to nature–nurture).

For better or for worse, contentions about nature–nurture have intensified because quantitative genetics produces a number called a **heritability coefficient**, varying from 0 to 1, that is meant to provide a single measure of genetics' influence of a trait. In a general way, a heritability coefficient measures how strongly differences among individuals are related to differences among their genes. But beware: Heritability coefficients, although simple to compute, are deceptively difficult to interpret. Nevertheless, numbers that provide simple answers to complicated questions tend to have a strong influence on the human imagination, and a great deal of time has been spent discussing whether the heritability of intelligence or personality or depression is equal to one number or another.

One reason nature–nurture continues to fascinate us so much is that we live in an era of great scientific discovery in genetics, comparable to the times of Copernicus, Galileo, and Newton, with regard to astronomy and physics. Every day, it seems, new discoveries are made, new possibilities proposed. When Francis Galton first started thinking about nature–nurture in the late-19th century he was very influenced by his cousin, Charles Darwin, but genetics *per se* was unknown. Mendel's famous work with peas, conducted at about the same time, went undiscovered for 20 years; quantitative genetics was developed in the 1920s; DNA was discovered by Watson and Crick in the 1950s; the human genome was completely sequenced at the turn of the 21st century; and we are now on the verge of being able to obtain the specific DNA sequence of anyone at a relatively low cost. No one knows what this new genetic knowledge will mean for the study of nature–nurture, but as we will see in the next section, answers to nature–nurture questions have turned out to be far more difficult and mysterious than anyone imagined.



Quantitative genetics uses statistical methods to study the effects that both heredity and environment have on test subjects. These methods have provided us with the heritability coefficient which measures how strongly differences among individuals for a trait are related to differences among their genes. [Image: EMSL, https://goo.gl/IRfn9g, CC BY-NC-SA 2.0, https://goo.gl/fbv27n]

What Have We Learned About Nature–Nurture?

It would be satisfying to be able to say that nature–nurture studies have given us conclusive and complete evidence about where traits come from, with some traits clearly resulting from genetics and others almost entirely from environmental factors, such as childrearing practices and personal will; but that is not the case. Instead, *everything* has turned out to have some footing in genetics. The more genetically-related people are, the more similar they are—for *everything*: height, weight, intelligence, personality, mental illness, etc. Sure, it seems like common sense that some traits have a genetic bias. For example, adopted children resemble their biological parents even if they have never met them, and identical twins are more similar to each other than are fraternal twins. And while certain psychological traits, such as personality or mental illness (e.g., schizophrenia), seem reasonably influenced by genetics, it turns out that the same is true for political attitudes, how much television people watch (Plomin, Corley, DeFries, & Fulker, 1990), and whether or not they get divorced (McGue & Lykken, 1992).

Research over the last half century has revealed how central genetics are to behavior. The more genetically related people are the more similar they are not just physically but also in terms of personality and behavior. [Image: Paul Altobelli, https://goo.gl/SWLwm2, CC BY 2.0, https://goo.gl/9uSnqN]

It may seem surprising, but genetic influence on behavior is a relatively recent discovery. In the middle of the 20th century, psychology was dominated by the doctrine of behaviorism, which held that behavior could only be explained in terms of environmental factors. Psychiatry concentrated on psychoanalysis, which probed for roots of behavior in individuals' early life-histories. The truth is, neither behaviorism nor psychoanalysis is incompatible with genetic influences on behavior, and neither Freud nor Skinner was naive about the importance of organic processes in behavior. Nevertheless, in their day it was widely thought that children's personalities were shaped entirely by imitating their parents' behavior, and that schizophrenia was caused by certain kinds of "pathological mothering." Whatever the outcome of our broader discussion of nature–nurture, the basic

fact that the best predictors of an adopted child's personality or mental health are found in the biological parents he or she has never met, rather than in the adoptive parents who raised him or her, presents a significant challenge to purely environmental explanations of personality or psychopathology. The message is clear: You can't leave genes out of the equation. But keep in mind, no behavioral traits are completely inherited, so you can't leave the environment out altogether, either.

Trying to untangle the various ways nature-nurture influences human behavior can be messy, and often common-sense notions can get in the way of good science. One very significant contribution of behavioral genetics that has changed psychology for good can be very helpful to keep in mind: When your subjects are biologically-related, no matter how clearly a situation may seem to point to environmental influence, it is never safe to interpret a behavior as wholly the result of nurture without further evidence. For example, when presented with data showing that children whose mothers read to them often are likely to have better reading scores in third grade, it is tempting to conclude that reading to your kids out loud is important to success in school; this may well be true, but the study as described is inconclusive, because there are genetic *as well as* environmental pathways between the parenting practices of mothers and the abilities of their children. This is a case where "correlation does not imply causation," as they say. To establish that reading aloud causes success, a scientist can either study the problem in adoptive families (in which the genetic pathway is absent) or by finding a way to randomly assign children to oral reading conditions.

The outcomes of nature–nurture studies have fallen short of our expectations (of establishing clear-cut bases for traits) in many ways. The most disappointing outcome has been the inability to organize traits from *more-* to *less*-genetic. As noted earlier, everything has turned out to be at least *somewhat* heritable (passed down), yet nothing has turned out to be *absolutely* heritable, and there hasn't been much consistency as to which traits are *more* heritable and which are *less* heritable once other considerations (such as how accurately the trait can be measured) are taken into account (Turkheimer, 2000). The problem is conceptual: The heritability coefficient, and, in fact, the whole quantitative structure that underlies it, does not match up with our nature–nurture intuitions. We want to know how "important" the roles of genes and environment are to the development of a trait, but in focusing on "important" maybe we're emphasizing the wrong thing. First of all, genes and environment are both crucial to *every* trait; without genes the environment would have nothing to work on, and too, genes cannot develop in a vacuum. Even more important, because nature–nurture questions look at the differences among people, the cause of a given trait depends not only on the trait itself, but also on the differences in that trait between members of the group being studied.

The classic example of the heritability coefficient defying intuition is the trait of having two

arms. No one would argue against the development of arms being a biological, genetic process. But fraternal twins are just as similar for "two-armedness" as identical twins, resulting in a heritability coefficient of zero for the trait of having two arms. Normally, according to the heritability model, this result (coefficient of zero) would suggest all nurture, no nature, but we know that's not the case. The reason this result is not a tip-off that arm development is less genetic than we imagine is because people *do not vary* in the genes related to arm development —which essentially upends the heritability formula. In fact, in this instance, the opposite is likely true: the extent that people differ in arm number is likely the result of accidents and, therefore, environmental. For reasons like these, we always have to be very careful when asking nature–nurture questions, especially when we try to express the answer in terms of a single number. The heritability of a trait is not simply a property of that trait, but a property of the trait in a particular context of relevant genes and environmental factors.

Another issue with the heritability coefficient is that it divides traits' determinants into two portions—genes and environment—which are then calculated together for the total variability. This is a little like asking how much of the experience of a symphony comes from the horns and how much from the strings; the ways instruments or genes integrate is more complex than that. It turns out to be the case that, for many traits, genetic differences affect behavior under some environmental circumstances but not others—a phenomenon called gene-environment interaction, or G x E. In one well-known example, Caspi et al. (2002) showed that among maltreated children, those who carried a particular allele of the MAOA gene showed a predisposition to violence and antisocial behavior, while those with other alleles did not. Whereas, in children who had not been maltreated, the gene had no effect. Making matters even more complicated are very recent studies of what is known as epigenetics (see module, "Epigenetics" http://noba.to/37p5cb8v), a process in which the DNA itself is modified by environmental events, and those genetic changes transmitted to children.

The answer to the nature –nurture question has not turned out to be as straightforward as we would like. The many questions we can ask about the relationships among genes, environments, and human traits may have many different answers, and the answer to one tells us little about the answers to the others. [Image: Sundaram Ramaswamy, https://goo.gl/Bv8lp6, CC BY 2.0, https://goo.gl/9uSnqN]

Some common questions about nature–nurture are, how susceptible is a trait to

change, how malleable is it, and do we "have a choice" about it? These questions are much more complex than they may seem at first glance. For example, phenylketonuria is an inborn error of metabolism caused by a single gene; it prevents the body from metabolizing phenylalanine. Untreated, it causes intellectual disability and death. But it can be treated effectively by a straightforward environmental intervention: avoiding foods containing phenylalanine. Height seems like a trait firmly rooted in our nature and unchangeable, but the average height of many populations in Asia and Europe has increased significantly in the past 100 years, due to changes in diet and the alleviation of poverty. Even the most modern genetics has not provided definitive answers to nature–nurture questions. When it was first becoming possible to measure the DNA sequences of individual people, it was widely thought that we would quickly progress to finding the specific genes that account for behavioral characteristics, but that hasn't happened. There are a few rare genes that have been found to have significant (almost always negative) effects, such as the single gene that causes Huntington's disease, or the Apolipoprotein gene that causes early onset dementia in a small percentage of Alzheimer's cases. Aside from these rare genes of great effect, however, the genetic impact on behavior is broken up over many genes, each with very small effects. For most behavioral traits, the effects are so small and distributed across so many genes that we have not been able to catalog them in a meaningful way. In fact, the same is true of environmental effects. We know that extreme environmental hardship causes catastrophic effects for many behavioral outcomes, but fortunately extreme environmental hardship is very rare. Within the normal range of environmental events, those responsible for differences (e.g., why some children in a suburban third-grade classroom perform better than others) are much more difficult to grasp.

The difficulties with finding clear-cut solutions to nature–nurture problems bring us back to the other great questions about our relationship with the natural world: the mind-body problem and free will. Investigations into what we mean when we say we are aware of something reveal that consciousness is not simply the product of a particular area of the brain, nor does choice turn out to be an orderly activity that we can apply to some behaviors but not others. So it is with nature and nurture: What at first may seem to be a straightforward matter, able to be indexed with a single number, becomes more and more complicated the closer we look. The many questions we can ask about the intersection among genes, environments, and human traits—how sensitive are traits to environmental change, and how common are those influential environments; are parents or culture more relevant; how sensitive are traits to differences in genes, and how much do the relevant genes vary in a particular population; does the trait involve a single gene or a great many genes; is the trait more easily described in genetic or more-complex behavioral terms?—may have different answers, and the answer to one tells us little about the answers to the others.

It is tempting to predict that the more we understand the wide-ranging effects of genetic differences on all human characteristics—especially behavioral ones—our cultural, ethical, legal, and personal ways of thinking about ourselves will have to undergo profound changes in response. Perhaps criminal proceedings will consider genetic background. Parents, presented with the genetic sequence of their children, will be faced with difficult decisions about reproduction. These hopes or fears are often exaggerated. In some ways, our thinking may need to change—for example, when we consider the meaning behind the fundamental American principle that all men are created equal. Human beings differ, and like all evolved organisms they differ genetically. The Declaration of Independence predates Darwin and Mendel, but it is hard to imagine that Jefferson—whose genius encompassed botany as well as moral philosophy—would have been alarmed to learn about the genetic diversity of organisms. One of the most important things modern genetics has taught us is that almost all human behavior is too complex to be nailed down, even from the most complete genetic information, unless we're looking at identical twins. The science of nature and nurture has demonstrated that genetic differences among people are vital to human moral equality, freedom, and self-determination, not opposed to them. As Mordecai Kaplan said about the role of the past in Jewish theology, genetics gets a vote, not a veto, in the determination of human behavior. We should indulge our fascination with nature–nurture while resisting the temptation to oversimplify it.

Outside Resources

Web: Institute for Behavioral Genetics
http://www.colorado.edu/ibg/

Discussion Questions

1. Is your personality more like one of your parents than the other? If you have a sibling, is his or her personality like yours? In your family, how did these similarities and differences develop? What do you think caused them?
2. Can you think of a human characteristic for which genetic differences would play almost no role? Defend your choice.
3. Do you think the time will come when we will be able to predict almost everything about someone by examining their DNA on the day they are born?
4. Identical twins are more similar than fraternal twins for the trait of aggressiveness, as well as for criminal behavior. Do these facts have implications for the courtroom? If it can be shown that a violent criminal had violent parents, should it make a difference in culpability or sentencing?

Vocabulary

Adoption study
A behavior genetic research method that involves comparison of adopted children to their adoptive and biological parents.

Behavioral genetics
The empirical science of how genes and environments combine to generate behavior.

Heritability coefficient
An easily misinterpreted statistical construct that purports to measure the role of genetics in the explanation of differences among individuals.

Quantitative genetics
Scientific and mathematical methods for inferring genetic and environmental processes based on the degree of genetic and environmental similarity among organisms.

Twin studies
A behavior genetic research method that involves comparison of the similarity of identical (monozygotic; MZ) and fraternal (dizygotic; DZ) twins.

References

Bouchard, T. J., Lykken, D. T., McGue, M., & Segal, N. L. (1990). Sources of human psychological differences: The Minnesota study of twins reared apart. Science, 250(4978), 223–228.

Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., Taylor, A. & Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. Science, 297(5582), 851–854.

McGue, M., & Lykken, D. T. (1992). Genetic influence on risk of divorce. Psychological Science, 3(6), 368–373.

Plomin, R., Corley, R., DeFries, J. C., & Fulker, D. W. (1990). Individual differences in television viewing in early childhood: Nature as well as nurture. Psychological Science, 1(6), 371–377.

Plomin, R., DeFries, J. C., Knopik, V. S., & Neiderhiser, J. M. (2012). Behavioral genetics. New York, NY: Worth Publishers.

Scott, J. P., & Fuller, J. L. (1998). Genetics and the social behavior of the dog. Chicago, IL: University of Chicago Press.

Turkheimer, E. (2000). Three laws of behavior genetics and what they mean. Current Directions in Psychological Science, 9(5), 160–164.

Sensation and Perception

9

Failures of Awareness: The Case of Inattentional Blindness

Daniel Simons

We think important objects and events in our world will automatically grab our attention, but they often don't, particularly when our attention is focused on something else. The failure to notice unexpected objects or events when attention is focused elsewhere is now known as inattentional blindness. The study of such failures of awareness has a long history, but their practical importance has received increasing attention over the past decade. This module describes the history and status of research on inattentional blindness, discusses the reasons why we find these results to be counterintuitive, and the implications of failures of awareness for how we see and act in our world.

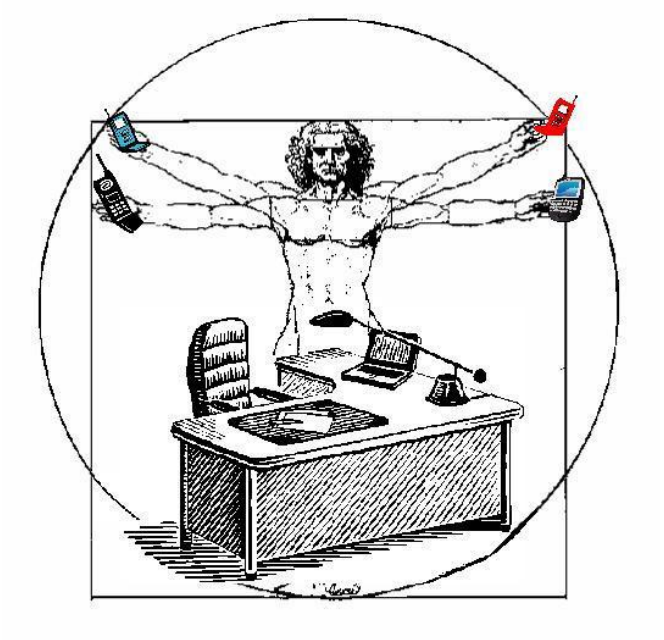
Learning Objectives

- Learn about inattentional blindness and why it occurs.
- Identify ways in which failures of awareness are counterintuitive.
- Better understand the link between focused attention and failures of awareness.

Do you regularly spot editing errors in movies? Can you multitask effectively, texting while talking with your friends or watching television? Are you fully aware of your surroundings? If you answered yes to any of those questions, you're not alone. And, you're most likely wrong.

More than 50 years ago, experimental psychologists began documenting the many ways that our perception of the world is limited, not by our eyes and ears, but by our minds. We appear

able to process only one stream of information at a time, effectively filtering other information from awareness. To a large extent, we perceive only that which receives the focus of our cognitive efforts: our attention.



Some researchers contend that there really is no such thing as multi-tasking. Instead, people are just rapidly switching their attention between tasks, rather than holding those tasks in their attention at the same time. [Image: Mike Licht, https://goo.gl/z7rkve, CC BY 2.0, https://goo.gl/v4Y0Zv]

Imagine the following task, known as **dichotic listening** (e.g., Cherry, 1953; Moray, 1959; Treisman, 1960): You put on a set of headphones that play two completely different speech streams, one to your left ear and one to your right ear. Your task is to repeat each syllable spoken into your left ear as quickly and accurately as possible, mimicking each sound as you hear it. When performing this attention-demanding task, you won't notice if the speaker in your right ear switches to a different language or is replaced by a different speaker with a similar voice. You won't notice if the content of their speech becomes nonsensical. In effect, you are deaf to the substance of the ignored speech. But, that is not because of the limits of your auditory senses. It is a form of cognitive deafness, due to the nature of focused, selective attention. Even if the speaker on your right headphone says your name, you will notice it only about one-third of the time (Conway, Cowan, & Bunting, 2001). And, at least by some accounts, you only notice it that often because you still devote some of your limited attention to the ignored speech stream (Holendar, 1986). In this task, you will tend to notice only large physical changes (e.g., a switch from a male to a female speaker), but not substantive ones, except in rare cases.

This **selective listening** task highlights the power of attention to filter extraneous information from awareness while letting in only those elements of our world that we want to hear. Focused attention is crucial to our powers of observation, making it possible for us to zero in on what we want to see or hear while filtering out irrelevant distractions. But, it has consequences as well: We can miss what would otherwise be obvious and important signals.

The same pattern holds for vision. In a groundbreaking series of studies in the 1970s and

early 1980s, Neisser and his colleagues devised a visual analogue of the dichotic listening task (Neisser & Becklen, 1975). Their subjects viewed a video of two distinct, but partially transparent and overlapping, events. For example, one event might involve two people playing a hand-clapping game and the other might show people passing a ball. Because the two events were partially transparent and overlapping, both produced sensory signals on the retina regardless of which event received the participant's attention. When participants were asked to monitor one of the events by counting the number of times the actors performed an action (e.g., hand clapping or completed passes), they often failed to notice unexpected events in the ignored video stream (e.g., the hand-clapping players stopping their game and shaking hands). As for dichotic listening, the participants were unaware of events happening outside the focus of their attention, even when looking right at them. They could tell that other "stuff" was happening on the screen, but many were unaware of the meaning or substance of that stuff.

To test the power of selective attention to induce failures of awareness, Neisser and colleagues (Neisser, 1979) designed a variant of this task in which participants watched a video of two teams of players, one wearing white shirts and one wearing black shirts. Subjects were asked to press a key whenever the players in white successfully passed a ball, but to ignore the players in black. As for the other videos, the teams were filmed separately and then superimposed so that they literally occupied the same space (they were partially transparent). Partway through the video, a person wearing a raincoat and carrying an umbrella strolled through the scene. People were so intently focused on spotting passes that they often missed the "umbrella woman." (Pro tip: If you look closely at the video, you'll see that Ulric Neisser plays on both the black and white teams.)

Have you ever been paying attention to something so closely you missed another event in the background? Or have you ever been so used to seeing something a certain way that when it changed, you didn't even notice it had? [Image: Tilde Ann Thurium, https://goo.gl/pb8I6Q, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

These surprising findings were well known in the field, but for decades, researchers dismissed their implications because the displays had such an odd, ghostly appearance. Of course, we

would notice if the displays were fully opaque and vivid rather than partly transparent and grainy. Surprisingly, no studies were built on Neisser's method for nearly 20 years. Inspired by these counterintuitive findings and after discussing them with Neisser himself, Christopher Chabris and I revisited them in the late 1990s (Simons & Chabris, 1999). We replicated Neisser's work, again finding that many people missed the umbrella woman when all of the actors in the video were partially transparent and occupying the same space. But, we added another wrinkle: a version of the video in which all of the actions of both teams of players were choreographed and filmed with a single camera. The players moved in and around each other and were fully visible. In the most dramatic version, we had a woman in a gorilla suit walk into the scene, stop to face the camera, thump her chest, and then walk off the other side after nine seconds on screen. Fully half the observers missed the gorilla when counting passes by the team in white.

This phenomenon is now known as **inattentional blindness**, the surprising failure to notice an unexpected object or event when attention is focused on something else (Mack & Rock, 1998). The past 15 years has seen a surge of interest in such failures of awareness, and we now have a better handle on the factors that cause people to miss unexpected events as well as the range of situations in which inattentional blindness occurs. People are much more likely to notice unexpected objects that share features with the attended items in a display (Most et al., 2001). For example, if you count passes by the players wearing black, you are more likely to notice the gorilla than if you count passes by the players wearing white because the color of the gorilla more closely matches that of the black-shirted players (Simons & Chabris, 1999). However, even unique items can go unnoticed. In one task, people monitored black shapes and ignored white shapes that moved around a computer window (Most et al., 2001). Approximately 30 percent of them failed to detect the bright red cross traversing the display, even though it was the only colored item and was visible for five seconds.

The more effort a cognitive task requires the more likely it becomes that you'll miss noticing something significant. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Another crucial influence on noticing is the effort you put into the attention-demanding task. If you have to keep separate counts of bounce passes and aerial passes, you are less likely to notice the gorilla (Simons & Chabris, 1999), and if

you are tracking faster moving objects, you are less likely to notice (Simons & Jensen, 2009). You can even miss unexpected visual objects when you devote your limited cognitive resources to a memory task (Fougnie & Marois, 2007), so the limits are not purely visual. Instead, they appear to reflect limits on the capacity of attention. Without attention to the unexpected event, you are unlikely to become aware of it (Mack & Rock, 1998; Most, Scholl, Clifford, & Simons, 2005).

Inattentional blindness is not just a laboratory curiosity—it also occurs in the real world and under more natural conditions. In a recent study (Chabris, Weinberger, Fontaine, & Simons, 2011), Chabris and colleagues simulated a famous police misconduct case in which a Boston police officer was convicted of lying because he claimed not to have seen a brutal beating (Lehr, 2009). At the time, he had been chasing a murder suspect and ran right past the scene of a brutal assault. In Chabris' simulation, subjects jogged behind an experimenter who ran right past a simulated fight scene. At night, 65 percent missed the fight scene. Even during broad daylight, 44 percent of observers jogged right passed it without noticing, lending some plausibility to the Boston cop's story that he was telling the truth and never saw the beating.

Perhaps more importantly, auditory distractions can induce real-world failures to see. Although people believe they can multitask, few can. And, talking on a phone while driving or walking decreases situation awareness and increases the chances that people will miss something important (Strayer & Johnston, 2001). In a dramatic illustration of cell phone–induced inattentional blindness, Ira Hyman observed that people talking on a cell phone as they walked across a college campus were less likely than other pedestrians to notice a unicycling clown who rode across their path (Hyman, Boss, Wise, McKenzie, & Caggiano, 2010).

Recently, the study of this sort of awareness failure has returned to its roots in studies of listening, with studies documenting **inattentional deafness**: When listening to a set of spatially localized conversations over headphones, people often fail to notice the voice of a person walking through the scene repeatedly stating "I am a gorilla" (Dalton & Fraenkel, 2012). Under conditions of focused attention, we see and hear far less of the unattended information than we might expect (Macdonald & Lavie, 2011; Wayand, Levin, & Varakin, 2005).

We now have a good understanding of the ways in which focused attention affects the detection of unexpected objects falling outside that focus. The greater the demands on attention, the less likely people are to notice objects falling outside their attention (Macdonald & Lavie, 2011; Simons & Chabris, 1999; Simons & Jensen, 2009). The more like the ignored elements of a scene, the less likely people are to notice. And, the more distracted we are, the less likely we are to be aware of our surroundings. Under conditions of distraction, we effectively develop tunnel vision.

Now you see me, now you don't! Although the research on attention has only developed over the last few decades, magicians have been taking advantages of our susceptibility to misguided focus for centuries. [Image: ShahanB, https://goo.gl/p5DYXH, CC BY-SA 3.0, https://goo.gl/eLCn2O]

Despite this growing understanding of the limits of attention and the factors that lead to more or less noticing, we have relatively less understanding of individual differences in noticing (Simons & Jensen, 2009). Do some people consistently notice the unexpected while others are obliviously unaware of their surroundings? Or, are we all subject to inattentional blindness due to structural limits on the nature of attention? The question remains controversial. A few studies suggest that those people who have a greater working memory capacity are more likely to notice unexpected objects (Hannon & Richards, 2010; Richards, Hannon, & Derakshan, 2010). In effect, those who have more resources available when focusing attention are more likely to spot other aspects of their world. However, other studies find no such relationship: Those with greater working memory capacity are not any more likely to spot an unexpected object or event (Seegmiller, Watson, & Strayer, 2011; Bredemeier & Simons, 2012). There are theoretical reasons to predict each pattern. With more resources available, people should be more likely to notice (see Macdonald & Lavie, 2011). However, people with greater working memory capacity also tend to be better able to maintain their focus on their prescribed task, meaning that they should be less likely to notice. At least one study suggests that the ability to perform a task does not predict the likelihood of noticing (Simons & Jensen, 2009; for a replication, see Bredemeier & Simons, 2012). In a study I conducted with Melinda Jensen, we measured how well people could track moving objects around a display, gradually increasing the speed until people reached a level of 75% accuracy. Tracking ability varied greatly: Some people could track objects at more than twice the speed others could. Yet, the ability to track objects more easily was unrelated to the odds of noticing an unexpected event. Apparently, as long as people try to perform the tracking task, they are relatively unlikely to notice unexpected events.

What makes these findings interesting and important is that they run counter to our intuitions. Most people are confident they would notice the chest-thumping gorilla. In fact, nearly 90% believe they would spot the gorilla (Levin & Angelone, 2008), and in a national survey, 78% agreed with the statement, "People generally notice when something unexpected enters their field of view, even when they're paying attention to something else" (Simons & Chabris, 2010). Similarly, people are convinced that they would spot errors in movies or changes to a

conversation partner (Levin & Angelone, 2008). We think we see and remember far more of our surroundings than we actually do. But why do we have such mistaken intuitions?

One explanation for this mistaken intuition is that our experiences themselves mislead us (Simons & Chabris, 2010). We rarely experience a study situation such as the gorilla experiment in which we are forced to confront something obvious that we just missed. That partly explains why demonstrations such as that one are so powerful: We expect that we would notice the gorilla, and we cannot readily explain away our failure to notice it. Most of the time, we are happily unaware of what we have missed, but we are fully aware of those elements of a scene that we have noticed. Consequently, if we assume our experiences are representative of the state of the world, we will conclude that we notice unexpected events. We don't easily think about what we're missing.

Given the limits on attention coupled with our mistaken impression that important events will capture our attention, how has our species survived? Why weren't our ancestors eaten by unexpected predators? One reason is that our ability to focus attention intently might have been more evolutionarily useful than the ability to notice unexpected events. After all, for an event to be unexpected, it must occur relatively infrequently. Moreover, most events don't require our immediate attention, so if inattentional blindness delays our ability to notice the events, the consequences could well be minimal. In a social context, others might notice that event and call attention to it. Although inattentional blindness might have had minimal consequences over the course of our evolutionary history, it does have consequences now.

At pedestrian speeds and with minimal distraction, inattentional blindness might not matter for survival. But in modern society, we face greater distractions and move at greater speeds, and even a minor delay in noticing something unexpected can mean the difference between a fender-bender and a lethal collision. If talking on a phone increases your odds of missing a unicycling clown, it likely also increases your odds of missing the child who runs into the street or the car that runs a red light. Why, then, do people continue to talk on the phone when driving? The reason might well be the same mistaken intuition that makes inattentional blindness surprising: Drivers simply do not notice how distracted they are when they are talking on a phone, so they believe they can drive just as well when talking on a phone even though they can't (Strayer & Johnston, 2001).

So, what can you do about inattentional blindness? The short answer appears to be, "not much." There is no magical elixir that will overcome the limits on attention, allowing you to notice everything (and that would not be a good outcome anyway). But, there is something you can do to mitigate the consequences of such limits. Now that you know about inattentional blindness, you can take steps to limit its impact by recognizing how your intuitions will lead

you astray.

Even though you may think you can drive, text, listen to music, and drink a smoothie at the same time, really, your focus should be only on the road. Everything else is a potential distraction from what's most important: driving safely! [Image: FMHS The Buzz TV, https://goo.gl/TSk2RP, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

First, maximize the attention you do have available by avoiding distractions, especially under conditions for which an unexpected event might be catastrophic. The ring of a new call or the ding of a new text are hard to resist, so make it impossible to succumb to the temptation by turning your phone off or putting it somewhere out of reach when you are driving. If you know that you will be tempted and you know that using your phone will increase inattentional blindness, you must be proactive. Second, pay attention to what others might not notice. If you are a bicyclist, don't assume that the driver sees you, even if they appear to make eye contact. Looking is not the same as seeing. Only by understanding the limits of attention and by recognizing our mistaken beliefs about what we "know" to be true can we avoid the modern-day consequences of those limits.

Outside Resources

Article: Scholarpedia article on inattentional blindness
http://www.scholarpedia.org/article/Inattentional_blindness

Video: The original gorilla video
http://www.youtube.com/watch?v=vJG698U2Mvo

Video: The sequel to the gorilla video
http://www.youtube.com/watch?v=IGQmdoK_ZfY

Web: Website for Chabris & Simons book, The Invisible Gorilla. Includes links to videos and descriptions of the research on inattentional blindness
http://www.theinvisiblegorilla.com

Discussion Questions

1. Many people, upon learning about inattentional blindness, try to think of ways to eliminate it, allowing themselves complete situation awareness. Why might we be far worse off if we were not subject to inattentional blindness?
2. If inattentional blindness cannot be eliminated, what steps might you take to avoid its consequences?
3. Can you think of situations in which inattentional blindness is highly likely to be a problem? Can you think of cases in which inattentional blindness would not have much of an impact?

Vocabulary

Dichotic listening
A task in which different audio streams are presented to each ear. Typically, people are asked to monitor one stream while ignoring the other.

Inattentional blindness
The failure to notice a fully visible, but unexpected, object or event when attention is devoted to something else.

Inattentional deafness
The auditory analog of inattentional blindness. People fail to notice an unexpected sound or voice when attention is devoted to other aspects of a scene.

Selective listening
A method for studying selective attention in which people focus attention on one auditory stream of information while deliberately ignoring other auditory information.

References

Bredemeier, K., & Simons, D. J. (2012). Working memory and inattentional blindness. Psychonomic Bulletin & Review, 19, 239–244.

Chabris, C. F., Weinberger, A., Fontaine, M., & Simons, D. J. (2011). You do not talk about fight club if you do not notice fight club: Inattentional blindness for a simulated real-world assault. i-Perception, 2, 150–153.

Cherry, E. C. (1953). Experiments on the recognition of speech with one and two ears. Journal of the Acoustical Society of America, 25, 975–979.

Conway, A. R. A., Cowan, N., & Bunting, M. F. (2001). The cocktail party phenomenon revisited: The importance of working memory capacity. Psychonomic Bulletin & Review, 8, 331–335.

Dalton, P., & Fraenkel, N. (2012). Gorillas we have missed: Sustained inattentional deafness for dynamic events. Cognition, 124, 367–372.

Hyman Jr, I. E., Boss, S. M., Wise, B. M., McKenzie, K. E., & Caggiano, J. M. (2010). Did you see the unicycling clown? Inattentional blindness while walking and talking on a cell phone. *Applied Cognitive Psychology, 24*(5), 597-607.

Levin, D. T., & Angelone, B. L. (2008). The visual metacognition questionnaire: A measure of intuitions about vision. The American Journal of Psychology, 121, 451–472.

Macdonald, J. S. P., & Lavie, N. (2011). Visual perceptual load induces inattentional deafness. Attention, Perception, & Psychophysics, 73, 1780–1789.

Mack A., & Rock I. (1998). Inattentional blindness. Cambridge, MA: MIT Press.

Moray, N. (1959). Attention in dichotic listening: Affective cues and the influence of instructions. Quarterly Journal of Experimental Psychology, 11, 56–60.

Most, S. B., Scholl, B. J., Clifford, E. R., & Simons, D. J. (2005). What you see is what you set: Sustained inattentional blindness and the capture of awareness. Psychological Review, 112, 217–242.

Most, S. B., Simons, D. J., Scholl, B. J., Jimenez, R., Clifford, E., & Chabris, C. F. (2001). How not to be seen: The contribution of similarity and selective ignoring to sustained inattentional blindness. Psychological Science, 12, 9–17.

Neisser U., & Becklen R., (1975). Selective looking: Attending to visually specified events. Cognitive Psychology, 7, 480–494.

Neisser, U. (1979). The control of information pickup in selective looking. In A. D. Pick (Ed.), Perception and its development: A tribute to Eleanor J. Gibson (pp. 201–219). Hillsdale, NJ: Lawrence Erlbaum Associates.

Richards, A., Hannon, E., & Derakshan, N. (2010). Predicting and manipulating the incidence of inattentional blindness. Psychological Research, 74, 513–523.

Seegmiller, J. K., Watson, J. M., & Strayer, D. L. (2011). Individual differences in susceptibility to inattentional blindness. Journal of Experimental Psychology: Learning, Memory, and Cognition, 37, 785–791.

Simons, D. J., & Chabris, C. F. (2010). The invisible gorilla, and other ways our intuitions deceive us. New York, NY: Crown.

Simons, D. J., & Chabris, C. F. (1999). Gorillas in our midst: Sustained inattentional blindness for dynamic events. Perception, 28, 1059–1074.

Simons, D. J., & Jensen, M. S. (2009). The effects of individual differences and task difficulty on inattentional blindness. Psychonomic Bulletin & Review, 16(2), 398–403.

Strayer, D. L., & Johnston, W. A. (2001). Driven to distraction: Dual-task studies of simulated driving and conversing on a cellular telephone. Psychological Science, 12, 462–466.

Treisman, A. (1960). Contextual cues in selective listening. Quarterly Journal of Experimental Psychology, 12, 242–248.

Wayand. J. F., Levin, D. T., & Varakin, D. A. (2005). Inattentional blindness for a noxious multimodal stimulus. The American Journal of Psychology, 118, 339–352.

10
Time and Culture

Robert V. Levine

There are profound cultural differences in how people think about, measure, and use their time. This module describes some major dimensions of time that are most prone to cultural variation.

Learning Objectives

- Understand how cultures differ in the views of time and the importance of these differences for social behavior.
- Explore major components of social time.
- Use these concepts to better understand the hidden dimensions of culture.

Introduction

It is said that "time is money" in industrialized economies. Workers are paid by the hour, lawyers charge by the minute, and advertising is sold by the second (US$3.3 million for a 30-second commercial, or a little over $110,000 per second, for the 2012 Super Bowl). Remarkably, the civilized mind has reduced time—the most obscure and abstract of all intangibles—to the most objective of all quantities: money. With time and things on the same value scale, we can establish how many of our working hours equal the price of a product in a store.

This way of thinking about time is not universal, however. Beliefs about time remain profoundly different from culture to culture. Research shows that cultural differences in time can be as

vast as those between languages. In one particularly telling study of the roots of culture shock, Spradley and Phillips asked a group of returning Peace Corps volunteers to rank 33 items concerning the amount of cultural adjustment each had required of them. The list included a wide range of items familiar to fearful travelers, such as "the type of food eaten," the "personal cleanliness of most people," "the number of people of your own race," and "the general standard of living." But aside from mastering the foreign language, the two greatest difficulties for the Peace Corps volunteers were concerned with social time: "the general pace of life," followed by one of its most significant components, "how punctual most people are" (Spradley & Phillips, 1972).

The idea that "time is money" may be good for business but is it good for society in general? What other ways do people around the world conceptualize and experience time? [Image: CC0 Public Domain, https://goo.gl/m25gce]

Half a century ago anthropologist Edward Hall described cultural rules of **social time** as the "**silent language**" (Hall, 1983). These informal patterns of time "are seldom, if ever, made explicit. They exist in the air around us. They are either familiar and comfortable or unfamiliar and wrong." The world over, children simply pick up their society's conceptions of early and late, of waiting and rushing, of the past, the present, and the future, as they mature. No dictionary clearly defines these rules of time for them or for strangers who stumble over the maddening incongruities between the time sense they bring with them and the one they face in a new land.

Cultures may differ on many aspects of social time—its value, meaning, how it should be divided, allocated, and measured. The following dimensions are particularly prone to different cultural, as well as individual, interpretations:

Work Versus Leisure

There are cultural differences in the value placed on work, on leisure, and upon the balance between the two. Although some balance is universal, the preferred formulas differ both across cultures and between individuals in each culture. The differences are marked even within highly industrialized countries, The United States and Japan are famous for long work

hours, as exemplified by the terms "workaholic" and "*karoshi*" ("death by overwork") (Levine, 1997). European nations tend to also emphasize work, with many differences among countries, but generally put greater emphasis on preserving nonwork time than do people in the United States and Japan (Levine, 2012).

Time spent within the workplace also varies across cultures. People tend to spend more of their work time on-task in some cultures and more of that time socializing—informal chatting, having tea or coffee with others, etc.—in other cultures. Studies have found wide cultural variation in answers to the question: "In the companies for which you have worked, what percent of time do people typically spend on tasks that are part of their job description." For example, people working in companies in large cities in the United States tend to report in the range of "80 percent task time, 20 percent social time." On the other hand, people working in companies in India, Nepal, Indonesia, Malaysia, and some Latin American countries tend to give answers closer to "50 percent task time, 50 percent social time" (Brislin and Kim, 2003).

Sequence

Each culture sets rules concerning the appropriate sequence of tasks and activities. Is it work before play, or vice versa? Do people take all of their sleep at night, or is there a siesta in the midafternoon? Is one expected to have coffee or tea and socialize, and for how long, before getting down to serious business? There are also customs about sequences over the long run. For example, how long is the socially accepted period of childhood, if it exists at all, and when is it time to assume the responsibilities of an adult?

Clock and Event Time

The most fundamental difference in timekeeping throughout history has been between people operating by the clock and those who measure time by social events (Lauer, 1981). This profound difference in thinking about time continues to divide cultures today. Under **clock time**, the hour on the timepiece governs the beginning and ending of activities. Under event time, scheduling is determined by the flow of the activity. Events begin and end when, by mutual consensus, participants "feel" the time is right (Levine, 1997).

In event-time societies, modes of time-reckoning tend to express social experience. Sometimes activities occur in finely coordinated sequences, but without observing the clock. For example, anthropologists have described how participants at an Indian wake move from gathering time to prayer time, singing time, intermission, and mealtime. They move by consensual feeling—when "the time feels right"—but with no apparent concern for the time

on the clock.

Many countries exhort event time as a philosophy of life. In East Africa, there is a popular adage that "Even the time takes its time." In Trinidad, it is commonly said that "Any time is Trinidad time" (Birth, 1999). In the United States and much of Europe, by contrast, the right way to measure time is assumed to be by the clock. This is especially true when it comes to work hours. Time is money, and any time not focused on-task is seen as wasted time.

Even the language of time may be more or less event-oriented. The Kachin people of North Burma, for example, have no single word equivalent of "time." They use the word *ahkying* to refer to the "time" of the clock, *na* to a long "time," *tawng* to a short "time," *ta* to springtime, and *asak* to the "time" of a person's life. Whereas, clock time cultures treat time as an objective entity—it is a noun in English—the Kachin words for time are treated more like adverbs (Levine, 1997).

Cultures differ greatly in their adherence to "clock time". While some cultures pride themselves on managing time down to the second (the trains run on time!), others have a more flexible view of when is the right time for an event to begin or end. [Image: John Tenniel, CC0 Public Domain, https://goo.gl/m25gce]

These different ways of time-keeping can often lead to cultural misunderstandings. Individuals operating on clock time are careful to be punctual and expect the same of others. Those on event time are more spontaneous in beginning and ending events and, as a result, tend to be less punctual and more understanding when others are less punctual.

There are also differences within cultures—on both the individual and situational levels. To take just one example, some workers may prosper under clearly defined schedules while others may prefer to complete their work on their own schedules. Similarly, some jobs (for example, financial traders) demand clock-time precision while others (for example, some creative arts) thrive on the spontaneity of event-time scheduling. Levine (2012) argues for fluency in both approaches and to recognize when either is more beneficial.

Calendars

Many cultures use social activities to define their calendars rather than the other way around. The calendars of the Nuer people from the Upper Nile in the Sudan, for example, are based on the seasonal changes in their environment. They know that the month of *kur* is occurring *because* they are building their fishing dams and cattle camps. When they break camp and return to their villages, they know it must now be the month of *dwat.*

Most societies have some type of week, but it is not always seven days long. The Muysca of Colombia had a three-day week. The Incas of Peru had a 10-day week. Often the length of the week reflects cycles of activities, rather than the other way around. For many, the market is the main activity requiring group coordination. The Khasi people hold their markets every eighth day. Consequently, they have made their week eight days long and named the days of the week after the places where the main markets occur (Levine, 2005).

Polychronic and Monochronic Time

Industrial/organizational psychologists emphasize the significance of monochronic versus polychronic work patterns (Bluedorn, 2002). People and organizations in clock-time cultures are more likely to emphasize **monochronic (M-time)** approaches, meaning they like to focus on one activity at a time. People in event time cultures, on the other hand, tend to emphasize **polychronic (P-time)** approaches, meaning they prefer to do several things at once. These labels were originally developed by Hall (1983). M-time people like to work from start to finish in linear sequence: The first task is begun and completed before turning to another, which is then begun and completed. In polychronic time, however, one project goes on until there is an inclination or inspiration to turn to another, which may lead to an idea for another, then back to first, with intermittent and unpredictable pauses and reassumptions of one task or another. Progress on P-time occurs a little at a time on each task.

What should dictate the conclusion of a good conversation, other time commitments or the flow of the conversation itself? P-time cultures prefer the latter. [Image: mikecogh, https://goo.gl/AjWjkE, CC BY-SA 2.0, https://goo.gl/osSgSv]

P-time cultures are characterized by a strong involvement with people. They emphasize the completion of human transactions rather than keeping to schedules. For example, two P-time

individuals who are deep in conversation will typically choose to arrive late for their next appointment rather than cut into the flow of their discussion. Both would be insulted, in fact, if their partner were to abruptly terminate the conversation before it came to a spontaneous conclusion.

Levine (2012) argues for the value of shifting between each approach depending on the characteristics of the individuals and the situations involved. In a corporation, for example, some positions may require tight scheduling of time (e.g., accountants during tax time). On the other hand, employees in research and development may be most productive when less tightly controlled.

Silence and "Doing Nothing"

In some cultures, notably the United States and Western Europe, silence makes people uncomfortable. It may denote nothing is happening or that something is going wrong. The usual response is to say something, to fill the silence or to keep the meeting or conversation going. People in other cultures, including many Asian and Pacific Island nations, are quite comfortable with silence. It is seen as an opportunity to focus inward and gather one's thoughts before you speak. The Japanese emphasize "**ma**," which roughly translates as the "space" between things, or the "pause." It implies that what happens between things, or what doesn't seem to be happening, is as or more important than what is visibly happening. As an extreme example, consider a question people in Brunei often begin their day by asking: "What isn't going to happen today?"

Brislin (2000) has described how cultural misunderstandings and counterproductive decisions often arise from these differences. For example, "Americans will sometimes misinterpret long periods of silence as a signal that they should make a concession. Their negotiating counterparts in Asia know this and will sometimes prolong their silence in the expectation that a concession will be made."

A related temporal difference concerns what people perceive as "wasted time." People, cultures, and economies that emphasize the rule that "time is money" may see any time not devoted to tangible production as wasted time. People in other cultures, however, believe that overemphasis on this rule is a waste of one's time in a larger sense, that it is a wasteful way to spend one's life. If something more worthy of one's attention—be it social- or work-related—challenges a planned schedule, it is seen as wasteful to not deviate from the planned schedule. In fact, the term "wasted time" may make little sense. A typical comment may be, "There is no such thing as wasted time. If you are not doing one thing, you are doing something

else" (Levine, 1997).

Norms Concerning Waiting

Cultures differ in their norms for waiting, not only how long it is appropriate to keep a person waiting but how the rules change depending on the situation and the people involved. Levine (1997) describes a number of "rules" to waiting and how these rules differ in various cultures. Some useful questions: Are the rules based on the principle that time is money? Who is expected to wait for whom, under what circumstances, and for how long? Are some individuals —by virtue of their status, power, and/or wealth—exempt from waiting? What is the protocol for waiting in line? Is it an orderly procedure, as in the United Kingdom, or do people just nudge their way through the crowd, pushing the people ahead of them, until they somehow make their way to the front, as in India? Is there a procedure for buying oneself a place in front, or off the line completely? What social message is being sent when the accepted rules are broken?

Temporal Orientation

There are individual and cultural differences in people's orientation toward the past, present, and future. Zimbardo and Boyd (2008) have developed a scale that distinguishes between six types of temporal frames:

1. Past negative—a pessimistic, negative, or aversive orientation toward the past.
2. Past positive—a warm, sentimental, nostalgic, and positive construction of the past.
3. Present hedonistic—hedonistic orientation attitude toward time and life.
4. Present fatalistic—a fatalistic, helpless, and hopeless attitude toward the future and life.
5. Future—planning for, and achievement of, future goals, characterizing a general future orientation.
6. Future transcendental—an orientation to the future beyond one's own death.

Zimbardo and Boyd have found large individual and cultural differences on both the individual subscales and the patterns of the subscales taken together. They describe a wide range of consequences of these differences. Time perspective affects political, economic, personal, social, environmental, and other domains of life and society. One of the paradoxes, they report, is that each particular **temporal perspective** is associated with numerous personal and social benefits but that, in excess, they are associated with even greater costs. There are both positive

Reflecting on our own lives, we often shift between various temporal orientations. Consider your usual perspective. Do you find yourself with a particular emphasis on the past, present, or future? [Image: Christian, https://goo.gl/QZzRLB, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

and negative processes associated with each perspective. Individuals who focus on the past, for example, are often described with terms such as happy, grateful, patriotic, high self-esteem, and having strong personal values; on the other hand, past time perspective can be associated with terms such as depressed, guilty, angry and revengeful, and resistant to change. Similarly, a focus on the present may be associated with strong social affiliations, joy, sensuality, sexuality, energy, and improvisation; but it may also be associated with violence, anger, over-fatalism, risk-taking, and addictive behavior. A focus on the future may be associated with achievement, self-efficacy, healthy behaviors, and hope for change; but also with anxiety, social isolation, competitiveness, and unhealthy physical consequences ranging from coronary artery disease to sexual impotence. The authors argue for the importance of a healthy balance in one's temporal orientation.

The Pace of Life

There are profound differences in the **pace of life** on many levels—individual temperament, cultural norms, between places, at different times, during different activities. Levine and Norenzayan (1999) conducted a series of field experiments measuring walking speed, work speed, and concern with clock time in countries around the world. They found that the characteristic pace of life of a place has consequences—both positive and negative—for the physical, social, economic, and psychological well-being of people who live there. The optimal pace, they argue, requires flexibility and sensitivity to matching individual preferences to the requirements of the situation.

Conclusion

Understanding the values and assumptions a culture places on these temporal dimensions is essential to creating policies that enhance the quality of peoples' lives. The historian Lewis Mumford once observed how "each culture believes that every other space and time is an

approximation to or perversion of the real space and time in which it lives." The truth, however, is there is no single correct way to think about time. There are different ways of thinking, each with their pluses and minuses, and all may be of value in given situations.

Outside Resources

Video: Dealing with Time
http://www.youtube.com/watch?v=fSvC3i4Sqp4

Video: RSA Animate—The Secret Powers of Time
www.youtube.com/watch?v=A3oIiH7BLmg&feature=related

Discussion Questions

1. Can you give an example of Edward Hall's notion of time as a "silent language"?
2. Can you give an example of clock time in your own life? Can you give an example of event time?
3. Are there activities where you might benefit from another culture's approach to time rather than your usual approach? Give an example.
4. What do you think are the consequences, both positive and negative, of a faster pace of life?
5. Is it fair to conclude that some cultural time practices are more advanced than others? That some are healthier than others? Explain.

Vocabulary

Clock time
Scheduling activities according to the time on the clock.

Ma
Japanese way of thinking that emphasizes attention to the spaces between things rather than the things themselves.

Monochronic (M-time)
Monochronic thinking focuses on doing one activity, from beginning to completion, at a time.

Pace of life
The frequency of events per unit of time; also referred to as speed or tempo.

Polychronic (P-time)
Polychronic thinking switches back and forth among multiple activities as the situation demands.

Silent language
Cultural norms of time and time use as they pertain to social communication and interaction.

Social time
Scheduling by the flow of the activity. Events begin and end when, by mutual consensus, participants "feel" the time is right.

Temporal perspective
The extent to which we are oriented toward the past, present, and future.

References

Birth, K. (1999). Any time is Trinidad time: Social meanings and temporal consciousness. Gainesville, FL: University Press of Florida.

Bluedorn, A. (2002). The human organization of time: Temporal realities and experience. Palo Alto, CA: Stanford Business Books.

Brislin, R. (2000). Understanding culture's influence on behavior (2nd ed.). Fort Worth, TX: Harcourt.

Brislin, R., & Kim, E. (2003). Cultural diversity in people's understanding and uses of time. Applied Psychology: An International Review, 52(3), 363–382.

Hall, E. T. (1983). The dance of life: The other dimension of time. Garden City: Anchor Press.

Lauer, R. (1981). Temporal man: The meaning and uses of social time. New York, NY: Praeger.

Levine, R. (2012). Time use and happiness: Implications for social policy. Thimpu, Bhutan: Centre for Bhutanese Studies.

Levine, R. (2005). A geography of busyness. Social Research, 72, 355–370.

Levine, R. (1997). A geography of time. New York, NY: Basic Books.

Levine, R., & Norenzayan, A. (1999). The pace of life in 31 countries. Journal of Cross-Cultural Psychology, 30, 178–205.

Spradley, J. P., & Phillips, M. (1972). Culture and stress: A quantitative analysis. American Anthropologist, 74, 518 529.

Zimbardo, P., & Boyd, J. (2008). The time paradox. New York, NY: Simon & Schuster.

11

Eyewitness Testimony and Memory Biases

Cara Laney & Elizabeth F. Loftus

Eyewitnesses can provide very compelling legal testimony, but rather than recording experiences flawlessly, their memories are susceptible to a variety of errors and biases. They (like the rest of us) can make errors in remembering specific details and can even remember whole events that did not actually happen. In this module, we discuss several of the common types of errors, and what they can tell us about human memory and its interactions with the legal system.

Learning Objectives

- Describe the kinds of mistakes that eyewitnesses commonly make and some of the ways that this can impede justice.
- Explain some of the errors that are common in human memory.
- Describe some of the important research that has demonstrated human memory errors and their consequences.

What Is Eyewitness Testimony?

Eyewitness testimony is what happens when a person witnesses a crime (or accident, or other legally important event) and later gets up on the stand and recalls for the court all the details of the witnessed event. It involves a more complicated process than might initially be

presumed. It includes what happens during the actual crime to facilitate or hamper witnessing, as well as everything that happens from the time the event is over to the later courtroom appearance. The eyewitness may be interviewed by the police and numerous lawyers, describe the perpetrator to several different people, and make an identification of the perpetrator, among other things.

What can happen to our memory from the time we witness an event to the retelling of that event later? What can influence how we remember, or misremember, highly significant events like a crime or accident? [Image: Robert Couse-Baker, https://goo.gl/OiPUmz, CC BY 2.0, https://goo.gl/BRvSA7]

Why Is Eyewitness Testimony an Important Area of Psychological Research?

When an eyewitness stands up in front of the court and describes what happened from her own perspective, this testimony can be extremely compelling—it is hard for those hearing this testimony to take it "with a grain of salt," or otherwise adjust its power. But to what extent is this necessary?

There is now a wealth of evidence, from research conducted over several decades, suggesting that eyewitness testimony is probably the most persuasive form of evidence presented in court, but in many cases, its accuracy is dubious. There is also evidence that mistaken eyewitness evidence can lead to wrongful conviction—sending people to prison for years or decades, even to death row, for crimes they did not commit. Faulty eyewitness testimony has been implicated in at least 75% of DNA exoneration cases—more than any other cause (Garrett, 2011). In a particularly famous case, a man named Ronald Cotton was identified by

a rape victim, Jennifer Thompson, as her rapist, and was found guilty and sentenced to life in prison. After more than 10 years, he was exonerated (and the real rapist identified) based on DNA evidence. For details on this case and other (relatively) lucky individuals whose false convictions were subsequently overturned with DNA evidence, see the Innocence Project website (**http://www.innocenceproject.org/**).

There is also hope, though, that many of the errors may be avoidable if proper precautions are taken during the investigative and judicial processes. Psychological science has taught us what some of those precautions might involve, and we discuss some of that science now.

Misinformation

Misinformation can be introduced into the memory of a witness between the time of seeing an event and reporting it later. Something as straightforward as which sort of traffic sign was in place at an intersection can be confused if subjects are exposed to erroneous information after the initial incident.

In an early study of eyewitness memory, undergraduate subjects first watched a slideshow depicting a small red car driving and then hitting a pedestrian (Loftus, Miller, & Burns, 1978). Some subjects were then asked leading questions about what had happened in the slides. For example, subjects were asked, "How fast was the car traveling when it passed the yield sign?" But this question was actually designed to be misleading, because the original slide included a stop sign rather than a yield sign.

Later, subjects were shown pairs of slides. One of the pair was the original slide containing the stop sign; the other was a replacement slide containing a yield sign. Subjects were asked which of the pair they had previously seen. Subjects who had been asked about the yield sign were likely to pick the slide showing the yield sign, even though they had originally seen the slide with the stop sign. In other words, the misinformation in the leading question led to inaccurate memory.

This phenomenon is called the misinformation effect, because the misinformation that subjects were exposed to after the event (here in the form of a misleading question) apparently contaminates subjects' memories of what they witnessed. Hundreds of subsequent studies have demonstrated that memory can be contaminated by erroneous information that people are

exposed to after they witness an event (see Frenda, Nichols, & Loftus, 2011; Loftus, 2005). The misinformation in these studies has led people to incorrectly remember everything from small but crucial details of a perpetrator's appearance to objects as large as a barn that wasn't there at all.

These studies have demonstrated that young adults (the typical research subjects in psychology) are often susceptible to misinformation, but that children and older adults can be even more susceptible (Bartlett & Memon, 2007; Ceci & Bruck, 1995). In addition, misinformation effects can occur easily, and without any intention to deceive (Allan & Gabbert, 2008). Even slight differences in the wording of a question can lead to misinformation effects. Subjects in one study were more likely to say yes when asked "Did you see the broken headlight?" than when asked "Did you see a broken headlight?" (Loftus, 1975).

Other studies have shown that misinformation can corrupt memory even more easily when it is encountered in social situations (Gabbert, Memon, Allan, & Wright, 2004). This is a problem particularly in cases where more than one person witnesses a crime. In these cases, witnesses tend to talk to one another in the immediate aftermath of the crime, including as they wait for police to arrive. But because different witnesses are different people with different perspectives, they are likely to see or notice different things, and thus remember different things, even when they witness the same event. So when they communicate about the crime later, they not only reinforce common memories for the event, they also contaminate each other's memories for the event (Gabbert, Memon, & Allan, 2003; Paterson & Kemp, 2006; Takarangi, Parker, & Garry, 2006).

The misinformation effect has been modeled in the laboratory. Researchers had subjects watch a video in pairs. Both subjects sat in front of the same screen, but because they wore differently polarized glasses, they saw two different versions of a video, projected onto a screen. So, although they were both watching the same screen, and believed (quite reasonably) that they were watching the same video, they were actually watching two different versions of the video (Garry, French, Kinzett, & Mori, 2008).

In the video, Eric the electrician is seen wandering through an unoccupied house and helping himself to the contents thereof. A total of eight details were different between the two videos. After watching the videos, the "co-witnesses" worked together on 12 memory test questions. Four of these questions dealt with details that were different in the two versions of the video, so subjects had the chance to influence one another. Then subjects worked individually on 20 additional memory test questions. Eight of these were for details that were different in the two videos. Subjects' accuracy was highly dependent on whether they had discussed the details previously. Their accuracy for items they had *not* previously discussed with their co-

witness was 79%. But for items that they *had* discussed, their accuracy dropped markedly, to 34%. That is, subjects allowed their co-witnesses to corrupt their memories for what they had seen.

Identifying Perpetrators

In addition to correctly remembering many details of the crimes they witness, eyewitnesses often need to remember the faces and other identifying features of the perpetrators of those crimes. Eyewitnesses are often asked to describe that perpetrator to law enforcement and later to make identifications from books of mug shots or lineups. Here, too, there is a substantial body of research demonstrating that eyewitnesses can make serious, but often understandable and even predictable, errors (Caputo & Dunning, 2007; Cutler & Penrod, 1995).

In most jurisdictions in the United States, lineups are typically conducted with pictures, called **photo spreads**, rather than with actual people standing behind one-way glass (Wells, Memon, & Penrod, 2006). The eyewitness is given a set of small pictures of perhaps six or eight individuals who are dressed similarly and photographed in similar circumstances. One of these individuals is the police suspect, and the remainder are "**foils**" or "fillers" (people known to be innocent of the particular crime under investigation). If the eyewitness identifies the suspect, then the investigation of that suspect is likely to progress. If a witness identifies a foil or no one, then the police may choose to move their investigation in another direction.

Mistakes in identifying perpetrators can be influenced by a number of factors including poor viewing conditions, too little time to view the perpetrator, or too much delay from time of witnessing to identification.

This process is modeled in laboratory studies of eyewitness identifications. In these studies, research subjects witness a mock crime (often as a short video) and then are asked to make an identification from a photo or a live lineup. Sometimes the lineups are target present, meaning that the perpetrator from the mock crime is actually in the lineup, and sometimes they are target absent, meaning that the lineup is made up entirely of foils. The subjects, or **mock witnesses**, are given some instructions and asked to pick the

perpetrator out of the lineup. The particular details of the witnessing experience, the instructions, and the lineup members can all influence the extent to which the mock witness is likely to pick the perpetrator out of the lineup, or indeed to make any selection at all. Mock witnesses (and indeed real witnesses) can make errors in two different ways. They can fail to pick the perpetrator out of a target present lineup (by picking a foil or by neglecting to make a selection), or they can pick a foil in a target absent lineup (wherein the only correct choice is to not make a selection).

Some factors have been shown to make eyewitness identification errors particularly likely. These include poor vision or viewing conditions during the crime, particularly stressful witnessing experiences, too little time to view the perpetrator or perpetrators, too much delay between witnessing and identifying, and being asked to identify a perpetrator from a race other than one's own (Bornstein, Deffenbacher, Penrod, & McGorty, 2012; Brigham, Bennett, Meissner, & Mitchell, 2007; Burton, Wilson, Cowan, & Bruce, 1999; Deffenbacher, Bornstein, Penrod, & McGorty, 2004).

It is hard for the legal system to do much about most of these problems. But there are some things that the justice system can do to help lineup identifications "go right." For example, investigators can put together high-quality, fair lineups. A fair lineup is one in which the suspect and each of the foils is equally likely to be chosen by someone who has read an eyewitness description of the perpetrator but who did not actually witness the crime (Brigham, Ready, & Spier, 1990). This means that no one in the lineup should "stick out," and that everyone should match the description given by the eyewitness. Other important recommendations that have come out of this research include better ways to conduct lineups, "double blind" lineups, unbiased instructions for witnesses, and conducting lineups in a sequential fashion (see Technical Working Group for Eyewitness Evidence, 1999; Wells et al., 1998; Wells & Olson, 2003).

Kinds of Memory Biases

Memory is also susceptible to a wide variety of other biases and errors. People can forget events that happened to them and people they once knew. They can mix up details across time and place. They can even remember whole complex events that never happened at all. Importantly, these errors, once made, can be very hard to unmake. A memory is no less "memorable" just because it is wrong.

Some small memory errors are commonplace, and you have no doubt experienced many of them. You set down your keys without paying attention, and then cannot find them later when

you go to look for them. You try to come up with a person's name but cannot find it, even though you have the sense that it is right at the tip of your tongue (psychologists actually call this the tip-of-the-tongue effect, or TOT) (Brown, 1991).

For most of our experiences schematas are a benefit and help with information overload. However, they may make it difficult or impossible to recall certain details of a situation later. Do you recall the library as it actually was or the library as approximated by your library schemata? [Dan Kleinman, https://goo.gl/07xyDD, CC BY 2.0, https://goo.gl/BRvSA7]

Other sorts of memory biases are more complicated and longer lasting. For example, it turns out that our expectations and beliefs about how the world works can have huge influences on our memories. Because many aspects of our everyday lives are full of redundancies, our memory systems take advantage of the recurring patterns by forming and using schemata, or memory templates (Alba & Hasher, 1983; Brewer & Treyens, 1981). Thus, we know to expect that a library will have shelves and tables and librarians, and so we don't have to spend energy noticing these at the time. The result of this lack of attention, however, is that one is likely to remember schema-consistent information (such as tables), and to remember them in a rather generic way, whether or not they were actually present.

False Memory

Some memory errors are so "large" that they almost belong in a class of their own: false memories. Back in the early 1990s a pattern emerged whereby people would go into therapy for depression and other everyday problems, but over the course of the therapy develop memories for violent and horrible victimhood (Loftus & Ketcham, 1994). These patients' therapists claimed that the patients were recovering genuine memories of real childhood abuse, buried deep in their minds for years or even decades. But some experimental psychologists believed that the memories were instead likely to be false—created in therapy. These researchers then set out to see whether it would indeed be possible for wholly false memories to be created by procedures similar to those used in these patients' therapy.

In early false memory studies, undergraduate subjects' family members were recruited to provide events from the students' lives. The student subjects were told that the researchers

had talked to their family members and learned about four different events from their childhoods. The researchers asked if the now undergraduate students remembered each of these four events—introduced via short hints. The subjects were asked to write about each of the four events in a booklet and then were interviewed two separate times. The trick was that one of the events came from the researchers rather than the family (and the family had actually assured the researchers that this event had *not* happened to the subject). In the first such study, this researcher-introduced event was a story about being lost in a shopping mall and rescued by an older adult. In this study, after just being asked whether they remembered these events occurring on three separate occasions, a quarter of subjects came to believe that they had indeed been lost in the mall (Loftus & Pickrell, 1995). In subsequent studies, similar procedures were used to get subjects to believe that they nearly drowned and had been rescued by a lifeguard, or that they had spilled punch on the bride's parents at a family wedding, or that they had been attacked by a vicious animal as a child, among other events (Heaps & Nash, 1999; Hyman, Husband, & Billings, 1995; Porter, Yuille, & Lehman, 1999).

More recent false memory studies have used a variety of different manipulations to produce false memories in substantial minorities and even occasional majorities of manipulated subjects (Braun, Ellis, & Loftus, 2002; Lindsay, Hagen, Read, Wade, & Garry, 2004; Mazzoni, Loftus, Seitz, & Lynn, 1999; Seamon, Philbin, & Harrison, 2006; Wade, Garry, Read, & Lindsay, 2002). For example, one group of researchers used a mock-advertising study, wherein subjects were asked to review (fake) advertisements for Disney vacations, to convince subjects that they had once met the character Bugs Bunny at Disneyland—an impossible false memory because Bugs is a Warner Brothers character (Braun et al., 2002). Another group of researchers photoshopped childhood photographs of their subjects into a hot air balloon picture and then asked the subjects to try to remember and describe their hot air balloon experience (Wade et al., 2002). Other researchers gave subjects unmanipulated class photographs from their childhoods along with a fake story about a class prank, and thus enhanced the likelihood that subjects would falsely remember the prank (Lindsay et al., 2004).

Using a false feedback manipulation, we have been able to persuade subjects to falsely remember having a variety of childhood experiences. In these studies, subjects are told (falsely) that a powerful computer system has analyzed questionnaires that they completed previously and has concluded that they had a particular experience years earlier. Subjects apparently believe what the computer says about them and adjust their memories to match this new information. A variety of different false memories have been implanted in this way. In some studies, subjects are told they once got sick on a particular food (Bernstein, Laney, Morris, & Loftus, 2005). These memories can then spill out into other aspects of subjects' lives, such that they often become less interested in eating that food in the future (Bernstein & Loftus, 2009b). Other false memories implanted with this methodology include having an

unpleasant experience with the character Pluto at Disneyland and witnessing physical violence between one's parents (Berkowitz, Laney, Morris, Garry, & Loftus, 2008; Laney & Loftus, 2008).

Importantly, once these false memories are implanted—whether through complex methods or simple ones—it is extremely difficult to tell them apart from true memories (Bernstein & Loftus, 2009a; Laney & Loftus, 2008).

Conclusion

To conclude, eyewitness testimony is very powerful and convincing to jurors, even though it is not particularly reliable. Identification errors occur, and these errors can lead to people being falsely accused and even convicted. Likewise, eyewitness memory can be corrupted by leading questions, misinterpretations of events, conversations with co-witnesses, and their own expectations for what should have happened. People can even come to remember whole events that never occurred.

The problems with memory in the legal system are real. But what can we do to start to fix them? A number of specific recommendations have already been made, and many of these are in the process of being implemented (e.g., Steblay & Loftus, 2012; Technical Working Group for Eyewitness Evidence, 1999; Wells et al., 1998). Some of these recommendations are aimed at specific legal procedures, including when and how witnesses should be interviewed, and how lineups should be constructed and conducted. Other recommendations call for appropriate education (often in the form of expert witness testimony) to be provided to jury members and others tasked with assessing eyewitness memory. Eyewitness testimony can be of great value to the legal system, but decades of research now argues that this testimony is often given far more weight than its accuracy justifies.

Outside Resources

Video 1: Eureka Foong's - The Misinformation Effect. This is a student-made video illustrating this phenomenon of altered memory. It was one of the winning entries in the 2014 Noba Student Video Award.
https://www.youtube.com/watch?v=iMPIWkFtd88

Video 2: Ang Rui Xia & Ong Jun Hao's - The Misinformation Effect. Another student-made video exploring the misinformation effect. Also an award winner from 2014.
https://www.youtube.com/watch?v=gsn9iKmOJLQ

Discussion Questions

1. Imagine that you are a juror in a murder case where an eyewitness testifies. In what ways might your knowledge of memory errors affect your use of this testimony?
2. How true to life do you think television shows such as CSI or Law & Order are in their portrayals of eyewitnesses?
3. Many jurisdictions in the United States use “show-ups,” where an eyewitness is brought to a suspect (who may be standing on the street or in handcuffs in the back of a police car) and asked, “Is this the perpetrator?” Is this a good or bad idea, from a psychological perspective? Why?

Vocabulary

False memories
Memory for an event that never actually occurred, implanted by experimental manipulation or other means.

Foils
Any member of a lineup (whether live or photograph) other than the suspect.

Misinformation effect
A memory error caused by exposure to incorrect information between the original event (e.g., a crime) and later memory test (e.g., an interview, lineup, or day in court).

Mock witnesses
A research subject who plays the part of a witness in a study.

Photo spreads
A selection of normally small photographs of faces given to a witness for the purpose of identifying a perpetrator.

Schema (plural: schemata)
A memory template, created through repeated exposure to a particular class of objects or events.

References

Alba, J. W., & Hasher, L. (1983). Is memory schematic? *Psychological Bulletin, 93*, 203–231.

Allan, K., & Gabbert, F. (2008). I still think it was a banana: Memorable 'lies' and forgettable 'truths'. *Acta Psychologica, 127*(2), 299-308.

Bartlett, J. C., & Memon, A. (2007). Eyewitness memory in young and older adults In: M.P.Toglia, J.D. Read, D.F. Ross & R.C.A Lindsay (Eds.), *The handbook of eyewitness psychology: Volume II: Memory for people* (pp. 309-338). Mahwah, NJ: Lawrence Erlbaum.

Berkowitz, S. R., Laney, C., Morris, E. K., Garry, M., & Loftus, E. F. (2008). Pluto behaving badly: False beliefs and their consequences. *American Journal of Psychology, 121*, 643–660

Bernstein, D. M., & Loftus, E. F. (2009b). The consequences of false memories for food preferences and choices. *Perspectives on Psychological Science, 4*, 135–139.

Bernstein, D. M., & Loftus, E. F., (2009a). How to tell if a particular memory is true or false. *Perspectives on Psychological Science, 4*, 370–374.

Bernstein, D. M., Laney, C., Morris, E. K., & Loftus, E. F. (2005). False memories about food can lead to food avoidance. *Social Cognition, 23*, 11–34.

Bornstein, B. H., Deffenbacher, K. A., Penrod, S. D., & McGorty, E. K. (2012). Effects of exposure time and cognitive operations on facial identification accuracy: A meta-analysis of two variables associated with initial memory strength. *Psychology, Crime, & Law, 18*, 473–490.

Braun, K. A., Ellis, R., & Loftus, E. F. (2002). Make my memory: How advertising can change our memories of the past. *Psychology and Marketing, 19*, 1–23.

Brewer, W. F., & Treyens, J. C. (1981). Role of schemata in memory for places. *Cognitive Psychology, 13*, 207–230.

Brigham, J. C., Bennett, L. B., Meissner, C. A., & Mitchell, T. L. (2007). The influence of race on eyewitness memory. In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *Handbook of eyewitness psychology, Vol. 2: Memory for people* (pp. 257–281). Mahwah, NJ: Lawrence Erlbaum.

Brown, A. S. (1991). A review of tip of the tongue experience. *Psychological Bulletin, 109*, 79–91.

Burton, A. M., Wilson, S., Cowan, M., & Bruce, V. (1999). Face recognition in poor-quality video: Evidence from security surveillance. *Psychological Science, 10*(3), 243-248.

Caputo, D. D., & Dunning, D. (2007). Distinguishing accurate identifications from erroneous ones: Post-dictive indicators of eyewitness accuracy. In R.C.L. Lindsay, D.F. Ross, J.D. Read, & M.P. Toglia (Eds.), *Handbook of Eyewitness Psychology, Vol 2: Memory for people* (pp.427-449). Mahwah, NJ: Lawrence Erlbaum.

Ceci, S. J., & Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children\'s testimony*. American Psychological Association.

Cutler, B. L., & Penrod, S. D. (1995). *Mistaken identification: The eyewitness, psychology and the law.* Cambridge, UK: Cambridge University Press.

Deffenbacher, K. A., Bornstein, B. H., Penrod, S. D., & McGorty, E. K. (2004). A meta-analytic review of the effects of high stress on eyewitness memory. *Law and Human Behavior, 28*, 687–706.

Frenda, S. J., Nichols, R. M., & Loftus, E. F. (2011). Current issues and advances in misinformation research. *Current Directions in Psychological Science, 20*(1), 20-23.

Gabbert, F., Memon, A., Allan, K., & Wright, D. B. (2004). Say it to my face: Examining the effects of socially encountered misinformation. *Legal and Criminological Psychology, 9*(2), 215-227.

Garrett, B. L. (2011). *Convicting the innocent*. Cambridge, MA: Harvard University Press.

Garry, M., French, L., Kinzett, T., & Mori, K. (2008). Eyewitness memory following discussion: Using the MORI technique with a Western sample. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition, 22*(4), 431-439.

Heaps, C., & Nash, M. (1999). Individual differences in imagination inflation. *Psychonomic Bulletin and Review, 6*, 313–138.

Hyman, I. E., Jr., Husband, T. H., & Billings, F. J. (1995). False memories of childhood experiences. *Applied Cognitive Psychology, 9*, 181–197.

Laney, C., & Loftus, E. F. (2008). Emotional content of true and false memories. *Memory, 16*, 500–516.

Lindsay, D. S., Hagen, L., Read, J. D., Wade, K. A., & Garry, M. (2004). True photographs and false memories. *Psychological Science, 15*, 149–154.

Loftus, E. F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning & Memory, 12*(4), 361-366.

Loftus, E. F. (1975). Leading questions and the eyewitness report. *Cognitive Psychology, 7*(4), 560-572.

Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals, 25*, 720–725.

Loftus, E. F., Ketcham, K. (1994). *The myth of repressed memory*. New York, NY: St. Martin's Press.

Loftus, E. F., Miller, D. G., & Burns, H. J. (1978). Semantic integration of verbal information into a visual memory. *Journal of Experimental Psychology: Human Learning and Memory, 4*(1), 19.

Mazzoni, G. A. L., Loftus, E. F., Seitz, A., & Lynn, S.J. (1999). Changing beliefs and memories

through dream interpretation. *Applied Cognitive Psychology, 13*, 125–144.

Paterson, H. M., & Kemp, R. I. (2006). Co-witnesses talk: A survey of eyewitness discussion. *Psychology, Crime & Law, 12*(2), 181-191.

Porter, S., Yuille, J. C., & Lehman, D. R. (1999). The nature of real, implanted, and fabricated memories for emotional childhood events: Implications for the recovered memory debate. *Law and Human Behavior, 23*, 517–537.

Seamon, J. G., Philbin, M. M., & Harrison, L. G. (2006). Do you remember proposing marriage to the Pepsi machine? False recollections from a campus walk. *Psychonomic Bulletin & Review, 13*, 752–7596.

Steblay, N. M., & Loftus, E. F. (2012). Eyewitness memory and the legal system. In E. Shafir (Ed.), *The behavioural foundations of public policy* (pp. 145–162). Princeton, NJ: Princeton University Press.

Takarangi, M. K., Parker, S., & Garry, M. (2006). Modernising the misinformation effect: The development of a new stimulus set. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition, 20*(5), 583-590.

Technical Working Group for Eyewitness Evidence. (1999). *Eyewitness evidence: A trainer\\\\\\\ 's manual for law enforcement*. Research Report. Washington, DC: U.S. Department of Justice.

Wade, K. A., Garry, M., Read, J. D., & Lindsay, S. A. (2002). A picture is worth a thousand lies. *Psychonomic Bulletin and Review, 9*, 597–603.

Wells, G. L., & Olson, E. A. (2003). Eyewitness testimony. *Annual Review of Psychology, 54*, 277–295.

Wells, G. L., Memon, A., & Penrod, S. D. (2006). Eyewitness evidence: Improving its probative value. *Psychological Science in the Public Interest, 7*(2), 45-75.

Wells, G. L., Small, M., Penrod, S., Malpass, R. S., Fulero, S. M., & Brimacombe, C. A. E. (1998). Eyewitness identification procedures: Recommendations for lineups and photospreads. *Law and Human Behavior, 22*, 603–647.

Cognition and Language

12
Categories and Concepts

Gregory Murphy

People form mental concepts of categories of objects, which permit them to respond appropriately to new objects they encounter. Most concepts cannot be strictly defined but are organized around the "best" examples or prototypes, which have the properties most common in the category. Objects fall into many different categories, but there is usually a most salient one, called the basic-level category, which is at an intermediate level of specificity (e.g., chairs, rather than furniture or desk chairs). Concepts are closely related to our knowledge of the world, and people can more easily learn concepts that are consistent with their knowledge. Theories of concepts argue either that people learn a summary description of a whole category or else that they learn exemplars of the category. Recent research suggests that there are different ways to learn and represent concepts and that they are accomplished by different neural systems.

Learning Objectives

- Understand the problems with attempting to define categories.
- Understand typicality and fuzzy category boundaries.
- Learn about theories of the mental representation of concepts.
- Learn how knowledge may influence concept learning.

Introduction

Consider the following set of objects: some dust, papers, a computer monitor, two pens, a

Although you've (probably) never seen this particular truck before, you know a lot about it because of the knowledge you've accumulated in the past about the features in the category of trucks. [Image: CC0 Public Domain, https://goo.gl/m25gce]

cup, and an orange. What do these things have in common? Only that they all happen to be on my desk as I write this. This set of things can be considered a **category**, a set of objects that can be treated as equivalent in some way. But, most of our categories seem much more informative—they share many properties. For example, consider the following categories: trucks, wireless devices, weddings, psychopaths, and trout. Although the objects in a given category are different from one another, they have many commonalities. When you know something is a truck, you know quite a bit about it. The psychology of categories concerns how people learn, remember, and use informative categories such as trucks or psychopaths.

The mental representations we form of categories are called **concepts**. There is a category of trucks in the world, and I also have a concept of trucks in my head. We assume that people's concepts correspond more or less closely to the actual category, but it can be useful to distinguish the two, as when someone's concept is not really correct.

Concepts are at the core of intelligent behavior. We expect people to be able to know what to do in new situations and when confronting new objects. If you go into a new classroom and see chairs, a blackboard, a projector, and a screen, you know what these things are and how they will be used. You'll sit on one of the chairs and expect the instructor to write on the blackboard or project something onto the screen. You do this *even if you have never seen any of these particular objects before*, because you have concepts of classrooms, chairs, projectors, and so forth, that tell you what they are and what you're supposed to do with them. Furthermore, if someone tells you a new fact about the projector—for example, that it has a halogen bulb—you are likely to extend this fact to other projectors you encounter. In short, concepts allow you to extend what you have learned about a limited number of objects to a potentially infinite set of entities.

You know thousands of categories, most of which you have learned without careful study or instruction. Although this accomplishment may seem simple, we know that it isn't, because it is difficult to program computers to solve such intellectual tasks. If you teach a learning

program that a robin, a swallow, and a duck are all birds, it may not recognize a cardinal or peacock as a bird. As we'll shortly see, the problem is that objects in categories are often surprisingly diverse.

Simpler organisms, such as animals and human infants, also have concepts (Mareschal, Quinn, & Lea, 2010). Squirrels may have a concept of predators, for example, that is specific to their own lives and experiences. However, animals likely have many fewer concepts and cannot understand complex concepts such as mortgages or musical instruments.

Nature of Categories

Traditionally, it has been assumed that categories are *well-defined*. This means that you can give a definition that specifies what is in and out of the category. Such a definition has two parts. First, it provides the *necessary features* for category membership: What must objects have in order to be in it? Second, those features must be *jointly sufficient* for membership: If an object has those features, then it is in the category. For example, if I defined a dog as a four-legged animal that barks, this would mean that every dog is four-legged, an animal, and barks, and also that anything that has all those properties is a dog.

Here is a very good dog, but one that does not fit perfectly into a well-defined category where all dogs have four legs. [Image: State Farm, https://goo.gl/KHtu6N, CC BY 2.0, https://goo.gl/BRvSA7]

Unfortunately, it has not been possible to find definitions for many familiar categories. Definitions are neat and clear-cut; the world is messy and often unclear. For example, consider our definition of dogs. In reality, not all dogs have four legs; not all dogs bark. I knew a dog that lost her bark with age (this was an improvement); no one doubted that she was still a dog. It is often possible to find some necessary features (e.g., all dogs have blood and breathe), but these features are generally not sufficient to determine category membership (you also have blood and breathe but are not a dog).

Even in domains where one might expect to find clear-cut definitions, such as science and

law, there are often problems. For example, many people were upset when Pluto was downgraded from its status as a planet to a dwarf planet in 2006. Upset turned to outrage when they discovered that there was no hard-and-fast definition of planethood: "Aren't these astronomers scientists? Can't they make a simple definition?" In fact, they couldn't. After an astronomical organization tried to make a definition for planets, a number of astronomers complained that it might not include accepted planets such as Neptune and refused to use it. If everything looked like our Earth, our moon, and our sun, it would be easy to give definitions of planets, moons, and stars, but the universe has sadly not conformed to this ideal.

Fuzzy Categories

Borderline Items

Experiments also showed that the psychological assumptions of well-defined categories were not correct. Hampton (1979) asked subjects to judge whether a number of items were in different categories. He did not find that items were either clear members or clear nonmembers. Instead, he found many items that were just barely considered category members and others that were just barely not members, with much disagreement among subjects. Sinks were barely considered as members of the kitchen utensil category, and sponges were barely excluded. People just included seaweed as a vegetable and just barely excluded tomatoes and gourds. Hampton found that members and nonmembers formed a continuum, with no obvious break in people's membership judgments. If categories were well defined, such examples should be very rare. Many studies since then have found such *borderline members* that are not clearly in or clearly out of the category.

Furniture	Fruit
chair	orange
table	banana
desk	pear
bookcase	plum
lamp	strawberry
cushion	pineapple
rug	lemon
stove	honeydew
picture	date
vase	tomato

Table 1. Examples of two categories, with members ordered by typicality (from Rosch & Mervis, 1975)

McCloskey and Glucksberg (1978) found further evidence for borderline membership by asking people to judge category membership twice, separated by two weeks. They found that when people made repeated category judgments such as "Is an olive a fruit?" or "Is a sponge a kitchen utensil?" they changed their minds about borderline items—up to 22 percent of the time. So, not only do people disagree with one another about borderline items, they disagree with themselves! As a result, researchers often say that categories are *fuzzy*, that is, they

have unclear boundaries that can shift over time.

Typicality

A related finding that turns out to be most important is that even among items that clearly are in a category, some seem to be "better" members than others (Rosch, 1973). Among birds, for example, robins and sparrows are very typical. In contrast, ostriches and penguins are very *atypical* (meaning not typical). If someone says, "There's a bird in my yard," the image you have will be of a smallish passerine bird such as a robin, not an eagle or hummingbird or turkey.

You can find out which category members are typical merely by asking people. Table 1 shows a list of category members in order of their rated typicality. Typicality is perhaps the most important variable in predicting how people interact with categories. The following text box is a partial list of what typicality influences.

We can understand the two phenomena of borderline members and typicality as two sides of the same coin. Think of the most typical category member: This is often called the category *prototype*. Items that are less and less similar to the prototype become less and less typical. At some point, these less typical items become so atypical that you start to doubt whether they are in the category at all. Is a rug really an example of furniture? It's in the home like chairs and tables, but it's also different from most furniture in its structure and use. From day to day, you might change your mind as to whether this atypical example is in or out of the

Influences of Typicality on Cognition
• **Typical items are judged category members more often** (Hampton, 1979).
• **Speed of categorization is faster for typical items** (Rips, Shoben, & Smith, 1973).
• **Typical members are learned before atypical ones** (Rosch & Mervis, 1975).
• **Learning a category is easier if typical examples are provided** (Mervis & Pani, 1980).
• **In language comprehension, references to typical members are understood more easily** (Garrod & Sanford, 1977).
• **In language production, people tend to say typical items before atypical ones (e.g., "apples and lemons" rather than "lemons and apples")** (Onishi, Murphy, & Bock, 2008).

Text Box 1

category. So, changes in typicality ultimately lead to borderline members.

Source of Typicality

Intuitively, it is not surprising that robins are better examples of birds than penguins are, or that a table is a more typical kind of furniture than is a rug. But given that robins and penguins are known to be birds, why should one be more typical than the other? One possible answer is the frequency with which we encounter the object: We see a lot more robins than penguins, so they must be more typical. Frequency does have some effect, but it is actually not the most important variable (Rosch, Simpson, & Miller, 1976). For example, I see both rugs and tables every single day, but one of them is much more typical as furniture than the other.

The best account of what makes something typical comes from Rosch and Mervis's (1975) *family resemblance theory*. They proposed that items are likely to be typical if they (a) have the features that are frequent in the category and (b) do not have features frequent in other categories. Let's compare two extremes, robins and penguins. Robins are small flying birds that sing, live in nests in trees, migrate in winter, hop around on your lawn, and so on. Most of these properties are found in many other birds. In contrast, penguins do not fly, do not sing, do not live in nests or in trees, do not hop around on your lawn. Furthermore, they have properties that are common in other categories, such as swimming expertly and having wings that look and act like fins. These properties are more often found in fish than in birds.

According to Rosch and Mervis, then, it is not because a robin is a very common bird that makes it typical. Rather, it is because the robin has the shape, size, body parts, and behaviors that are very common among birds—and not common among fish, mammals, bugs, and so forth.

When you think of "bird," how closely does the robin resemble your general figure? [Image: CC0 Public Domain, https://goo.gl/m25gce]

In a classic experiment, Rosch and Mervis (1975) made up two new categories, with arbitrary features. Subjects viewed example after example and had to learn which example was in which category. Rosch and Mervis constructed some items that had features that were common in the category and other items that had features less

common in the category. The subjects learned the first type of item before they learned the second type. Furthermore, they then rated the items with common features as more typical. In another experiment, Rosch and Mervis constructed items that differed in how many features were shared with a *different* category. The more features were shared, the longer it took subjects to learn which category the item was in. These experiments, and many later studies, support both parts of the family resemblance theory.

Category Hierarchies

Many important categories fall into *hierarchies*, in which more concrete categories are nested inside larger, abstract categories. For example, consider the categories: brown bear, bear, mammal, vertebrate, animal, entity. Clearly, all brown bears are bears; all bears are mammals; all mammals are vertebrates; and so on. Any given object typically does not fall into just one category—it could be in a dozen different categories, some of which are structured in this hierarchical manner. Examples of biological categories come to mind most easily, but within the realm of human artifacts, hierarchical structures can readily be found: desk chair, chair, furniture, artifact, object.

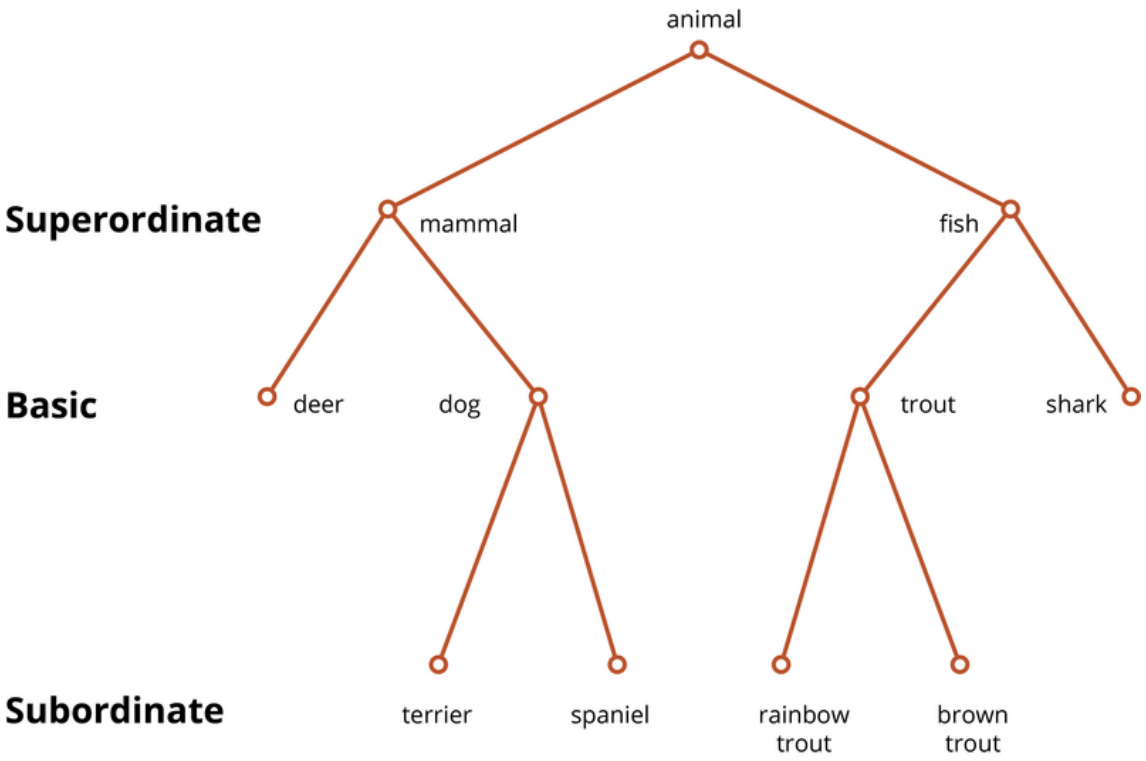


Figure 1. This is a highly simplified illustration of hierarchically organized categories, with the superordinate, basic, and subordinate levels labeled. Keep in mind that there may be even more specific subordinates (e.g., wire-haired terriers) and more general superordinates (e.g., living thing)

Brown (1958), a child language researcher, was perhaps the first to note that there seems to be a preference for which category we use to label things. If your office desk chair is in the way, you'll probably say, "Move that chair," rather than "Move that desk chair" or "piece of furniture." Brown thought that the use of a single, consistent name probably helped children to learn the name for things. And, indeed, children's first labels for categories tend to be exactly those names that adults prefer to use (Anglin, 1977).

This preference is referred to as a preference for the **basic level of categorization**, and it was first studied in detail by Eleanor Rosch and her students (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976). The basic level represents a kind of Goldilocks effect, in which the category used for something is not too small (northern brown bear) and not too big (animal), but is just right (bear). The simplest way to identify an object's basic-level category is to discover how it would be labeled in a neutral situation. Rosch et al. (1976) showed subjects pictures and asked them to provide the first name that came to mind. They found that 1,595 names were at the basic level, with 14 more specific names (*subordinates*) used. Only once did anyone use a more general name (*superordinate*). Furthermore, in printed text, basic-level labels are much more frequent than most subordinate or superordinate labels (e.g., Wisniewski & Murphy, 1989).

The preference for the basic level is not merely a matter of labeling. Basic-level categories are usually easier to learn. As Brown noted, children use these categories first in language learning, and superordinates are especially difficult for children to fully acquire.**[1]** People are faster at identifying objects as members of basic-level categories (Rosch et al., 1976).

Rosch et al. (1976) initially proposed that basic-level categories cut the world at its joints, that is, merely reflect the big differences between categories like chairs and tables or between cats and mice that exist in the world. However, it turns out that which level is basic is not universal. North Americans are likely to use names like *tree, fish*, and *bird* to label natural objects. But people in less industrialized societies seldom use these labels and instead use more specific words, equivalent to *elm, trout,* and *finch* (Berlin, 1992). Because Americans and many other people living in industrialized societies know so much less than our ancestors did about the natural world, our basic level has "moved up" to what would have been the superordinate level a century ago. Furthermore, experts in a domain often have a preferred level that is more specific than that of non-experts. Birdwatchers see sparrows rather than just birds, and carpenters see roofing hammers rather than just hammers (Tanaka & Taylor, 1991). This all suggests that the preferred level is not (only) based on how different categories are in the world, but that people's knowledge and interest in the categories has an important effect.

One explanation of the basic-level preference is that basic-level categories are more

differentiated: The category members are similar to one another, but they are different from members of other categories (Murphy & Brownell, 1985; Rosch et al., 1976). (The alert reader will note a similarity to the explanation of typicality I gave above. However, here we're talking about the entire category and not individual members.) Chairs are pretty similar to one another, sharing a lot of features (legs, a seat, a back, similar size and shape); they also don't share that many features with other furniture. Superordinate categories are not as useful because their members are not very similar to one another. What features are common to most furniture? There are very few. Subordinate categories are not as useful, because they're very similar to other categories: Desk chairs are quite similar to dining room chairs and easy chairs. As a result, it can be difficult to decide which subordinate category an object is in (Murphy & Brownell, 1985). Experts can differ from novices in which categories are the most differentiated, because they know different things about the categories, therefore changing how similar the categories are.

[1] This is a controversial claim, as some say that infants learn superordinates before anything else (Mandler, 2004). However, if true, then it is very puzzling that older children have great difficulty learning the correct meaning of words for superordinates, as well as in learning artificial superordinate categories (Horton & Markman, 1980; Mervis, 1987). However, it seems fair to say that the answer to this question is not yet fully known.

Theories of Concept Representation

Now that we know these facts about the psychology of concepts, the question arises of how concepts are mentally represented. There have been two main answers. The first, somewhat confusingly called the *prototype theory* suggests that people have a *summary representation* of the category, a mental description that is meant to apply to the category as a whole. (The significance of *summary* will become apparent when the next theory is described.) This description can be represented as a set of *weighted features* (Smith & Medin, 1981). The features are weighted by their frequency in the category. For the category of birds, having wings and feathers would have a very high weight; eating worms would have a lower weight; living in Antarctica would have a lower weight still, but not zero, as some birds do live there.

The idea behind prototype theory is that when you learn a category, you learn a general description that applies to the category as a whole: Birds have wings and usually fly; some eat worms; some swim underwater to catch fish. People can state these generalizations, and sometimes we learn about categories by reading or hearing such statements ("The kimodo dragon can grow to be 10 feet long").

When you try to classify an item, you see how well it matches that weighted list of features. For example, if you saw something with wings and feathers fly onto your front lawn and eat a worm, you could (unconsciously) consult your concepts and see which ones contained the features you observed. This example possesses many of the highly weighted bird features, and so it should be easy to identify as a bird.

If you were asked, "What kind of animal is this?" according to prototype theory, you would consult your summary representations of different categories and then select the one that is most similar to this image—probably a lizard! [Image: Adhi Rachdian, https://goo.gl/dQyUwf, CC BY 2.0, https://goo.gl/BRvSA7]

This theory readily explains the phenomena we discussed earlier. Typical category members have more, higher-weighted features. Therefore, it is easier to match them to your conceptual representation. Less typical items have fewer or lower-weighted features (and they may have features of other concepts). Therefore, they don't match your representation as well. This makes people less certain in classifying such items. Borderline items may have features in common with multiple categories or not be very close to any of them. For example, edible seaweed does not have many of the common features of vegetables but also is not close to any other food concept (meat, fish, fruit, etc.), making it hard to know what kind of food it is.

A very different account of concept representation is the *exemplar theory* (**exemplar** being a fancy name for an example; Medin & Schaffer, 1978). This theory denies that there is a summary representation. Instead, the theory claims that your concept of vegetables is remembered examples of vegetables you have seen. This could of course be hundreds or thousands of exemplars over the course of your life, though we don't know for sure how many exemplars you actually remember.

How does this theory explain classification? When you see an object, you (unconsciously) compare it to the exemplars in your memory, and you judge how similar it is to exemplars in different categories. For example, if you see some object on your plate and want to identify it, it will probably activate memories of vegetables, meats, fruit, and so on. In order to categorize this object, you calculate how similar it is to each exemplar in your memory. These similarity scores are added up for each category. Perhaps the object is very similar to a large number of vegetable exemplars, moderately similar to a few fruit, and only minimally similar

to some exemplars of meat you remember. These similarity scores are compared, and the category with the highest score is chosen.**[2]**

Why would someone propose such a theory of concepts? One answer is that in many experiments studying concepts, people learn concepts by seeing exemplars over and over again until they learn to classify them correctly. Under such conditions, it seems likely that people eventually memorize the exemplars (Smith & Minda, 1998). There is also evidence that *close similarity* to well-remembered objects has a large effect on classification. Allen and Brooks (1991) taught people to classify items by following a rule. However, they also had their subjects study the items, which were richly detailed. In a later test, the experimenters gave people new items that were very similar to one of the old items but were in a different category. That is, they changed one property so that the item no longer followed the rule. They discovered that people were often fooled by such items. Rather than following the category rule they had been taught, they seemed to recognize the new item as being very similar to an old one and so put it, incorrectly, into the same category.

Many experiments have been done to compare the prototype and exemplar theories. Overall, the exemplar theory seems to have won most of these comparisons. However, the experiments are somewhat limited in that they usually involve a small number of exemplars that people view over and over again. It is not so clear that exemplar theory can explain real-world classification in which people do not spend much time learning individual items (how much time do you spend studying squirrels? or chairs?). Also, given that some part of our knowledge of categories is learned through general statements we read or hear, it seems that there must be room for a summary description separate from exemplar memory.

Many researchers would now acknowledge that concepts are represented through multiple cognitive systems. For example, your knowledge of dogs may be in part through general descriptions such as "dogs have four legs." But you probably also have strong memories of some exemplars (your family dog, Lassie) that influence your categorization. Furthermore, some categories also involve rules (e.g., a strike in baseball). How these systems work together is the subject of current study.

[2] Actually, the decision of which category is chosen is more complex than this, but the details are beyond this discussion.

Knowledge

The final topic has to do with how concepts fit with our broader knowledge of the world. We

have been talking very generally about people learning the features of concepts. For example, they see a number of birds and then learn that birds generally have wings, or perhaps they remember bird exemplars. From this perspective, it makes no difference what those exemplars or features are—people just learn them. But consider two possible concepts of buildings and their features in Table 2.

Donker	**Blegdav**
has thick windows	has steel windows
is red	is purple
divers live there	farmers live there
is under water	is in the desert
get there by submarine	get there by submarine
has fish as pets	has polar bears as pets

Table 2. Examples of two fictional concepts

Imagine you had to learn these two concepts by seeing exemplars of them, each exemplar having some of the features listed for the concept (as well as some idiosyncratic features). Learning the donker concept would be pretty easy. It seems to be a kind of underwater building, perhaps for deep-sea explorers. Its features seem to go together. In contrast, the blegdav doesn't really make sense. If it's in the desert, how can you get there by submarine, and why do they have polar bears as pets? Why would farmers live in the desert or use submarines? What good would steel windows do in such a building? This concept seems peculiar. In fact, if people are asked to learn new concepts that make sense, such as donkers, they learn them quite a bit faster than concepts such as blegdavs that don't make sense (Murphy & Allopenna, 1994). Furthermore, the features that seem connected to one another (such as being underwater and getting there by submarine) are learned better than features that don't seem related to the others (such as being red).

Such effects demonstrate that when we learn new concepts, we try to connect them to the knowledge we already have about the world. If you were to learn about a new animal that doesn't seem to eat or reproduce, you would be very puzzled and think that you must have gotten something wrong. By themselves, the prototype and exemplar theories don't predict this. They simply say that you learn descriptions or exemplars, and they don't put any constraints on what those descriptions or exemplars are. However, the *knowledge approach* to concepts emphasizes that concepts are meant to tell us about real things in the world, and so our knowledge of the world is used in learning and thinking about concepts.

We can see this effect of knowledge when we learn about new pieces of technology. For example, most people could easily learn about tablet computers (such as iPads) when they were first introduced by drawing on their knowledge of laptops, cell phones, and related technology. Of course, this reliance on past knowledge can also lead to errors, as when people

don't learn about features of their new tablet that weren't present in their cell phone or expect the tablet to be able to do something it can't.

One important aspect of people's knowledge about categories is called **psychological essentialism** (Gelman, 2003; Medin & Ortony, 1989). People tend to believe that some categories—most notably natural kinds such as animals, plants, or minerals—have an underlying property that is found only in that category and that causes its other features. Most categories don't actually have essences, but this is sometimes a firmly held belief. For example, many people will state that there is something about dogs, perhaps some specific gene or set of genes, that all dogs have and that makes them bark, have fur, and look the way they do. Therefore, decisions about whether something is a dog do not depend only on features that you can easily see but also on the assumed presence of this cause.

Belief in an essence can be revealed through experiments describing fictional objects. Keil (1989) described to adults and children a fiendish operation in which someone took a raccoon, dyed its hair black with a white stripe down the middle, and implanted a "sac of super-smelly yucky stuff" under its tail. The subjects were shown a picture of a skunk and told that this is now what the animal looks like. What is it? Adults and children over the age of 4 all agreed that the animal is still a raccoon. It may look and even act like a skunk, but a raccoon cannot change its stripes (or whatever!)—it will always be a raccoon.

Although it may seem natural that different species have an unchangeable "essence," consider evolution and everything's development from common ancestors. [Image: Marc Dragiewicz, https://goo.gl/E9v4eR, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Importantly, the same effect was not found when Keil described a coffeepot that was operated on to look like and function as a bird feeder. Subjects agreed that it was now a bird feeder. Artifacts don't have an essence.

Signs of essentialism include (a) objects are believed to be either in or out of the category, with no in-between; (b) resistance to change of category membership or of properties connected to the essence; and (c) for living things, the essence is passed on to progeny.

Essentialism is probably helpful in dealing with much of the natural world, but it may be less helpful when it is applied to humans. Considerable evidence suggests that people think of

gender, racial, and ethnic groups as having essences, which serves to emphasize the difference between groups and even justify discrimination (Hirschfeld, 1996). Historically, group differences were described by inheriting the blood of one's family or group. "Bad blood" was not just an expression but a belief that negative properties were inherited and could not be changed. After all, if it is in the nature of "those people" to be dishonest (or clannish or athletic …), then that could hardly be changed, any more than a raccoon can change into a skunk.

Research on categories of people is an exciting ongoing enterprise, and we still do not know as much as we would like to about how concepts of different kinds of people are learned in childhood and how they may (or may not) change in adulthood. Essentialism doesn't apply only to person categories, but it is one important factor in how we think of groups.

Conclusion

Concepts are central to our everyday thought. When we are planning for the future or thinking about our past, we think about specific events and objects in terms of their categories. If you're visiting a friend with a new baby, you have some expectations about what the baby will do, what gifts would be appropriate, how you should behave toward it, and so on. Knowing about the category of babies helps you to effectively plan and behave when you encounter this child you've never seen before.

Learning about those categories is a complex process that involves seeing exemplars (babies), hearing or reading general descriptions ("Babies like black-and-white pictures"), general knowledge (babies have kidneys), and learning the occasional rule (all babies have a rooting reflex). Current research is focusing on how these different processes take place in the brain. It seems likely that these different aspects of concepts are accomplished by different neural structures (Maddox & Ashby, 2004).

Another interesting topic is how concepts differ across cultures. As different cultures have different interests and different kinds of interactions with the world, it seems clear that their concepts will somehow reflect those differences. On the other hand, the structure of categories in the world also imposes a strong constraint on what kinds of categories are actually useful. Some researchers have suggested that differences between Eastern and Western modes of thought have led to qualitatively different kinds of concepts (e.g., Norenzayan, Smith, Kim, & Nisbett, 2002). Although such differences are intriguing, we should also remember that different cultures seem to share common categories such as chairs, dogs, parties, and jars, so the differences may not be as great as suggested by experiments designed to detect cultural effects. The interplay of culture, the environment, and basic cognitive

processes in establishing concepts has yet to be fully investigated.

Outside Resources

Debate: The debate about Pluto and the definition of planet is an interesting one, as it illustrates the difficulty of arriving at definitions even in science. The Planetary Science Institute's website has a series of press releases about the Pluto debate, including reactions from astronomers, while it happened.
http://www.psi.edu

Image Search: It can be interesting to get a pictorial summary of how much diversity there is among category members. If you do an image search for familiar categories such as houses, dogs, weddings, telephones, fruit, or whatever, you can get a visual display on a single page of the category structure. Of course, the results are probably biased, as people do not just randomly upload pictures of dogs or fruit, but it nonetheless will likely reveal the typicality structure, as most of the pictures will be of typical exemplars, and the atypical ones will stand out. (This activity will also demonstrate the phenomenon of ambiguity in language, as a search for "house" will yield some pictures of the TV character House, M.D. However, that is a lesson for a different module.)
https://www.google.com/

Self-test: If you would like to run your own category-learning experiment, you can do so by following the link below. It works either in-browser or by download. When downloaded, users can put in their own stimuli to categorize.
http://cognitrn.psych.indiana.edu/CogSciSoftware/Categorization/index.html

Software: Self-test Categorization Applet - This software allows you to conduct your own categorization experiment.
http://cognitrn.psych.indiana.edu/CogSciSoftware/Categorization/index.html

Web: A Compendium of Category and Concept Activities and Worksheets - This website contains all types of printable worksheets and activities on how to categorize concepts. It includes word searches, picture sorts, and more.
https://freelanguagestuff.com/category/

Web: An interesting article at Space.com argues (I believe correctly) that the term planet will not and should not be defined.
http://www.space.com/3142-planets-defined.html

Web: Most familiar categories have simple labels such as planet or dog. However, more

complex categories can be made up for a particular purpose. Barsalou (1983) studied categories such as things to carry out of a burning house or ways to avoid being killed by the Mob. Interestingly, someone has published a book consisting of people's photographs of things they would carry out of a burning house, and there is also a website showing such collections. Try to analyze what is common to the category members. What is the category's prototype?
http://theburninghouse.com/

Discussion Questions

1. Pick a couple of familiar categories and try to come up with definitions for them. When you evaluate each proposal (a) is it in fact accurate as a definition, and (b) is it a definition that people might actually use in identifying category members?
2. For the same categories, can you identify members that seem to be "better" and "worse" members? What about these items makes them typical and atypical?
3. Going around the room, point to some common objects (including things people are wearing or brought with them) and identify what the basic-level category is for that item. What are superordinate and subordinate categories for the same items?
4. List some features of a common category such as tables. The knowledge view suggests that you know reasons for why these particular features occur together. Can you articulate some of those reasons? Do the same thing for an animal category.
5. Choose three common categories: a natural kind, a human artifact, and a social event. Discuss with class members from other countries or cultures whether the corresponding categories in their cultures differ. Can you make a hypothesis about when such categories are likely to differ and when they are not?

Vocabulary

Basic-level category
The neutral, preferred category for a given object, at an intermediate level of specificity.

Category
A set of entities that are equivalent in some way. Usually the items are similar to one another.

Concept
The mental representation of a category.

Exemplar
An example in memory that is labeled as being in a particular category.

Psychological essentialism
The belief that members of a category have an unseen property that causes them to be in the category and to have the properties associated with it.

Typicality
The difference in "goodness" of category members, ranging from the most typical (the prototype) to borderline members.

References

Allen, S. W., & Brooks, L. R. (1991). Specializing the operation of an explicit rule.*Journal of Experimental Psychology: General, 120*, 3–19.

Anglin, J. M. (1977). *Word, object, and conceptual developmen*t. New York, NY: W. W. Norton.

Berlin, B. (1992). *Ethnobiological classification: Principles of categorization of plants and animals in traditional societies*. Princeton, NJ: Princeton University Press.

Brown, R. (1958). How shall a thing be called? *Psychological Review, 65*, 14–21.

Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. Oxford, UK: Oxford University Press.

Hampton, J. A. (1979). Polymorphous concepts in semantic memory. *Journal of Verbal Learning and Verbal Behavior, 18*, 441–461.

Hirschfeld, L. A. (1996). *Race in the making: Cognition, culture, and the child's construction of human kinds*. Cambridge, MA: MIT Press.

Horton, M. S., & Markman, E. M. (1980). Developmental differences in the acquisition of basic and superordinate categories. *Child Development*, 51, 708–719.

Keil, F. C. (1989). *Concepts, kinds, and cognitive development*. Cambridge, MA: MIT Press.

Maddox, W. T., & Ashby, F. G. (2004). Dissociating explicit and procedural-based systems of perceptual category learning. *Behavioural Processes, 66*, 309–332.

Mandler, J. M. (2004). *The foundations of mind: Origins of conceptual thought*. Oxford, UK: Oxford University Press.

Mareschal, D., Quinn, P. C., & Lea, S. E. G. (Eds.) (2010). *The making of human concepts*. Oxford, UK: Oxford University Press.

McCloskey, M. E., & Glucksberg, S. (1978). Natural categories: Well defined or fuzzy sets? *Memory & Cognition, 6*, 462–472.

Medin, D. L., & Ortony, A. (1989). Psychological essentialism. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179–195). Cambridge, UK: Cambridge University Press.

Medin, D. L., & Schaffer, M. M. (1978). Context theory of classification learning. *Psychological Review*, 85, 207–238.

Mervis, C. B. (1987). Child-basic object categories and early lexical development. In U. Neisser (Ed.), *Concepts and conceptual development: Ecological and intellectual factors in categorization* (pp. 201–233). Cambridge, UK: Cambridge University Press.

Murphy, G. L., & Allopenna, P. D. (1994). The locus of knowledge effects in concept learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 20*, 904–919.

Murphy, G. L., & Brownell, H. H. (1985). Category differentiation in object recognition: Typicality constraints on the basic category advantage. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 11*, 70–84.

Norenzayan, A., Smith, E. E., Kim, B. J., & Nisbett, R. E. (2002). Cultural preferences for formal versus intuitive reasoning. *Cognitive Science, 26*, 653–684.

Rosch, E., & Mervis, C. B. (1975). Family resemblance: Studies in the internal structure of categories. *Cognitive Psychology*, 7, 573–605.

Rosch, E., Mervis, C. B., Gray, W., Johnson, D., & Boyes-Braem, P. (1976). *Basic objects in natural categories. Cognitive Psychology, 8*, 382–439.

Rosch, E., Simpson, C., & Miller, R. S. (1976). Structural bases of typicality effects. *Journal of Experimental Psychology: Human Perception and Performance, 2*, 491–502.

Rosch, E. H. (1973). On the internal structure of perceptual and semantic categories. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 111–144). New York, NY: Academic Press.

Smith, E. E., & Medin, D. L. (1981). *Categories and concepts*. Cambridge, MA: Harvard University Press.

Smith, J. D., & Minda, J. P. (1998). Prototypes in the mist: The early epochs of category learning. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 24*, 1411–1436.

Tanaka, J. W., & Taylor, M. E. (1991). Object categories and expertise: Is the basic level in the eye of the beholder? *Cognitive Psychology, 15*, 121–149.

Wisniewski, E. J., & Murphy, G. L. (1989). Superordinate and basic category names in discourse: A textual analysis. *Discourse Processes, 12*, 245–261.

13
Theory of Mind

Bertram Malle

One of the most remarkable human capacities is to perceive and understand mental states. This capacity, often labeled “theory of mind,” consists of an array of psychological processes that play essential roles in human social life. We review some of these roles, examine what happens when the capacity is deficient, and explore the many processes that make up the capacity to understand minds.

Learning Objectives

- Explain what theory of mind is.
- Enumerate the many domains of social life in which theory of mind is critical.
- Describe some characteristics of how autistic individuals differ in their processing of others’ minds.
- Describe and explain some of the many concepts and processes that comprise the human understanding of minds.
- Have a basic understanding of how ordinary people explain unintentional and intentional behavior.

Introduction

One of the most fascinating human capacities is the ability to perceive and interpret other people’s behavior in terms of their mental states. Having an appreciation for the workings of another person’s mind is considered a prerequisite for natural language acquisition (Baldwin

& Tomasello, 1998), strategic social interaction (Zhang, Hedden, & Chia, 2012), reflexive thought (Bogdan, 2000), and moral judgment (Guglielmo, Monroe, & Malle, 2009). This capacity develops from early beginnings in the first year of life to the adult's fast and often effortless understanding of others' thoughts, feelings, and intentions. And though we must speculate about its evolutionary origin, we do have indications that the capacity evolved sometime in the last few million years.

In this module we will focus on two questions: What is the role of understanding others' minds in human social life? And what is known about the mental processes that underlie such understanding? For simplicity, we will label this understanding "theory of mind," even though it is not literally a "theory" that people have about the mind; rather, it is a capacity that some scholars prefer to label "mentalizing" or "mindreading." But we will go behind all these labels by breaking down the capacity into distinct components: the specific concepts and mental processes that underlie the human understanding of minds.

First, let's get clear about the roles that this understanding plays in social life.

The Role of Theory of Mind in Social Life

We rely on the theory of mind in social situations to infer what others are thinking and feeling. Among other things, this capability helps us work successfully in teams. [Image: Office of Public Affairs, https://goo.gl/O8zvFj, CC BY-SA 2.0, https://goo.gl/rxiUsF]

Put yourself in this scene: You observe two people's movements, one behind a large wooden object, the other reaching behind him and then holding a thin object in front of the other. Without a theory of mind you would neither understand what this movement stream meant nor be able to predict either person's likely responses. With the capacity to interpret certain physical movements in terms of mental states, perceivers can parse this complex scene into intentional actions of reaching and giving (Baird & Baldwin, 2001); they can interpret the actions as instances of offering and trading; and with an appropriate cultural script, they know that all that was going on was a customer pulling out her credit card with the intention to pay the cashier behind the register. People's

theory of mind thus frames and interprets perceptions of human behavior in a particular way —as perceptions of agents who can act intentionally and who have desires, beliefs, and other mental states that guide their actions (Perner, 1991; Wellman, 1990).

Not only would social perceivers without a theory of mind be utterly lost in a simple payment interaction; without a theory of mind, there would probably be no such things as cashiers, credit cards, and payment (Tomasello, 2003). Plain and simple, humans need to understand minds in order to engage in the kinds of complex interactions that social communities (small and large) require. And it is these complex social interactions that have given rise, in human cultural evolution, to houses, cities, and nations; to books, money, and computers; to education, law, and science.

The list of social interactions that rely deeply on theory of mind is long; here are a few highlights.

- Teaching another person new actions or rules by taking into account what the learner knows or doesn't know and how one might best make him understand.
- Learning the words of a language by monitoring what other people attend to and are trying to do when they use certain words.
- Figuring out our social standing by trying to guess what others think and feel about us.
- Sharing experiences by telling a friend how much we liked a movie or by showing her something beautiful.
- Collaborating on a task by signaling to one another that we share a goal and understand and trust the other's intention to pursue this joint goal.

Individuals with autism can have a harder time using the theory of mind because it involves processing facial expressions and inferring people's intentions. A look that might convey a lot of meaning to most people conveys little or nothing to someone with autism. [Image: WarzauWynn, https://goo.gl/gUO8HE, CC BY-NC 2.0, https://goo.gl/tgFydH]

Autism and Theory of Mind

Another way of appreciating the enormous impact that theory of mind has on social interactions is to study what happens when the capacity is severely limited, as in the case of autism (Tager-Flusberg, 2007). In a fascinating discussion in which (high-

functioning) autistic individuals talk about their difficulties with other people's minds (Blackburn, Gottschewski, George, & L—, 2000), one person reports: "I know people's faces down to the acne scars on the left corners of their chins . . . and how the hairs of their eyebrows curl. . . . The best I can do is start picking up bits of data during my encounter with them because there's not much else I can do. . . . I'm not sure what kind of information about them I'm attempting to process." What seems to be missing, as another person with autism remarks, is an "automatic processing of 'people information.'" Some autistic people report that they perceive others "in a more analytical way." This analytical mode of processing, however, is very tiresome and slow: "Given time I may be able to analyze someone in various ways, and seem to get good results, but may not pick up on certain aspects of an interaction until I am obsessing over it hours or days later" (Blackburn et al., 2000).

So what is this magical potion that allows most people to gain quick and automatic access to other people's minds and to recognize the meaning underlying human behavior? Scientific research has accumulated a good deal of knowledge in the past few decades, and here is a synopsis of what we know.

The Mental Processes Underlying Theory of Mind

The first thing to note is that "theory of mind" is not a single thing. What underlies people's capacity to recognize and understand mental states is a whole host of components—a toolbox, as it were, for many different but related tasks in the social world (Malle, 2008). Figure 1 shows some of the most important tools, organized in a way that reflects the complexity of involved processes: from simple and automatic on the bottom to complex and deliberate on the top. This organization also reflects development—from tools that infants master within the first 6–12 months to tools they need to acquire over the next 3–5 years. Strikingly, the organization also reflects evolution: monkeys have available the tools on the bottom; chimpanzees have available the tools at the second level; but only humans master the remaining tools above. Let's look at a few of them in more detail.

Agents, Goals, and Intentionality

The *agent* category allows humans to identify those moving objects in the world that can act on their own. Features that even very young children take to be indicators of being an agent include being self-propelled, having eyes, and reacting systematically to the interaction partner's behavior, such as following gaze or imitating (Johnson, 2000; Premack, 1990).

The process of *recognizing goals* builds on this agent category, because agents are

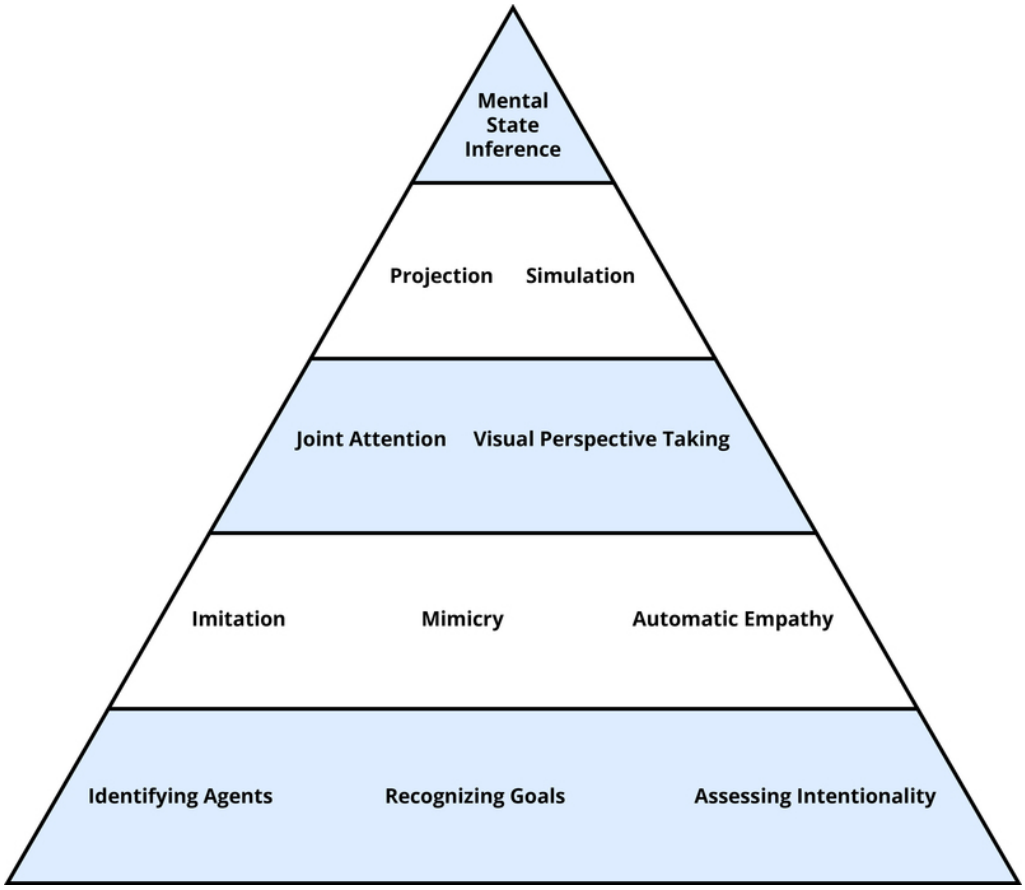


Figure 1. Some of the major tools of theory of mind, with the bottom showing simple, automatic, early developing, and evolutionarily old processes, and the top showing complex, more deliberate, late developing, and evolutionarily recent processes.

characteristically directed toward goal objects, which means they seek out, track, and often physically contact said objects. Even before the end of their first year, infants recognize that humans reach toward an object they strive for even if that object changes location or if the path to the object contains obstacles (Gergely, Nádasdy, Csibra, & Bíró, 1995; Woodward, 1998). What it means to recognize goals, therefore, is to see the systematic and predictable relationship between a particular agent pursuing a particular object across various circumstances.

Through learning to recognize the many ways by which agents pursue goals, humans learn to pick out behaviors that are **intentional**. The concept of **intentionality** is more sophisticated than the *goal* concept. For one thing, human perceivers recognize that some behaviors can be unintentional even if they were goal-directed—such as when you unintentionally make a fool of yourself even though you had the earnest goal of impressing your date. To act intentionally you need, aside from a goal, the right kinds of beliefs about how to achieve the

goal. Moreover, the adult concept of intentionality requires that an agent have the *skill* to perform the intentional action in question: If I am flipping a coin, trying to make it land on heads, and if I get it to land on heads on my first try, you would not judge my action of making it land on heads as intentional—you would say it was luck (Malle & Knobe, 1997).

Imitation, Synchrony, and Empathy

It's natural when having a conversation to unconsciously synchronize with our partners. [Image: Jacopo Aneghini Photos , https://goo.gl/QDpPln, CC BY-NC 2.0, https://goo.gl/VnKlK8]

Imitation and empathy are two other basic capacities that aid the understanding of mind from childhood on (Meltzoff & Decety, 2003). *Imitation* is the human tendency to carefully observe others' behaviors and do as they do—even if it is the first time the perceiver has seen this behavior. A subtle, automatic form of imitation is called **mimicry**, and when people mutually mimic one another they can reach a state of **synchrony**. Have you ever noticed when two people in conversation take on similar gestures, body positions, even tone of voice? They "synchronize" their behaviors by way of (largely) unconscious imitation. Such synchrony can happen even at very low levels, such as negative physiological arousal (Levenson & Ruef, 1992), though the famous claim of synchrony in women's menstrual cycles is a myth (Yang & Schank, 2006). Interestingly, people who enjoy an interaction synchronize their behaviors more, and increased synchrony (even manipulated in an experiment) makes people enjoy their interaction more (Chartrand & Bargh, 1999). Some research findings suggest that synchronizing is made possible by brain mechanisms that tightly link perceptual information with motor information (when I see you move your arm, my arm-moving program is activated). In monkeys, highly specialized so-called **mirror neurons** fire both when the monkey sees a certain action and when it performs that same action (Rizzolatti, Fogassi, & Gallese, 2001). In humans, however, things are a bit more complex. In many everyday settings, people perceive uncountable behaviors and fortunately don't copy all of them (just consider walking in a crowd—hundreds of your mirror neurons would fire in a blaze of confusion). Human imitation and mirroring is selective, triggering primarily actions that are relevant to the perceiver's current state or aim.

Automatic empathy builds on imitation and synchrony in a clever way. If Bill is sad and expresses this emotion in his face and body, and if Elena watches or interacts with Bill, then she will subtly imitate his dejected behavior and, through well-practiced associations of certain behaviors and emotions, she will feel a little sad as well (Sonnby-Borgström, Jönsson, & Svensson, 2003). Thus, she empathizes with him—whether she wants to or not. Try it yourself. Type "sad human faces" into your Internet search engine and select images from your results. Look at 20 photos and pay careful attention to what happens to your face and to your mood. Do you feel almost a "pull" of some of your facial muscles? Do you feel a tinge of melancholy?

Joint Attention, Visual Perspective Taking

Going beyond the automatic, humans are capable of actively engaging with other people's mental states, such as when they enter into situations of joint attention—like Marissa and Noah, who are each looking at an object and are both aware that each of them is looking at the object. This sounds more complicated than it really is. Just point to an object when a 3-year old is around and notice how both the child and you check in with each other, ensuring that you are really *jointly* engaging with the object. Such shared engagement is critical for children to learn the meaning of objects—both their value (is it safe and rewarding to approach?) and the words that refer to them (what do you call this?). When I hold up my keyboard and show it to you, we are jointly attending to it, and if I then say it's called "Tastatur" in German, you know that I am referring to the keyboard and not to the table on which it had been resting.

Another important capacity of engagement is visual perspective taking: You are sitting at a dinner table and advise another person on where the salt is—do you consider that it is to *her* left even though it is to *your* right? When we overcome our egocentric perspective this way, we imaginatively adopt the other person's spatial viewpoint and determine how the world looks from their perspective. In fact, there is evidence that we mentally "rotate" toward the other's spatial location, because the farther away the person sits (e.g., 60, 90, or 120 degrees away from you) the longer it takes to adopt the person's perspective (Michelon & Zacks, 2006).

Projection, Simulation (and the Specter of Egocentrism)

When imagining what it might be like to be in another person's *psychological* position, humans have to go beyond mental rotation. One tool to understand the other's thoughts or feelings is simulation—using one's own mental states as a model for others' mental states: "What would it feel like sitting across from the stern interrogator? *I* would feel scared . . ." An even simpler form of such modeling is the assumption that the other thinks, feels, wants what we

do—which has been called the "like-me" assumption (Meltzoff, 2007) or the inclination toward *social* **projection** (Krueger, 2007). In a sense, this is an absence of perspective taking, because we assume that the other's perspective equals our own. This can be an effective strategy if we share with the other person the same environment, background, knowledge, and goals, but it gets us into trouble when this presumed common ground is in reality lacking. Let's say you know that Brianna doesn't like Fred's new curtains, but you hear her exclaim to Fred, "These are beautiful!" Now you have to predict whether Fred can figure out that Brianna was being sarcastic. It turns out that you will have a hard time suppressing your own knowledge in this case and you may overestimate how easy it is for Fred to spot the sarcasm (Keysar, 1994). Similarly, you will overestimate how visible that pimple is on your chin—even though it feels big and ugly to you, in reality very few people will ever notice it (Gilovich & Savitsky, 1999). So the next time when you spot a magnificent bird high up in the tree and you get impatient with your friend who just can't see what is clearly obvious, remember: it's obvious to *you*.

What all these examples show is that people use their own current state—of knowledge, concern, or perception—to grasp other people's mental states. And though they often do so correctly, they also get things wrong at times. This is why couples counselors, political advisors, and Buddhists agree on at least one thing: we all need to try harder to recognize our egocentrism and actively take other people's perspective—that is, grasp their actual mental states, even if (or especially when) they are different from our own.

Explicit Mental State Inference

The ability to truly take another person's perspective requires that we separate what we want, feel, and know from what the other person is likely to want, feel, and know. To do so humans make use of a variety of information. For one thing, they rely on stored knowledge—both general knowledge ("Everybody would be nervous when threatened by a man with a gun") and agent-specific knowledge ("Joe was fearless because he was trained in martial arts"). For another, they critically rely on perceived facts of the concrete situation—such as what is happening to the agent, the agent's facial expressions and behaviors, and what the person saw or didn't see.

This capacity of integrating multiple lines of information into a mental-state inference develops steadily within the first few years of life, and this process has led to a substantial body of research (Wellman, Cross, & Watson, 2001). The research began with a clever experiment by Wimmer and Perner (1983), who tested whether children can pass a **false-belief test** (see Figure 2). The child is shown a picture story of Sally, who puts her ball in a basket and leaves

the room. While Sally is out of the room, Anne comes along and takes the ball from the basket and puts it inside a box. The child is then asked *where* Sally thinks the ball is located when she comes back to the room. Is she going to look first *in the box* or *in the basket*?

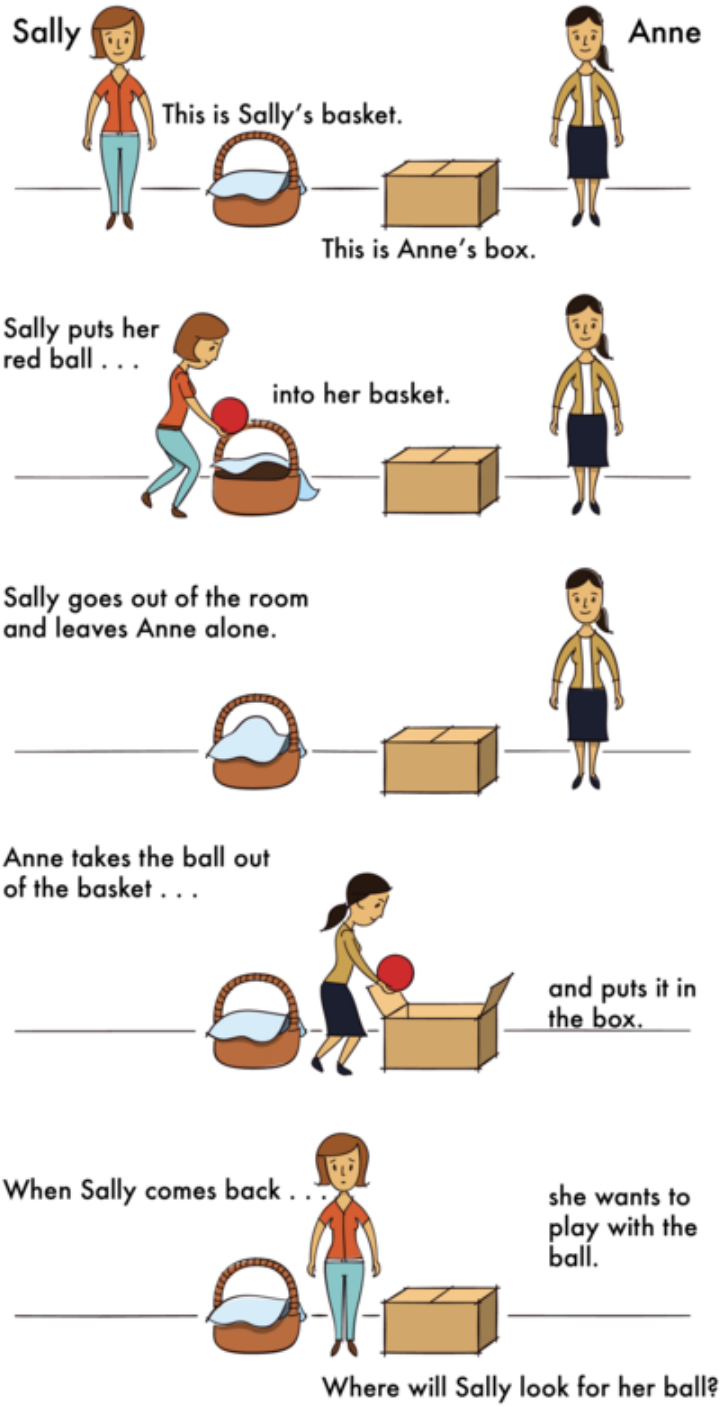


Figure 2. Sally–Anne task to test children's ability to infer false beliefs.

The right answer is that she will look in the basket, because that's where she put it and thinks it is; but we have to infer this *false belief* against our own better knowledge that the ball is in the box. This is very difficult for children before the age of 4, and it usually takes some cognitive effort in adults (Epley, Morewedge, & Keysar, 2004).

The challenge is clear: People are good at automatically relating to other people, using their own minds as a fitting model for others' minds. But people need to recognize when to step out of their own perspective and truly represent the other person's perspective—which may harbor very different thoughts, feelings, and intentions.

Tools in Summary

We have seen that the human understanding of other minds relies on many tools. People process such information as motion, faces, and gestures and categorize it into such concepts as agent, intentional action, or fear. They rely on relatively automatic psychological processes, such as imitation, joint attention, and projection. And they rely on more effortful processes, such as simulation and mental-state inference. These processes all link behavior that humans observe to mental states that humans infer. If we call this stunning capacity a "theory," it is a theory of mind *and* behavior.

Folk Explanations of Behavior

Nowhere is this mind–behavior link clearer than in **people's explanations of behavior**—when they try to understand why somebody acted or felt a certain way. People have a strong need to answer such "why" questions, from the trivial to the significant: why the neighbor's teenage daughter is wearing a short skirt in the middle of winter; why the policeman is suddenly so friendly; why the murderer killed three people. The need to explain this last behavior seems puzzling, because typical benefits of explanation are absent: We do not need to predict or control the criminal's behavior since we will never have anything to do with him. Nonetheless, we have an insatiable desire to *understand*, to find *meaning* in this person's behavior—and in people's behavior generally.

Older theories of how people explain and understand behavior suggested that people merely identify causes of the behavior (e.g., Kelley, 1967). That is true for most unintentional behaviors —tripping, having a headache, calling someone by the wrong name. But to explain *intentional* behaviors, people use a more sophisticated framework of interpretation, which follows directly from their concept of intentionality and the associated mental states they infer (Malle, 2004). We have already mentioned the complexity of people's concept of intentionality; here it is in

When people behave in ways that don't make sense to us we often feel compelled to come up with reasonable explanations. What are their motives? What circumstances would lead to this? How could this happen? [Image: lwpkommunikacio, https://goo.gl/5x1SAN, CC BY 2.0, https://goo.gl/axKpvj]

full (Malle & Knobe, 1997): For an agent to perform a behavior intentionally, she must have a desire for an outcome (what we had called a goal), beliefs about how a particular action leads to the outcome, and an intention to perform that action; if the agent then actually performs the action with awareness and skill, people take it to be an intentional action. To explain *why* the agent performed the action, humans try to make the inverse inference of *what desire* and *what beliefs* the agent had that led her to so act, and these inferred desires and beliefs are the *reasons* for which she acted. What was her reason for wearing a short skirt in the winter? "She wanted to annoy her mother." What was the policeman's reason for suddenly being so nice? "He thought he was speaking with an influential politician." What was his reason for killing three people? In fact, with such extreme actions, people are often at a loss for an answer. If they do offer an answer, they frequently retreat to "causal history explanations" (Malle, 1999), which step outside the agent's own reasoning and refer instead to more general background facts—for example, that he was mentally ill or a member of an extremist group. But people clearly prefer to explain others' actions by referring to their beliefs and desires, the specific reasons for which they acted.

By relying on a theory of mind, explanations of behavior make meaningful what would otherwise be inexplicable motions—just like in our initial example of two persons passing some object between them. We recognize that the customer wanted to pay and that's why she passed her credit card to the cashier, who in turn knew that he was given a credit card and swiped it. It all seems perfectly clear, almost trivial to us. But that is only because humans have a theory of mind and use it to retrieve the relevant knowledge, simulate the other people's perspective, infer beliefs and desires, and explain what a given action means. Humans do this effortlessly and often accurately. Moreover, they do it within seconds or less. What's so special about that? Well, it takes years for a child to develop this capacity, and it took our species a few million years to evolve it. That's pretty special.

Outside Resources

Blog: On the debate about menstrual synchrony
http://blogs.scientificamerican.com/context-and-variation/2011/11/16/menstrual-synchrony/

Blog: On the debates over mirror neurons
http://blogs.scientificamerican.com/guest-blog/2012/11/06/whats-so-special-about-mirror-neurons/

Book: First and last chapters of Zunshine, L. (2006). Why we read fiction: Theory of mind and the novel. Columbus, OH: Ohio State University Press.
https://ohiostatepress.org/Books/Book PDFs/Zunshine Why.pdf

Movie: A movie that portrays the social difficulties of a person with autism: Adam (Fox Searchlight Pictures, 2009)
http://www.imdb.com/title/tt1185836/?ref_=fn_tt_tt_1

ToM and Autism TEDx Talks
https://www.ted.com/playlists/153/the_autism_spectrum

Video: TED talk on autism
http://www.ted.com/talks/temple_grandin_the_world_needs_all_kinds_of_minds.html

Video: TED talk on empathy
http://blog.ted.com/2011/04/18/a-radical-experiment-in-empathy-sam-richards-at-ted-com/

Video: TED talk on theory of mind and moral judgment
http://www.ted.com/talks/rebecca_saxe_how_brains_make_moral_judgments.html

Video: Test used by Baron Cohen (prior to the core study) to investigate whether autistic children had a theory of mind by using a false belief task.
https://www.youtube.com/watch?v=jbL34F81Rz0

Video: Theory of mind development
http://www.youtube.com/watch?v=YiT7HFj2gv4, http://www.youtube.com/watch?v=YGSj2zY2OEM

Discussion Questions

1. Recall a situation in which you tried to infer what a person was thinking or feeling but you just couldn't figure it out, and recall another situation in which you tried the same but succeeded. Which tools were you able to use in the successful case that you didn't or couldn't use in the failed case?
2. Mindfulness training improves keen awareness of one's own mental states. Look up a few such training programs (easily found online) and develop a similar training program to improve awareness of other people's minds.
3. In the near future we will have robots that closely interact with people. Which theory of mind tools should a robot definitely have? Which ones are less important? Why?
4. Humans assume that everybody has the capacity to make choices and perform intentional actions. But in a sense, a choice is just a series of brain states, caused by previous brain states and states of the world, all governed by the physical laws of the universe. Is the concept of choice an illusion?
5. The capacity to understand others' minds is intimately related to another unique human capacity: language. How might these two capacities have evolved? Together? One before the other? Which one?

Vocabulary

Automatic empathy
A social perceiver unwittingly taking on the internal state of another person, usually because of mimicking the person's expressive behavior and thereby feeling the expressed emotion.

False-belief test
An experimental procedure that assesses whether a perceiver recognizes that another person has a false belief—a belief that contradicts reality.

Folk explanations of behavior
People's natural explanations for why somebody did something, felt something, etc. (differing substantially for unintentional and intentional behaviors).

Intention
An agent's mental state of committing to perform an action that the agent believes will bring about a desired outcome.

Intentionality
The quality of an agent's performing a behavior intentionally—that is, with skill and awareness and executing an intention (which is in turn based on a desire and relevant beliefs).

Joint attention
Two people attending to the same object and being aware that they both are attending to it.

Mimicry
Copying others' behavior, usually without awareness.

Mirror neurons
Neurons identified in monkey brains that fire both when the monkey performs a certain action and when it perceives another agent performing that action.

Projection
A social perceiver's assumption that the other person wants, knows, or feels the same as the perceiver wants, know, or feels.

Simulation
The process of representing the other person's mental state.

Synchrony
Two people displaying the same behaviors or having the same internal states (typically because of mutual mimicry).

Theory of mind
The human capacity to understand minds, a capacity that is made up of a collection of concepts (e.g., agent, intentionality) and processes (e.g., goal detection, imitation, empathy, perspective taking).

Visual perspective taking
Can refer to visual perspective taking (perceiving something from another person's spatial vantage point) or more generally to effortful mental state inference (trying to infer the other person's thoughts, desires, emotions).

References

Baird, J. A., & Baldwin, D. A. (2001). Making sense of human behavior: Action parsing and intentional inference. In B. F. Malle, L. J. Moses, & D. A. Baldwin (Eds.), *Intentions and intentionality: Foundations of social cognition* (pp. 193–206). Cambridge, MA:MIT Press.

Baldwin, D. A., & Tomasello, M. (1998). Word learning: A window on early pragmatic understanding. In E. V. Clark (Ed.), *The proceedings of the twenty-ninth annual child language research forum* (pp. 3–23). Chicago, IL: Center for the Study of Language and Information.

Blackburn, J., Gottschewski, K., George, E., & L—, N. (2000, May). A discussion about theory of mind: From an autistic perspective. *Proceedings of Autism Europe's 6th International Congress*. Glasgow. Retrieved from http://archive.autistics.org/library/AE2000-ToM.html.

Bogdan, R. (2000). *Minding minds: Evolving a reflexing mind by interpreting others*. Cambridge, MA: MIT Press.

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception–behavior link and social interaction. *Journal of Personality and Social Psychology, 76*, 893–910.

Epley, N., Morewedge, C. K., & Keysar, B. (2004). Perspective taking in children and adults: Equivalent egocentrism but differential correction. *Journal of Experimental Social Psychology, 40*, 760–768.

Gergely, G., Nádasdy, Z., Csibra, G., & Bíró, S. (1995). Taking the intentional stance at 12 months of age. *Cognition, 56*, 165–193.

Gilovich, T., & Savitsky, K. (1999). The spotlight effect and the illusion of transparency: Egocentric assessments of how we are seen by others. *Current Directions in Psychological Science, 8*, 165–168.

Guglielmo, S., Monroe, A. E., & Malle, B. F. (2009). At the heart of morality lies folk psychology. *Inquiry: An Interdisciplinary Journal of Philosophy, 52*, 449–466.

Johnson, S. C. (2000). The recognition of mentalistic agents in infancy. *Trends in Cognitive Sciences, 4*, 22–28.

Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska Symposium on Motivation* (Vol. 15, pp. 192–240). Lincoln: University of Nebraska Press.

Keysar, B. (1994). The illusory transparency of intention: Linguistic perspective taking in text. *Cognitive Psychology, 26*, 165–208.

Krueger, J. I. (2007). From social projection to social behaviour. *European Review of Social Psychology, 18*, 1–35.

Levenson, R. W., & Ruef, A. M. (1992). Empathy: A physiological substrate. *Journal of Personality*

and Social Psychology, 63, 234–246.

Malle, B. F. (2008). The fundamental tools, and possibly universals, of social cognition. In R. M. Sorrentino & S. Yamaguchi (Eds.), *Handbook of motivation and cognition across cultures* (pp. 267–296). New York, NY: Elsevier/Academic Press.

Malle, B. F. (2004). *How the mind explains behavior: Folk explanations, meaning, and social interaction*. Cambridge, MA: MIT Press.

Malle, B. F. (1999). How people explain behavior: A new theoretical framework. *Personality and Social Psychology Review, 3*, 23–48.

Malle, B. F., & Knobe, J. (1997). The folk concept of intentionality. *Journal of Experimental Social Psychology, 33*, 101–121.

Meltzoff, A. N. (2007). "Like me": A foundation for social cognition. *Developmental Science, 10*, 126–134.

Meltzoff, A. N., & Decety, J. (2003). What imitation tells us about social cognition: A rapprochement between developmental psychology and cognitive neuroscience. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 358*, 491–500.

Michelon, P., & Zacks, J. M. (2006). Two kinds of visual perspective taking. *Perception & Psychophysics, 68*, 327–337.

Perner, J. (1991). *Understanding the representational mind*. Cambridge, MA: MIT Press.

Premack, D. (1990). The infant's theory of self-propelled objects. *Cognition, 36*, 1–16.

Rizzolatti, G., Fogassi, L., & Gallese, V. (2001). Neurophysiological mechanisms underlying the understanding and imitation of action. *Nature Reviews Neuroscience, 2*, 661–670.

Sonnby-Borgström, M., Jönsson, P., & Svensson, O. (2003). Emotional empathy as related to mimicry reactions at different levels of information processing. *Journal of Nonverbal Behavior, 27*, 3–23.

Tager-Flusberg, H. (2007). Evaluating the theory-of-mind hypothesis of autism. *Current Directions in Psychological Science, 16*, 311–315.

Tomasello, M. (2003). The key is social cognition. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the study of language and thought* (pp. 47–57). Cambridge, MA: MIT Press.

Wellman, H. M. (1990). *The child's theory of mind*. Cambridge, MA: MIT Press.

Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development, 72*, 655–684.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition, 13*, 103–128.

Woodward, A. L. (1998). Infants selectively encode the goal object of an actor's reach. *Cognition, 69*, 1–34.

Yang, Z., & Schank, J. C. (2006). Women do not synchronize their menstrual cycles. *Human Nature, 17*, 433–447.

Zhang, J., Hedden, T., & Chia, A. (2012). Perspective-taking and depth of theory-of-mind reasoning in sequential-move games. *Cognitive Science, 36*, 560–573.

Development

14

Social and Personality Development in Childhood

Ross Thompson

Childhood social and personality development emerges through the interaction of social influences, biological maturation, and the child's representations of the social world and the self. This interaction is illustrated in a discussion of the influence of significant relationships, the development of social understanding, the growth of personality, and the development of social and emotional competence in childhood.

Learning Objectives

- Provide specific examples of how the interaction of social experience, biological maturation, and the child's representations of experience and the self provide the basis for growth in social and personality development.
- Describe the significant contributions of parent–child and peer relationships to the development of social skills and personality in childhood.
- Explain how achievements in social understanding occur in childhood. Moreover, do scientists believe that infants and young children are egocentric?
- Describe the association of temperament with personality development.
- Explain what is "social and emotional competence" and provide some examples of how it develops in childhood.

Introduction

"How have I become the kind of person I am today?" Every adult ponders this question from time to time. The answers that readily come to mind include the influences of parents, peers, temperament, a moral compass, a strong sense of self, and sometimes critical life experiences such as parental divorce. Social and personality development encompasses these and many other influences on the growth of the person. In addition, it addresses questions that are at the heart of understanding how we develop as unique people. How much are we products of nature or nurture? How enduring are the influences of early experiences? The study of social and personality development offers perspective on these and other issues, often by showing how complex and multifaceted are the influences on developing children, and thus the intricate processes that have made you the person you are today (Thompson, 2006a).

Understanding social and personality development requires looking at children from three perspectives that interact to shape development. The first is the social context in which each child lives, especially the relationships that provide security, guidance, and knowledge. The second is biological maturation that supports developing social and emotional competencies and underlies temperamental individuality. The third is children's developing representations of themselves and the social world. Social and personality development is best understood as the continuous interaction between these social, biological, and representational aspects of psychological development.

Humans are inherently social creatures. Mostly, we work, play, and live together in groups. [Image: The Daring Librarian, https://goo.gl/LmA2pS, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Relationships

This interaction can be observed in the development of the earliest relationships between infants and their parents in the first year. Virtually all infants living in normal circumstances develop strong emotional attachments to those who care for them. Psychologists believe that the development of these attachments is as biologically natural as learning to walk and not simply a byproduct of the parents' provision of food or warmth. Rather, attachments have evolved in humans because they promote children's motivation to stay close to those who care for them and, as a consequence, to benefit from the learning, security, guidance, warmth,

and affirmation that close relationships provide (Cassidy, 2008).

One of the first and most important relationships is between mothers and infants. The quality of this relationship has an effect on later psychological and social development. [Image: Premnath Thirumalaisamy, https://goo.gl/66BROf, CC BY-NC 2.0, https://goo.gl/FIlc2e]

Although nearly all infants develop emotional attachments to their caregivers--parents, relatives, nannies-- their sense of security in those attachments varies. Infants become *securely* attached when their parents respond sensitively to them, reinforcing the infants' confidence that their parents will provide support when needed. Infants become *insecurely* attached when care is inconsistent or neglectful; these infants tend to respond avoidantly, resistantly, or in a disorganized manner (Belsky & Pasco Fearon, 2008). Such insecure attachments are not necessarily the result of deliberately bad parenting but are often a byproduct of circumstances. For example, an overworked single mother may find herself overstressed and fatigued at the end of the day, making fully-involved childcare very difficult. In other cases, some parents are simply poorly emotionally equipped to take on the responsibility of caring for a child.

The different behaviors of securely- and insecurely-attached infants can be observed especially when the infant needs the caregiver's support. To assess the nature of attachment, researchers use a standard laboratory procedure called the "Strange Situation," which involves brief separations from the caregiver (e.g., mother) (Solomon & George, 2008). In the Strange Situation, the caregiver is instructed to leave the child to play alone in a room for a short time, then return and greet the child while researchers observe the child's response. Depending on the child's level of attachment, he or she may reject the parent, cling to the parent, or simply welcome the parent—or, in some instances, react with an agitated combination of responses.

Infants can be securely or insecurely attached with mothers, fathers, and other regular caregivers, and they can differ in their security with different people. The **security of attachment** is an important cornerstone of social and personality development, because infants and young children who are securely attached have been found to develop stronger friendships with peers, more advanced emotional understanding and early conscience

development, and more positive self-concepts, compared with insecurely attached children (Thompson, 2008). This is consistent with attachment theory's premise that experiences of care, resulting in secure or insecure attachments, shape young children's developing concepts of the self, as well as what people are like, and how to interact with them.

As children mature, parent-child relationships naturally change. Preschool and grade-school children are more capable, have their own preferences, and sometimes refuse or seek to compromise with parental expectations. This can lead to greater parent-child conflict, and how conflict is managed by parents further shapes the quality of parent-child relationships. In general, children develop greater competence and self-confidence when parents have high (but reasonable) expectations for children's behavior, communicate well with them, are warm and responsive, and use reasoning (rather than coercion) as preferred responses to children's misbehavior. This kind of parenting style has been described as **authoritative** (Baumrind, 2013). Authoritative parents are supportive and show interest in their kids' activities but are not overbearing and allow them to make constructive mistakes. By contrast, some less-constructive parent-child relationships result from authoritarian, uninvolved, or permissive parenting styles (see Table 1).

		Expectations/Control	
		Low	High
Warmth/ Responsiveness	Low	uninvolved	authoritarian
	High	permissive	authoritative

Table 1: Comparison of Four Parenting Styles

Parental roles in relation to their children change in other ways, too. Parents increasingly become mediators (or gatekeepers) of their children's involvement with peers and activities outside the family. Their communication and practice of values contributes to children's academic achievement, moral development, and activity preferences. As children reach adolescence, the parent-child relationship increasingly becomes one of "coregulation," in which both the parent(s) and the child recognizes the child's growing competence and autonomy, and together they rebalance authority relations. We often see evidence of this as parents start accommodating their teenage kids' sense of independence by allowing them to

get cars, jobs, attend parties, and stay out later.

Family relationships are significantly affected by conditions outside the home. For instance, the Family Stress Model describes how financial difficulties are associated with parents' depressed moods, which in turn lead to marital problems and poor parenting that contributes to poorer child adjustment (Conger, Conger, & Martin, 2010). Within the home, parental marital difficulty or divorce affects more than half the children growing up today in the United States. Divorce is typically associated with economic stresses for children and parents, the renegotiation of parent-child relationships (with one parent typically as primary custodian and the other assuming a visiting relationship), and many other significant adjustments for children. Divorce is often regarded by children as a sad turning point in their lives, although for most it is not associated with long-term problems of adjustment (Emery, 1999).

Peer Relationships

Parent-child relationships are not the only significant relationships in a child's life. Peer relationships are also important. Social interaction with another child who is similar in age, skills, and knowledge provokes the development of many social skills that are valuable for the rest of life (Bukowski, Buhrmester, & Underwood, 2011). In peer relationships, children learn how to initiate and maintain social interactions with other children. They learn skills for managing conflict, such as turn-taking, compromise, and bargaining. Play also involves the mutual, sometimes complex, coordination of goals, actions, and understanding. For example, as infants, children get their first encounter with sharing (of each other's toys); during pretend play as preschoolers they create narratives together, choose roles, and collaborate to act out their stories; and in primary school, they may join a sports team, learning to work together and support each other emotionally and strategically toward a common goal. Through these experiences, children develop friendships that provide additional sources of security and support to those provided

Peer relationships are particularly important for children. They can be supportive but also challenging. Peer rejection may lead to behavioral problems later in life. [Image: Twentyfour Students, https://goo.gl/3IS2gV, CC BY-SA 2.0, https://goo.gl/jSSrcO]

by their parents.

However, peer relationships can be challenging as well as supportive (Rubin, Coplan, Chen, Bowker, & McDonald, 2011). Being accepted by other children is an important source of affirmation and self-esteem, but peer rejection can foreshadow later behavior problems (especially when children are rejected due to aggressive behavior). With increasing age, children confront the challenges of bullying, peer victimization, and managing conformity pressures. Social comparison with peers is an important means by which children evaluate their skills, knowledge, and personal qualities, but it may cause them to feel that they do not measure up well against others. For example, a boy who is not athletic may feel unworthy of his football-playing peers and revert to shy behavior, isolating himself and avoiding conversation. Conversely, an athlete who doesn't "get" Shakespeare may feel embarrassed and avoid reading altogether. Also, with the approach of adolescence, peer relationships become focused on psychological intimacy, involving personal disclosure, vulnerability, and loyalty (or its betrayal)—which significantly affects a child's outlook on the world. Each of these aspects of peer relationships requires developing very different social and emotional skills than those that emerge in parent-child relationships. They also illustrate the many ways that peer relationships influence the growth of personality and self-concept.

Social Understanding

As we have seen, children's experience of relationships at home and the peer group contributes to an expanding repertoire of social and emotional skills and also to broadened social understanding. In these relationships, children develop expectations for specific people (leading, for example, to secure or insecure attachments to parents), understanding of how to interact with adults and peers, and developing self-concept based on how others respond to them. These relationships are also significant forums for emotional development.

Remarkably, young children begin developing social understanding very early in life. Before the end of the first year, infants are aware that other people have perceptions, feelings, and other mental states that affect their behavior, and which are different from the child's own mental states. This can be readily observed in a process called **social referencing**, in which an infant looks to the mother's face when confronted with an unfamiliar person or situation (Feinman, 1992). If the mother looks calm and reassuring, the infant responds positively as if the situation is safe. If the mother looks fearful or distressed, the infant is likely to respond with wariness or distress because the mother's expression signals danger. In a remarkably insightful manner, therefore, infants show an awareness that even though they are uncertain about the unfamiliar situation, their mother is not, and that by "reading" the emotion in her

face, infants can learn about whether the circumstance is safe or dangerous, and how to respond.

Although developmental scientists used to believe that infants are egocentric—that is, focused on their own perceptions and experience—they now realize that the opposite is true. Infants are aware at an early stage that people have different mental states, and this motivates them to try to figure out what others are feeling, intending, wanting, and thinking, and how these mental states affect their behavior. They are beginning, in other words, to develop a **theory of mind**, and although their understanding of mental states begins very simply, it rapidly expands (Wellman, 2011). For example, if an 18-month-old watches an adult try repeatedly to drop a necklace into a cup but inexplicably fail each time, they will immediately put the necklace into the cup themselves—thus completing what the adult intended, but failed, to do. In doing so, they reveal their awareness of the intentions underlying the adult's behavior (Meltzoff, 1995). Carefully designed experimental studies show that by late in the preschool years, young children understand that another's beliefs can be mistaken rather than correct, that memories can affect how you feel, and that one's emotions can be hidden from others (Wellman, 2011). Social understanding grows significantly as children's theory of mind develops.

How do these achievements in social understanding occur? One answer is that young children are remarkably sensitive observers of other people, making connections between their emotional expressions, words, and behavior to derive simple inferences about mental states (e.g., concluding, for example, that what Mommy is looking at is in her mind) (Gopnik, Meltzoff, & Kuhl, 2001). This is especially likely to occur in relationships with people whom the child knows well, consistent with the ideas of attachment theory discussed above. Growing language skills give young children words with which to represent these mental states (e.g., "mad," "wants") and talk about them with others. Thus in conversation with their parents about everyday experiences, children learn much about people's mental states from how adults talk about them ("Your sister was sad because she thought Daddy was coming home.") (Thompson, 2006b). Developing social understanding is, in other words, based on children's everyday interactions with others and their careful interpretations of what they see and hear. There are also some scientists who believe that infants are biologically prepared to perceive people in a special way, as organisms with an internal mental life, and this facilitates their interpretation of people's behavior with reference to those mental states (Leslie, 1994).

Personality

Parents look into the faces of their newborn infants and wonder, "What kind of person will

Although a child's temperament is partly determined by genetics, environmental influences also contribute to shaping personality. Positive personality development is supported by a "good fit" between a child's natural temperament, environment and experiences. [Image: Thomas Hawk, https://goo.gl/2So40O, CC BY-NC 2.0, https://goo.gl/FIlc2e]

this child will become?" They scrutinize their baby's preferences, characteristics, and responses for clues of a developing personality. They are quite right to do so, because temperament is a foundation for personality growth. But **temperament** (defined as early-emerging differences in reactivity and self-regulation) is not the whole story. Although temperament is biologically based, it interacts with the influence of experience from the moment of birth (if not before) to shape personality (Rothbart, 2011). Temperamental dispositions are affected, for example, by the support level of parental care. More generally, personality is shaped by the **goodness of fit** between the child's temperamental qualities and characteristics of the environment (Chess & Thomas, 1999). For example, an adventurous child whose parents regularly take her on weekend hiking and fishing trips would be a good "fit" to her lifestyle, supporting personality growth. Personality is the result, therefore, of the continuous interplay between biological disposition and experience, as is true for many other aspects of social and personality development.

Personality develops from temperament in other ways (Thompson, Winer, & Goodvin, 2010). As children mature biologically, temperamental characteristics emerge and change over time. A newborn is not capable of much self-control, but as brain-based capacities for self-control advance, temperamental changes in self-regulation become more apparent. For example, a newborn who cries frequently doesn't necessarily have a grumpy personality; over time, with sufficient parental support and increased sense of security, the child might be less likely to cry.

In addition, personality is made up of many other features besides temperament. Children's developing self-concept, their motivations to achieve or to socialize, their values and goals, their coping styles, their sense of responsibility and conscientiousness, and many other qualities are encompassed into personality. These qualities are influenced by biological dispositions, but even more by the child's experiences with others, particularly in close relationships, that guide the growth of individual characteristics.

Indeed, personality development begins with the biological foundations of temperament but becomes increasingly elaborated, extended, and refined over time. The newborn that parents gazed upon thus becomes an adult with a personality of depth and nuance.

Social and Emotional Competence

Social and personality development is built from the social, biological, and representational influences discussed above. These influences result in important developmental outcomes that matter to children, parents, and society: a young adult's capacity to engage in socially constructive actions (helping, caring, sharing with others), to curb hostile or aggressive impulses, to live according to meaningful moral values, to develop a healthy identity and sense of self, and to develop talents and achieve success in using them. These are some of the developmental outcomes that denote social and emotional competence.

These achievements of social and personality development derive from the interaction of many social, biological, and representational influences. Consider, for example, the development of conscience, which is an early foundation for moral development. **Conscience** consists of the cognitive, emotional, and social influences that cause young children to create and act consistently with internal standards of conduct (Kochanska, 2002). Conscience emerges from young children's experiences with parents, particularly in the development of a mutually responsive relationship that motivates young children to respond constructively to the parents' requests and expectations. Biologically based temperament is involved, as some children are temperamentally more capable of motivated self-regulation (a quality called **effortful control**) than are others, while some children are dispositionally more prone to the fear and anxiety that parental disapproval can evoke. Conscience development grows through a good fit between the child's temperamental qualities and how parents communicate and reinforce behavioral expectations. Moreover, as an illustration of the interaction of genes and experience, one research group found that young children with a particular gene allele (the 5-HTTLPR) were low on measures of conscience development when they had previously experienced unresponsive maternal care, but children with the same allele growing up with responsive care showed strong later performance on conscience measures (Kochanska, Kim, Barry, & Philibert, 2011).

Conscience development also expands as young children begin to represent moral values and think of themselves as moral beings. By the end of the preschool years, for example, young children develop a "moral self" by which they think of themselves as people who want to do the right thing, who feel badly after misbehaving, and who feel uncomfortable when others misbehave. In the development of conscience, young children become more socially and

emotionally competent in a manner that provides a foundation for later moral conduct (Thompson, 2012).

The development of gender and gender identity is likewise an interaction among social, biological, and representational influences (Ruble, Martin, & Berenbaum, 2006). Young children learn about gender from parents, peers, and others in society, and develop their own conceptions of the attributes associated with maleness or femaleness (called **gender schemas**). They also negotiate biological transitions (such as puberty) that cause their sense of themselves and their sexual identity to mature.

Social influences such as cultural norms impact children's interests, dress, style of speech and even life aspirations. [Image: Amanda Westmont, https://goo.gl/ntS5qx, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Each of these examples of the growth of social and emotional competence illustrates not only the interaction of social, biological, and representational influences, but also how their development unfolds over an extended period. Early influences are important, but not determinative, because the capabilities required for mature moral conduct, gender identity, and other outcomes continue to develop throughout childhood, adolescence, and even the adult years.

Conclusion

As the preceding sentence suggests, social and personality development continues through adolescence and the adult years, and it is influenced by the same constellation of social, biological, and representational influences discussed for childhood. Changing social relationships and roles, biological maturation and (much later) decline, and how the individual represents experience and the self continue to form the bases for development throughout life. In this respect, when an adult looks forward rather than retrospectively to ask, "what kind of person am I becoming?"—a similarly fascinating, complex, multifaceted interaction of developmental processes lies ahead.

Outside Resources

Web: Center for the Developing Child, Harvard University
http://developingchild.harvard.edu

Web: Collaborative for Academic, Social, and Emotional Learning
http://casel.org

Discussion Questions

1. If parent–child relationships naturally change as the child matures, would you expect that the security of attachment might also change over time? What reasons would account for your expectation?
2. In what ways does a child's developing theory of mind resemble how scientists create, refine, and use theories in their work? In other words, would it be appropriate to think of children as informal scientists in their development of social understanding?
3. If there is a poor goodness of fit between a child's temperament and characteristics of parental care, what can be done to create a better match? Provide a specific example of how this might occur.
4. What are the contributions that parents offer to the development of social and emotional competence in children? Answer this question again with respect to peer contributions.

Vocabulary

Authoritative
A parenting style characterized by high (but reasonable) expectations for children's behavior, good communication, warmth and nurturance, and the use of reasoning (rather than coercion) as preferred responses to children's misbehavior.

Conscience
The cognitive, emotional, and social influences that cause young children to create and act consistently with internal standards of conduct.

Effortful control
A temperament quality that enables children to be more successful in motivated self-regulation.

Family Stress Model
A description of the negative effects of family financial difficulty on child adjustment through the effects of economic stress on parents' depressed mood, increased marital problems, and poor parenting.

Gender schemas
Organized beliefs and expectations about maleness and femaleness that guide children's thinking about gender.

Goodness of fit
The match or synchrony between a child's temperament and characteristics of parental care that contributes to positive or negative personality development. A good "fit" means that parents have accommodated to the child's temperamental attributes, and this contributes to positive personality growth and better adjustment.

Security of attachment
An infant's confidence in the sensitivity and responsiveness of a caregiver, especially when he or she is needed. Infants can be securely attached or insecurely attached.

Social referencing
The process by which one individual consults another's emotional expressions to determine how to evaluate and respond to circumstances that are ambiguous or uncertain.

Temperament
Early emerging differences in reactivity and self-regulation, which constitutes a foundation for personality development.

Theory of mind
Children's growing understanding of the mental states that affect people's behavior.

References

Baumrind, D. (2013). Authoritative parenting revisited: History and current status. In R. E. Larzelere, A. Sheffield, & A. W. Harrist (Eds.), *Authoritative parenting: Synthesizing nurturance and discipline for optimal child development* (pp. 11–34). Washington, DC: American Psychological Association.

Belsky, J., & Pasco Fearon, R. M. (2008). Precursors of attachment security. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 295–316). New York, NY: Guilford.

Bukowski, W. M., Buhrmester, D., & Underwood, M. K. (2011). Peer relations as a developmental context. In M. K. Underwood & L. H. Rosen (Eds.), *Social development*(pp. 153–179). New York, NY: Guilford

Cassidy, J. (2008). The nature of the child's ties. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 3–22). New York, NY: Guilford.

Chess, S., & Thomas, A. (1999). *Goodness of fit: Clinical applications from infancy through adult life*. New York, NY: Brunner-Mazel/Taylor & Francis.

Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family, 72*, 685–704

Emery, R. E. (1999). *Marriage, divorce, and children's adjustment* (2nd ed.). Thousand Oaks, CA: Sage.

Feinman, S. (Ed.) (1992). *Social referencing and the social construction of reality in infancy*. New York, NY: Plenum.

Gopnik, A., Meltzoff, A. N., & Kuhl, P. K. (2001). *The scientist in the crib*. New York, NY: HarperCollins.

Kochanska, G. (2002). Mutually responsive orientation between mothers and their young children: A context for the early development of conscience. *Current Directions in Psychological Science*, 11, 191–195.

Kochanska, G., Kim, S., Barry, R. A., & Philibert, R. A. (2011). Children's genotypes interact with maternal responsive care in predicting children's competence: Diathesis-stress or differential susceptibility? *Development and Psychopathology, 23*, 605-616.

Leslie, A. M. (1994). ToMM, ToBy, and agency: Core architecture and domain specificity in cognition and culture. In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 119-148). New York, NY: Cambridge University Press.

Meltzoff, A. N. (1995). Understanding the intentions of others: Re-enactment of intended acts by 18-month-old children. *Developmental Psychology, 31*, 838-850.

Rothbart, M. K. (2011). *Becoming who we are: Temperament and personality in development*. New York, NY: Guilford.

Rubin, K. H., Coplan, R., Chen, X., Bowker, J., & McDonald, K. L. (2011). Peer relationships in childhood. In M. Bornstein & M. E. Lamb (Eds.), *Developmental science: An advanced textbook* (6th ed. pp. 519–570). New York, NY: Psychology Press/Taylor & Francis.

Ruble, D. N., Martin, C., & Berenbaum, S. (2006). Gender development. In W. Damon & R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 858–932). New York, NY: Wiley.

Solomon, J., & George, C. (2008). The measurement of attachment security and related constructs in infancy and early childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 383–416). New York, NY: Guilford.

Thompson, R. A. (2012). Whither the preconventional child? Toward a life-span moral development theory. *Child Development Perspectives*, 6, 423–429.

Thompson, R. A. (2008). Early attachment and later development: Familiar questions, new answers. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 348–365). New York, NY: Guilford.

Thompson, R. A. (2006a). Conversation and developing understanding: Introduction to the special issue. *Merrill-Palmer Quarterly, 52*, 1–16.

Thompson, R. A. (2006b). The development of the person: Social understanding, relationships, self, conscience. In W. Damon & R. M. Lerner (Series Eds.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 24–98). New York, NY: Wiley.

Thompson, R. A., Winer, A. C., & Goodvin, R. (2010). The individual child: Temperament, emotion, self, and personality. In M. Bornstein & M. E. Lamb (Eds.), *Developmental science: An advanced textbook* (6th ed., pp. 423–464). New York, NY: Psychology Press/Taylor & Francis.

Wellman, H. M. (2011). Developing a theory of mind. In U. Goswami (Ed.), *Wiley-Blackwell handbook of childhood cognitive development* (2nd ed., pp. 258–284). New York, NY: Wiley-Blackwell

15

Attachment Through the Life Course

R. Chris Fraley

The purpose of this module is to provide a brief review of attachment theory—a theory designed to explain the significance of the close, emotional bonds that children develop with their caregivers and the implications of those bonds for understanding personality development. The module discusses the origins of the theory, research on individual differences in attachment security in infancy and childhood, and the role of attachment in adult relationships.

Learning Objectives

- Explain the way the attachment system works and its evolutionary significance.
- Identify three commonly studied attachment patterns and what is known about the development of those patterns.
- Describe what is known about the consequences of secure versus insecure attachment in adult relationships.

Introduction

Some of the most rewarding experiences in people's lives involve the development and maintenance of close relationships. For example, some of the greatest sources of joy involve falling in love, starting a family, being reunited with distant loved ones, and sharing experiences with close others. And, not surprisingly, some of the most painful experiences in people's lives involve the disruption of important social bonds, such as separation from a spouse, losing a

parent, or being abandoned by a loved one.

Why do close relationships play such a profound role in human experience? Attachment theory is one approach to understanding the nature of close relationships. In this module, we review the origins of the theory, the core theoretical principles, and some ways in which attachment influences human behavior, thoughts, and feelings across the life course.

Close relationships are the fabric of society, and are integral to the maintenance of our species.

[Image: CC0 Public Domain, https://goo.gl/m25gce]

Attachment Theory: A Brief History and Core Concepts

Attachment theory was originally developed in the 1940s by John Bowlby, a British psychoanalyst who was attempting to understand the intense distress experienced by infants who had been separated from their parents. Bowlby (1969) observed that infants would go to extraordinary lengths to prevent separation from their parents or to reestablish proximity to a missing parent. For example, he noted that children who had been separated from their parents would often cry, call for their parents, refuse to eat or play, and stand at the door in desperate anticipation of their parents' return. At the time of Bowlby's initial writings, psychoanalytic writers held that these expressions were manifestations of immature defense mechanisms that were operating to repress emotional pain. However, Bowlby observed that such expressions are common to a wide variety of mammalian species and speculated that these responses to separation may serve an evolutionary function (see Focus Topic 1).

Focus Topic 1: Harlow's research on contact comfort

When Bowlby was originally developing his theory of attachment, there were alternative theoretical perspectives on why infants were emotionally attached to their primary caregivers (most often, their biological mothers). Bowlby and other theorists, for example, believed that there was something important about the responsiveness and contact provided by mothers. Other theorists, in contrast, argued that young infants feel emotionally connected to their mothers because mothers satisfy more basic needs, such as the need for food. That is, the child comes to feel emotionally connected to the mother because she is associated with the reduction of primary drives, such as hunger, rather than the reduction of drives that might be relational in nature.

In a classic set of studies, psychologist Harry Harlow placed young monkeys in cages that contained two artificial, surrogate "mothers" (Harlow, 1958). One of those surrogates was a simple wire contraption; the other was a wire contraption covered in cloth. Both of the surrogate mothers were equipped with a feeding tube so that Harrow and his colleagues had the option to allow the surrogate to deliver or not deliver milk. Harlow found that the young macaques spent a disproportionate amount of time with the cloth surrogate as opposed to the wire surrogate. Moreover, this was true even when the infants were fed by the wire surrogate rather than the cloth surrogate. This suggests that the strong emotional bond that infants form with their primary caregivers is rooted in something more than whether the caregiver provides food per se. Harlow's research is now regarded as one of the first experimental demonstrations of the importance of "contact comfort" in the establishment of infant–caregiver bonds.

Drawing on evolutionary theory, Bowlby (1969) argued that these behaviors are adaptive responses to separation from a primary **attachment figure**—a caregiver who provides support, protection, and care. Because human infants, like other mammalian infants, cannot feed or protect themselves, they are dependent upon the care and protection of "older and wiser" adults for survival. Bowlby argued that, over the course of evolutionary history, infants who were able to maintain proximity to an attachment figure would be more likely to survive to a reproductive age.

According to Bowlby, a motivational system, what he called the **attachment behavioral system**, was gradually "designed" by natural selection to regulate proximity to an attachment figure. The attachment system functions much like a thermostat that continuously monitors the ambient temperature of a room, comparing that temperature against a desired state and

adjusting behavior (e.g., activating the furnace) accordingly. In the case of the attachment system, Bowlby argued that the system continuously monitors the accessibility of the primary attachment figure. If the child perceives the attachment figure to be nearby, accessible, and attentive, then the child feels loved, secure, and confident and, behaviorally, is likely to explore his or her environment, play with others, and be sociable. If, however, the child perceives the attachment figure to be inaccessible, the child experiences anxiety and, behaviorally, is likely to exhibit attachment behaviors ranging from simple visual searching on the low extreme to active searching, following, and vocal signaling on the other. These **attachment behaviors** continue either until the child is able to reestablish a desirable level of physical or psychological proximity to the attachment figure or until the child exhausts himself or herself or gives up, as may happen in the context of a prolonged separation or loss.

Individual Differences in Infant Attachment

Think of your earliest memory, does it involve just you, or does it include your loved ones, your family and caretakers? [Image: CC0 Public Domain, https://goo.gl/m25gce]

Although Bowlby believed that these basic dynamics captured the way the attachment system works in most children, he recognized that there are individual differences in the way children appraise the accessibility of the attachment figure and how they regulate their attachment behavior in response to threats. However, it was not until his colleague, Mary Ainsworth, began to systematically study infant–parent separations that a formal understanding of these individual differences emerged. Ainsworth and her students developed a technique called the **strange situation**—a laboratory task for studying infant–parent attachment (Ainsworth, Blehar, Waters, & Wall, 1978). In the strange situation, 12-month-old infants and their parents are brought to the laboratory and, over a period of approximately 20 minutes, are systematically separated from and reunited with one another. In the strange situation, most children (about 60%) behave in the way implied by Bowlby's normative theory. Specifically, they become upset when the parent leaves the room, but, when he or she returns, they actively seek the parent and are easily comforted by him or her. Children who exhibit this pattern of behavior are often called

secure. Other children (about 20% or less) are ill at ease initially and, upon separation, become extremely distressed. Importantly, when reunited with their parents, these children have a difficult time being soothed and often exhibit conflicting behaviors that suggest they want to be comforted, but that they also want to "punish" the parent for leaving. These children are often called anxious-resistant. The third pattern of attachment that Ainsworth and her colleagues documented is often labeled avoidant. Avoidant children (about 20%) do not consistently behave as if they are stressed by the separation but, upon reunion, actively avoid seeking contact with their parent, sometimes turning their attention to play objects on the laboratory floor.

Ainsworth's work was important for at least three reasons. First, she provided one of the first empirical demonstrations of how attachment behavior is organized in unfamiliar contexts. Second, she provided the first empirical taxonomy of individual differences in infant attachment patterns. According to her research, at least three types of children exist: those who are secure in their relationship with their parents, those who are anxious-resistant, and those who are anxious-avoidant. Finally, she demonstrated that these individual differences were correlated with infant–parent interactions in the home during the first year of life. Children who appear secure in the strange situation, for example, tend to have parents who are responsive to their needs. Children who appear insecure in the strange situation (i.e., anxious-resistant or avoidant) often have parents who are insensitive to their needs, or inconsistent or rejecting in the care they provide.

Is attachment style multi-generational? How does one person's childhood attachment style translate to the way they interact with their own children? [Image: CC0 Public Domain, https://goo.gl/m25gce]

Antecedents of Attachment Patterns

In the years that have followed Ainsworth's ground-breaking research, researchers have investigated a variety of factors that may help determine whether children develop secure or insecure relationships with their primary attachment figures. As mentioned above, one of the key determinants of attachment patterns is the history of sensitive and responsive interactions between the caregiver and the child. In short, when the child is uncertain or stressed, the ability of the caregiver to

provide support to the child is critical for his or her psychological development. It is assumed that such supportive interactions help the child learn to regulate his or her emotions, give the child the confidence to explore the environment, and provide the child with a safe haven during stressful circumstances.

Evidence for the role of sensitive caregiving in shaping attachment patterns comes from longitudinal and experimental studies. For example, Grossmann, Grossmann, Spangler, Suess, and Unzner (1985) studied parent–child interactions in the homes of 54 families, up to three times during the first year of the child's life. At 12 months of age, infants and their mothers participated in the strange situation. Grossmann and her colleagues found that children who were classified as secure in the strange situation at 12 months of age were more likely than children classified as insecure to have mothers who provided responsive care to their children in the home environment.

Van den Boom (1994) developed an intervention that was designed to enhance maternal sensitive responsiveness. When the infants were 9 months of age, the mothers in the intervention group were rated as more responsive and attentive in their interaction with their infants compared to mothers in the control group. In addition, their infants were rated as more sociable, self-soothing, and more likely to explore the environment. At 12 months of age, children in the intervention group were more likely to be classified as secure than insecure in the strange situation.

Attachment Patterns and Child Outcomes

Attachment researchers have studied the association between children's attachment patterns and their adaptation over time. Researchers have learned, for example, that children who are classified as secure in the strange situation are more likely to have high functioning relationships with peers, to be evaluated favorably by teachers, and to persist with more diligence in challenging tasks. In contrast, insecure-avoidant children are more likely to be construed as "bullies" or to have a difficult time building and maintaining friendships (Weinfield, Sroufe, Egeland, & Carlson, 2008).

Attachment in Adulthood

Although Bowlby was primarily focused on understanding the nature of the infant–caregiver relationship, he believed that attachment characterized human experience across the life course. It was not until the mid-1980s, however, that researchers began to take seriously the possibility that attachment processes may be relevant to adulthood. Hazan and Shaver (1987)

were two of the first researchers to explore Bowlby's ideas in the context of romantic relationships. According to Hazan and Shaver, the emotional bond that develops between adult romantic partners is partly a function of the same motivational system—the attachment behavioral system—that gives rise to the emotional bond between infants and their caregivers. Hazan and Shaver noted that in both kinds of relationship, people (a) feel safe and secure when the other person is present; (b) turn to the other person during times of sickness, distress, or fear; (c) use the other person as a "secure base" from which to explore the world; and (d) speak to one another in a unique language, often called "motherese" or "baby talk." (See Focus Topic 2)

Focus Topic 2: Attachment and social media

Social media websites and mobile communication services are coming to play an increasing role in people's lives. Many people use Facebook, for example, to keep in touch with family and friends, to update their loved ones regarding things going on in their lives, and to meet people who share similar interests. Moreover, modern cellular technology allows people to get in touch with their loved ones much easier than was possible a mere 20 years ago.

From an attachment perspective, these innovations in communications technology are important because they allow people to stay connected virtually to their attachment figures —regardless of the physical distance that might exist between them. Recent research has begun to examine how attachment processes play out in the use of social media. Oldmeadow, Quinn, and Kowert (2013), for example, studied a diverse sample of individuals and assessed their attachment security and their use of Facebook. Oldmeadow and colleagues found that the use of Facebook may serve attachment functions. For example, people were more likely to report using Facebook to connect with others when they were experiencing negative emotions. In addition, the researchers found that people who were more anxious in their attachment orientation were more likely to use Facebook frequently, but people who were more avoidant used Facebook less and were less open on the site.

On the basis of these parallels, Hazan and Shaver (1987) argued that adult romantic relationships, such as infant–caregiver relationships, are attachments. According to Hazan and Shaver, individuals gradually transfer attachment-related functions from parents to peers as they develop. Thus, although young children tend to use their parents as their primary attachment figures, as they reach adolescence and young adulthood, they come to rely more

upon close friends and/or romantic partners for basic attachment-related functions. Thus, although a young child may turn to his or her mother for comfort, support, and guidance when distressed, scared, or ill, young adults may be more likely to turn to their romantic partners for these purposes under similar situations.

Hazan and Shaver (1987) asked a diverse sample of adults to read the three paragraphs below and indicate which paragraph best characterized the way they think, feel, and behave in close relationships:

1. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, others want me to be more intimate than I feel comfortable being.
2. I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't worry about being abandoned or about someone getting too close to me.
3. I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to get very close to my partner, and this sometimes scares people away.

Conceptually, these descriptions were designed to represent what Hazan and Shaver considered to be adult analogues of the kinds of attachment patterns Ainsworth described in the strange situation (avoidant, secure, and anxious, respectively). Hazan and Shaver (1987) found that the distribution of the three patterns was similar to that observed in infancy. In other words, about 60% of adults classified themselves as secure (paragraph B), about 20% described themselves as avoidant (paragraph A), and about 20% described themselves as anxious-resistant (paragraph C). Moreover, they found that people who described themselves as secure, for example, were more likely to report having had warm and trusting relationships with their parents when they were growing up. In addition, they were more likely to have positive views of romantic relationships. Based on these findings, Hazan and Shaver (1987) concluded that the same kinds of individual differences that exist in infant attachment also exist in adulthood.

Research on Attachment in Adulthood

Attachment theory has inspired a large amount of literature in social, personality, and clinical psychology. In the sections below, I provide a brief overview of some of the major research questions and what researchers have learned about attachment in adulthood.

Who Ends Up with Whom?

People who had relatively secure attachments as children go on to have more secure romantic attachments. [Image: CC0 Public Domain, https://goo.gl/m25gce]

When people are asked what kinds of psychological or behavioral qualities they are seeking in a romantic partner, a large majority of people indicate that they are seeking someone who is kind, caring, trustworthy, and understanding—the kinds of attributes that characterize a "secure" caregiver (Chappell & Davis, 1998). But we know that people do not always end up with others who meet their ideals. Are secure people more likely to end up with secure partners—and, vice versa, are insecure people more likely to end up with insecure partners? The majority of the research that has been conducted to date suggests that the answer is "yes." Frazier, Byer, Fischer, Wright, and DeBord (1996), for example, studied the attachment patterns of more than 83 heterosexual couples and found that, if the man was relatively secure, the woman was also likely to be secure.

One important question is whether these findings exist because (a) secure people are more likely to be attracted to other secure people, (b) secure people are likely to create security in their partners over time, or (c) some combination of these possibilities. Existing empirical research strongly supports the first alternative. For example, when people have the opportunity to interact with individuals who vary in security in a speed-dating context, they express a greater interest in those who are higher in security than those who are more insecure (McClure, Lydon, Baccus, & Baldwin, 2010). However, there is also some evidence that people's attachment styles mutually shape one another in close relationships. For example, in a longitudinal study, Hudson, Fraley, Vicary, and Brumbaugh (2012) found that, if one person in a relationship experienced a change in security, his or her partner was likely to experience a change in the same direction.

Relationship Functioning

Research has consistently demonstrated that individuals who are relatively secure are more

likely than insecure individuals to have high functioning relationships—relationships that are more satisfying, more enduring, and less characterized by conflict. For example, Feeney and Noller (1992) found that insecure individuals were more likely than secure individuals to experience a breakup of their relationship. In addition, secure individuals are more likely to report satisfying relationships (e.g., Collins & Read, 1990) and are more likely to provide support to their partners when their partners were feeling distressed (Simpson, Rholes, & Nelligan, 1992).

Do Early Experiences Shape Adult Attachment?

Sharing food, celebrations, and traditions are some of the ways we establish secure attachments with our loved ones from an early age. [Image: iwona_kellie, https://goo.gl/B406LK, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

The majority of research on this issue is retrospective—that is, it relies on adults' reports of what they recall about their childhood experiences. This kind of work suggests that secure adults are more likely to describe their early childhood experiences with their parents as being supportive, loving, and kind (Hazan & Shaver, 1987). A number of longitudinal studies are emerging that demonstrate prospective associations between early attachment experiences and adult attachment styles and/or interpersonal functioning in adulthood. For example, Fraley, Roisman, Booth-LaForce, Owen, and Holland (2013) found in a sample of more than 700 individuals studied from infancy to adulthood that maternal sensitivity across development prospectively predicted security at age 18. Simpson, Collins, Tran, and Haydon (2007) found that attachment security, assessed in infancy in the strange situation, predicted peer competence in grades 1 to 3, which, in turn, predicted the quality of friendship relationships at age 16, which, in turn, predicted the expression of positive and negative emotions in their adult romantic relationships at ages 20 to 23.

It is easy to come away from such findings with the mistaken assumption that early experiences "determine" later outcomes. To be clear: Attachment theorists assume that the relationship between early experiences and subsequent outcomes is probabilistic, not deterministic.

Having supportive and responsive experiences with caregivers early in life is assumed to set the stage for positive social development. But that does not mean that attachment patterns are set in stone. In short, even if an individual has far from optimal experiences in early life, attachment theory suggests that it is possible for that individual to develop well-functioning adult relationships through a number of corrective experiences—including relationships with siblings, other family members, teachers, and close friends. Security is best viewed as a culmination of a person's attachment history rather than a reflection of his or her early experiences alone. Those early experiences are considered important not because they determine a person's fate, but because they provide the foundation for subsequent experiences.

Outside Resources

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. Journal of Personality and Social Psychology, 52, 511-524. Retrieved from:
http://www2.psych.ubc.ca/~schaller/Psyc591Readings/HazanShaver1987.pdf

Hofer, M. A. (2006). Psychobiological roots of early attachment. Current Directions in Psychological Science, 15, 84-88. doi:10.1111/j.0963-7214.2006.00412.x
http://cdp.sagepub.com/content/15/2/84.short

Strange Situation Video
https://www.youtube.com/watch?v=QTsewNrHUHU

Survey: Learn more about your attachment patterns via this online survey
http://www.yourpersonality.net/relstructures/

Video on Harry Harlow's Research with Rhesus Monkeys
https://www.youtube.com/watch?v=OrNBEhzjg8I

Discussion Questions

1. What kind of relationship did you have with your parents or primary caregivers when you were young? Do you think that had any bearing on the way you related to others (e.g., friends, relationship partners) as you grew older?
2. There is variation across cultures in the extent to which people value independence. Do you think this might have implications for the development of attachment patterns?
3. As parents age, it is not uncommon for them to have to depend on their adult children. Do you think that people's history of experiences in their relationships with their parents might shape people's willingness to provide care for their aging parents? In other words, are secure adults more likely to provide responsive care to their aging parents?
4. Some people, despite reporting insecure relationships with their parents, report secure, well-functioning relationships with their spouses. What kinds of experiences do you think might enable someone to develop a secure relationship with their partners despite having an insecure relationship with other central figures in their lives?
5. Most attachment research on adults focuses on attachment to peers (e.g., romantic

partners). What other kinds of things may serve as attachment figures? Do you think siblings, pets, or gods can serve as attachment figures?

Vocabulary

Attachment behavioral system
A motivational system selected over the course of evolution to maintain proximity between a young child and his or her primary attachment figure.

Attachment behaviors
Behaviors and signals that attract the attention of a primary attachment figure and function to prevent separation from that individual or to reestablish proximity to that individual (e.g., crying, clinging).

Attachment figure
Someone who functions as the primary safe haven and secure base for an individual. In childhood, an individual's attachment figure is often a parent. In adulthood, an individual's attachment figure is often a romantic partner.

Attachment patterns
(also called "attachment styles" or "attachment orientations") Individual differences in how securely (vs. insecurely) people think, feel, and behave in attachment relationships.

Strange situation
A laboratory task that involves briefly separating and reuniting infants and their primary caregivers as a way of studying individual differences in attachment behavior.

References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York, NY: Basic Books

Chappell, K. D., & Davis, K. E. (1998). Attachment, partner choice, and perception of romantic partners: An experimental test of the attachment-security hypothesis. *Personal Relationships, 5*, 327–342.

Collins, N., & Read, S. (1990). Adult attachment, working models and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*, 644-663.

Feeney, J. A., & Noller, P. (1992). Attachment style and romantic love: Relationship dissolution. *Australian Journal of Psychology, 44*, 69–74.

Fraley, R. C., Roisman, G. I., Booth-LaForce, C., Owen, M. T., & Holland, A. S. (2013). Interpersonal and genetic origins of adult attachment styles: A longitudinal study from infancy to early adulthood. *Journal of Personality and Social Psychology, 104*, 8817-838.

Frazier, P. A, Byer, A. L., Fischer, A. R., Wright, D. M., & DeBord, K. A. (1996). Adult attachment style and partner choice: Correlational and experimental findings. *Personal Relationships, 3*, 117–136.

Grossmann, K., Grossmann, K. E., Spangler, G., Suess, G., & Unzner, L. (1985). Maternal sensitivity and newborns orientation responses as related to quality of attachment in northern Germany. *Monographs of the Society for Research in Child Development, 50(1-2)*, 233–256.

Harlow, H. F. (1958). The nature of love. *American Psychologist*, 13, 673–685.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*, 511-524.

Hudson, N. W., Fraley, R. C., Vicary, A. M., & Brumbaugh, C. C. (2012). *Attachment coregulation: A longitudinal investigation of the coordination in romantic partners' attachment styles*. Manuscript under review.

McClure, M. J., Lydon., J. E., Baccus, J., & Baldwin, M. W. (2010). A signal detection analysis of the anxiously attached at speed-dating: Being unpopular is only the first part of the problem. *Personality and Social Psychology Bulletin, 36*, 1024–1036.

Oldmeadow, J. A., Quinn, S., & Kowert, R. (2013). Attachment style, social skills, and Facebook use amongst adults. *Computers in Human Behavior*, 28, 1142–1149.

Simpson, J. A., Collins, W. A., Tran, S., & Haydon, K. C. (2007). Attachment and the experience

and expression of emotions in adult romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology, 92*, 355–367.

Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation. *Journal of Personality and Social Psychology, 62*, 434–446.

Weinfield, N. S., Sroufe, L. A., Egeland, B., Carlson, E. A. (2008). Individual differences in infant-caregiver attachment: Conceptual and empirical aspects of security. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 78–101). New York, NY: Guilford Press.

van den Boom, D. C. (1994). The influence of temperament and mothering on attachment and exploration: An experimental manipulation of sensitive responsiveness among lower-class mothers with irritable infants. *Child Development, 65*, 1457–1477.

16

The Developing Parent

Marissa L. Diener

This module focuses on parenthood as a developmental task of adulthood. Parents take on new roles as their children develop, transforming their identity as a parent as the developmental demands of their children change. The main influences on parenting, parent characteristics, child characteristics, and contextual factors, are described.

Learning Objectives

- Identify and describe the stages of parenthood.
- Identify and describe the influences on parenting.

The Development of Parents

Think back to an emotional event you experienced as a child. How did your parents react to you? Did your parents get frustrated or criticize you, or did they act patiently and provide support and guidance? Did your parents provide lots of rules for you or let you make decisions on your own? Why do you think your parents behaved the way they did?

Psychologists have attempted to answer these questions about the influences on parents and understand why parents behave the way they do. Because parents are critical to a child's development, a great deal of research has been focused on the impact that parents have on children. Less is known, however, about the development of parents themselves and the impact of children on parents. Nonetheless, parenting is a major role in an adult's life. Parenthood is often considered a normative developmental task of adulthood. Cross-cultural

studies show that adolescents around the world plan to have children. In fact, most men and women in the United States will become parents by the age of 40 years (Martinez, Daniels, & Chandra, 2012). People have children for many reasons, including emotional reasons (e.g., the emotional bond with children and the gratification the parent–child relationship brings), economic and utilitarian reasons (e.g., children provide help in the family and support in old age), and social-normative reasons (e.g., adults are expected to have children; children provide status) (Nauck, 2007).

Parenthood has a huge impact on a person's identity, emotions, daily behaviors, and many other aspects of their lives. [Image: Kim881231, CC0 Public Domain, https://goo.gl/m25gce]

Parenthood is undergoing changes in the United States and elsewhere in the world. Children are less likely to be living with both parents, and women in the United States have fewer children than they did previously. The average fertility rate of women in the United States was about seven children in the early 1900s and has remained relatively stable at 2.1 since the 1970s (Hamilton, Martin, & Ventura, 2011; Martinez, Daniels, & Chandra, 2012). Not only are parents having fewer children, the context of parenthood has also changed. Parenting outside of marriage has increased dramatically among most socioeconomic, racial, and ethnic groups, although college-educated women are substantially more likely to be married at the birth of a child than are mothers with less education (Dye, 2010). Parenting is occurring outside of marriage for many reasons, both economic and social. People are having children at older ages, too. Despite the fact that young people are more often delaying childbearing, most 18- to 29-year-olds want to have children and say that being a good parent is one of the most important things in life (Wang & Taylor, 2011).

Galinsky (1987) was one of the first to emphasize the development of parents themselves, how they respond to their children's development, and how they grow as parents. Parenthood is an experience that transforms one's identity as parents take on new roles. Children's growth and development force parents to change their roles. They must develop new skills and abilities in response to children's development. Galinsky identified six stages of parenthood that focus on different tasks and goals (see Table 2).

	1960	2012
Average number of children (fertility rate)	3.6[6]	2.1[2]
Percent of births to unmarried women	5%[1]	41%[3]
Median age at first marriage for women	20.8 years[5]	26.5 years[2]
Percent of adults ages 18 to 29 married	59%[4]	20%[4]

Table 1. Demographic Changes in Parenthood in the United States

1. Ventura & Bachrach, 1999
2. Martinez, Daniels, & Chandra, 2012
3. Hamilton, Martin, & Ventura, 2012
4. Cohn, Passel, Wang, & Livingston, 2011
5. U.S. Decennial Census (1890-2000).
6. Wetzel, J. R. (1990).

1. The Image-Making Stage

As prospective parents think about and form images about their roles as parents and what parenthood will bring, and prepare for the changes an infant will bring, they enter the image-making stage. Future parents develop their ideas about what it will be like to be a parent and the type of parent they want to be. Individuals may evaluate their relationships with their own parents as a model of their roles as parents.

2. The Nurturing Stage

The second stage, the nurturing stage, occurs at the birth of the baby. A parent's main goal during this stage is to develop an attachment relationship to their baby. Parents must adapt their romantic relationships, their relationships with their other children, and with their own parents to include the new infant. Some parents feel attached to the baby immediately, but for other parents, this occurs more gradually. Parents may have imagined their infant in specific ways, but they now have to reconcile those images with their actual baby. In incorporating their relationship with their child into their other relationships, parents often have to reshape their conceptions of themselves and their identity. Parenting responsibilities are the most demanding during infancy because infants are completely dependent on caregiving.

3. The Authority Stage

	Age of Child	Main Tasks and Goals
Stage 1: The Image-Making Stage	Planning for a child; Pregnancy	Consider what it means to be a parent and plan for changes to accommodate a child.
Stage 2: The Nurturing Stage	Infancy	Develop an attachment relationship with child and adapt to the new baby
Stage 3: The Authority Stage	Toddler and preschool	Parents create rules and figure out how to effectively guide their children's behavior.
Stage 4: The Interpretive Stage	Middle childhood	Parents help their children interpret their experiences with the social world beyond the family.
Stage 5: The Interdependent Stage	Adolescence	Parents renegotiate their relationship with their adolescent children to allow for shared power in decision-making.
Stage 6: The Departure Stage	Early adulthood	Parents evaluate their successes and failures as parents.

Table 2. Galinsky's Stages of Parenthood

The authority stage occurs when children are 2 years old until about 4 or 5 years old. In this stage, parents make decisions about how much authority to exert over their children's behavior. Parents must establish rules to guide their child's behavior and development. They have to decide how strictly they should enforce rules and what to do when rules are broken.

4. The Interpretive Stage

The interpretive stage occurs when children enter school (preschool or kindergarten) to the beginning of adolescence. Parents interpret their children's experiences as children are increasingly exposed to the world outside the family. Parents answer their children's questions, provide explanations, and determine what behaviors and values to teach. They decide what experiences to provide their children, in terms of schooling, neighborhood, and extracurricular activities. By this time, parents have experience in the parenting role and often reflect on their strengths and weaknesses as parents, review their images of parenthood, and determine how realistic they have been. Parents have to negotiate how involved to be with their children, when to step in, and when to encourage children to make choices independently.

5. The Interdependent Stage

Parents of teenagers are in the **interdependent stage**. They must redefine their authority and renegotiate their relationship with their adolescent as the children increasingly make decisions independent of parental control and authority. On the other hand, parents do not permit their adolescent children to have complete autonomy over their decision-making and behavior, and thus adolescents and parents must adapt their relationship to allow for greater negotiation and discussion about rules and limits.

6. The Departure Stage

During the **departure stage** of parenting, parents evaluate the entire experience of parenting. They prepare for their child's departure, redefine their identity as the parent of an adult child, and assess their parenting accomplishments and failures. This stage forms a transition to a new era in parents' lives. This stage usually spans a long time period from when the oldest child moves away (and often returns) until the youngest child leaves. The parenting role must be redefined as a less central role in a parent's identity.

Despite the interest in the development of parents among lay people and helping professionals, little research has examined developmental changes in parents' experience and behaviors over time. Thus, it is not clear whether these theoretical stages are generalizable to parents of different races, ages, and religions, nor do we have empirical data on the factors that influence individual differences in these stages. On a practical note, how-to books and websites geared toward parental development should be evaluated with caution, as not all advice provided is supported by research.

When a child achieves a new level of independence and leaves the home it marks another turning point in the identity of a parent. [Image: State Farm, https://goo.gl/Npw2fb, CC BY 2.0, https://goo.gl/BRvSA7]

Influences on Parenting

Parenting is a complex process in which parents and children influence one another. There are many reasons that parents behave the way they do. The multiple influences on parenting are still being explored. Proposed influences on parental behavior include 1) parent characteristics, 2) child characteristics, and 3) contextual and sociocultural characteristics (Belsky, 1984; Demick, 1999) (see Figure 1).

Parent Characteristics

Parents bring unique traits and qualities to the parenting relationship that affect their decisions as parents. These characteristics include the age of the parent, gender, beliefs, personality, developmental history, knowledge about parenting and child development, and mental and physical health. Parents' personalities affect parenting behaviors. Mothers and fathers who are more agreeable, conscientious, and outgoing are warmer and provide more structure to their children. Parents who are more agreeable, less anxious, and less negative also support their children's autonomy more than parents who are anxious and less agreeable (Prinzie, Stams, Dekovic, Reijntjes, & Belsky, 2009). Parents who have these personality traits appear to be better able to respond to their children positively and provide a more consistent, structured environment for their children.

Parents' developmental histories, or their experiences as children, also affect their parenting strategies. Parents may learn parenting practices from their own parents. Fathers whose own parents provided monitoring, consistent and age-appropriate discipline, and warmth were more likely to provide this constructive parenting to their own children (Kerr, Capaldi, Pears, & Owen, 2009). Patterns of negative parenting and ineffective discipline also appear from one generation to the next. However, parents who are dissatisfied with their own parents' approach may be more likely to change their parenting methods with their own children.

Child Characteristics

Parenting is **bidirectional**. Not only do parents affect their children, children influence their parents. Child characteristics, such as gender, birth order, **temperament**, and health status, affect parenting behaviors and roles. For example, an infant with an easy temperament may enable parents to feel more effective, as they are easily able to soothe the child and elicit smiling and cooing. On the other hand, a cranky or fussy infant elicits fewer positive reactions from his or her parents and may result in parents feeling less effective in the parenting role

(Eisenberg et al., 2008). Over time, parents of more difficult children may become more punitive and less patient with their children (Clark, Kochanska, & Ready, 2000; Eisenberg et al., 1999; Kiff, Lengua, & Zalewski, 2011). Parents who have a fussy, difficult child are less satisfied with their marriages and have greater challenges in balancing work and family roles (Hyde, Else-Quest, & Goldsmith, 2004). Thus, child temperament is one of the child characteristics that influences how parents behave with their children.

A child with a difficult temperament can have a significant impact on a parent. [Image: Harald Groven, https://goo.gl/cwemLg, CC BY-SA 2.0, https://goo.gl/eH69he]

Another child characteristic is the gender of the child. Parents respond differently to boys and girls. Parents often assign different household chores to their sons and daughters. Girls are more often responsible for caring for younger siblings and household chores, whereas boys are more likely to be asked to perform chores outside the home, such as mowing the lawn (Grusec, Goodnow, & Cohen, 1996). Parents also talk differently with their sons and daughters, providing more scientific explanations to their sons and using more emotion words with their daughters (Crowley, Callanan, Tenenbaum, & Allen, 2001).

Contextual Factors and Sociocultural Characteristics

The parent–child relationship does not occur in isolation. Sociocultural characteristics, including economic hardship, religion, politics, neighborhoods, schools, and social support, also influence parenting. Parents who experience economic hardship are more easily frustrated, depressed, and sad, and these emotional characteristics affect their parenting skills (Conger & Conger, 2002). Culture also influences parenting behaviors in fundamental ways. Although promoting the development of skills necessary to function effectively in one's community is a universal goal of parenting, the specific skills necessary vary widely from culture to culture. Thus, parents have different goals for their children that partially depend on their culture (Tamis-LeMonda et al., 2008). For example, parents vary in how much they emphasize goals for independence and individual achievements, and goals involving maintaining harmonious relationships and being embedded in a strong network of social relationships. These differences in parental goals are influenced by culture and by immigration status. Other important contextual characteristics, such as the neighborhood, school, and

social networks, also affect parenting, even though these settings don't always include both the child and the parent (Brofenbrenner, 1989). For example, Latina mothers who perceived their neighborhood as more dangerous showed less warmth with their children, perhaps because of the greater stress associated with living a threatening environment (Gonzales et al., 2011). Many contextual factors influence parenting.

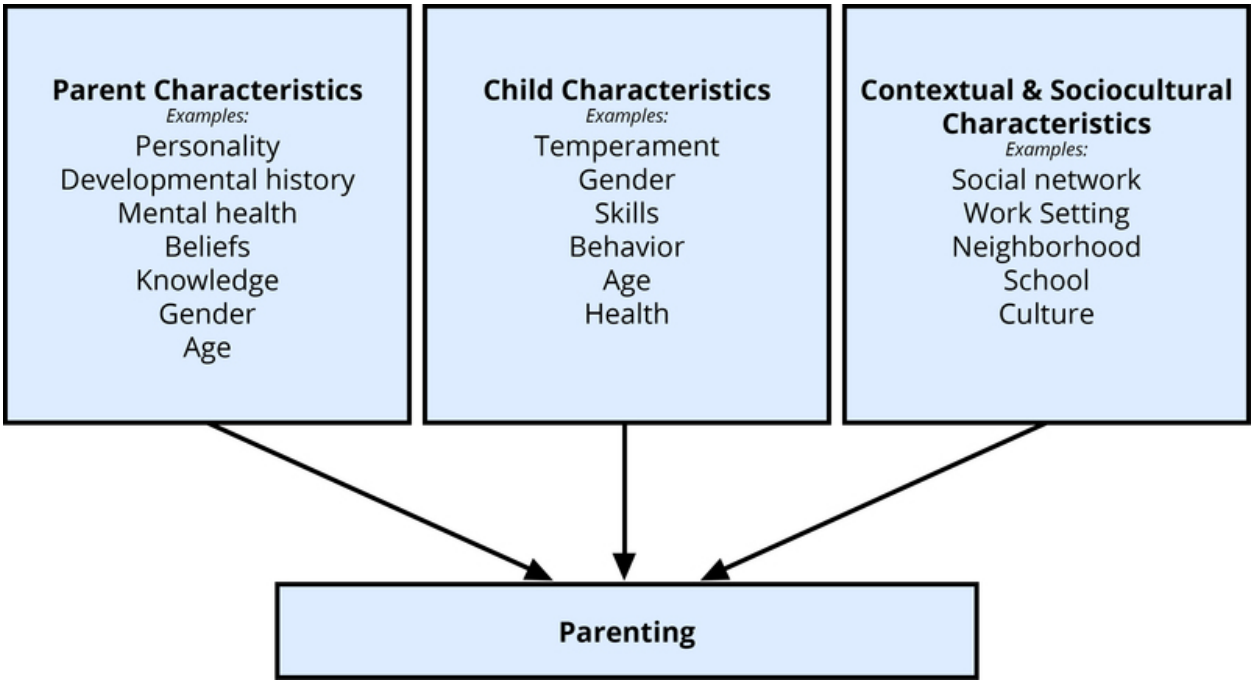


Figure 1. Influences on Parenting

Conclusion

Many factors influence parenting decisions and behaviors. These factors include characteristics of the parent, such as gender and personality, as well as characteristics of the child, such as age. The context is also important. The interaction among all these factors creates many different patterns of parenting behavior. Furthermore, parenting influences not just a child's development, but also the development of the parent. As parents are faced with new challenges, they change their parenting strategies and construct new aspects of their identity. The goals and tasks of parents change over time as their children develop.

Outside Resources

Article: "Is a Child's Behavior Always a Reflection of His Parents?" - This article is written by Dr. Peggy Drexler and discusses the notion that child behavior is not always a reflection of parenting.
http://www.huffingtonpost.com/peggy-drexler/is-a-childs-behavior-alwa_b_1886367.html

Article: "Parent behavior toward first and second children" - This journal article describes how parents behave differently and the same with their first and second born children. This is an interesting read to learn more about parenting behavior and how it changes based on a child characteristic, birth order.
http://psycnet.apa.org/psycinfo/1954-08594-001

Org: American Psychological Association (APA), Parenting - Parenting is a psychology topic explored by APA. They state that, "Parenting practices around the world share three major goals: ensuring children's health and safety, preparing children for life as productive adults and transmitting cultural values. A high-quality parent-child relationship is critical for healthy development." This webpage links to articles to support these goals.
http://www.apa.org/topics/parenting/

Org: Society for the Research in Child Development (SRCD) - SRCD works to coordinate and integrate research in human development. It aims to assist in the dissemination of research findings and in this way can be a great resource to teachers and students.
http://www.srcd.org

Web: American Psychological Association- Information and Resources on Parenting
http://www.apa.org/topics/parenting/index.aspx

Web: NPR, Parenting - National Public Radio presented interesting stories on many topics related to child development. The page linked here has many stories on parenting.
http://www.npr.org/tags/126952921/parenting

Web: PBS Parents: Child Development - PBS has some interesting resources for parents including articles, games and products. This is a good resource for students looking for some friendly and less psychology based sources that they can read or share with their own families.
http://www.pbs.org/parents/child-development/

Discussion Questions

1. Reflect on the way you were raised. Consider the parenting behaviors (e.g., rules, discipline strategies, warmth, and support) used in your household when you were a child. Why do you think your parents behaved this way? How do these factors fit with the influences on parenting described here? Provide specific examples of multiple influences on parenting.
2. Think about different parents and grandparents you know. Do the challenges they face as parents differ based on the age of their children? Do your observations fit with Galinsky's stages of parenting?
3. What type of parent do you envision yourself becoming? If you are a parent, how do you parent your child/children? How do you think this is similar to or different than the way you were raised? What influences exist in your life that will make you parent differently from your own parents?

Vocabulary

Authority stage
Stage from approximately 2 years to age 4 or 5 when parents create rules and figure out how to effectively guide their children's behavior.

Bidirectional
The idea that parents influence their children, but their children also influence the parents; the direction of influence goes both ways, from parent to child, and from child to parent.

Departure stage
Stage at which parents prepare for a child to depart and evaluate their successes and failures as parents.

Image-making stage
Stage during pregnancy when parents consider what it means to be a parent and plan for changes to accommodate a child.

Interdependent stage
Stage during teenage years when parents renegotiate their relationship with their adolescent children to allow for shared power in decision-making.

Interpretive stage
Stage from age 4or 5 to the start of adolescence when parents help their children interpret their experiences with the social world beyond the family.

Nurturing stage
Stage from birth to around 18-24 months in which parents develop an attachment relationship with child and adapt to the new baby.

Temperament
A child's innate personality; biologically based personality, including qualities such as activity level, emotional reactivity, sociability, mood, and soothability.

References

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development, 55*, 83–96.

Bronfenbrenner, U. (1989). Ecological systems theory. In R. Vasta (Ed.), *Annals of Child Development, Vol. 6* (pp. 187–251). Geenwich, CT: JAI Press.

Clark, L. A., Kochanska, G., & Ready, R. (2000). Mothers' personality and its interaction with child temperament as predictors of parenting behavior. *Journal of Personality and Social Psychology, 79*, 274–285.

Cohn, D., Passel, J., Wang, W., & Livingston, G. (2011). Barely Half of U.S. Adults are Married – A Record Low. *Social & Demographic Trends.* Washington, DC: Pew Research Center.

Conger, R. D., & Conger, K. J. (2002). Resilience in Midwestern families: Selected findings from the first decade of a prospective longitudinal study. *Journal of Marriage and Family, 64*, 361–373.

Crowley, K., Callanan, M. A., Tenenbaum, H. R., & Allen, E. (2001). Parents explain more often to boys than to girls during shared scientific thinking. *Psychological Science, 12*, 258–261.

Demick, J. (1999). Parental development: Problem, theory, method, and practice. In R. L. Mosher, D. J. Youngman, & J. M. Day (Eds.), *Human Development Across the Life Span: Educational and Psychological Applications* (pp. 177–199). Westport, CT: Praeger.

Dye, J. L. (2010). Fertility of American women: 2008. Current Population Reports P20-563. Retrieved on May 18, 2012 from www.census.gov/prod/2010pubs/p20-563.pdf.

Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I.K., Murphy, B.C., & Reiser, M. (1999). Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development, 70*, 513-534.

Eisenberg, N., Hofer, C., Spinrad, T., Gershoff, E., Valiente, C., Losoya, S. L., Zhou, Q., Cumberland, A., Liew, J., Reiser, M., & Maxon, E. (2008). Understanding parent-adolescent conflict discussions: Concurrent and across-time prediction from youths' dispositions and parenting. *Monographs of the Society for Research in Child Development, 73*, (Serial No. 290, No. 2), 1-160.

Galinsky, E. (1987). *The Six Stages of Parenthood.* Cambridge, MA: Perseus Books.

Gonzales, N. A., Coxe, S., Roosa, M. W., White, R. M. B., Knight, G. P., Zeiders, K. H., & Saenz, D. (2011). Economic hardship, neighborhood context, and parenting: Prospective effects on Mexican-American adolescent's mental health. *American Journal of Community Psychology, 47*, 98–113. doi: 10.1007/s10464-010-9366-1

Grusec, J. E., Goodnow, J. J., & Cohen, L. (1996). Household work and the development of concern for others. *Developmental Psychology, 32*, 999–1007.

Hamilton, B. E., Martin, J. A., & Ventura, S. J. (2011). Births: Preliminary data for 2010. *National Vital Statistics Reports, 60*(2). Hyattsville, MD: U.S. Department of Health and Human Services.

Hyde, J. S., Else-Quest, N. M., & Goldsmith, H. H. (2004). Children's temperament and behavior problems predict their employed mothers' work functioning. *Child Development, 75*, 580–594.

Kerr, D. C. R., Capaldi, D. M., Pears, K. C., & Owen, L. D. (2009). A prospective three generational study of fathers' constructive parenting: Influences from family of origin, adolescent adjustment, and offspring temperament. *Developmental Psychology, 45*, 1257–1275.

Kiff, C. J., Lengua, L. J., & Zalewski, M. (2011). Nature and nurturing: Parenting in the context of child temperament. *Clinical Child and Family Psychology Review, 14*, 251–301. doi: 10.1007/s10567-011-0093-4

Martinez, G., Daniels, K., & Chandra, A. (2012). Fertility of men and women aged 15-44 years in the United States: National Survey of Family Growth, 2006-2010. *National Health Statistics Reports, 51*(April). Hyattsville, MD: U.S., Department of Health and Human Services.

Nauck, B. (2007). Value of children and the framing of fertility: Results from a cross-cultural comparative survey in 10 societies. *European Sociological Review, 23*, 615–629.

Prinzie, P., Stams, G. J., Dekovic, M., Reijntjes, A. H., & Belsky, J. (2009). The relations between parents' Big Five personality factors and parenting: A meta-analytic review. *Journal of Personality and Social Psychology, 97*, 351–362.

Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., & Niwa, E. Y. (2008). Parents' goals for children: The dynamic coexistence of individualism and collectivism in cultures and individuals. *Social Development, 17*, 183–209. doi: 10.1111/j.1467.9507.2007.00419.x

U.S. Decennial Census (1890-2000). http://www.census.gov

Ventura, S. J., & Bachrach, C. A. (1999). Nonmarital childbearing in the United States, 1940-1999. *National Vital Statistics, 48*, No. 16. Hyattsville, MD: National Center for Health Statistics.

Wang, W., & Taylor, P. (2011). *For Millennials, parenthood trumps marriage*. Washington, DC: Pew Research Center.

Wetzel, J. R. (1990). *American Families: 75 Years of change*. Washington, DC: Bureau of Labor Statistics.

Social Psychology

17
Social Neuroscience

Tiffany A. Ito & Jennifer T. Kubota

This module provides an overview of the new field of social neuroscience, which combines the use of neuroscience methods and theories to understand how other people influence our thoughts, feelings, and behavior. The module reviews research measuring neural and hormonal responses to understand how we make judgments about other people and react to stress. Through these examples, it illustrates how social neuroscience addresses three different questions: (1) how our understanding of social behavior can be expanded when we consider neural and physiological responses, (2) what the actual biological systems are that implement social behavior (e.g., what specific brain areas are associated with specific social tasks), and (3) how biological systems are impacted by social processes.

Learning Objectives

- Define social neuroscience and describe its three major goals.
- Describe how measures of brain activity such as EEG and fMRI are used to make inferences about social processes.
- Discuss how social categorization occurs.
- Describe how simulation may be used to make inferences about others.
- Discuss the ways in which other people can cause stress and also protect us against stress.

Psychology has a long tradition of using our brains and body to better understand how we think and act. For example, in 1939 Heinrich Kluver and Paul Bucy removed (i.e. lesioned) the temporal lobes in some rhesus monkeys and observed the effect on behavior. Included in

these lesions was a subcortical area of the brain called the amygdala. After surgery, the monkeys experienced profound behavioral changes, including loss of fear. These results provided initial evidence that the amygdala plays a role in emotional responses, a finding that has since been confirmed by subsequent studies (Phelps & LeDoux, 2005; Whalen & Phelps, 2009).

What Is Social Neuroscience?

Social neuroscience similarly uses the brain and body to understand how we think and act, with a focus on how we think about and act toward other people. More specifically, we can think of social neuroscience as an interdisciplinary field that uses a range of neuroscience measures to understand how other people influence our thoughts, feelings, and behavior. As such, social neuroscience studies the same topics as social psychology, but does so from a multilevel perspective that includes the study of the brain and body. Figure 1 shows the scope of social neuroscience with respect to the older fields of social psychology and neuroscience. Although the field is relatively new – the term first appeared in 1992 (Cacioppo & Berntson, 1992) – it has grown rapidly, thanks to technological advances making measures

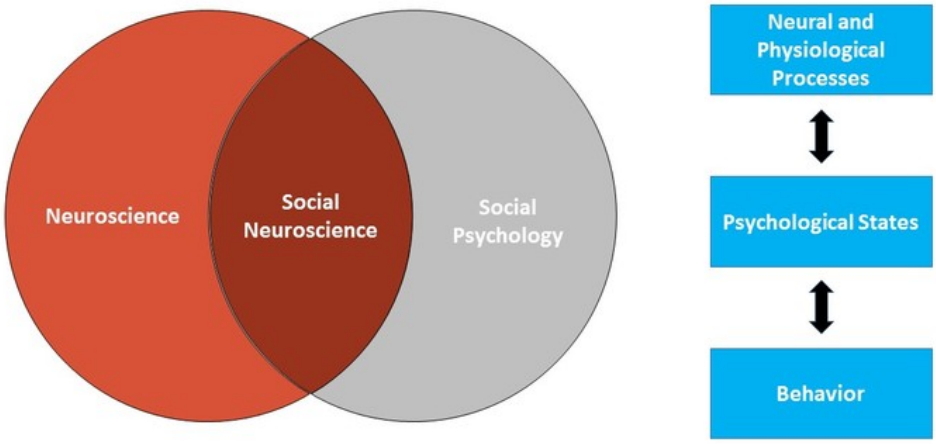


Figure 1. Social neuroscience is the intersection of social psychology and neuroscience. Under this multilevel approach, neural/physiological processes and behavior are two things we can measure or observe. Psychological states cannot be directly observed, but understanding them is the goal. Social neuroscientists use the observable neural/physiological processes and behavioral responses to make inferences about unobservable psychological states. The bidirectional arrows show that all levels of analysis are assumed to influence each other (e.g., psychological states can influence neural responses, and neural responses can influence psychological states).

of the brain and body cheaper and more powerful than ever before, and to the recognition that neural and physiological information are critical to understanding how we interact with other people.

Social neuroscience can be thought of as both a methodological approach (using measures of the brain and body to study social processes) and a theoretical orientation (seeing the benefits of integrating neuroscience into the study of social psychology). The overall approach in social neuroscience is to understand the psychological processes that underlie our social behavior. Because those psychological processes are intrapsychic phenomena that cannot be directly observed, social neuroscientists rely on a combination of measureable or observable neural and physiological responses as well as actual overt behavior to make inferences about psychological states (see Figure 1). Using this approach, social neuroscientists have been able to pursue three different types of questions: (1) What more can we learn about social behavior when we consider neural and physiological responses? (2) What are the actual biological systems that implement social behavior (e.g., what specific brain areas are associated with specific social tasks)? and (3) How are biological systems impacted by social processes?

In this module, we review three research questions that have been addressed with social neuroscience that illustrate the different goals of the field. These examples also expose you to some of the frequently used measures.

How Automatically Do We Judge Other People?

Social categorization is the act of mentally classifying someone as belonging in a group. Why do we do this? It is an effective mental shortcut. Rather than effortfully thinking about every detail of every person we encounter, social categorization allows us to rely on information we already know about the person's group. For example, by classifying your restaurant server as a man, you can quickly activate all the information you have stored about men and use it to guide your behavior. But this shortcut comes with potentially high costs. The stored group beliefs might not be very accurate, and even when they do accurately describe some group members, they are unlikely to be true for every member you encounter. In addition, many beliefs we associate with groups – called **stereotypes** – are negative. This means that relying on social categorization can often lead people to make negative assumptions about others.

The potential costs of social categorization make it important to understand how social categorization occurs. Is it rare or does it occur often? Is it something we can easily stop, or is it hard to override? One difficulty answering these questions is that people are not always

consciously aware of what they are doing. In this case, we might not always realize when we are categorizing someone. Another concern is that even when people are aware of their behavior, they can be reluctant to accurately report it to an experimenter. In the case of social categorization, subjects might worry they will look bad if they accurately report classifying someone into a group associated with negative stereotypes. For instance, many racial groups are associated with some negative stereotypes, and subjects may worry that admitting to classifying someone into one of those groups means they believe and use those negative stereotypes.

Figure 2: This man is wearing an elastic electrode cap into which individual electrodes (inside the white circles) are sewn into standardized locations. [Image: Hans, CC0 Public Domain, https://goo.gl/m25gce]

Social neuroscience has been useful for studying how social categorization occurs without having to rely on self-report measures, instead measuring brain activity differences that occur when people encounter members of different social groups. Much of this work has been recorded using the **electroencephalogram**, or **EEG**. EEG is a measure of electrical activity generated by the brain's neurons. Comparing this electrical activity at a given point in time against what a person is thinking and doing at that same time allows us to make inferences about brain activity associated with specific psychological states. One particularly nice feature of EEG is that it provides very precise timing information about when brain activity occurs. EEG is measured non-invasively with small electrodes that rest on the surface of the scalp. This is often done with a stretchy elastic cap, like the one shown in Figure 2, into which the small electrodes are sewn. Researchers simply pull the cap onto the subject's head to get the electrodes into place; wearing it is similar to wearing a swim cap. The subject can then be asked to think about different topics or engage in different tasks as brain activity is measured.

To study social categorization, subjects have been shown pictures of people who belong to different social groups. Brain activity recorded from many individual trials (e.g., looking at lots of different Black individuals) is then averaged together to get an overall idea of how the brain responds when viewing individuals who belong to a particular social group. These studies

suggest that social categorization is an **automatic process** – something that happens with little conscious awareness or control – especially for dimensions like gender, race, and age (Ito & Urland, 2003; Mouchetant-Rostaing & Giard, 2003). The studies specifically show that brain activity differs when subjects view members of different social groups (e.g., men versus women, Black people versus White peop), suggesting that the group differences are being encoded and processed by the perceiver. One interesting finding is that these brain changes occur both when subjects are purposely asked to categorize the people into social groups (e.g., to judge whether the person is Black or White), and also when they are asked to do something that draws attention away from group classifications (e.g., making a personality judgment about the person) (Ito & Urland, 2005). This tells us that we do not have to intend to make group classifications in order for them to happen. It is also very interesting to consider how quickly the changes in brain responses occur. Brain activity is altered by viewing members of different groups within 200 milliseconds of seeing a person's face. That is just two-tenths of a second. Such a fast response lends further support to the idea that social categorization occurs automatically and may not depend on conscious intention.

Overall, this research suggests that we engage in social categorization very frequently. In fact, it appears to happen automatically (i.e., without us consciously intending for it to happen) in most situations for dimensions like gender, age, and race. Since classifying someone into a group is the first step to activating a group stereotype, this research provides important information about how easily stereotypes can be activated. And because it is hard for people to accurately report on things that happen so quickly, this issue has been difficult to study using more traditional self-report measures. Using EEGs has, therefore, been helpful in providing interesting new insights into social behavior.

Do We Use Our Own Behavior to Help Us Understand Others?

Classifying someone into a social group then activating the associated stereotype is one way to make inferences about others. However, it is not the only method. Another strategy is to imagine what our own thoughts, feelings, and behaviors would be in a similar situation. Then we can use our simulated reaction as a best guess about how someone else will respond (Goldman, 2005). After all, we are experts in our own feelings, thoughts, and tendencies. It might be hard to know what other people are feeling and thinking, but we can always ask ourselves how we would feel and act if we were in their shoes.

There has been some debate about whether **simulation** is used to get into the minds of others (Carruthers & Smith, 1996; Gallese & Goldman, 1998). Social neuroscience research has addressed this question by looking at the brain areas used when people think about

themselves and others. If the same brain areas are active for the two types of judgments, it lends support to the idea that the self may be used to make inferences about others via simulation.

We know that an area in the prefrontal cortex called the **medial prefrontal cortex** (mPFC) – located in the middle of the frontal lobe – is active when people think about themselves (Kelley, Macrae, Wyland, Caglar, Inati, & Heatherton, 2002). This conclusion comes from studies using **functional magnetic resonance imaging**, or fMRI. While EEG measures the brain's electrical activity, fMRI measures changes in the oxygenation of blood flowing in the brain. When neurons become more active, blood flow to the area increases to bring more oxygen and glucose to the active cells. fMRI allows us to image these changes in oxygenation by placing people in an fMRI machine or scanner (Figure 3), which consists of large magnets that create strong magnetic fields. The magnets affect the alignment of the oxygen molecules within the blood (i.e., how they are tilted). As the oxygen molecules move in and out of alignment with the magnetic fields, their nuclei produce energy that can be detected with special sensors

Figure 3. Functional magnetic resonance imaging (fMRI) scanner used to image the brain while people perform tasks. The scanner allows researchers to view the changes in blood oxygenation in specific locations in the brain during a task. Images are collected using powerful magnets and radio waves that shift the position of atoms in oxygenated blood that rushes to areas involved in performing the task. MRIs are non-invasive and there are no known risks from exposure to the magnetic fields or radio waves. Subjects lay on the while bed with their head inside the head coil, then the bed is moved into the scanner. [Image: Janne Moren, https://goo.gl/MKb2jn, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

placed close to the head. Recording fMRI involves having the subject lay on a small bed that is then rolled into the scanner. While fMRI does require subjects to lie still within the small scanner and the large magnets involved are noisy, the scanning itself is safe and painless. Like EEG, the subject can then be asked to think about different topics or engage in different tasks as brain activity is measured. If we know what a person is thinking or doing when fMRI detects a blood flow increase to a particular brain area, we can infer that part of the brain is involved with the thought or action. fMRI is particularly useful for identifying which particular brain areas are active at a given point in time.

The conclusion that the mPFC is associated with the self comes from studies measuring fMRI while subjects think about themselves (e.g., saying whether traits are descriptive of themselves). Using this knowledge, other researchers have looked at whether the same brain area is active when people make inferences about others. Mitchell, Neil Macrae, and Banaji (2005) showed subjects pictures of strangers and had them judge either how pleased the person was to have his or her picture taken or how symmetrical the face appeared. Judging whether someone is pleased about being photographed requires making an inference about someone's internal feelings – we call this **mentalizing**. By contrast, facial symmetry judgments are based solely on physical appearances and do not involve mentalizing. A comparison of brain activity during the two types of judgments shows more activity in the mPFC when making the mental versus physical judgments, suggesting this brain area is involved when inferring the internal beliefs of others.

There are two other notable aspects of this study. First, mentalizing about others also increased activity in a variety of regions important for many aspects of social processing, including a region important in representing biological motion (**superior temporal sulcus** or STS), an area critical for emotional processing (amygdala), and a region also involved in thinking about the beliefs of others (**temporal parietal junction**, TPJ) (Gobbini & Haxby, 2007; Schultz, Imamizu, Kawato, & Frith, 2004) (Figure 4). This finding shows that a distributed and interacting set of brain areas is likely to be involved in social processing. Second, activity in the most ventral part of the mPFC (the part closer to the belly rather than toward the top of the head), which has been most consistently associated with thinking about the self, was particularly active when subjects mentalized about people they rated as similar to themselves. Simulation is thought to be most likely for similar others, so this finding lends support to the conclusion that we use simulation to mentalize about others. After all, if you encounter someone who has the same musical taste as you, you will probably assume you have other things in common with him. By contrast, if you learn that someone loves music that you hate, you might expect him to differ from you in other ways (Srivastava, Guglielmo, & Beer, 2010). Using a simulation of our own feelings and thoughts will be most accurate if we have reason to think the person's internal experiences are like our own. Thus, we may be most likely to use simulation to make

inferences about others if we think they are similar to us.

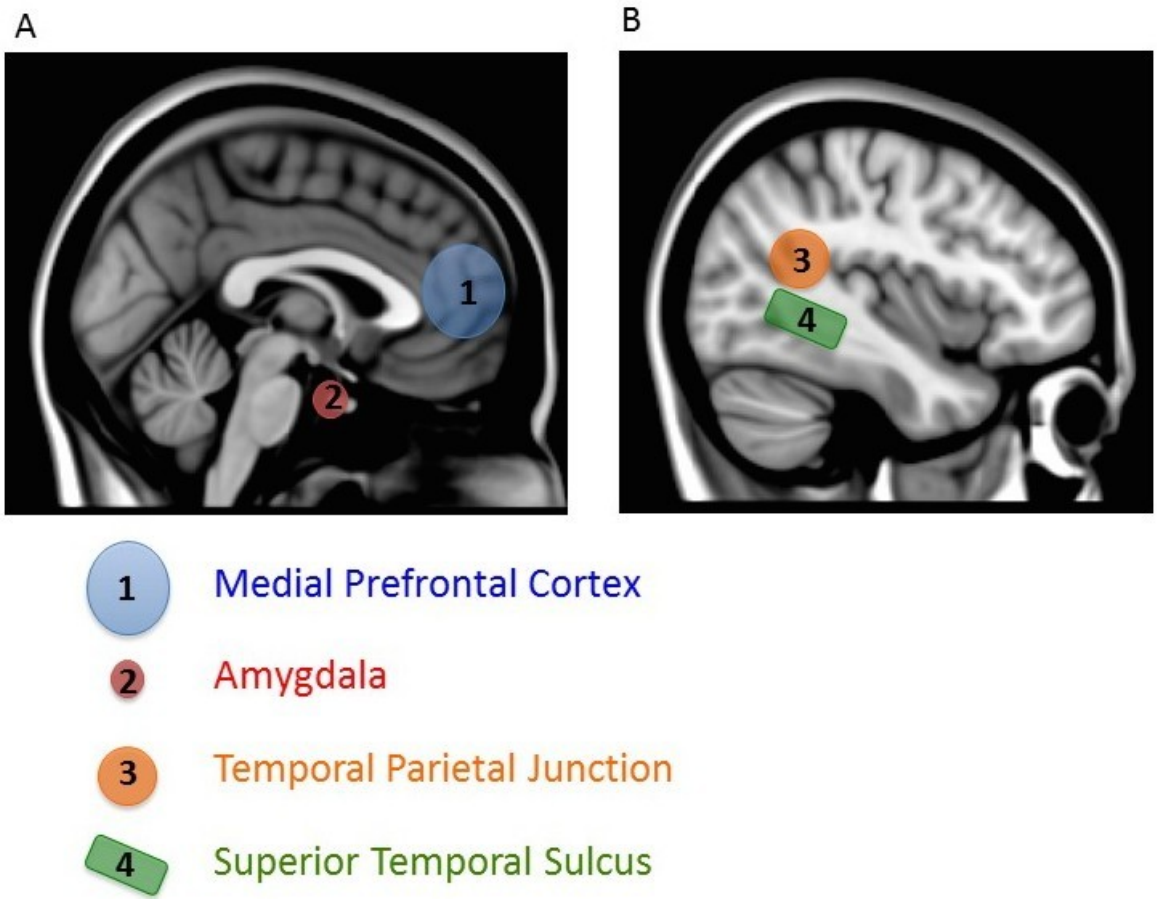


Figure 4. The areas of the brain most commonly associated with processing of self and others. Panel A is a sagittal view, looking at the inside of the brain as if it were sliced in half. Panel B is a lateral view, showing the brain from the outside. The medial prefrontal cortex (mPFC) (Structure 1) is commonly activated when thinking about one's self and when thinking about similar others. Additionally, the amygdala (Structure 2) is important for learning about and detecting important things in our environments and plays an important role in fear learning and expression. The temporal parietal junction (TPJ) (Structure 3), located at the intersection of the parietal and temporal lobes, is activated when people think about the beliefs of others. Activity in the superior temporal sulcus (STS) (Structure 4) is commonly observed when people view biological motion. The common activation of this network of regions when people think about the feelings, thoughts, and intentions of others indicates that the processing of others involves a number of complex psychological processes.

This research is a good example of how social neuroscience is revealing the **functional neuroanatomy** of social behavior. That is, it tells us which brain areas are involved with social behavior. The mPFC (as well as other areas such as the STS, amygdala, and TPJ) is involved in making judgments about the self and others. This research also provides new information about how inferences are made about others. Whereas some have doubted the widespread use of simulation as a means for making inferences about others, the activation of the mPFC

when mentalizing about others, and the sensitivity of this activation to similarity between self and other, provides evidence that simulation occurs.

What Is the Cost of Social Stress?

Stress is an unfortunately frequent experience for many of us. **Stress** – which can be broadly defined as a threat or challenge to our well-being – can result from everyday events like a course exam or more extreme events such as experiencing a natural disaster. When faced with a stressor, **sympathetic nervous system** activity increases in order to prepare our body to respond to the challenge. This produces what Selye (1950) called a **fight or flight response**. The release of **hormones**, which act as messengers from one part of an organism (e.g., a cell or gland) to another part of the organism, is part of the stress response.

A small amount of stress can actually help us stay alert and active. In comparison, sustained stressors, or chronic stress, detrimentally affect our health and impair performance (Al'Absi, Hugdahl, & Lovallo, 2002; Black, 2002; Lazarus, 1974). This happens in part through the chronic secretion of stress-related hormones (e.g., Davidson, Pizzagalli, Nitschke, & Putnam, 2002; Dickerson, Gable, Irwin, Aziz, & Kemeny, 2009). In particular, stress activates the **hypothalamic-pituitary-adrenal (HPA) axis** to release **cortisol** (see Figure 5 for a discussion). Chronic stress, by way of increases in cortisol, impairs attention, memory, and self-control (Arnsten, 2009). Cortisol levels can be measured non-invasively in bodily fluids, including blood and saliva. Researchers often collect a cortisol sample before and after a potentially stressful task. In one common collection method, subjects place polymer swabs under their tongue for 1 to 2 minutes to soak up saliva. The saliva samples are then stored and analyzed later to determine the level of cortisol present at each time point.

Whereas early stress researchers studied the effects of physical stressors like loud noises, social neuroscientists have been instrumental in studying how our interactions with other people can cause stress. This question has been addressed through **neuroendocrinology**, or the study of how the brain and hormones act in concert to coordinate the physiology of the body. One contribution of this work has been in understanding the conditions under which other people can cause stress. In one study, Dickerson, Mycek, and Zaldivar (2008) asked undergraduates to deliver a speech either alone or to two other people. When the students gave the speech in front of others, there was a marked increase in cortisol compared with when they were asked to give a speech alone. This suggests that like chronic physical stress, everyday social stressors, like having your performance judged by others, induces a stress response. Interestingly, simply giving a speech in the same room with someone who is doing something else did not induce a stress response. This suggests that the mere presence of

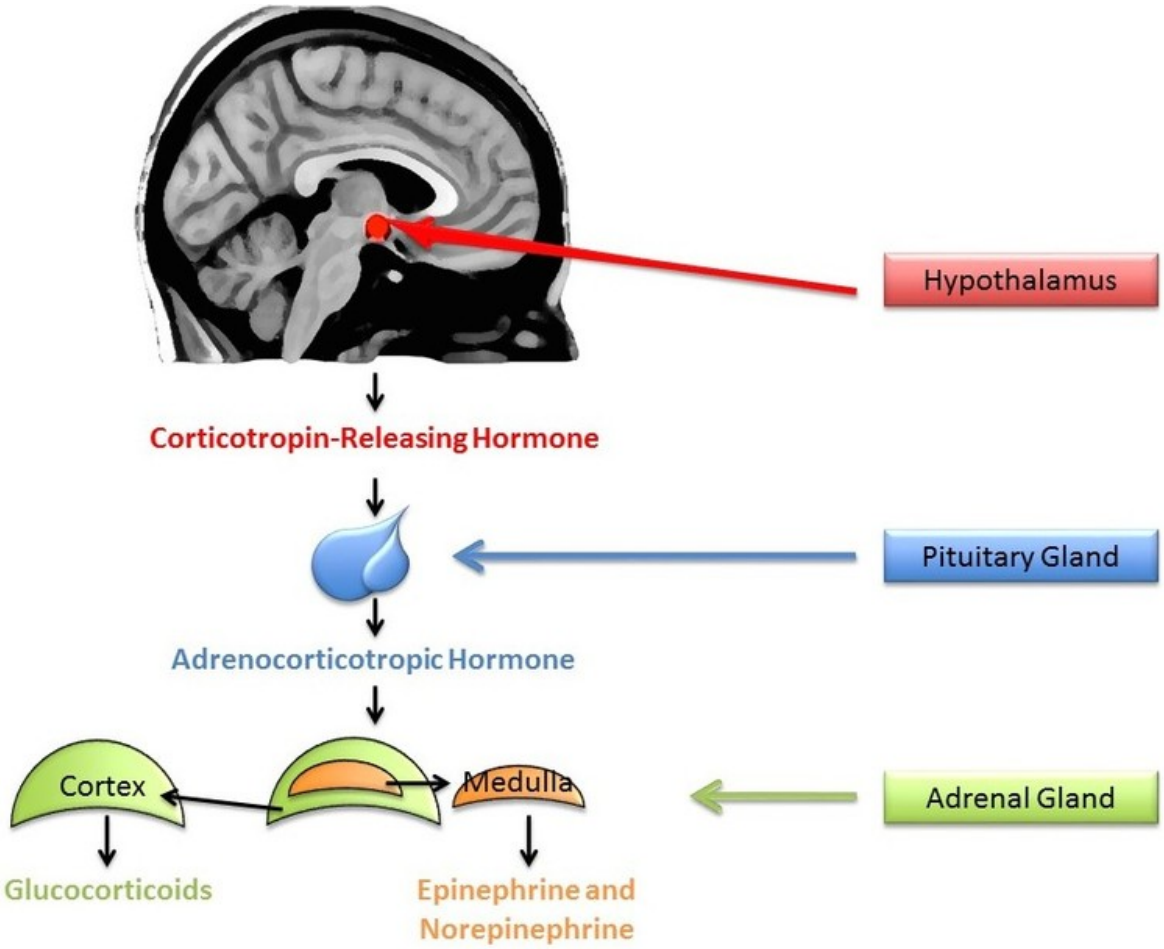


Figure 5: The Hypothalamic-pituitary-adrenal (HPA) axis. Black arrows represent the stress response pathway starting in the brain at the hypothalamus (an area within the brain). Stress triggers neurons in the hypothalamus to release corticotrophin-releasing hormone (CRH). The CRH is transported to the pituitary gland, another area in the brain, that activates the secretion of andrenocorticotropic hormone (ACTH). In turn, ACTH stimulates the adrenal glands that sit on top of the kidneys. The adrenal glands are composed of the outer adrenal cortex and inner adrenal medulla. The adrenal cortex secretes glucorcorticoids (including cortisol) and the medulla secretes epinephrine and norepinephrine. Stress, both psychological and physical, activates the HPA axis and results in the systemic release of cortisol, epinephrine, and norepinephrine.

others is not stressful, but rather it is the potential for them to judge us that induces stress.

Worrying about what other people think of us is not the only source of social stress in our lives. Other research has shown that interacting with people who belong to different social groups than us – what social psychologists call outgroup members – can increase physiological stress responses. For example, cardiovascular responses associated with stress like contractility of the heart ventricles and the amount of blood pumped by the heart (what is called cardiac output) are increased when interacting with outgroup as compared with ingroup members (i.e., people who belong to the same social group we do) (Mendes, Blascovich, Likel, & Hunter, 2002). This stress may derive from the expectation that interactions with dissimilar

others will be uncomfortable (Stephan & Stephan, 1985) or concern about being judged as unfriendly and prejudiced if the interaction goes poorly (Plant & Devine, 2003).

The research just reviewed shows that events in our social lives can be stressful, but are social interactions always bad for us? No. In fact, while others can be the source of much stress, they are also a major buffer against stress. Research on **social support** shows that relying on a network of individuals in tough times gives us tools for dealing with stress and can ward off loneliness (Cacioppo & Patrick, 2008). For instance, people who report greater social support show a smaller increase in cortisol when performing a speech in front of two evaluators (Eisenberger, Taylor, Gable, Hilmert, & Lieberman, 2007).

What determines whether others will increase or decrease stress? What matters is the context of the social interaction. When it has potential to reflect badly on the self, social interaction can be stressful, but when it provides support and comfort, social interaction can protect us from the negative effects of stress. Using neuroendocrinology by measuring hormonal changes in the body has helped researchers better understand how social factors impact our body and ultimately our health.

Conclusions

Human beings are intensely social creatures – our lives are intertwined with other people and our health and well-being depend on others. Social neuroscience helps us to understand the critical function of how we make sense of and interact with other people. This module provides an introduction to what social neuroscience is and what we have already learned from it, but there is much still to understand. As we move forward, one exciting future direction will be to better understand how different parts of the brain and body interact to produce the numerous and complex patterns of social behavior that humans display. We hinted at some of this complexity when we reviewed research showing that while the mPFC is involved in mentalizing, other areas such as the STS, amygdala, and TPJ are as well. There are likely additional brain areas involved as well, interacting in ways we do not yet fully understand. These brain areas in turn control other aspects of the body to coordinate our responses during social interactions. Social neuroscience will continue to investigate these questions, revealing new information about how social processes occur, while also increasing our understanding of basic neural and physiological processes.

Outside Resources

Society for Social Neuroscience
http://www.s4sn.org

Video: See a demonstration of fMRI data being collected.
https://www.youtube.com/watch?v=lLORKtkf2n8

Video: See an example of EEG data being collected.
https://www.youtube.com/watch?v=1ovv6lmPHSI

Video: View two tasks frequently used in the lab to create stress – giving a speech in front of strangers, and doing math computations out loud in front of others. Notice how some subjects show obvious signs of stress, but in some situations, cortisol changes suggest that even people who appear calm are experiencing a physiological response associated with stress.
http://www.youtube.com/watch?v=aYI6lCeeT5g

Video: Watch a video used by Fritz Heider and Marianne Simmel in a landmark study on social perception published in 1944. Their goal was to investigate how we perceive other people, and they studied it by seeing how readily we apply people-like interpretations to non-social stimuli.
https://www.youtube.com/watch?v=n9TWwG4SFWQ

Discussion Questions

1. Categorizing someone as a member of a social group can activate group stereotypes. EEG research suggests that social categorization occurs quickly and often automatically. What does this tell us about the likelihood of stereotyping occurring? How can we use this information to develop ways to stop stereotyping from happening?
2. Watch this video, similar to what was used by Fritz Heider and Marianne Simmel in a landmark study on social perception published in 1944, and imagine telling a friend what happened in the video. http://intentionperception.org/wp-content/uploads/2013/02/Heider_Flash.swf. After watching the video, think about the following: Did you describe the motion of the objects solely in geometric terms (e.g., a large triangle moved from the left to the right), or did you describe the movements as actions of animate beings, maybe even of people (e.

g., the circle goes into the house and shuts the door)? In the original research, 33 of 34 subjects described the action of the shapes using human terms. What does this tell us about our tendency to mentalize?

3. Consider the types of things you find stressful. How many of them are social in nature (e.g., are related to your interactions with other people)? Why do you think our social relations have such potential for stress? In what ways can social relations be beneficial and serve as a buffer for stress?

Vocabulary

Amygdala
A region located deep within the brain in the medial area (toward the center) of the temporal lobes (parallel to the ears). If you could draw a line through your eye sloping toward the back of your head and another line between your two ears, the amygdala would be located at the intersection of these lines. The amygdala is involved in detecting relevant stimuli in our environment and has been implicated in emotional responses.

Automatic process
When a thought, feeling, or behavior occurs with little or no mental effort. Typically, automatic processes are described as involuntary or spontaneous, often resulting from a great deal of practice or repetition.

Cortisol
A hormone made by the adrenal glands, within the cortex. Cortisol helps the body maintain blood pressure and immune function. Cortisol increases when the body is under stress.

Electroencephalogram
A measure of electrical activity generated by the brain's neurons.

Fight or flight response
The physiological response that occurs in response to a perceived threat, preparing the body for actions needed to deal with the threat.

Functional magnetic resonance imaging
A measure of changes in the oxygenation of blood flow as areas in the brain become active.

Functional neuroanatomy
Classifying how regions within the nervous system relate to psychology and behavior.

Hormones
Chemicals released by cells in the brain or body that affect cells in other parts of the brain or body.

Hypothalamic-pituitary-adrenal (HPA) axis
A system that involves the hypothalamus (within the brain), the pituitary gland (within the brain), and the adrenal glands (at the top of the kidneys). This system helps maintain

homeostasis (keeping the body's systems within normal ranges) by regulating digestion, immune function, mood, temperature, and energy use. Through this, the HPA regulates the body's response to stress and injury.

Ingroup
A social group to which an individual identifies or belongs.

Lesions
Damage or tissue abnormality due, for example, to an injury, surgery, or a vascular problem.

Medial prefrontal cortex
An area of the brain located in the middle of the frontal lobes (at the front of the head), active when people mentalize about the self and others.

Mentalizing
The act of representing the mental states of oneself and others. Mentalizing allows humans to interpret the intentions, beliefs, and emotional states of others.

Neuroendocrinology
The study of how the brain and hormones act in concert to coordinate the physiology of the body.

Outgroup
A social group to which an individual does not identify or belong.

Simulation
Imaginary or real imitation of other people's behavior or feelings.

Social categorization
The act of mentally classifying someone into a social group (e.g., as female, elderly, a librarian).

Social support
A subjective feeling of psychological or physical comfort provided by family, friends, and others.

Stereotypes
The beliefs or attributes we associate with a specific social group. Stereotyping refers to the act of assuming that because someone is a member of a particular group, he or she possesses the group's attributes. For example, stereotyping occurs when we assume someone is

unemotional just because he is man, or particularly athletic just because she is African American.

Stress
A threat or challenge to our well-being. Stress can have both a psychological component, which consists of our subjective thoughts and feelings about being threatened or challenged, as well as a physiological component, which consists of our body's response to the threat or challenge (see "fight or flight response").

Superior temporal sulcus
The sulcus (a fissure in the surface of the brain) that separates the superior temporal gyrus from the middle temporal gyrus. Located in the temporal lobes (parallel to the ears), it is involved in perception of biological motion or the movement of animate objects.

Sympathetic nervous system
A branch of the autonomic nervous system that controls many of the body's internal organs. Activity of the SNS generally mobilizes the body's fight or flight response.

Temporal parietal junction
The area where the temporal lobes (parallel to the ears) and parieta lobes (at the top of the head toward the back) meet. This area is important in mentalizing and distinguishing between the self and others.

References

Al'Absi, M., Hugdahl, K., & Lovallo, W. (2002). Adrenocortical stress responses and altered working memory performance. *Psychophysiology, 39*(1), 95–99.

Arnsten, A. F. T. (2009). Stress signaling pathways that impair prefrontal cortex structure and function. *Nature Neuroscience Reviews, 10*(6), 410–422.

Black, P. (2002). Stress and the inflammatory response: A review of neurogenic inflammation. * Brain, Behavior, & Immunity, 16*, 622–653.

Cacioppo, J. T., & Berntson, G. G. (1992). Social psychological contributions to the decade of the brain: Doctrine of multilevel analysis. *American Psychologist, 47*, 1019–1028.

Cacioppo, J. T., & Patrick, B. (2008). *Loneliness: Human nature and the need for social connection*. New York, NY: W. W. Norton & Company.

Carruthers, P. and Smith, P. (1996). *Theories of Theories of Mind*. New York, NY: Cambridge University Press.

Davidson, R. J., Pizzagalli, D., Nitschke, J. B., & Putnam, K. (2002). Depression: Perspectives from affective neuroscience. *Annual Review of Psychology, 53*, 545–574.

Dickerson, S. S., Gable, S. L., Irwin, M. R., Aziz, N., & Kemeny, M. E. (2009). Social-evaluative threat and proinflammatory cytokine regulation an experimental laboratory investigation. *Psychological Science, 20*, 1237–1244.

Dickerson, S. S., Mycek, P. J., & Zaldivar, F. (2008). Negative social evaluation, but not mere social presence, elicits cortisol responses to a laboratory stressor task. *Health Psychology, 27*(1), 116–121.

Eisenberger, N. I., Taylor, S. E., Gable, S. L., Hilmert, C. J., & Lieberman, M. D. (2007). Neural pathways link social support to attenuated neuroendocrine stress responses. *Neuroimage, 35*(4), 1601–1612.

Gallese, V., & Goldman, A. (1998). Mirror neurons and the simulation theory of mind-reading. *Trends in Cognitive Sciences, 2*, 493–501.

Gobbini, M. I., & Haxby, J. V. (2007). Neural systems for recognition of familiar faces. *Neuropsychologia, 45*(1), 32–41.

Goldman, A. I. (2005). Imitation, mind reading, and simulation. In S. Hurley & N. Chater (Eds.), *Perspectives on imitation: From neuroscience to social science (Vol. 2: Imitation, human development, and culture*, pp. 79–93). Cambridge, MA: MIT Press.

Ito, T. A., & Urland, G. R. (2003). Race and gender on the brain: Electrocortical measures of attention to race and gender of multiply categorizable individuals. *Journal of Personality*

and Social Psychology, 85, 616–626.

Ito, T.A., & Urland, G.R. (2005). The influence of processing objectives on the perception of faces: An ERP study of race and gender perception. *Cognitive, Affective, and Behavioral Neuroscience, 5*, 21–36.

Kelley, W. M., Macrae, C. N., Wyland, C. L., Caglar, S., Inati, S., & Heatherton, T. F. (2002). Finding the self? An event-related fMRI study. *Journal of Cognitive Neuroscience, 14*, 785–794.

Lazarus, R. S., (1974). Psychological stress and coping in adaptation and illness. *International Journal of Psychiatry in Medicine, 5*, 321–333.

Mendes, W. B., Blascovich, J., Lickel, B., & Hunter, S. (2002). Challenge and threat during social interactions with White and Black men. *Personality and Social Psychology Bulletin, 28*, 939–952.

Mitchell, J. P., Neil Macrae, C., & Banaji, M. R. (2005). Forming impressions of people versus inanimate objects: social-cognitive processing in the medial prefrontal cortex. *Neuroimage, 26*(1), 251–257.

Mouchetant-Rostaing, Y., & Giard, M. H. (2003). Electrophysiological correlates of age and gender perception on human faces. *Journal of Cognitive Neuroscience, 15*, 900–910.

Phelps, E. A., & LeDoux, J. E. (2005). Contributions of the amygdala to emotion processing: From animal models to human behavior. *Neuron, 48*, 175.

Plant, E. A., & Devine, P. G. (2003). The antecedents and implications of interracial anxiety. *Personality and Social Psychology Bulletin, 29*, 790–801.

Schultz, J., Imamizu, H., Kawato, M., & Frith, C. D. (2004). Activation of the human superior temporal gyrus during observation of goal attribution by intentional objects. *Journal of Cognitive Neuroscience, 16*, 1695–1705.

Selye, H. (1950). *The physiology and pathology of exposure to stress*. Montreal: Acta Inc.

Srivastava, S., Guglielmo, S., & Beer, J. S. (2010). Perceiving others' personalities: Examining the dimensionality, assumed similarity to the self, and stability of perceiver effects. *Journal of Personality and Social Psychology, 98*, 520.

Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues, 41*(3), 157–175.

Whalen, P. J., & Phelps, E. A. (2009). *The human amygdala*. New York, NY: The Guilford Press.

18

Social Cognition and Attitudes

Yanine D. Hess & Cynthia L. Pickett

Social cognition is the area of social psychology that examines how people perceive and think about their social world. This module provides an overview of key topics within social cognition and attitudes, including judgmental heuristics, social prediction, affective and motivational influences on judgment, and explicit and implicit attitudes.

Learning Objectives

- Learn how we simplify the vast array of information in the world in a way that allows us to make decisions and navigate our environments efficiently.
- Understand some of the social factors that influence how we reason.
- Determine if our reasoning processes are always conscious, and if not, what some of the effects of automatic/nonconscious cognition are.
- Understand the difference between explicit and implicit attitudes, and the implications they have for behavior.

Introduction

Imagine you are walking toward your classroom and you see your teacher and a fellow student you know to be disruptive in class whispering together in the hallway. As you approach, both of them quit talking, nod to you, and then resume their urgent whispers after you pass by. What would you make of this scene? What story might you tell yourself to help explain this interesting and unusual behavior?

People know intuitively that we can better understand others' behavior if we know the thoughts contributing to the behavior. In this example, you might guess that your teacher harbors several concerns about the disruptive student, and therefore you believe their whispering is related to this. The area of social psychology that focuses on how people think about others and about the social world is called **social cognition**.

Researchers of social cognition study how people make sense of themselves and others to make judgments, form attitudes, and make predictions about the future. Much of the research in social cognition has demonstrated that humans are adept at distilling large amounts of information into smaller, more usable chunks, and that we possess many cognitive tools that allow us to efficiently navigate our environments. This research has also illuminated many social factors that can influence these judgments and predictions. Not only can our past experiences, expectations, motivations, and moods impact our reasoning, but many of our decisions and behaviors are driven by unconscious processes and implicit attitudes we are unaware of having. The goal of this module is to highlight the mental tools we use to navigate and make sense of our complex social world, and describe some of the emotional, motivational, and cognitive factors that affect our reasoning.

Simplifying Our Social World

Consider how much information you come across on any given day; just looking around your bedroom, there are hundreds of objects, smells, and sounds. How do we simplify all this information to attend to what is important and make decisions quickly and efficiently? In part, we do it by forming schemas of the various people, objects, situations, and events we encounter. A **schema** is a mental model, or representation, of any of the various things we come across in our daily lives. A schema (related to the word schematic) is kind of like a mental blueprint for how we expect something to be or behave. It is an organized body of general information or beliefs we develop from direct encounters, as well as from secondhand sources. Rather than spending copious amounts of time learning about each new individual object (e. g., each new dog we see), we rely on our schemas to tell us that a newly encountered dog probably barks, likes to fetch, and enjoys treats. In this way, our schemas greatly reduce the amount of cognitive work we need to do and allow us to "go beyond the information given" (Bruner, 1957).

We can hold schemas about almost anything—individual people (*person schemas*), ourselves (*self-schemas*), and recurring events (*event schemas,* or *scripts*). Each of these types of schemas is useful in its own way. For example, event schemas allow us to navigate new situations efficiently and seamlessly. A script for dining at a restaurant would indicate that one should

wait to be seated by the host or hostess, that food should be ordered from a menu, and that one is expected to pay the check at the end of the meal. Because the majority of dining situations conform to this general format, most diners just need to follow their mental scripts to know what to expect and how they should behave, greatly reducing their cognitive workload.

Does the person in this image fit reasonably into your heuristic of a librarian? How representative is he of that category? [Image: University Library of Kyiv-Mohyla Academy, https://goo.gl/LxQTuD, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Another important way we simplify our social world is by employing **heuristics**, which are mental shortcuts that reduce complex problem-solving to more simple, rule-based decisions. For example, have you ever had a hard time trying to decide on a book to buy, then you see one ranked highly on a book review website? Although selecting a book to purchase can be a complicated decision, you might rely on the "rule of thumb" that a recommendation from a credible source is likely a safe bet—so you buy it. A common instance of using heuristics is when people are faced with judging whether an object belongs to a particular category. For example, you would easily classify a pit bull into the category of "dog." But what about a coyote? Or a fox? A plastic toy dog? In order to make this classification (and many others), people may rely on the **representativeness heuristic** to arrive at a quick decision (Kahneman & Tversky, 1972, 1973). Rather than engaging in an in-depth consideration of the object's attributes, one can simply judge the likelihood of the object belonging to a category, based on how similar it is to one's mental representation of that category. For example, a perceiver may quickly judge a female to be an athlete based on the fact that the female is tall, muscular, and wearing sports apparel—which fits the perceiver's representation of an athlete's characteristics.

In many situations, an object's similarity to a category is a good indicator of its membership in that category, and an individual using the representativeness heuristic will arrive at a correct judgment. However, when base-rate information (e.g., the actual percentage of athletes in the area and therefore the probability that this person actually *is* an athlete) conflicts with representativeness information, use of this heuristic is less appropriate. For example, if asked to judge whether a quiet, thin man who likes to read poetry is a classics professor at a

prestigious university or a truck driver, the representativeness heuristic might lead one to guess he's a professor. However, considering the base-rates, we know there are far fewer university classics professors than truck drivers. Therefore, although the man fits the mental image of a professor, the actual probability of him being one (considering the number of professors out there) is lower than that of being a truck driver.

In addition to judging whether things belong to particular categories, we also attempt to judge the likelihood that things will happen. A commonly employed heuristic for making this type of judgment is called the **availability heuristic**. People use the availability heuristic to evaluate the frequency or likelihood of an event based on how easily instances of it come to mind (Tversky & Kahneman, 1973). Because more commonly occurring events are more likely to be cognitively accessible (or, they come to mind more easily), use of the availability heuristic can lead to relatively good approximations of frequency. However, the heuristic can be less reliable when judging the frequency of relatively infrequent *but highly accessible* events. For example, do you think there are more words that begin with "k," or more that have "k" as the third letter? To figure this out, you would probably make a list of words that start with "k" and compare it to a list of words with "k" as the third letter. Though such a quick test may lead you to believe there are more words that begin with "k," the truth is that there are 3 times as many words that have "k" as the third letter (Schwarz et al., 1991). In this case, words beginning with "k" are more readily available to memory (i.e., more accessible), so they seem to be more numerous. Another example is the very common fear of flying: dying in a plane crash is extremely rare, but people often overestimate the probability of it occurring because plane crashes tend to be highly memorable and publicized.

In summary, despite the vast amount of information we are bombarded with on a daily basis, the mind has an entire kit of "tools" that allows us to navigate that information efficiently. In addition to category and frequency judgments, another common mental calculation we perform is predicting the future. We rely on our predictions about the future to guide our actions. When deciding what entrée to select for dinner, we may ask ourselves, "How happy will I be if I choose this over that?" The answer we arrive at is an example of a future prediction. In the next section, we examine individuals' ability to accurately predict others' behaviors, as well as their own future thoughts, feelings, and behaviors, and how these predictions can impact their decisions.

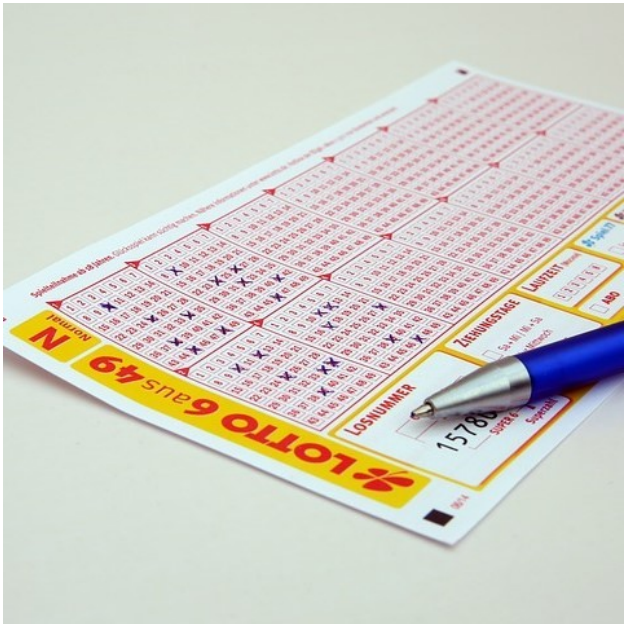
Making Predictions About the Social World

Whenever we face a decision, we predict our future behaviors or feelings in order to choose the best course of action. If you have a paper due in a week and have the option of going out

to a party or working on the paper, the decision of what to do rests on a few things: the amount of time you predict you will need to write the paper, your prediction of how you will feel if you do poorly on the paper, and your prediction of how harshly the professor will grade it.

In general, we make predictions about others quickly, based on relatively little information. Research on "thin-slice judgments" has shown that perceivers are able to make surprisingly accurate inferences about another person's emotional state, personality traits, and even sexual orientation based on just snippets of information—for example, a 10-second video clip (Ambady, Bernieri, & Richeson, 2000; Ambady, Hallahan, & Conner, 1999; Ambady & Rosenthal, 1993). Furthermore, these judgments are predictive of the target's future behaviors. For example, one study found that students' ratings of a teacher's warmth, enthusiasm, and attentiveness from a 30-second video clip strongly predicted that teacher's final student evaluations after an entire semester (Ambady & Rosenthal, 1993). As might be expected, the more information there is available, the more accurate many of these judgments become (Carney, Colvin, & Hall, 2007).

Because we seem to be fairly adept at making predictions about others, one might expect predictions about the self to be foolproof, given the considerable amount of information one has about the self compared to others. To an extent, research has supported this conclusion. For example, our own predictions of our future academic performance are more accurate than peers' predictions of our performance, and self-expressed interests better predict occupational choice than career inventories (Shrauger & Osberg, 1981). Yet, it is not always the case that we hold greater insight into ourselves. While our own assessment of our personality traits does predict certain behavioral tendencies better than peer assessment of our personality, for certain behaviors, peer reports are more accurate than self-reports (Kolar, Funder, & Colvin, 1996; Vazire, 2010). Similarly, although we are generally aware of our knowledge, abilities, and future prospects, our perceptions are often overly positive, and we display overconfidence in their accuracy and potential (Metcalfe, 1998). For example, we tend



Although we can be reasonably certain that a winning lottery ticket will make us feel good, we tend to overestimate both how good we'll feel and for how long. [Image: CC0 Public Domain, https://goo.gl/m25gce]

to underestimate how much time it will take us to complete a task, whether it is writing a paper, finishing a project at work, or building a bridge—a phenomenon known as the **planning fallacy** (Buehler, Griffin, & Ross, 1994). The planning fallacy helps explain why so many college students end up pulling all-nighters to finish writing assignments or study for exams. The tasks simply end up taking longer than expected. On the positive side, the planning fallacy can also lead individuals to pursue ambitious projects that may turn out to be worthwhile. That is, if they had accurately predicted how much time and work it would have taken them, they may have never started it in the first place.

The other important factor that affects decision-making is our ability to predict how we will *feel* about certain outcomes. Not only do we predict whether we will feel positively or negatively, we also make predictions about how strongly and for how long we will feel that way. Research demonstrates that these predictions of one's future feelings—known as **affective forecasting**—are accurate in some ways but limited in others (Gilbert & Wilson, 2007). We are adept at predicting whether a future event or situation will make us feel positively or negatively (Wilson & Gilbert, 2003), but we often incorrectly predict the strength or duration of those emotions. For example, you may predict that if your favorite sports team loses an important match, you will be devastated. Although you're probably right that you will feel negative (and not positive) emotions, will you be able to accurately estimate how negative you'll feel? What about how long those negative feelings will last?

Predictions about future feelings are influenced by the **impact bias** : the tendency for a person to overestimate the *intensity* of their future feelings. For example, by comparing people's estimates of how they expected to feel after a specific event to their actual feelings after the event, research has shown that people generally overestimate how badly they will feel after a negative event—such as losing a job—and they also overestimate how happy they will feel after a positive event—such as winning the lottery (Brickman, Coates, & Janoff-Bullman, 1978). Another factor in these estimations is the **durability bias**. The durability bias refers to the tendency for people to overestimate *how long* (or, the *duration*) positive and negative events will affect them. This bias is much greater for predictions regarding negative events than positive events, and occurs because people are generally unaware of the many psychological mechanisms that help us adapt to and cope with negative events (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998;Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000).

In summary, individuals form impressions of themselves and others, make predictions about the future, and use these judgments to inform their decisions. However, these judgments are shaped by our tendency to view ourselves in an overly positive light and our inability to appreciate our habituation to both positive and negative events. In the next section, we will discuss how motivations, moods, and desires also shape social judgment.

Hot Cognition: The Influence of Motivations, Mood, and Desires on Social Judgment

Although we may believe we are always capable of rational and objective thinking (for example, when we methodically weigh the pros and cons of two laundry detergents in an unemotional —i.e., "cold"—manner), our reasoning is often influenced by our motivations and mood. **Hot cognition** refers to the mental processes that are influenced by desires and feelings. For example, imagine you receive a poor grade on a class assignment. In this situation, your ability to reason objectively about the quality of your assignment may be limited by your anger toward the teacher, upset feelings over the bad grade, and your motivation to maintain your belief that you are a good student. In this sort of scenario, we may want the situation to turn out a particular way or our belief to be the truth. When we have these **directional goals**, we are motivated to reach a particular outcome or judgment and do not process information in a cold, objective manner.

Motivated skepticism is a bias that can easily impact our views of political candidates or issues. It may be more difficult to objectively evaluate the merits of a political argument if it comes from someone we don't expect to vote for. [Image: Senado Federal, https://goo.gl/slEPEv, CC BY-NC 2.0, https://goo.gl/VnKlK8]

Directional goals can bias our thinking in many ways, such as leading to **motivated skepticism**, whereby we are skeptical of evidence that goes against what we want to believe despite the strength of the evidence (Ditto & Lopez, 1992). For example, individuals trust medical tests less if the results suggest they have a deficiency compared to when the results suggest they are healthy. Through this motivated skepticism, people often continue to believe what they want to believe, even in the face of nearly incontrovertible evidence to the contrary.

There are also situations in which we do not have wishes for a particular outcome but our goals bias our reasoning, anyway. For example, being motivated to reach an accurate conclusion can influence our reasoning processes by making us more cautious—leading to indecision. In contrast, sometimes individuals are motivated to make a quick decision, without being particularly concerned about the quality of it. Imagine trying to

choose a restaurant with a group of friends when you're really hungry. You may choose whatever's nearby without caring if the restaurant is the best or not. This **need for closure** (the desire to come to a firm conclusion) is often induced by time constraints (when a decision needs to be made quickly) as well as by individual differences in the need for closure (Webster & Kruglanski, 1997). Some individuals are simply more uncomfortable with ambiguity than others, and are thus more motivated to reach clear, decisive conclusions.

Just as our goals and motivations influence our reasoning, our moods and feelings also shape our thinking process and ultimate decisions. Many of our decisions are based in part on our memories of past events, and our retrieval of memories is affected by our current mood. For example, when you are sad, it is easier to recall the sad memory of your dog's death than the happy moment you received the dog. This tendency to recall memories similar in valence to our current mood is known as **mood-congruent memory** (Blaney, 1986; Bower 1981, 1991; DeSteno, Petty, Wegener, & Rucker, 2000; Forgas, Bower, & Krantz, 1984; Schwarz, Strack, Kommer, & Wagner, 1987). The mood we were in when the memory was recorded becomes a retrieval cue; our present mood primes these congruent memories, making them come to mind more easily (Fiedler, 2001). Furthermore, because the availability of events in our memory can affect their perceived frequency (the availability heuristic), the biased retrieval of congruent memories can then impact the subsequent judgments we make (Tversky & Kahneman, 1973). For example, if you are retrieving many sad memories, you might conclude that you have had a tough, depressing life.

In addition to our moods influencing the specific memories we retrieve, our moods can also influence the broader judgments we make. This sometimes leads to inaccuracies when our current mood is irrelevant to the judgment at hand. In a classic study demonstrating this effect, researchers found that study participants rated themselves as less-satisfied with their lives in general if they were asked on a day when it happened to be raining vs. sunny (Schwarz & Clore, 1983). However, this occurred only if the participants were not aware that the weather might be influencing their mood. In essence, participants were in worse moods on rainy days than sunny days, and, if unaware of the weather's effect on their mood, they incorrectly used their mood as evidence of their overall life satisfaction.

In summary, our mood and motivations can influence both the way we think and the decisions we ultimately make. Mood can shape our thinking even when the mood is irrelevant to the judgment, and our motivations can influence our thinking even if we have no particular preference about the outcome. Just as we might be unaware of how our reasoning is influenced by our motives and moods, research has found that our behaviors can be determined by unconscious processes rather than intentional decisions, an idea we will explore in the next

section.

Automaticity

Do we actively choose and control all our behaviors or do some of these behaviors occur automatically? A large body of evidence now suggests that many of our behaviors are, in fact, **automatic**. A behavior or process is considered automatic if it is unintentional, uncontrollable, occurs outside of conscious awareness, or is cognitively efficient (Bargh & Chartrand, 1999). A process may be considered automatic even if it does not have all these features; for example, driving is a fairly automatic process, but is clearly intentional. Processes can become automatic through repetition, practice, or repeated associations. Staying with the driving example: although it can be very difficult and cognitively effortful at the start, over time it becomes a relatively automatic process, and aspects of it can occur outside conscious awareness.

Our tendency to subtly mimic the people we interact with is largely an unconscious behavior. [Image: Susan Sermoneta, https://goo.gl/6yQXYp, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

In addition to practice leading to the learning of automatic behaviors, some automatic processes, such as fear responses, appear to be innate. For example, people quickly detect negative stimuli, such as negative words, even when those stimuli are presented subliminally (Dijksterhuis & Aarts, 2003; Pratto & John, 1991). This may represent an evolutionarily adaptive response that makes individuals more likely to detect danger in their environment. Other innate automatic processes may have evolved due to their pro-social outcomes. The **chameleon effect**—where individuals nonconsciously mimic the postures, mannerisms, facial expressions, and other behaviors of their interaction partners—is an example of how people may engage in certain behaviors without conscious intention or awareness (Chartrand & Bargh, 1999). For example, have you ever noticed that you've picked up some of the habits of your friends? Over time, but also in brief encounters, we will nonconsciously mimic those around us because of the positive social effects of doing so. That is, automatic mimicry has been shown to lead to more positive social interactions and to increase liking between the mimicked person and the mimicking person.

When concepts and behaviors have been repeatedly associated with each other, one of them

can be **primed**—i.e., made more cognitively accessible—by exposing participants to the (strongly associated) other one. For example, by presenting participants with the concept of a doctor, associated concepts such as "nurse" or "stethoscope" are primed. As a result, participants recognize a word like "nurse" more quickly (Meyer, & Schvaneveldt, 1971). Similarly, stereotypes can automatically prime associated judgments and behaviors. **Stereotypes** are our general beliefs about a group of people and, once activated, they may guide our judgments outside of conscious awareness. Similar to schemas, stereotypes involve a mental representation of how we expect a person will think and behave. For example, someone's mental schema for women may be that they're caring, compassionate, and maternal; however, a stereotype would be that *all* women are examples of this schema. As you know, assuming all people are a certain way is not only wrong but insulting, especially if negative traits are incorporated into a schema and subsequent stereotype.

In a now classic study, Patricia Devine (1989) primed study participants with words typically associated with Black people (e.g., "blues," "basketball") in order to activate the stereotype of Black people. Devine found that study participants who were primed with the Black stereotype judged a target's ambiguous behaviors as being more hostile (a trait stereotypically associated with Black people) than nonprimed participants. Research in this area suggests that our social context—which constantly bombards us with concepts—may prime us to form particular judgments and influence our thoughts and behaviors.

In summary, there are many cognitive processes and behaviors that occur outside of our awareness and despite our intentions. Because automatic thoughts and behaviors do not require the same level of cognitive processing as conscious, deliberate thinking and acting, automaticity provides an efficient way for individuals to process and respond to the social world. However, this efficiency comes at a cost, as unconsciously held stereotypes and attitudes can sometimes influence us to behave in unintended ways. We will discuss the consequences of both consciously and unconsciously held attitudes in the next section.

Attitudes and Attitude Measurement

When we encounter a new object or person, we often form an attitude toward it (him/her). An **attitude** is a "psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 1). In essence, our attitudes are our general evaluations of things (i.e., do you regard this thing positively or negatively?) that can bias us toward having a particular response to it. For example, a negative attitude toward mushrooms would predispose you to avoid them and think negatively of them in other ways. This bias can be long- or short-term and can be overridden by another experience with

the object. Thus, if you encounter a delicious mushroom dish in the future, your negative attitude could change to a positive one.

Traditionally, attitudes have been measured through **explicit attitude** measures, in which participants are directly asked to provide their attitudes toward various objects, people, or issues (e.g., a survey).

For example, in a semantic-differential scale, respondents are asked to provide evaluations of an attitude object using a series of negative to positive response scales—which have something like "unpleasant" at one end of the scale and "pleasant" at the other (Osgood, Suci, & Tannenbaum, 1957). In a Likert scale, respondents are asked to indicate their agreement level with various evaluative statements, such as, "I believe that psychology is the most interesting major" (Likert, 1932). Here, participants mark their selection between something like "strongly disagree" and "strongly agree." These explicit measures of attitudes can be used to predict people's actual behavior, but there are limitations to them. For one thing, individuals aren't always aware of their true attitudes, because they're either undecided or haven't given a particular issue much thought. Furthermore, even when individuals are aware of their attitudes, they might not want to admit to them, such as when holding a certain attitude is viewed negatively by their culture. For example, sometimes it can be difficult to measure people's true opinions on racial issues, because participants fear that expressing their true attitudes will be viewed as socially unacceptable. Thus, explicit attitude measures may be unreliable when asking about controversial attitudes or attitudes that are not widely accepted by society.

The explicit attitudes expressed by voters are used to predict the outcomes of elections, however some people who respond to opinion questions that involve controversial issues may hide their true attitudes. [Image: SueWalkerWhite, https://goo.gl/1jL4WP, CC BY-NC 2.0, https://goo.gl/VnKlK8]

In order to avoid some of these limitations, many researchers use more subtle or covert ways of measuring attitudes that do not suffer from such self-presentation concerns (Fazio & Olson, 2003). An **implicit attitude** is an attitude that a person does not verbally or overtly express. For example, someone may have a positive, explicit attitude toward his job; however, nonconsciously, he may have a lot of negative associations with it (e.g., having to wake up

early, the long commute, the office heating is broken) which results in an implicitly negative attitude. To learn what a person's implicit attitude is, you have to use **implicit measures of attitudes**. These measures infer the participant's attitude rather than having the participant explicitly report it. Many implicit measures accomplish this by recording the time it takes a participant (i.e., the reaction time) to label or categorize an attitude object (i.e., the person, concept, or object of interest) as positive or negative. For example, the faster someone categorizes his or her job (measured in milliseconds) as negative compared to positive, the more negative the implicit attitude is (i.e., because a faster categorization implies that the two concepts—"work" and "negative"—are closely related in one's mind).

One common implicit measure is the **Implicit Association Test** (IAT;Greenwald & Banaji, 1995; Greenwald, McGhee, & Schwartz, 1998), which does just what the name suggests, measuring how quickly the participant pairs a concept (e.g., cats) with an attribute (e.g., good or bad). The participant's response time in pairing the concept with the attribute indicates how strongly the participant associates the two. Another common implicit measure is the **evaluative priming task** (Fazio, Jackson, Dunton, & Williams, 1995), which measures how quickly the participant labels the valence (i.e., positive or negative) of the attitude object when it appears immediately after a positive or negative image. The more quickly a participant labels the attitude object after being primed with a positive versus negative image indicates how positively the participant evaluates the object.

Individuals' implicit attitudes are sometimes inconsistent with their explicitly held attitudes. Hence, implicit measures may reveal biases that participants do not report on explicit measures. As a result, implicit attitude measures are especially useful for examining the pervasiveness and strength of controversial attitudes and stereotypic associations, such as racial biases or associations between race and violence. For example, research using the IAT has shown that about 66% of white respondents have a negative bias toward Black people (Nosek, Banaji, & Greenwald, 2002), that bias on the IAT against Black people is associated with more discomfort during interracial interactions (McConnell, & Leibold, 2001), and that implicit associations linking Black people to violence are associated with a greater tendency to shoot unarmed Black targets in a video game (Payne, 2001). Thus, even though individuals are often unaware of their implicit attitudes, these attitudes can have serious implications for their behavior, especially when these individuals do not have the cognitive resources available to override the attitudes' influence.

Conclusion

Decades of research on social cognition and attitudes have revealed many of the "tricks" and

"tools" we use to efficiently process the limitless amounts of social information we encounter. These tools are quite useful for organizing that information to arrive at quick decisions. When you see an individual engage in a behavior, such as seeing a man push an elderly woman to the ground, you form judgments about his personality, predictions about the likelihood of him engaging in similar behaviors in the future, as well as predictions about the elderly woman's feelings and how you would feel if you were in her position. As the research presented in this module demonstrates, we are adept and efficient at making these judgments and predictions, but they are not made in a vacuum. Ultimately, our perception of the social world is a subjective experience, and, consequently, our decisions are influenced by our experiences, expectations, emotions, motivations, and current contexts. Being aware of when our judgments are most accurate, and how our judgments are shaped by social influences, prepares us to be in a much better position to appreciate, and potentially counter, their effects.

Outside Resources

Video: Daniel Gilbert discussing affective forecasting.
http://www.dailymotion.com/video/xebnl3_dan-gilbert-on-what-affective-forec_people#.UQlwDx3WLm4

Video: Focus on heuristics.
http://study.com/academy/lesson/heuristics.html

Web: BBC Horizon documentary How to Make Better Decisions that discusses many module topics (Part 1).
http://www.youtube.com/watch?v=ul-FqOfX-t8

Web: Implicit Attitudes Test.
https://implicit.harvard.edu/implicit/

Discussion Questions

1. Describe your event-schema, or script, for an event that you encounter regularly (e.g., dining at a restaurant). Now, attempt to articulate a script for an event that you have encountered only once or a few times. How are these scripts different? How confident are you in your ability to navigate these two events?
2. Think of a time when you made a decision that you thought would make you very happy (e.g., purchasing an item). To what extent were you accurate or inaccurate? In what ways were you wrong, and why do you think you were wrong?
3. What is an issue you feel strongly about (e.g., abortion, death penalty)? How would you react if research demonstrated that your opinion was wrong? What would it take before you would believe the evidence?
4. Take an implicit association test at the Project Implicit website (https://implicit.harvard.edu/implicit). How do your results match or mismatch your explicit attitudes.

Vocabulary

Affective forecasting
Predicting how one will feel in the future after some event or decision.

Attitude
A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor.

Automatic
A behavior or process has one or more of the following features: unintentional, uncontrollable, occurring outside of conscious awareness, and cognitively efficient.

Availability heuristic
A heuristic in which the frequency or likelihood of an event is evaluated based on how easily instances of it come to mind.

Chameleon effect
The tendency for individuals to nonconsciously mimic the postures, mannerisms, facial expressions, and other behaviors of one's interaction partners.

Directional goals
The motivation to reach a particular outcome or judgment.

Durability bias
A bias in affective forecasting in which one overestimates for how long one will feel an emotion (positive or negative) after some event.

Evaluative priming task
An implicit attitude task that assesses the extent to which an attitude object is associated with a positive or negative valence by measuring the time it takes a person to label an adjective as good or bad after being presented with an attitude object.

Explicit attitude
An attitude that is consciously held and can be reported on by the person holding the attitude.

Heuristics
A mental shortcut or rule of thumb that reduces complex mental problems to more simple

rule-based decisions.

Hot cognition
The mental processes that are influenced by desires and feelings.

Impact bias
A bias in affective forecasting in which one overestimates the strength or intensity of emotion one will experience after some event.

Implicit Association Test
An implicit attitude task that assesses a person's automatic associations between concepts by measuring the response times in pairing the concepts.

Implicit attitude
An attitude that a person cannot verbally or overtly state.

Implicit measures of attitudes
Measures of attitudes in which researchers infer the participant's attitude rather than having the participant explicitly report it.

Mood-congruent memory
The tendency to be better able to recall memories that have a mood similar to our current mood.

Motivated skepticism
A form of bias that can result from having a directional goal in which one is skeptical of evidence despite its strength because it goes against what one wants to believe.

Need for closure
The desire to come to a decision that will resolve ambiguity and conclude an issue.

Planning fallacy
A cognitive bias in which one underestimates how long it will take to complete a task.

Primed
A process by which a concept or behavior is made more cognitively accessible or likely to occur through the presentation of an associated concept.

Representativeness heuristic

A heuristic in which the likelihood of an object belonging to a category is evaluated based on the extent to which the object appears similar to one's mental representation of the category.

Schema
A mental model or representation that organizes the important information about a thing, person, or event (also known as a script).

Social cognition
The study of how people think about the social world.

Stereotypes
Our general beliefs about the traits or behaviors shared by group of people.

References

Ambady, N., & Rosenthal, R. (1993). Half a minute: Predicting teacher evaluations from thin slices of nonverbal behavior and physical attractiveness. *Journal of Personality and Social Psychology, 64*, 431–441.

Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. *Advances in Experimental Social Psychology, 32*, 201–271. San Diego, CA: Academic Press.

Ambady, N., Hallahan, M., & Conner, B. (1999). Accuracy of judgments of sexual orientation from thin slices of behavior. *Journal of Personality and Social Psychology, 77*, 538–547.

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462–479.

Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin, 99*, 229–246.

Bower, G. H. (1991). Mood congruity of social judgments. In J. P. Forgas (Ed.), *Emotion and social judgments* (pp. 31–53). New York, NY: Pergamon.

Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*, 129–148.

Brickman, P., Coates, D., & Janoff-Bullman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology, 36*, 917–927.

Bruner, J. S. (1957). Going beyond the information given. In J. S. Bruner, E. Brunswik, L. Festinger, F. Heider, K. F. Muenzinger, C. E. Osgood, & D. Rapaport, (Eds.), *Contemporary approaches to cognition* (pp. 41–69). Cambridge, MA: Harvard University Press.

Buehler, R., Griffin, D., & Ross, M. (1994). Exploring the "planning fallacy": Why people underestimate their task completion times. *Journal of Personality and Social Psychology, 67*, 366–381.

Carney, D. R., Colvin, C. R., & Hall, J. A. (2007). A thin slice perspective on the accuracy of first impressions. *Journal of Research in Personality, 41*, 1054–1072.

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology, 76*, 893–910.

DeSteno, D., Petty, R., Wegener, D., & Rucker, D. (2000). Beyond valence in the perception of likelihood: The role of emotion specificity. *Journal of Personality and Social Psychology, 78*, 397–416.

Devine, P. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 5*, 5–18.

Dijksterhuis, A., & Aarts, H. (2003). On wildebeests and humans: The preferential detection of

negative stimuli. *Psychological Science, 14*, 14–18.

Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and nonpreferred conclusions. *Journal of Personality and Social Psychology, 63*, 568–584.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes (p. 1)*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology, 54*, 297–327.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology, 69*, 1013–1027.

Fiedler, K. (2001). Affective influences on social information processing. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 163–185). Mahwah, NJ: Lawrence Erlbaum Associates.

Forgas, J. P., Bower, G. H., & Krantz, S. (1984). The influence of mood on perceptions of social interactions. *Journal of Experimental Social Psychology, 20*, 497–513.

Gilbert, D. T., & Wilson, T. D. (2007). *Prospection: Experiencing the future. Science, 317*, 1351–1354.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology, 75*, 617–638.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4–27.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80*, 237–251.

Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology, 3*, 430–454.

Kolar, D. W., Funder, D. C., & Colvin, C. R. (1996). Comparing the accuracy of personality judgments by the self and knowledgeable others. *Journal of Personality, 64*, 311–337.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 140*, 1–55.

McConnell, A. R., & Leibold, J. M. (2001). Relations among the implicit association test,

discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology, 37*, 435–442.

Metcalfe, J. (1998). Cognitive optimism: Self-deception or memory-based processing heuristics? *Personality and Social Psychology Review, 2*, 100–110.

Meyer, D. E., & Schvaneveldt, R. W. (1971). Facilitation in recognizing pairs of words: Evidence of a dependence between retrieval operations. *Journal of Experimental Psychology, 90*, 227–234.

Nosek, B. A., Banaji, M., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration website. *Group Dynamics: Theory, Research, and Practice, 6*, 101–115.

Osgood, C. E., Suci, G., & Tannenbaum, P. (1957). *The measurement of meaning.* Urbana, IL: University of Illinois Press.

Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81*, 181–192.

Pratto, F., & John, O. P. (1991). Automatic vigilance: The attention-grabbing power of negative social information. *Journal of Personality and Social Psychology, 61*, 380–391.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45*, 513–523.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, 61(2), 195.

Schwarz, N., Strack, F., Kommer, D., & Wagner, D. (1987). Soccer, rooms, and the quality of your life: Mood effects on judgments of satisfaction with life in general and with specific domains. *Journal of Social Psychology, 17*, 69–79.

Shrauger, J. S., & Osberg, T. M. (1981). The relative accuracy of self-predictions and judgments by others in psychological assessment. *Psychological Bulletin, 90*, 322–351.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*, 207–232.

Vazire, S. (2010). Who knows what about a person? The self-other asymmetry (SOKA) model. *Journal of Personality and Social Psychology, 98*, 281–300.

Webster, D. M., & Kruglanski, A. W. (1997). Cognitive and social consequences of the need for cognitive closure. *European Review of Social Psychology, 18*, 133–173.

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. *Advances in Experimental Social*

Psychology, 35, 345–411.

Wilson, T. D., Wheatley, T. P., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology, 78*, 821–836.

19

Persuasion: So Easily Fooled

Robert V. Levine

This module introduces several major principles in the process of persuasion. It offers an overview of the different paths to persuasion. It then describes how mindless processing makes us vulnerable to undesirable persuasion and some of the “tricks” that may be used against us.

Learning Objectives

- Recognize the difference between the central and peripheral routes to persuasion.
- Understand the concepts of trigger features, fixed action patterns, heuristics, and mindless thinking, and how these processes are essential to our survival but, at the same time, leave us vulnerable to exploitation.
- Understand some common “tricks” persuasion artists may use to take advantage of us.
- Use this knowledge to make you less susceptible to unwanted persuasion.

Introduction

Have you ever tried to swap seats with a stranger on an airline? Ever negotiated the price of a car? Ever tried to convince someone to recycle, quit smoking, or make a similar change in health behaviors? If so, you are well versed with how persuasion can show up in everyday life.

Persuasion has been defined as “the process by which a message induces change in beliefs, attitudes, or behaviors” (Myers, 2011). Persuasion can take many forms. It may, for example,

differ in whether it targets public compliance or private acceptance, is short-term or long-term, whether it involves slowly escalating commitments or sudden interventions and, most of all, in the benevolence of its intentions. When persuasion is well-meaning, we might call it education. When it is manipulative, it might be called mind control (Levine, 2003).

Whatever the content, however, there is a similarity to the form of the persuasion process itself. As the advertising commentator Sid Bernstein once observed, "Of course, you sell candidates for political office the same way you sell soap or sealing wax or whatever; because, when you get right down to it, that's the only way anything is sold" (Levine, 2003).

Persuasion is one of the most studied of all social psychology phenomena. This module provides an introduction to several of its most important components.

The instruments of persuasion work the same for selling products or politicians. [Image: if winter ends, https://goo.gl/BxiDC0, CC BY-NC 2.0, https://goo.gl/VnKlK8]

Two Paths to Persuasion

Persuasion theorists distinguish between the central and peripheral routes to persuasion (Petty & Cacioppo, 1986). The central route employs direct, relevant, logical messages. This

method rests on the assumption that the audience is motivated, will think carefully about what is presented, and will react on the basis of your arguments. The central route is intended to produce enduring agreement. For example, you might decide to vote for a particular political candidate after hearing her speak and finding her logic and proposed policies to be convincing.

The peripheral route, on the other hand, relies on superficial cues that have little to do with logic. The peripheral approach is the salesman's way of thinking. It requires a target who *isn't* thinking carefully about what you are saying. It requires low effort from the target and often exploits rule-of-thumb **heuristics** that trigger mindless reactions (see below). It may be intended to persuade you to do something you do not want to do and might later be sorry you did. Advertisements, for example, may show celebrities, cute animals, beautiful scenery, or provocative sexual images that have nothing to do with the product. The peripheral approach is also common in the darkest of persuasion programs, such as those of dictators and cult leaders. Returning to the example of voting, you can experience the peripheral route in action when you see a provocative, emotionally charged political advertisement that tugs at you to vote a particular way.

Triggers and Fixed Action Patterns

The central route emphasizes objective communication of information. The peripheral route relies on psychological techniques. These techniques may take advantage of a target's not thinking carefully about the message. The process mirrors a phenomenon in animal behavior known as **fixed action patterns (FAPs)**. These are sequences of behavior that occur in exactly the same fashion, in exactly the same order, every time they're elicited. Cialdini (2008) compares it to a prerecorded tape that is turned on and, once it is, always plays to its finish. He describes it is as if the animal were turning on a tape recorder (Cialdini, 2008). There is the feeding tape, the territorial tape, the migration tape, the nesting tape, the aggressive tape—each sequence ready to be played when a situation calls for it.

In humans fixed action patterns include many of the activities we engage in while mentally on "auto-pilot." These behaviors are so automatic that it is very difficult to control them. If you ever feed a baby, for instance, nearly everyone mimics each bite the baby takes by opening and closing their own mouth! If two people near you look up and point you will automatically look up yourself. We also operate in a reflexive, non-thinking way when we make many decisions. We are more likely, for example, to be less critical about medical advice dispensed from a doctor than from a friend who read an interesting article on the topic in a popular

magazine.

A notable characteristic of fixed action patterns is how they are activated. At first glance, it appears the animal is responding to the overall situation. For example, the maternal tape appears to be set off when a mother sees her hungry baby, or the aggressive tape seems to be activated when an enemy invades the animal's territory. It turns out, however, that the on/off switch may actually be controlled by a specific, minute detail of the situation—maybe a sound or shape or patch of color. These are the hot buttons of the biological world—what Cialdini refers to as "**trigger features**" and biologists call "releasers."

Certain triggers can cause people to switch into an automatic pattern of behavior. In an experiment, potential customers were more easily persuaded to buy when they heard the words "for a good cause." [Image: joelorama, https://goo.gl/FLXszT, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Humans are not so different. Take the example of a study conducted on various ways to promote a campus bake sale for charity (Levine, 2003). Simply displaying the cookies and other treats to passersby did not generate many sales (only 2 out of 30 potential customers made a purchase). In an alternate condition, however, when potential customers were asked to "buy a cookie for a good cause" the number rose to 12 out of 30. It seems that the phrase "a good cause" triggered a willingness to act. In fact, when the phrase "a good cause" was paired with a locally-recognized charity (known for its food-for-the-homeless program) the numbers held steady at 14 out of 30. When a fictional good cause was used instead (the make believe "Levine House") still 11 out of 30 potential customers made purchases and not one asked about the purpose or nature of the cause. The phrase "for a good cause" was an influential enough hot button that the exact cause didn't seem to matter.

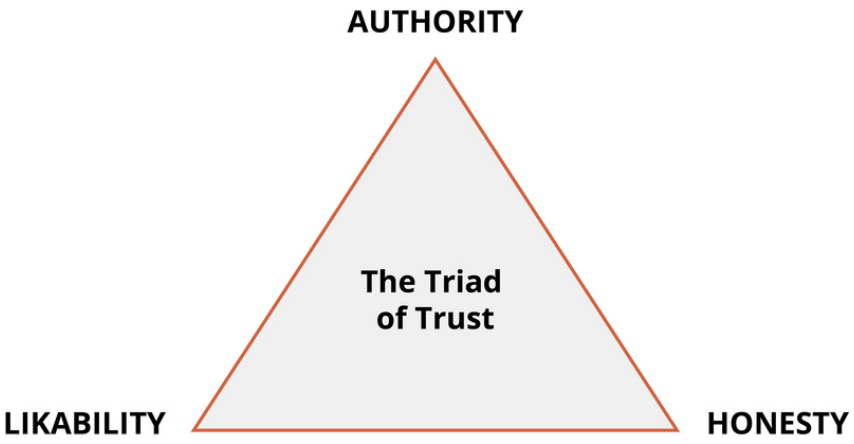
The effectiveness of peripheral persuasion relies on our frequent reliance on these sorts of fixed action patterns and trigger features. These mindless, rules-of-thumb are generally effective shortcuts for coping with the overload of information we all must confront. They serve as heuristics—mental shortcuts-- that enable us to make decisions and solve problems quickly and efficiently. They also, however, make us vulnerable to uninvited exploitation

through the peripheral route of persuasion.

The Source of Persuasion: The Triad of Trustworthiness

Effective persuasion requires trusting the source of the communication. Studies have identified three characteristics that lead to trust: perceived authority, honesty, and likability.

When the source appears to have any or all of these characteristics, people not only are more willing to agree to their request but are willing to do so without carefully considering the facts. We assume we are on safe ground and are happy to shortcut the tedious process of informed decision making. As a result, we are more susceptible to messages and requests, no matter their particular content or how peripheral they may be.



Authority

From earliest childhood, we learn to rely on authority figures for sound decision making because their authority signifies status and power, as well as expertise. These two facets often work together. Authorities such as parents and teachers are not only our primary sources of wisdom while we grow up, but they control us and our access to the things we want. In addition, we have been taught to believe that respect for authority is a moral virtue. As adults, it is natural to transfer this respect to society's designated authorities, such as judges, doctors, bosses, and religious leaders. We assume their positions give them special access to information and power. Usually we are correct, so that our willingness to defer to authorities becomes a convenient shortcut to sound decision making. Uncritical trust in authority may, however, lead to bad decisions. Perhaps the most famous study ever conducted in social psychology demonstrated that, when conditions were set up just so, two-thirds of a sample

of psychologically normal men were willing to administer potentially lethal shocks to a stranger when an apparent authority in a laboratory coat ordered them to do so (Milgram, 1974; Burger, 2009).

Uncritical trust in authority can be problematic for several reasons. First, even if the source of the message is a legitimate, well-intentioned authority, they may not always be correct. Second, when respect for authority becomes mindless, expertise in one domain may be confused with expertise in general. To assume there is credibility when a successful actor promotes a cold remedy, or when a psychology professor offers his views about politics, can lead to problems. Third, the authority may not be legitimate. It is not difficult to fake a college degree or professional credential or to buy an official-looking badge or uniform.

Honesty

Honesty is the moral dimension of trustworthiness. Persuasion professionals have long understood how critical it is to their efforts. Marketers, for example, dedicate exorbitant resources to developing and maintaining an image of honesty. A trusted brand or company name becomes a mental shortcut for consumers. It is estimated that some 50,000 new products come out each year. Forrester Research, a marketing research company, calculates that children have seen almost six million ads by the age of 16. An established brand name helps us cut through this volume of information. It signals we are in safe territory. "The real suggestion to convey," advertising leader Theodore MacManus observed in 1910, "is that the man manufacturing the product is an honest man, and the product is an honest product, to be preferred above all others" (Fox, 1997).

People tend to favor products that are associated with people they like. This is the key ingredient to celebrity endorsements. While there are a lot of factors that can contribute to likability, being physically attractive is one of the most influential. [Image: DFID, https://goo.gl/KfFvvi, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Likability

If we know that celebrities aren't really experts, and that they are being paid to say what they're saying, why do their endorsements sell so many products?

Ultimately, it is because we like them. More than any single quality, we trust people we like. Roger Ailes, a public relations adviser to Presidents Reagan and George H.W. Bush, observed: "If you could master one element of personal communication that is more powerful than anything . . . it is the quality of being likable. I call it the magic bullet, because if your audience likes you, they'll forgive just about everything else you do wrong. If they don't like you, you can hit every rule right on target and it doesn't matter."

The mix of qualities that make a person likable are complex and often do not generalize from one situation to another. One clear finding, however, is that physically attractive people tend to be liked more. In fact, we prefer them to a disturbing extent: Various studies have shown we perceive attractive people as smarter, kinder, stronger, more successful, more socially skilled, better poised, better adjusted, more exciting, more nurturing, and, most important, of higher moral character. All of this is based on no other information than their physical appearance (e.g., Dion, Berscheid, & Walster, 1972).

Manipulating the Perception of Trustworthiness

The perception of trustworthiness is highly susceptible to manipulation. Levine (2003) lists some of the most common psychological strategies that are used to achieve this effect:

Manipulating Trustworthiness	
Testimonials & Endorsements	Presenting the Message as Education
"Word of Mouth"	The Maven

Testimonials and Endorsement

This technique employs someone who people already trust to testify about the product or message being sold. The technique goes back to the earliest days of advertising when satisfied customers might be shown describing how a patent medicine cured their life-long battle with "nerves" or how Dr. Scott's Electric Hair Brush healed their baldness ("My hair (was) falling out, and I was rapidly becoming bald, but since using the brush a thick growth of hair has made its appearance, quite equal to that I had before previous to its falling out," reported a satisfied

customer in an 1884 ad for the product). Similarly, Kodak had Prince Henri D'Orleans and others endorse the superior quality of their camera ("The results are marvellous[sic]. The enlargements which you sent me are superb," stated Prince Henri D'Orleans in a 1888 ad).

Celebrity endorsements are a frequent feature in commercials aimed at children. The practice has aroused considerable ethical concern, and research shows the concern is warranted. In a study funded by the Federal Trade Commission, more than 400 children ages 8 to 14 were shown one of various commercials for a model racing set. Some of the commercials featured an endorsement from a famous race car driver, some included real racing footage, and others included neither. Children who watched the celebrity endorser not only preferred the toy cars more but were convinced the endorser was an expert about the toys. This held true for children of all ages. In addition, they believed the toy race cars were bigger, faster, and more complex than real race cars they saw on film. They were also less likely to believe the commercial was staged (Ross et al., 1984).

Presenting the Message as Education

The message may be framed as objective information. Salespeople, for example, may try to convey the impression they are less interested in selling a product than helping you make the best decision. The implicit message is that being informed is in everyone's best interest, because they are confident that when you understand what their product has to offer that you will conclude it is the best choice. Levine (2003) describes how, during training for a job as a used car salesman, he was instructed: "If the customer tells you they do not want to be bothered by a salesperson, your response is 'I'm not a salesperson, I'm a product consultant. I don't give prices or negotiate with you. I'm simply here to show you our inventory and help you find a vehicle that will fit your needs.'"

Word of Mouth

Imagine you read an ad that claims a new restaurant has the best food in your city. Now, imagine a friend tells you this new restaurant has the best food in the city. Who are you more likely to believe? Surveys show we turn to people around us for many decisions. A 1995 poll found that 70% of Americans rely on personal advice when selecting a new doctor. The same poll found that 53% of moviegoers are influenced by the recommendation of a person they know. In another survey, 91% said they're likely to use another person's recommendation when making a major purchase.

Persuasion professionals may exploit these tendencies. Often, in fact, they pay for the surveys.

Using this data, they may try to disguise their message as word of mouth from your peers. For example, Cornerstone Promotion, a leading marketing firm that advertises itself as under-the-radar marketing specialists, sometimes hires children to log into chat rooms and pretend to be fans of one of their clients or pays students to throw parties where they subtly circulate marketing material among their classmates.

The Maven

More persuasive yet, however, is to involve peers face-to-face. Rather than over-investing in formal advertising, businesses and organizations may plant seeds at the grassroots level hoping that consumers themselves will then spread the word to each other. The seeding process begins by identifying so-called information hubs—individuals the marketers believe can and will reach the most other people.

The seeds may be planted with established opinion leaders. Software companies, for example, give advance copies of new computer programs to professors they hope will recommend it to students and colleagues. Pharmaceutical companies regularly provide travel expenses and speaking fees to researchers willing to lecture to health professionals about the virtues of their drugs. Hotels give travel agents free weekends at their resorts in the hope they'll later recommend them to clients seeking advice.

There is a Yiddish word, maven, which refers to a person who's an expert or a connoisseur, as in a friend who knows where to get the best price on a sofa or the co-worker you can turn to for advice about where to buy a computer. They (a) know a lot of people, (b) communicate a great deal with people, (c) are more likely than others to be asked for their opinions, and (d) enjoy spreading the word about what they know and think. Most important of all, they are trusted. As a result, mavens are often targeted by persuasion professionals to help spread their message.

Other Tricks of Persuasion

There are many other mindless, mental shortcuts—heuristics and fixed action patterns—that leave us susceptible to persuasion. A few examples:

- "Free Gifts" & Reciprocity
- Social Proof
- Getting a Foot-in-the-Door

- A Door-in-the-Face
- "And That's Not All"
- The Sunk Cost Trap
- Scarcity & Psychological Reactance

Reciprocity

"There is no duty more indispensable than that of returning a kindness," wrote Cicero. Humans are motivated by a sense of equity and fairness. When someone does something for us or gives us something, we feel obligated to return the favor in kind. It triggers one of the most powerful of social norms, the reciprocity rule, whereby we feel compelled to repay, in equitable value, what another person has given to us.

Gouldner (1960), in his seminal study of the reciprocity rule, found it appears in every culture. It lays the basis for virtually every type of social relationship, from the legalities of business arrangements to the subtle exchanges within a romance. A salesperson may offer free gifts, concessions, or their valuable time in order to get us to do something for them in return. For example, if a colleague helps you when you're busy with a project, you might feel obliged to support her ideas for improving team processes. You might decide to buy more from a supplier if they have offered you an aggressive discount. Or, you might give money to a charity fundraiser who has given you a flower in the street (Cialdini, 2008; Levine, 2003).

Social Proof

If everyone is doing it, it must be right. People are more likely to work late if others on their team are doing the same, to put a tip in a jar that already contains money, or eat in a restaurant that is busy. This principle derives from two extremely powerful social forces—social comparison and conformity. We compare our behavior to what others are doing and, if there is a discrepancy between the other person and ourselves, we feel pressure to change (Cialdini, 2008).

The principle of social proof is so common that it easily passes unnoticed. Advertisements, for example, often consist of little more than attractive social models appealing to our desire to be one of the group. For example, the German candy company Haribo suggests that when you purchase their products you are joining a larger society of satisfied customers: "Kids and grown-ups love it so-- the happy world of Haribo". Sometimes social cues are presented with such specificity that it is as if the target is being manipulated by a puppeteer—for example,

the laugh tracks on situation comedies that instruct one not only when to laugh but how to laugh. Studies find these techniques work. Fuller and Skeehy-Skeffington (1974), for example, found that audiences laughed longer and more when a laugh track accompanied the show than when it did not, even though respondents knew the laughs they heard were connived by a technician from old tapes that had nothing to do with the show they were watching. People are particularly susceptible to social proof (a) when they are feeling uncertain, and (b) if the people in the comparison group seem to be similar to ourselves. As P.T. Barnum once said, "Nothing draws a crowd like a crowd."

While few people really like to wait in long lines, we might do it anyway in certain situations. If enough people are willing to wait it (usually) is a sign that there is something worth having at the end. A line in front of a restaurant, movie, etc. is social proof that will likely influence other people to try. [Image: Bill Badzo, https://goo.gl/fPdNVn, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Commitment and Consistency

Westerners have a desire to both feel and be perceived to act consistently. Once we have made an initial commitment, it is more likely that we will agree to subsequent commitments that follow from the first. Knowing this, a clever persuasion artist might induce someone to agree to a difficult-to-refuse small request and follow this with progressively larger requests that were his target from the beginning. The process is known as getting a **foot in the door** and then **slowly escalating the commitments**.

Paradoxically, we are less likely to say "No" to a large request than we are to a small request when it follows this pattern. This can have costly consequences. Levine (2003), for example, found ex-cult members tend to agree with the statement: "Nobody ever joins a cult. They just postpone the decision to leave."

A Door in the Face

Some techniques bring a paradoxical approach to the escalation sequence by pushing a request to or beyond its acceptable limit and then backing off. In the door-in-the-face (sometimes called the reject-then-compromise) procedure, the persuader begins with a large request they expect will be rejected. They want the door to be slammed in their face. Looking

forlorn, they now follow this with a smaller request, which, unknown to the customer, was their target all along.

In one study, for example, Mowen and Cialdini (1980), posing as representatives of the fictitious "California Mutual Insurance Co.," asked university students walking on campus if they'd be willing to fill out a survey about safety in the home or dorm. The survey, students were told, would take about 15 minutes. Not surprisingly, most of the students declined—only one out of four complied with the request. In another condition, however, the researchers door-in-the-faced them by beginning with a much larger request. "The survey takes about two hours," students were told. Then, after the subject declined to participate, the experimenters retreated to the target request: ". . . look, one part of the survey is particularly important and is fairly short. It will take only 15 minutes to administer." Almost twice as many now complied.

And That's Not All!

The that's-not-all technique also begins with the salesperson asking a high price. This is followed by several seconds' pause during which the customer is kept from responding. The salesperson then offers a better deal by either lowering the price or adding a bonus product. That's-not-all is a variation on door-in-the-face. Whereas the latter begins with a request that will be rejected, however, that's-not-all gains its influence by putting the customer on the fence, allowing them to waver and then offering them a comfortable way off.

Burger (1986) demonstrated the technique in a series of field experiments. In one study, for example, an experimenter-salesman told customers at a student bake sale that cupcakes cost 75 cents. As this price was announced, another salesman held up his hand and said, "Wait a second," briefly consulted with the first salesman, and then announced ("that's-not-all") that the price today included two cookies. In a control condition, customers were offered the cupcake and two cookies as a package for 75 cents right at the onset. The bonus worked magic: Almost twice as many people bought cupcakes in the that's-not-all condition (73%) than in the control group (40%).

The Sunk Cost Trap

Sunk cost is a term used in economics referring to nonrecoverable investments of time or money. The trap occurs when a person's aversion to loss impels them to throw good money after bad, because they don't want to waste their earlier investment. This is vulnerable to manipulation. The more time and energy a cult recruit can be persuaded to spend with the group, the more "invested" they will feel, and, consequently, the more of a loss it will feel to

leave that group. Consider the advice of billionaire investor Warren Buffet: "When you find yourself in a hole, the best thing you can do is stop digging" (Levine, 2003).

Scarcity and Psychological Reactance

People may be more attracted to an opportunity when supplies or time is limited. [Image: Peter Rukavina, https://goo.gl/KQ2LmT, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

People tend to perceive things as more attractive when their availability is limited, or when they stand to lose the opportunity to acquire them on favorable terms (Cialdini, 2008). Anyone who has encountered a willful child is familiar with this principle. In a classic study, Brehm & Weinraub (1977), for example, placed 2-year-old boys in a room with a pair of equally attractive toys. One of the toys was placed next to a plexiglass wall; the other was set behind the plexiglass. For some boys, the wall was 1 foot high, which allowed the boys to easily reach over and touch the distant toy. Given this easy access, they showed no particular preference for one toy or the other. For other boys, however, the wall was a formidable 2 feet high, which required them to walk around the barrier to touch the toy. When confronted with this wall of inaccessibility, the boys headed directly for the forbidden fruit, touching it three times as quickly as the accessible toy.

Research shows that much of that 2-year-old remains in adults, too. People resent being controlled. When a person seems too pushy, we get suspicious, annoyed, often angry, and yearn to retain our freedom of choice more than before. Brehm (1966) labeled this the principle of psychological reactance.

The most effective way to circumvent psychological reactance is to first get a foot in the door and then escalate the demands so gradually that there is seemingly nothing to react against. Hassan (1988), who spent many years as a higher-up in the "Moonies" cult, describes how they would shape behaviors subtly at first, then more forcefully. The material that would make up the new identity of a recruit was doled out gradually, piece by piece, only as fast as the person was deemed ready to assimilate it. The rule of thumb was to "tell him only what he

can accept." He continues: "Don't sell them [the converts] more than they can handle . . . . If a recruit started getting angry because he was learning too much about us, the person working on him would back off and let another member move in ....."

Defending Against Unwelcome Persuasion

The most commonly used approach to help people defend against unwanted persuasion is known as the "inoculation" method. Research has shown that people who are subjected to weak versions of a persuasive message are less vulnerable to stronger versions later on, in much the same way that being exposed to small doses of a virus immunizes you against full-blown attacks. In a classic study by McGuire (1964), subjects were asked to state their opinion on an issue. They were then mildly attacked for their position and then given an opportunity to refute the attack. When later confronted by a powerful argument against their initial opinion, these subjects were more resistant than were a control group. In effect, they developed defenses that rendered them immune.

Sagarin and his colleagues have developed a more aggressive version of this technique that they refer to as "stinging" (Sagarin, Cialdini, Rice, & Serna, 2002). Their studies focused on the popular advertising tactic whereby well-known authority figures are employed to sell products they know nothing about, for example, ads showing a famous astronaut pontificating on Rolex watches. In a first experiment, they found that simply forewarning people about the deviousness of these ads had little effect on peoples' inclination to buy the product later. Next, they stung the subjects. This time, they were immediately confronted with their gullibility. "Take a look at your answer to the first question. Did you find the ad to be even somewhat convincing? If so, then you got fooled. ... Take a look at your answer to the second question. Did you notice that this 'stockbroker' was a fake?" They were then asked to evaluate a new set of ads. The sting worked. These subjects were not only more likely to recognize the manipulativeness of deceptive ads; they were also less likely to be persuaded by them.

Anti-vulnerability trainings such as these can be helpful. Ultimately, however, the most effective defense against unwanted persuasion is to accept just how vulnerable we are. One must, first, accept that it is normal to be vulnerable and, second, to learn to recognize the danger signs when we are falling prey. To be forewarned is to be forearmed.

Conclusion

This module has provided a brief introduction to the psychological processes and subsequent "tricks" involved in persuasion. It has emphasized the peripheral route of persuasion because

this is when we are most vulnerable to psychological manipulation. These vulnerabilities are side effects of "normal" and usually adaptive psychological processes. Mindless heuristics offer shortcuts for coping with a hopelessly complicated world. They are necessities for human survival. All, however, underscore the dangers that accompany any mindless thinking.

Outside Resources

Book: Ariely, D. (2008). Predictably irrational. New York, NY: Harper.

Book: Cialdini, R. B. (2008). Influence: Science and practice (5th ed.). Boston, MA: Allyn and Bacon.

Book: Gass, R., & Seiter, J. (2010). Persuasion, social influence, and compliance gaining (4th ed.). Boston, MA: Pearson.

Book: Kahneman, D. (2012). Thinking fast and slow. New York, NY: Farrar, Straus & Giroux.

Book: Levine, R. (2006). The power of persuasion: how we\\\\\\\\\\\\\\\'re bought and sold. Hoboken, NJ: Wiley
http://www.amazon.com/The-Power-Persuasion-Were-Bought/dp/0471763179

Book: Tavris, C., & Aronson, E. (2011). Mistakes were made (but not by me). New York, NY: Farrar, Straus & Giroux.

Student Video 2: \\\\\\\'Persuasion\\\\\\\', created by Jake Teeny and Ben Oliveto, compares the central and peripheral routes to persuasion and also looks at how techniques of persuasion such as Scarcity and Social Proof influence our consumer choices. It was one of the winning entries in the 2015 Noba Student Video Award.
https://vimeo.com/123205124

Student Video 3: \\\\\\\'Persuasion in Advertising\\\\\\\' is a humorous look at the techniques used by companies to try to convince us to buy their products. The video was created by the team of Edward Puckering, Chris Cameron, and Kevin Smith. It was one of the winning entries in the 2015 Noba Student Video Award.
https://www.youtube.com/watch?v=B-UnkWGCKzU

Video: A brief, entertaining interview with the celebrity pickpocket shows how easily we can be fooled. See A Pickpocket's Tale at
http://www.newyorker.com/online/blogs/culture/2013/01/video-the-art-of-pickpocketing.html

Video: The documentary Outfoxed provides an excellent example of how persuasion can be masked as news and education.
http://www.outfoxed.org/

Discussion Questions

1. Imagine you are commissioned to create an ad to sell a new beer. Can you give an example of an ad that would rely on the central route? Can you give an example of an ad that would rely on the peripheral route?
2. The reciprocity principle can be exploited in obvious ways, such as giving a customer a free sample of a product. Can you give an example of a less obvious way it might be exploited? What is a less obvious way that a cult leader might use it to get someone under his or her grip?
3. Which "trick" in this module are you, personally, most prone to? Give a personal example of this. How might you have avoided it?

Vocabulary

Central route to persuasion
Persuasion that employs direct, relevant, logical messages.

Fixed action patterns (FAPs)
Sequences of behavior that occur in exactly the same fashion, in exactly the same order, every time they are elicited.

Foot in the door
Obtaining a small, initial commitment.

Gradually escalating commitments
A pattern of small, progressively escalating demands is less likely to be rejected than a single large demand made all at once.

Heuristics
Mental shortcuts that enable people to make decisions and solve problems quickly and efficiently.

Peripheral route to persuasion
Persuasion that relies on superficial cues that have little to do with logic.

Psychological reactance
A reaction to people, rules, requirements, or offerings that are perceived to limit freedoms.

Social proof
The mental shortcut based on the assumption that, if everyone is doing it, it must be right.

The norm of reciprocity
The normative pressure to repay, in equitable value, what another person has given to us.

The rule of scarcity
People tend to perceive things as more attractive when their availability is limited, or when they stand to lose the opportunity to acquire them on favorable terms.

The triad of trust
We are most vulnerable to persuasion when the source is perceived as an authority, as honest

and likable.

Trigger features
Specific, sometimes minute, aspects of a situation that activate fixed action patterns.

References

Barrett, D. (2010). *Supernormal stimuli: How primal urges overran their evolutionary purpose*. New York, NY: W.W. Norton.

Brehm, J. W. (1966). *A theory of psychological reactance*. New York, NY: Academic Press.

Brehm, S. S., & Weinraub, M. (1977). Physical barriers and psychological reactance: Two-year-olds' responses to threats to freedom. *Journal of Personality and Social Psychology*, 35, 830–836.

Burger, J. M. (2009). Replicating Milgram: Would people still obey today? *American Psychologist*, 64(1), 1–11.

Burger, J. M. (1986). Increasing compliance by improving the deal: The that's-not-all technique. *Journal of Personality and Social Psychology*, 51, 277–283.

Cialdini, R. B. (2008). *Influence: Science and practice* (5th ed.). Boston, MA: Allyn and Bacon.

Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, 24, 285–290

Fox, Stephen (1997). *The mirror makers: A history of American advertising and its creators*. Champaign, IL: University of Illinois Press.

Fuller, R. G., & Sheehy-Skeffington, A. (1974). Effects of group laughter on responses to humorous materials: A replication and extension. *Psychological Reports*, 35, 531–534.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, 161–178.

Hassan, S. (1988). *Combating cult mind control*. Rochester, VT: Park Street Press.

Levine, R. (2003). *The power of persuasion: How we're bought and sold*. Hoboken, NJ: Wiley.

Levine, R. (2003). *The power of persuasion: How we're bought and sold*. Hoboken, NJ: John Wiley & Sons

McGuire, W. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 1, p. 306). New York, NY: Academic Press.

Milgram, S. (1974). *Obedience to authority: An experimental view*. New York, NY: Harper & Row.

Mowen, J. C., & Cialdini, R. B. (1980). On implementing the door-in-the-face compliance technique in a business context. *Journal of Marketing Research*, 17, 253–258.

Myers, David (2011). *Social psychology* (10th ed.). New York, NY: Worth.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L.

Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123–205). San Diego, CA: Academic Press.

Ross, R. P., Campbell, T., Wright, J. C., Huston, A. C., Rice, M. L., & Turk, P. (1984). When celebrities talk, children listen: An experimental analysis of children's responses to TV ads with celebrity endorsement. *Journal of Applied Developmental Psychology*, 5, 185–202.

Sagarin, B. J., Cialdini, R. B., Rice, W. E., & Serna, S. B. (2002). Dispelling the illusion of invulnerability: The motivations and mechanisms of resistance to persuasion. *Journal of Personality and Social Psychology*, 83, 526–541.

20
Conformity and Obedience

Jerry M. Burger

We often change our attitudes and behaviors to match the attitudes and behaviors of the people around us. One reason for this conformity is a concern about what other people think of us. This process was demonstrated in a classic study in which college students deliberately gave wrong answers to a simple visual judgment task rather than go against the group. Another reason we conform to the norm is because other people often have information we do not, and relying on norms can be a reasonable strategy when we are uncertain about how we are supposed to act. Unfortunately, we frequently misperceive how the typical person acts, which can contribute to problems such as the excessive binge drinking often seen in college students. Obeying orders from an authority figure can sometimes lead to disturbing behavior. This danger was illustrated in a famous study in which participants were instructed to administer painful electric shocks to another person in what they believed to be a learning experiment. Despite vehement protests from the person receiving the shocks, most participants continued the procedure when instructed to do so by the experimenter. The findings raise questions about the power of blind obedience in deplorable situations such as atrocities and genocide. They also raise concerns about the ethical treatment of participants in psychology experiments.

Learning Objectives

- Become aware of how widespread conformity is in our lives and some of the ways each of us changes our attitudes and behavior to match the norm.
- Understand the two primary reasons why people often conform to perceived norms.
- Appreciate how obedience to authority has been examined in laboratory studies and some of the implications of the findings from these investigations.
- Consider some of the remaining issues and sources of controversy surrounding Milgram's

obedience studies.

Introduction

When he was a teenager, my son often enjoyed looking at photographs of me and my wife taken when we were in high school. He laughed at the hairstyles, the clothing, and the kind of glasses people wore "back then." And when he was through with his ridiculing, we would point out that no one is immune to fashions and fads and that someday his children will probably be equally amused by his high school photographs and the trends he found so normal at the time.

Everyday observation confirms that we often adopt the actions and attitudes of the people around us. Trends in clothing, music, foods, and entertainment are obvious. But our views on political issues, religious questions, and lifestyles also reflect to some degree the attitudes of the people we interact with. Similarly, decisions about behaviors such as smoking and drinking are influenced by whether the people we spend time with engage in these activities. Psychologists refer to this widespread tendency to act and think like the people around us as **conformity**.

Fashion trends serve as good, and sometimes embarrassing, examples of our own susceptibility to conformity. [Image: bianca francesca, https://goo.gl/0roq35, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

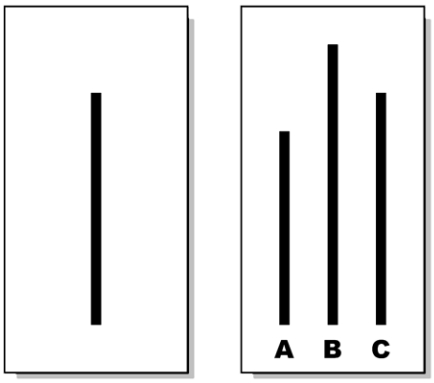
Conformity

What causes all this conformity? To start, humans may possess an inherent tendency to imitate the actions of others. Although we usually are not aware of it, we often mimic the gestures, body posture, language, talking speed, and many other behaviors of the people we interact with. Researchers find that this mimicking increases the connection between people and allows our interactions to flow more smoothly (Chartrand & Bargh, 1999).

Beyond this automatic tendency to imitate others, psychologists have identified two primary reasons for conformity. The first of these is **normative influence**. When normative influence is operating, people go along with the crowd because they are concerned about what others think of them. We don't want to look out of step or become the target of criticism just because we like different kinds of music or dress differently than everyone else. Fitting in also brings rewards such as camaraderie and compliments.

How powerful is normative influence? Consider a classic study conducted many years ago by Solomon Asch (1956). The participants were male college students who were asked to engage in a seemingly simple task. An experimenter standing several feet away held up a card that depicted one line on the left side and three lines on the right side. The participant's job was to say aloud which of the three lines on the right was the same length as the line on the left. Sixteen cards were presented one at a time, and the correct answer on each was so obvious as to make the task a little boring. Except for one thing. The participant was not alone. In fact, there were six other people in the room who also gave their answers to the line-judgment task aloud. Moreover, although they pretended to be fellow participants, these other individuals were, in fact, confederates working with the experimenter. The real participant was seated so that he always gave his answer after hearing what five other "participants" said. Everything went smoothly until the third trial, when inexplicably the first "participant" gave an obviously incorrect answer. The mistake might have been amusing, except the second participant gave the same answer. As did the third, the fourth, and the fifth participant. Suddenly the real participant was in a difficult situation. His eyes told him one thing, but five out of five people apparently saw something else.

It's one thing to wear your hair a certain way or like certain foods because everyone around you does. But, would participants intentionally give a wrong answer just to conform with the other participants? The confederates uniformly gave incorrect answers on 12 of the 16 trials, and 76 percent of the participants went along with the norm at least once and also gave the wrong answer. In total, they conformed with the group on one-third of the 12 test trials. Although we might be impressed that the majority of the time participants answered honestly,



Examples of the cards used in the Asch experiment. How powerful is the normative influence? Would you be tempted to give a clearly incorrect answer, like many participants in the Asch experiment did, to better match the thoughts of a group of peers? [Image: Fred the Oyster, https://goo.gl/Gi5mtu, CC BY-SA 4.0, https://goo.gl/zVGXn8]

most psychologists find it remarkable that so many college students caved in to the pressure of the group rather than do the job they had volunteered to do. In almost all cases, the participants knew they were giving an incorrect answer, but their concern for what these other people might be thinking about them overpowered their desire to do the right thing.

Variations of Asch's procedures have been conducted numerous times (Bond, 2005; Bond & Smith, 1996). We now know that the findings are easily replicated, that there is an increase in conformity with more confederates (up to about five), that teenagers are more prone to conforming than are adults, and that people conform significantly less often when they believe the confederates will not hear their responses (Berndt, 1979; Bond, 2005; Crutchfield, 1955; Deutsch & Gerard, 1955). This last finding is consistent with the notion that participants change their answers because they are concerned about what others think of them. Finally, although we see the effect in virtually every culture that has been studied, more conformity is found in collectivist countries such as Japan and China than in individualistic countries such as the United States (Bond & Smith, 1996). Compared with individualistic cultures, people who live in collectivist cultures place a higher value on the goals of the group than on individual preferences. They also are more motivated to maintain harmony in their interpersonal relations.

The other reason we sometimes go along with the crowd is that people are often a source of information. Psychologists refer to this process as **informational influence**. Most of us, most of the time, are motivated to do the right thing. If society deems that we put litter in a proper container, speak softly in libraries, and tip our waiter, then that's what most of us will do. But sometimes it's not clear what society expects of us. In these situations, we often rely on **descriptive norms** (Cialdini, Reno, & Kallgren, 1990). That is, we act the way most people—or most people like us—act. This is not an unreasonable strategy. Other people often have information that we do not, especially when we find ourselves in new situations. If you have ever been part of a conversation that went something like this,

"Do you think we should?"

"Sure. Everyone else is doing it.",

you have experienced the power of informational influence.

Efforts to influence people to engage in healthier or more sustainable behaviors have benefitted from the informational influence. For example, hotels have been able to significantly increase the numbers of people who re-use bath towels (reducing water and energy use) by informing them on signs in their rooms that re-using towels is a typical behavior of other hotel guests. [Image: Infrogmation of New Orleans, https://goo.gl/5P5F0v, CC BY 2.0, https://goo.gl/BRvSA7]

However, it's not always easy to obtain good descriptive norm information, which means we sometimes rely on a flawed notion of the norm when deciding how we should behave. A good example of how misperceived norms can lead to problems is found in research on binge drinking among college students. Excessive drinking is a serious problem on many campuses (Mita, 2009). There are many reasons why students binge drink, but one of the most important is their perception of the descriptive norm. How much students drink is highly correlated with how much they believe the average student drinks (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). Unfortunately, students aren't very good at making this assessment. They notice the boisterous heavy drinker at the party but fail to consider all the students not attending the party. As a result, students typically overestimate the descriptive norm for college student drinking (Borsari & Carey, 2003; Perkins, Haines, & Rice, 2005). Most students believe they consume significantly less alcohol than the norm, a miscalculation that creates a dangerous push toward more and more excessive alcohol consumption. On the positive side, providing students with accurate information about drinking norms has been found to reduce overindulgent drinking (Burger, LaSalvia, Hendricks, Mehdipour, & Neudeck, 2011; Neighbors, Lee, Lewis, Fossos, & Walter, 2009).

Researchers have demonstrated the power of descriptive norms in a number of areas. Homeowners reduced the amount of energy they used when they learned that they were consuming more energy than their neighbors (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Undergraduates selected the healthy food option when led to believe that other students had made this choice (Burger et al., 2010). Hotel guests were more likely to reuse their towels when a hanger in the bathroom told them that this is what most guests

did (Goldstein, Cialdini, & Griskevicius, 2008). And more people began using the stairs instead of the elevator when informed that the vast majority of people took the stairs to go up one or two floors (Burger & Shelton, 2011).

Obedience

Although we may be influenced by the people around us more than we recognize, whether we conform to the norm is up to us. But sometimes decisions about how to act are not so easy. Sometimes we are directed by a more powerful person to do things we may not want to do. Researchers who study **obedience** are interested in how people react when given an order or command from someone in a position of authority. In many situations, obedience is a good thing. We are taught at an early age to obey parents, teachers, and police officers. It's also important to follow instructions from judges, firefighters, and lifeguards. And a military would fail to function if soldiers stopped obeying orders from superiors. But, there is also a dark side to obedience. In the name of "following orders" or "just doing my job," people can violate ethical principles and break laws. More disturbingly, obedience often is at the heart of some of the worst of human behavior—massacres, atrocities, and even genocide.

It was this unsettling side of obedience that led to some of the most famous and most controversial research in the history of psychology. Milgram (1963, 1965, 1974) wanted to know why so many otherwise decent German citizens went along with the brutality of the Nazi leaders during the Holocaust. "These inhumane policies may have originated in the mind of a single person," Milgram (1963, p. 371) wrote, "but they could only be carried out on a massive scale if a very large number of persons obeyed orders."

Photographs of victims of Cambodian dictator Pol Pot. From 1975-79 the Khmer Rouge army obediently carried out orders to execute tens of thousands of civilians. [Image: ...your local connection, https://goo.gl/ut9fvk, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

To understand this obedience, Milgram conducted a series of laboratory investigations. In all but one variation of the basic procedure, participants were men recruited from the community surrounding Yale University, where the research was carried

out. These citizens signed up for what they believed to be an experiment on learning and memory. In particular, they were told the research concerned the effects of punishment on learning. Three people were involved in each session. One was the participant. Another was the experimenter. The third was a confederate who pretended to be another participant.

The experimenter explained that the study consisted of a memory test and that one of the men would be the teacher and the other the learner. Through a rigged drawing, the real participant was always assigned the teacher's role and the confederate was always the learner. The teacher watched as the learner was strapped into a chair and had electrodes attached to his wrist. The teacher then moved to the room next door where he was seated in front of a large metal box the experimenter identified as a "shock generator." The front of the box displayed gauges and lights and, most noteworthy, a series of 30 levers across the bottom. Each lever was labeled with a voltage figure, starting with 15 volts and moving up in 15-volt increments to 450 volts. Labels also indicated the strength of the shocks, starting with "Slight Shock" and moving up to "Danger: Severe Shock" toward the end. The last two levers were simply labeled "XXX" in red.

Through a microphone, the teacher administered a memory test to the learner in the next room. The learner responded to the multiple-choice items by pressing one of four buttons that were barely within reach of his strapped-down hand. If the teacher saw the correct answer light up on his side of the wall, he simply moved on to the next item. But if the learner got the item wrong, the teacher pressed one of the shock levers and, thereby, delivered the learner's punishment. The teacher was instructed to start with the 15-volt lever and move up to the next highest shock for each successive wrong answer.

In reality, the learner received no shocks. But he did make a lot of mistakes on the test, which forced the teacher to administer what he believed to be increasingly strong shocks. The purpose of the study was to see how far the teacher would go before refusing to continue. The teacher's first hint that something was amiss came after pressing the 75-volt lever and hearing through the wall the learner say "Ugh!" The learner's reactions became stronger and louder with each lever press. At 150 volts, the learner yelled out, "Experimenter! That's all. Get me out of here. I told you I had heart trouble. My heart's starting to bother me now. Get me out of here, please. My heart's starting to bother me. I refuse to go on. Let me out."

The experimenter's role was to encourage the participant to continue. If at any time the teacher asked to end the session, the experimenter responded with phrases such as, "The experiment requires that you continue," and "You have no other choice, you must go on." The experimenter ended the session only after the teacher stated four successive times that he did not want to continue. All the while, the learner's protests became more intense with each shock. After 300

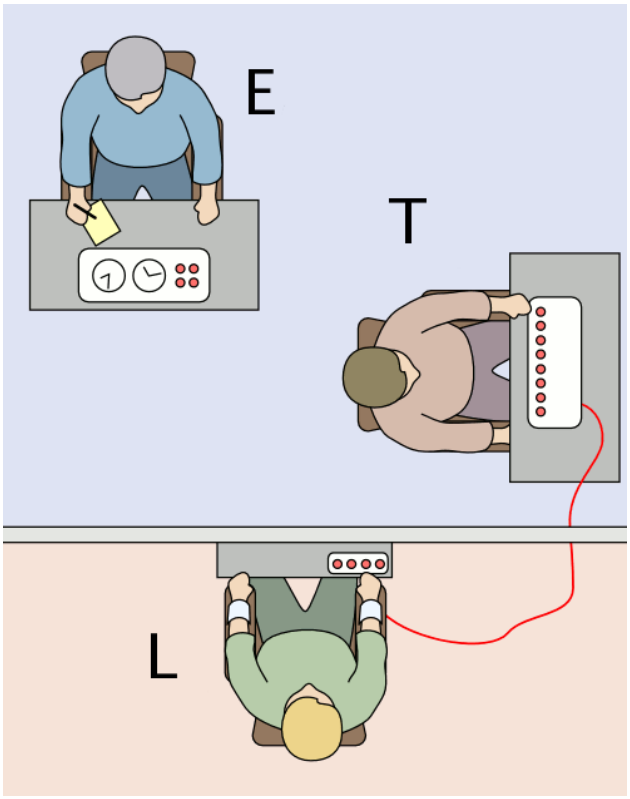


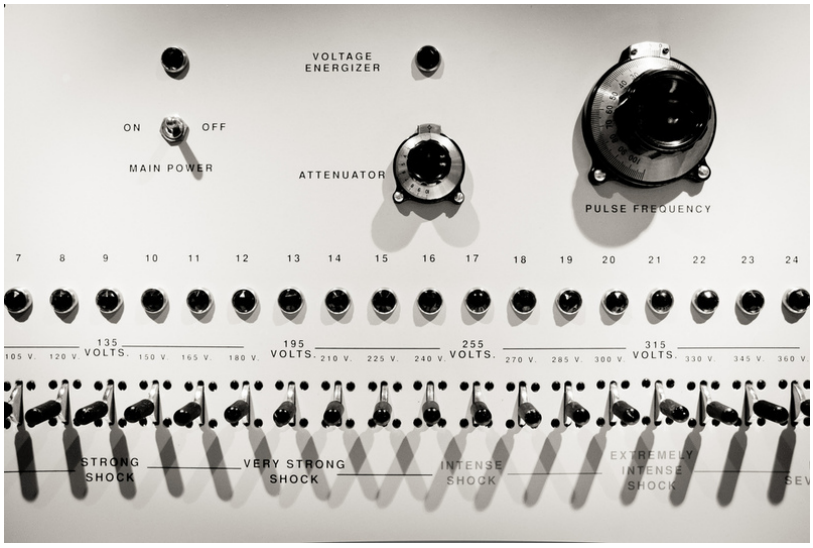
Diagram of the Milgram Experiment in which the "teacher" (T) was asked to deliver a (supposedly) painful electric shock to the "learner"(L). Would this experiment be approved by a review board today? [Image: Fred the Oyster, https://goo.gl/ZIbQz1, CC BY-SA 4.0, https://goo.gl/X3i0tq]

volts, the learner refused to answer any more questions, which led the experimenter to say that no answer should be considered a wrong answer. After 330 volts, despite vehement protests from the learner following previous shocks, the teacher heard only silence, suggesting that the learner was now physically unable to respond. If the teacher reached 450 volts—the end of the generator—the experimenter told him to continue pressing the 450 volt lever for each wrong answer. It was only after the teacher pressed the 450-volt lever three times that the experimenter announced that the study was over.

If you had been a participant in this research, what would you have done? Virtually everyone says he or she would have stopped early in the process. And most people predict that very few if any participants would keep pressing all the way to 450 volts. Yet in the basic procedure described here, 65 percent of the participants continued to administer shocks to the very end of the session. These were not brutal, sadistic men. They were ordinary citizens who nonetheless followed the experimenter's instructions to administer what they believed to be excruciating if not dangerous electric shocks to an innocent person. The disturbing implication from the findings is that, under the right circumstances, each of us may be capable of acting in some very uncharacteristic and perhaps some very unsettling ways.

Milgram conducted many variations of this basic procedure to explore some of the factors that affect obedience. He found that obedience rates decreased when the learner was in the same room as the experimenter and declined even further when the teacher had to physically touch the learner to administer the punishment. Participants also were less willing to continue the procedure after seeing other teachers refuse to press the shock levers, and they were significantly less obedient when the instructions to continue came from a person they believed to be another participant rather than from the experimenter. Finally, Milgram found that women participants followed the experimenter's instructions at exactly the same rate the men had.

Milgram's obedience research has been the subject of much controversy and discussion. Psychologists continue to debate the extent to which Milgram's studies tell us something about atrocities in general and about the behavior of German citizens during the Holocaust in particular (Miller, 2004). Certainly, there are important features of that time and place that cannot be recreated in a laboratory, such as a pervasive climate of prejudice and dehumanization. Another issue concerns the relevance of the findings. Some people have argued that today we are more aware of the dangers of blind obedience than we were when the research was conducted back in the 1960s. However, findings from partial and modified replications of Milgram's procedures conducted in recent years suggest that people respond to the situation today much like they did a half a century ago (Burger, 2009).



If you had been "a teacher" in the Milgram experiment, would you have behaved differently than the majority who delivered what they thought were massive 450-volt shocks? [Image: Sharon Drummond, https://goo.gl/uQZGtZ, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Another point of controversy concerns the ethical treatment of research participants. Researchers have an obligation to look out for the welfare of their participants. Yet, there is little doubt that many of Milgram's participants experienced intense levels of stress as they went through the procedure. In his defense, Milgram was not unconcerned about the effects of the experience on his participants. And in follow-up questionnaires, the vast majority of his participants said they were pleased they had been part of the research and thought similar experiments should be conducted in the future. Nonetheless, in part because of Milgram's studies, guidelines and procedures were developed to protect research participants from these kinds of experiences. Although Milgram's intriguing findings left us with many

unanswered questions, conducting a full replication of his experiment remains out of bounds by today's standards.

Finally, it is also worth noting that although a number of factors appear to lead to obedience, there are also those who would not obey. In one conceptual replication of the Milgram studies, conducted with a small sample in Italy, the researchers explored the moment that approximately two-thirds of the sample refused to cooperate (Bocchiaro & Zimbardo, 2010). The investigators identified compassion, ethics, and recognition of the situation as problematic as major influences on refusal. Thus, just as there are pressures to obey there are also instances in which people can stand up to authority.

Social psychologists are fond of saying that we are all influenced by the people around us more than we recognize. Of course, each person is unique, and ultimately each of us makes choices about how we will and will not act. But decades of research on conformity and obedience make it clear that we live in a social world and that—for better or worse—much of what we do is a reflection of the people we encounter.

Outside Resources

Student Video: Christine N. Winston and Hemali Maher\'s \'The Milgram Experiment\' gives an excellent 3-minute overview of one of the most famous experiments in the history of psychology. It was one of the winning entries in the 2015 Noba Student Video Award.
https://www.youtube.com/watch?v=uVIUZwkM_G0

Video: An example of information influence in a field setting
http://www.youtube.com/watch?v=4yFeaS60nWk

Video: Scenes from a recent partial replication of Milgram's obedience studies
http://www.youtube.com/watch?v=HwqNP9HRy7Y

Video: Scenes from a recent replication of Asch's conformity experiment
http://www.youtube.com/watch?v=VgDx5g9ql1g

Discussion Questions

1. In what ways do you see normative influence operating among you and your peers? How difficult would it be to go against the norm? What would it take for you to not do something just because all your friends were doing it?
2. What are some examples of how informational influence helps us do the right thing? How can we use descriptive norm information to change problem behaviors?
3. Is conformity more likely or less likely to occur when interacting with other people through social media as compared to face-to-face encounters?
4. When is obedience to authority a good thing and when is it bad? What can be done to prevent people from obeying commands to engage in truly deplorable behavior such as atrocities and massacres?
5. In what ways do Milgram's experimental procedures fall outside the guidelines for research with human participants? Are there ways to conduct relevant research on obedience to authority without violating these guidelines?

Vocabulary

Conformity
Changing one's attitude or behavior to match a perceived social norm.

Descriptive norm
The perception of what most people do in a given situation.

Informational influence
Conformity that results from a concern to act in a socially approved manner as determined by how others act.

Normative influence
Conformity that results from a concern for what other people think of us.

Obedience
Responding to an order or command from a person in a position of authority.

References

Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs, 70* (9, Whole No. 416).

Berndt, T. J. (1979). Developmental changes in conformity to peers and parents. *Developmental Psychology, 15*, 608–616.

Bocchiaro, P., & Zimbardo, P. G. (2010). Defying unjust authority: An exploratory study. *Current Psychology, 29*(2), 155-170.

Bond, R. (2005). Group size and conformity. *Group Processes & Intergroup Relations, 8*, 331–354.

Bond, R., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin, 119*, 111–137.

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64*, 331–341.

Burger, J. M. (2009). Replicating Milgram: Would people still obey today? *American Psychologist, 64*, 1–11.

Burger, J. M., & Shelton, M. (2011). Changing everyday health behaviors through descriptive norm manipulations. *Social Influence, 6*, 69–77.

Burger, J. M., Bell, H., Harvey, K., Johnson, J., Stewart, C., Dorian, K., & Swedroe, M. (2010). Nutritious or delicious? The effect of descriptive norm information on food choice. *Journal of Social and Clinical Psychology, 29*, 228–242.

Burger, J. M., LaSalvia, C. T., Hendricks, L. A., Mehdipour, T., & Neudeck, E. M. (2011). Partying before the party gets started: The effects of descriptive norms on pre-gaming behavior. *Basic and Applied Social Psychology, 33*, 220–227.

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology, 76*, 893–910.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.

Crutchfield, R. S. (1955). Conformity and character. *American Psychologist, 10*, 191–198.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology, 51*, 629–636.

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint:Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research, 35*, 472–482.

Milgram, S. (1974). *Obedience to authority: An experimental view*. New York, NY: Harper & Row.

Milgram, S. (1965). Some conditions of obedience and disobedience to authority. *Human Relations, 18*, 57–76.

Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology, 67*, 371.

Miller, A. G. (2004). What can the Milgram obedience experiments tell us about the Holocaust? Generalizing from the social psychology laboratory. In A. G. Miller (Ed.), *The social psychology of good and evil* (pp. 193–239). New York, NY: Guilford Press.

Mita, M. (2009). College binge drinking still on the rise. *JAMA: Journal of the American Medical Association, 302*, 836–837.

Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Larimer, M. E. (2007). Are social norms the best predictor of outcomes among heavy-drinking college students? *Journal of Studies on Alcohol and Drugs, 68*, 556–565.

Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Walter, T. (2009). Internet-based personalized feedback to reduce 21st-birthday drinking: A randomized controlled trial of an even-specific prevention intervention. *Journal of Consulting and Clinical Psychology, 77*, 51–63.

Perkins, H. W., Haines, M. P., & Rice, R. (2005). Misperceiving the college drinking norm and related problems: A nationwide study of exposure to prevention information, perceived norms, and student alcohol misuse. *Journal of Studies on Alcohol, 66*, 470–478.

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*, 429–434.

21
Love, Friendship, and Social Support

Debi Brannan & Cynthia D. Mohr

Friendship and love, and more broadly, the relationships that people cultivate in their lives, are some of the most valuable treasures a person can own. This module explores ways in which we try to understand how friendships form, what attracts one person to another, and how love develops. It also explores how the Internet influences how we meet people and develop deep relationships. Finally, this module will examine social support and how this can help many through the hardest times and help make the best times even better.

Learning Objectives

- Understand what attracts us to others.
- Review research that suggests that friendships are important for our health and well-being.
- Examine the influence of the Internet on friendship and developing relationships.
- Understand what happens to our brains when we are in love.
- Consider the complexity of love.
- Examine the construct and components of social support.

Introduction

The importance of relationships has been examined by researchers for decades. Many researchers point to sociologist Émile Durkheim's classic study of suicide and social ties (1951) as a starting point for this work. Durkheim argued that being socially connected is imperative

Interpersonal relationships are vital to our physiological and psychological health. [CC0 Public Domain, https://goo.gl/m25gce]

to achieving personal well-being. In fact, he argued that a person who has no close relationships is likely a person who is at risk for suicide. It is those relationships that give a person meaning in their life. In other words, suicide tends to be higher among those who become disconnected from society. What is interesting about that notion is when people are asked to describe the basic necessities for life—people will most often say food, water, and shelter, but seldom do people list "close relationships" in the top three. Yet time and time again, research has demonstrated that we are social creatures and we need others to survive and thrive. Another way of thinking about it is that close relationships are the psychological equivalent of food and water; in other words, these relationships are necessary for survival. Baumeister and Leary (1995) maintain that humans have basic needs and one of them is the need to belong; these needs are what makes us human and give a sense of purpose and identity to our lives (Brissette, Cohen, & Seeman, 2000; Ryff, 1989).

Given that close relationships are so vital to well-being, it is important to ask how interpersonal relationships begin. What makes us like or love one person but not another? Why is it that when bad things happen, we frequently want to talk to our friends or family about the situation? Though these are difficult questions to answer because relationships are complicated and unique, this module will examine how relationships begin; the impact of technology on relationships; and why coworkers, acquaintances, friends, family, and intimate partners are so important in our lives.

Attraction: The Start of Friendship and Love

Why do some people hit it off immediately? Or decide that the friend of a friend was not likable? Using scientific methods, psychologists have investigated factors influencing attraction and have identified a number of variables, such as similarity, proximity (physical or functional), familiarity, and reciprocity, that influence with whom we develop relationships.

Proximity

Great and important relationships can develop by chance and physical proximity helps. For example, seeing someone regularly on your daily bus commute to work or school may be all that's necessary to spark a genuine friendship. [Image: Cheri Lucas Rowlands, https://goo.gl/crCc0Q, CC BY-SA 2.0, https://goo.gl/rxiUsF]

Often we "stumble upon" friends or romantic partners; this happens partly due to how close in proximity we are to those people. Specifically, **proximity** or *physical nearness* has been found to be a significant factor in the development of relationships. For example, when college students go away to a new school, they will make friends consisting of classmates, roommates, and teammates (i.e., people close in proximity). Proximity allows people the opportunity to get to know one other and discover their similarities—all of which can result in a friendship or intimate relationship. Proximity is not just about geographic distance, but rather **functional distance**, or the frequency with which we cross paths with others. For example, college students are more likely to become closer and develop relationships with people on their dorm-room floors because they see them (i.e., cross paths) more often than they see people on a different floor. How does the notion of proximity apply in terms of online relationships? Deb Levine (2000) argues that in terms of developing online relationships and attraction, functional distance refers to being at the same place at the same time in a virtual world (i.e., a chat room or Internet forum)—crossing virtual paths.

Familiarity

One of the reasons why proximity matters to attraction is that it breeds *familiarity*; people are more attracted to that which is familiar. Just being around someone or being repeatedly exposed to them increases the likelihood that we will be attracted to them. We also tend to feel safe with familiar people, as it is likely we know what to expect from them. Dr. Robert Zajonc (1968) labeled this phenomenon the **mere-exposure effect**. More specifically, he argued that the more often we are exposed to a stimulus (e.g., sound, person) the more likely we are to view that stimulus positively. Moreland and Beach (1992) demonstrated this by exposing a college class to four women (similar in appearance and age) who attended different numbers of classes, revealing that the more classes a woman attended, the more familiar,

similar, and attractive she was considered by the other students.

There is a certain comfort in knowing what to expect from others; consequently research suggests that we like what is familiar. While this is often on a subconscious level, research has found this to be one of the most basic principles of attraction (Zajonc, 1980). For example, a young man growing up with an overbearing mother may be attracted to other overbearing women *not* because he likes being dominated but rather because it is what he considers normal (i.e., familiar).

Similarity

When you hear about couples such as Sandra Bullock and Jesse James, or Kim Kardashian and Kanye West, do you shake your head thinking "this won't last"? It is probably because they seem so different. While many make the argument that opposites attract, research has found that is generally not true; s*imilarity* is key. Sure, there are times when couples can appear fairly different, but overall we like others who are like us. Ingram and Morris (2007) examined this phenomenon by inviting business executives to a cocktail mixer, 95% of whom reported that they wanted to meet new people. Using electronic name tag tracking, researchers revealed that the executives did not mingle or meet new people; instead, they only spoke with those they already knew well (i.e., people who were similar).

When it comes to marriage, research has found that couples tend to be very similar, particularly when it comes to age, social class, race, education, physical attractiveness, values, and attitudes (McCann Hamilton, 2007; Taylor, Fiore, Mendelsohn, & Cheshire, 2011). This phenomenon is known as the *matching hypothesis* (Feingold, 1988; Mckillip & Redel, 1983). We like others who validate our points of view and who are similar in thoughts, desires, and attitudes.

Reciprocity

Another key component in attraction is *reciprocity*; this principle is based on the notion that we are more likely to like someone if they feel the same way toward us. In other words, it is hard to be friends with someone who is not friendly in return. Another way to think of it is that relationships are built on give and take; if one side is not reciprocating, then the relationship is doomed. Basically, we feel obliged to give what we get and to maintain equity in relationships. Researchers have found that this is true across cultures (Gouldner, 1960).

Friendship

> "In poverty and other misfortunes of life, true friends are a sure refuge. They keep the young out of mischief; they comfort and aid the old in their weakness, and they incite those in the prime of life to noble deeds."—Aristotle

Having best friends make us feel better about ourselves and buffers us from stress. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Research has found that close friendships can protect our mental and physical health when times get tough. For example, Adams, Santo, and Bukowski (2011) asked fifth- and sixth-graders to record their experiences and self-worth, and to provide saliva samples for 4 days. Children whose best friend was present during or shortly after a negative experience had significantly lower levels of the stress hormone cortisol in their saliva compared to those who did not have a best friend present. Having a best friend also seemed to protect their feelings of self-worth. Children who did not identify a best friend or did not have an available best friend during distress experienced a drop in self-esteem over the course of the study.

Workplace friendships

Friendships often take root in the workplace, due to the fact that people are spending as much, or more, time at work than they are with their family and friends (Kaufman & Hotchkiss, 2003). Often, it is through these relationships that people receive mentoring and obtain social support and resources, but they can also experience conflicts and the potential for misinterpretation when sexual attraction is an issue. Indeed, Elsesser and Peplau (2006) found that many workers reported that friendships grew out of collaborative work projects, and these friendships made their days more pleasant.

In addition to those benefits, Riordan and Griffeth (1995) found that people who worked in an environment where friendships could develop and be maintained were more likely to

report higher levels of job satisfaction, job involvement, and organizational commitment, and they were less likely to leave that job. Similarly, a Gallup poll revealed that employees who had "close friends" at work were almost 50% more satisfied with their jobs than those who did not (Armour, 2007).

Internet friendships

What influence does the Internet have on friendships? It is not surprising that people use the Internet with the goal of meeting and making new friends (Fehr, 2008; McKenna, 2008). Researchers have wondered if the issue of not being face-to-face reduces the authenticity of relationships, or if the Internet really allows people to develop deep, meaningful connections. Interestingly, research has demonstrated that virtual relationships are often as intimate as in-person relationships; in fact, Bargh and colleagues found that online relationships are sometimes more intimate (Bargh et al., 2002). This can be especially true for those individuals who are more socially anxious and lonely—such individuals who are more likely to turn to the Internet to find new and meaningful relationships (McKenna, Green, & Gleason, 2002). McKenna et al. (2002) suggest that for people who have a hard time meeting and maintaining relationships, due to shyness, anxiety, or lack of face-to-face social skills, the Internet provides a safe, nonthreatening place to develop and maintain relationships. Similarly, Penny Benford (2008) found that for high-functioning autistic individuals, the Internet facilitated communication and relationship development with others, which would have been more difficult in face-to-face contexts, leading to the conclusion that Internet communication could be empowering for those who feel frustrated when communicating face to face.

Romantic relationships are so central to psychological health that most people in the world are or will be in a romantic relationship in their lifetime. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Love

Is all love the same? Are there different types of love? Examining these questions more closely, Robert Sternberg's (2004; 2007) work has focused on the notion that all types of love are comprised of three distinct areas: intimacy, passion, and commitment. Intimacy includes caring,

closeness, and emotional support. The passion component of love is comprised of physiological and emotional arousal; these can include physical attraction, emotional responses that promote physiological changes, and sexual arousal. Lastly, commitment refers to the cognitive process and decision to commit to love another person and the willingness to work to keep that love over the course of your life. The elements involved in intimacy (caring, closeness, and emotional support) are generally found in all types of close relationships—for example, a mother's love for a child or the love that friends share. Interestingly, this is not true for passion. Passion is unique to romantic love, differentiating friends from lovers. In sum, depending on the type of love and the stage of the relationship (i.e., newly in love), different combinations of these elements are present.

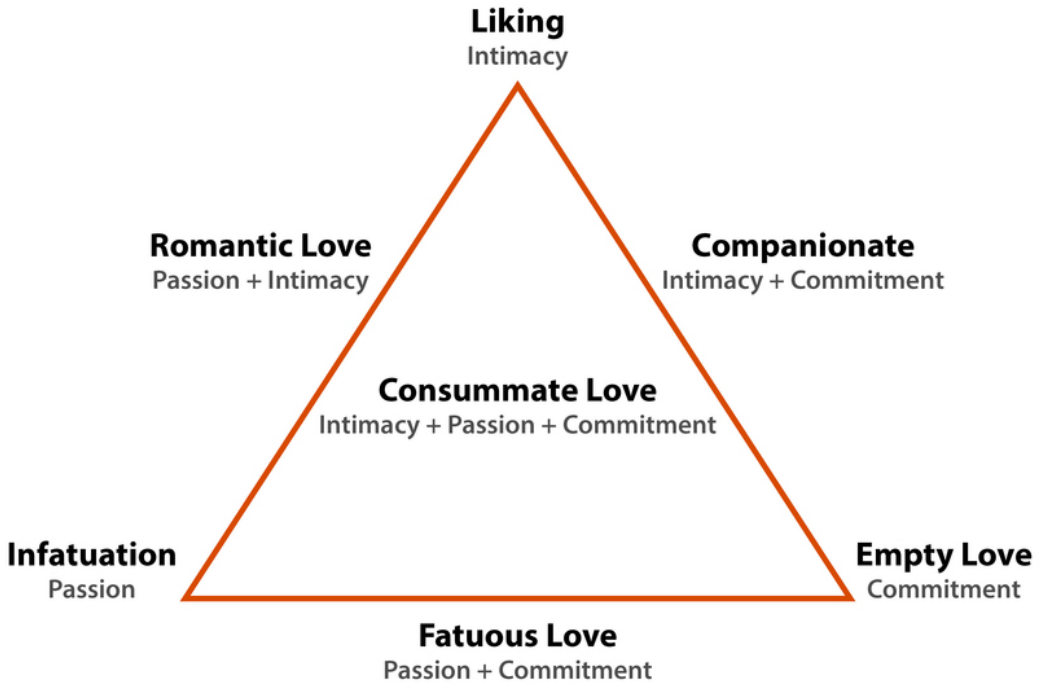


Figure 1: Triangular Theory of Love. Adapted from Wikipedia Creative Commons, 2013

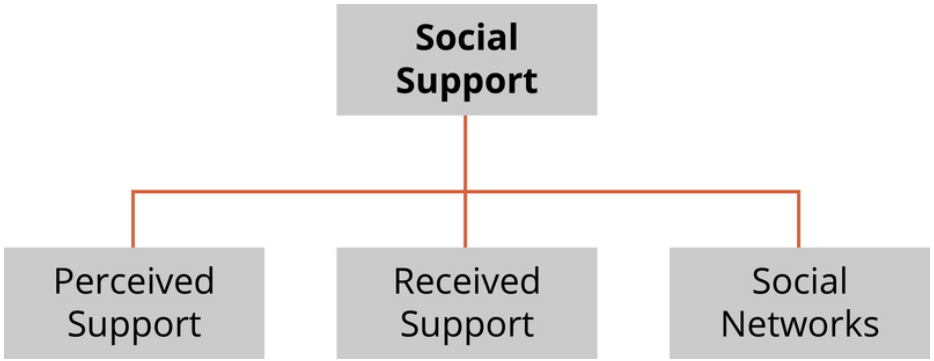
Taking this theory a step further, anthropologist Helen Fisher explained that she scanned the brains (using fMRI) of people who had just fallen in love and observed that their brain chemistry was "going crazy," similar to the brain of an addict on a drug high (Cohen, 2007). Specifically, serotonin production increased by as much as 40% in newly in-love individuals. Further, those newly in love tended to show obsessive-compulsive tendencies. Conversely, when a person experiences a breakup, the brain processes it in a similar way to quitting a heroin habit (Fisher, Brown, Aron, Strong, & Mashek, 2009). Thus, those who believe that breakups are physically painful are correct! Another interesting point is that long-term love and sexual desire activate different areas of the brain. More specifically, sexual needs activate the part of the brain that

is particularly sensitive to innately pleasurable things such as food, sex, and drugs (i.e., the striatum—a rather simplistic reward system), whereas love requires conditioning—it is more like a habit. When sexual needs are rewarded consistently, then love can develop. In other words, love grows out of positive rewards, expectancies, and habit (Cacioppo, Bianchi-Demicheli, Hatfield & Rapson, 2012).

Love and the Internet

The ways people are finding love has changed with the advent of the Internet. In a poll, 49% of all American adults reported that either themselves or someone they knew had dated a person they met online (Madden & Lenhart, 2006). As Finkel and colleagues (2007) found, social networking sites, and the Internet generally, perform three important tasks. Specifically, sites provide individuals with access to a database of other individuals who are interested in meeting someone. Dating sites generally reduce issues of proximity, as individuals do not have to be close in proximity to meet. Also, they provide a medium in which individuals can communicate with others. Finally, some Internet dating websites advertise special matching strategies, based on factors such as personality, hobbies, and interests, to identify the "perfect match" for people looking for love online. In general, scientific questions about the effectiveness of Internet matching or online dating compared to face-to-face dating remain to be answered.

It is important to note that social networking sites have opened the doors for many to meet people that they might not have ever had the opportunity to meet; unfortunately, it now appears that the social networking sites can be forums for unsuspecting people to be duped. In 2010 a documentary, *Catfish*, focused on the personal experience of a man who met a woman online and carried on an emotional relationship with this person for months. As he later came to discover, though, the person he thought he was talking and writing with did not exist. As Dr. Aaron Ben-Zeév stated, online relationships leave room for deception; thus, people have to be cautious.



Social Support

When bad things happen, it is important for people to know that others care about them and can help them out. Unsurprisingly, research has found that this is a common thread across cultures (Markus & Kitayma, 1991; Triandis, 1995) and over time (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000); in other words, social support is the active ingredient that makes our relationships particularly beneficial. But what *is* social support? One way of thinking about social support is that it consists of three discrete conceptual components.

Perceived Social Support

Have you ever thought that when things go wrong, you know you have friends/family members that are there to help you? This is what psychologists call perceived social support or "a psychological sense of support" (Gottlieb, 1985). How powerful is this belief that others will be available in times of need? To examine this question, Dr. Arnberg and colleagues asked 4,600 survivors of the tragic 2004 Indian Ocean (or Boxing Day) Tsunami about their perception of social support provided by friends and family after the event. Those who experienced the most amount of stress found the most benefit from just knowing others were available if they needed anything (i.e., perceived support). In other words, the magnitude of the benefits depended on the extent of the stress, but the bottom line was that for these survivors, knowing that they had people around to support them if they needed it helped them all to some degree.

Perceived support has also been linked to well-being. Brannan and colleagues (2012) found that perceived support predicted each component of well-being (high positive affect, low negative affect, high satisfaction with life) among college students in Iran, Jordan, and the United States. Similarly, Cohen and McKay (1984) found that a high level of perceived support can serve as a buffer against stress. Interestingly enough, Dr. Cohen found that those with higher levels of social support were less likely to catch the common cold. The research is clear —perceived social support increases happiness and well-being and makes our live better in general (Diener & Seligman, 2002; Emmons & Colby, 1995).

Received Social Support

Received support is the actual receipt of support or helping behaviors from others (Cohen & Wills, 1985). Interestingly, unlike perceived support, the benefits of *received* support have been beset with mixed findings (Stroebe & Stroebe, 1996). Similar to perceived support, receiving support can buffer people from stress and positively influence some individuals—however,

Social support is one of the ways people maintain healthy communities. [Image: Fort Belvoir Community Hospital, https://goo.gl/9f1c9N, CC BY-NC 2.0, https://goo.gl/VnKlK8]

others might not want support or think they need it. For example, dating advice from a friend may be considered more helpful than such advice from your mom! Interestingly, research has indicated that regardless of the support-provider's intentions, the support may not be considered as helpful to the person receiving the support if it is unwanted (Dunkel-Schetter, Blasband, Feinstein, & Herbert, 1992; Cutrona, 1986). Indeed, mentor support was viewed negatively by novice ESOL teachers (those teaching English as a second language in other countries; Brannan & Bleistein, 2012). Yet received support from family was perceived as very positive—the teachers said that their family members cared enough to ask about their jobs and told them how proud they were. Conversely, received mentor support did not meet teachers' needs, instead making them feel afraid and embarrassed to receive mentor support.

Quality or Quantity?

With so many mixed findings, psychologists have asked whether it is the quality of social support that matters or the quantity (e.g., more people in my **support network**). Interestingly, research by Friedman and Martin (2011) examining 1,500 Californians over 8 decades found that while quality does matter, individuals with larger social networks lived significantly longer than those with smaller networks. This research suggests we should count the number of our friends / family members—the more, the better, right? Not necessarily: Dunbar (1992; 1993) argued that we have a cognitive limit with regard to how many people with whom we can maintain social relationships. The general consensus is about 150—we can only "really" know (maintain contact and relate to) about 150 people. Finally, research shows that diversity also matters in terms of one's network, such that individuals with more diverse social networks (i.e., different types of relationships including friends, parents, neighbors, and classmates) were less likely to get the common cold compared to those with fewer and less diverse networks (Cohen, Doyle, Turner, Alper, & Skoner, 2003). In sum, it is important to have quality relationships as well as quantity—and as the Beatles said, "all you need is love—love is all you need."

Outside Resources

Movie: Official Website of Catfish the Movie
http://www.iamrogue.com/catfish

Video: Ted Talk from Helen Fisher on the brain in love
http://www.ted.com/talks/helen_fisher_studies_the_brain_in_love.html

Video: The Science of Heartbreak
https://youtu.be/lGglw8eAikY

Web: Groundbreaking longitudinal study on longevity from Howard S. Friedman and Leslie R. Martin
http://www.howardsfriedman.com/longevityproject/

Discussion Questions

1. What is more important—perceived social support or received social support? Why?
2. We understand how the Internet has changed the dating scene—how might it further change how we become romantically involved?
3. Can you love someone whom you have never met?
4. Do you think it is the quality or quantity of your relationships that really matters most?

Vocabulary

Functional distance
The frequency with which we cross paths with others.

Mere-exposure effect
The notion that people like people/places/things merely because they are familiar with them.

Perceived social support
A person's perception that others are there to help them in times of need.

Proximity
Physical nearness.

Received social support
The actual act of receiving support (e.g., informational, functional).

Support support network
The people who care about and support a person.

References

Adams, R. E., Santo, J., & Bukowski, W. M. (2011). The presence of a best friend buffers the effects of negative experiences. *Developmental Psychology, 47(6)*, 1786–1791. doi:10.1037/a0025401

Aristotle. (n.d.). In poverty and other misfortunes of life.... BrainyQuote.com. Retrieved July 25, 2013, from http://www.brainyquote.com/quotes/quotes/a/aristotle148482.html

Armour, S. (2007, August 2). Friendships and work: A good or bad partnership? *USA Today*. Retrieved from http://usatoday30.usatoday.com/money/workplace/2007-08-01-work-friends_N.htm

Bargh, J. A., McKenna, K. Y. A, & Fitsimons, G. G. (2002). Can you see the real me? Activation and expression of the true self on the Internet. *Journal of Social Issues, 58*, 33–48.

Baumeister, R. & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529.

Benford, P. (2008). The use of Internet-based communication by people with autism (Doctoral dissertation, University of Nottingham).

Brannan, D., & Bleisten, T. (2012). Novice ESOL teachers' perceptions of social support and self-efficacy. *TESOL Quarterly, 46*, 519–541.

Brannan, D., Biswas-Diener, R., Mohr, C. D., Mortazavi, S., & Stein, N. (2012). Friends and family, a cross-cultural investigation of social support and subjective well-being. Journal of Positive Psychology, 8(1), 65–75.

Brissette, I., Cohen, S., & Seeman, T. E. (2000). Measuring social integration and social networks. In S. Cohen, L. Underwood, & B. Gottlieb (Eds.), Measuring and intervening in social support, (pp. 53–85), New York, NY: Oxford University Press.

Cacioppo, S., Bianchi-Demicheli, F., Hatfield, E., & Rapson, R. L. (2012). Social neuroscience of love. *Clinical Neuropsychiatry, 9(1)*, 3–13.

Cohen, E. (2007, February 15). Loving with all your ... brain. *CNN.com*. Retrieved July 25th, 2013, from http://www.cnn.com/2007/HEALTH/02/14/love.science/.

Cohen, S., & McKay, G. (1984). Social support, stress, and the buffering hypothesis: A theoretical analysis. In A. Baum, J. E. Singer, & S. E. Taylor (Eds.), *Handbook of psychology and health* (pp. 253–267), Volume IV. Hillsdale, NJ: Erlbaum.

Cohen, S., & Wills, T. A. (1985). Stress, social support and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.

Cohen, S., Doyle, W. J., Turner, R. B., Alper, C. M., & Skoner, D. P. (2003). Sociability and susceptibility to the common cold. *Psychological Science, 14*, 389–395.

Cutrona, C. (1986). Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology, 51(1)*, 201–208.

Diener, E. & Seligman, M. E. P. (2002). Very happy people. *Psychological Science, 13*, 81–84.

Dunbar, R. I. M. (1993). Coevolution of neocortical size, group size and language in humans. *Behavioral and Brain Sciences, 16*, 681–735.

Dunbar, R. I. M. (1992). Neocortex size as a constraint on group size in primates. *Journal of Human Evolution, 22*, 469–493. doi:10.1016/0047-2484(92)90081-J

Dunkel-Schetter, C., Blasband, D., Feinstein, L., & Herbert, T. (1992). Elements of supportive interactions: When are attempts to help effective? In Spacapan, S. & Oskamp, S. (Eds.) Helping and being helped: *Naturalistic studies*. (pp. 83–114). Thousand Oaks, CA, US: Sage Publications, Inc.

Durkheim, E. (1951). *Suicide: A study in sociology*. Ornstein, R. & Swencionis, C. (Eds). New York, NY: Free Press.

Elsesser, L., & Peplau, L. A. (2006). The glass partition: Obstacles to cross-sex friendships at work. *Human Relations, 59(8)*, 1077–1100.

Emmons, R. A. & Colby, P. M. (1995). Emotional conflict and well-being relation to perceived availability, daily utilization, and observer reports of social support. *Journal of Personality and Social Psychology, 68*, 947–959.

Fehr, B. (2008). Friendship formation. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of Relationship Initiation* (pp. 29–54). New York, NY: Psychology Press.

Feingold, Alan (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin 104*, 226–235.

Finkel, E. J., Burnette J. L., & Scissors L. E. (2007). Vengefully ever after: Destiny beliefs, state attachment anxiety, and forgiveness. *Journal of Personality and Social Psychology, 92*, 871–886.

Fisher, H. E., Brown, L. L., Aron, A., Strong, G., & Mashek, D. (2009). Reward, addiction, and emotion regulation systems associated with rejection in love. *Journal of Neurophysiology, 104*, 51–60.

Friedman, H. S. & Martin, L. R. (2011). *The Longevity Project: Surprising Discoveries for Health and Long Life from the Landmark Eight-Decade Study*. New York, NY: Hudson Street Press.

Gottlieb, B. H. (1985). Social support and community mental health. In S. Cohen & S. Syme (Eds.), *Social Support and Health* (pp. 303–326). Orlando, FL: Academic Press.

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review, 25*, 169–186.

Ingram, P., & Morris, M. W. (2007). Do people mix at mixers? Structure, homophily, and the "life of the party." *Administrative Science Quarterly, 52*, 558–585.

Kaufman, B. E., & Hotchkiss, J. L. 2003. *The economics of labor markets* (6th ed.). Mason, OH: Thomson South-Western.

Levine, D. (2000). Virtual attraction: What rocks your boat. *Cyberpsychology & Behavior, 3(4)*, 565–573. doi:10.1089/109493100420179

Madden, M. & Lenhart, A. (2006). Americans who are seeking romance use the Internet to help them in their search, but there is still widespread public concern about safety of online dating. Pew/Internet and American Life Project. Retrieved from http://www.pewinternet.-org/Reports/2006/OnlineDating.aspx

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224–253.

McCann Hamilton, V. (2007) *Human relations: The art and science of building effective relationships*. Upper Saddle River, NJ: Pearson Prentice Hall.

McKenna, K. A. (2008) MySpace or your place: Relationship initiation and development in the wired and wireless world. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 235–247). New York, NY: Psychology Press.

McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues, 58*, 9–31.

Mckillip, J., & Redel, S. L. (1983). External validity of matching on physical attractiveness for same- and opposite-sex couples. *Journal of Applied Social Psychology, 13*, 328–337.

Moreland, R. L., & Beach, S. R. (1992). Exposure effects in the classroom: The development of affinity among students. *Journal of Experimental Social Psychology, 28*, 255–276.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, R., & Ryan, R. (2000). Daily well being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin, 26*, 419–435.

Riordan, C. M., & Griffeth, R. W. (1995). The opportunity for friendship in the workplace: An underexplored construct. *Journal of Business and Psychology, 10*, 141–154.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57(6)*, 1069–1081.

Sternberg, R. J. (2007). Triangulating Love. In Oord, T. J. *The Altruism Reader: Selections from Writings on Love, Religion, and Science* (pp 331-347). West Conshohocken, PA: Templeton Foundation.

Sternberg, R. J. (2004). A Triangular Theory of Love. In Reis, H. T.; Rusbult, C. E. *Close Relationships*

(pp: 528-276). New York, NY: Psychology Press.

Stroebe, W., & Stroebe, M. (1996). The social psychology of social support. In *Social psychology: Handbook of basic principles* (pp. 597–621). New York, NY: Guilford Press.

Taylor, L. S., Fiore, A. T., Mendelsohn, G. A., & Cheshire, C. (2011). "Out of my league": A real-world test of the matching hypothesis. *Personality and Social Psychology Bulletin, 37*, 942–955.

Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, CO: Westview.

Triangular Theory of Love. (n.d.). In Wikipedia. Retrieved April 3, 2013, from http://en.wikipedia.org/wiki/Triangular_theory_of_love

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35(2)*, 151–175.

Zajonc, R. B. (1968) Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9*, 1–27.

22
Positive Relationships

Nathaniel M. Lambert

Most research in the realm of relationships has examined that which can go wrong in relationships (e.g., conflict, infidelity, intimate partner violence). I summarize much of what has been examined about what goes right in a relationship and call these positive relationship deposits. Some research indicates that relationships need five positive interactions for every negative interaction. Active-constructive responding, gratitude, forgiveness, and time spent together are some sources of positive deposits in one's relational bank account. These kinds of deposits can reduce the negative effects of conflict on marriage and strengthen relationships.

Learning Objectives

- Understand some of the challenges that plague close relationships today.
- Become familiar with the concept of positive emotional deposits.
- Review some of the research that is relevant to positive emotional deposits.
- Describe several ways people make positive emotional deposits.

Introduction

The status of close relationships in America can sometimes look a bit grim. More than half of marriages now end in divorce in the United States (Pinsof, 2002). Infidelity is the leading cause of divorce (Priviti & Amato, 2004) and is on the rise across all age groups (Allen et al., 2008). Cybersex has likely contributed to the increased rates of infidelity, with some 65% of those

who look for sex online having intercourse with their "Internet" partner offline as well. Research on intimate partner violence indicates that it occurs at alarmingly high rates, with over one-fifth of couples reporting at least one episode of violence over the course of a year (Schafer, Caetano, & Clark, 1998). These and other issues that arise in relationships (e.g., substance abuse, conflict) represent significant obstacles to close relationships. With so many problems that plague relationships, how can a positive relationship be cultivated? Is there some magic bullet or ratio? Yes, kind of.

Many people consider romantic attachments one of the most significant relationships and invest them with time and resources. [Image: Ly Thien Hoang (Lee), https://goo.gl/JQbLVe, CC BY 2.0, https://goo.gl/BRvSA7]

The Magic Formula

Of course, no research is perfect, and there really is no panacea that will cure any relationship. However, we do have some research that suggests that long-term, stable marriages have been shown to display a particular ratio between positive and negative interactions. That ratio is not 1:1, in fact, 1:1 is approximately the ratio of couples who were heading toward divorce. Thus, in a couple where a spouse gives one compliment for each criticism, the likely outcome is divorce. Happier couples have five positive interactions for every one negative interaction (Gottman, 1994).

What can you do to increase the ratio of positive interactions on a regular basis?—through positive relationship deposits. Naturally, making positive relationship deposits will boost your overall positive emotions—so by making positive relationships a priority in your life you can

boost your positive emotions, becoming a flourishing individual.

Positive Relationship Deposits

In *Seven Habits of Highly Effective People,* Covey (1989) compared human relationships to actual bank accounts—suggesting that every day we make deposits or withdrawals from our relationship accounts with each person in our lives. He recommended that to keep an overall positive balance, we need to make regular positive deposits. This will ultimately help buffer the negatives that are bound to occur in relationships. Keeping this metaphor of emotional capital in mind could be beneficial for promoting the well-being of the relationships in one's life.

Research suggests that if you focus on the positive aspects of a relationship you are more likely to stay in that relationship. [Image: adwriter, https://goo.gl/Hz9BOJ, CC BY-NC 2.0, https://goo.gl/tgFydH]

Some research suggests that people, on average, have more positive than negative experiences (Gable & Haidt, 2005). Thus, there are far more opportunities for deposits than for withdrawals. Conversely, even though there may be fewer negatives, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) argue quite persuasively that bad events overpower good events in one's life, which suggests that the negative withdrawals are more salient and more impactful. This further accentuates the need to ensure that we have a healthy store of positive deposits that can help to counteract these more impactful account withdrawals. Positive deposits that accumulate over time should provide a buffer against the withdrawals that happen in every relationship. In other words, the inevitable occasional conflict is not nearly so bad for the relationship when it occurs in a partnership that is otherwise highly positive. What opportunities does relationships science suggest are effective opportunities each day to make positive relationship deposits?

Common Opportunities for Daily Positive Deposits

An individual's general sentiment of his or her partner is dependent on ongoing interactions,

and these interactions provide many opportunities for deposits or withdrawals. To illustrate how much daily interaction can give opportunities to make deposits in relationships, I will describe research that has been done on capitalization and active-constructive responding, gratitude, forgiveness, and spending time together in meaningful ways. Although there are several other ways by which positive relationship deposits can be made, these four have received quite a bit of attention by researchers. Then I will discuss some evidence on how an accumulation of such daily relationship deposits seems to provide a safeguard against the impact of conflict.

Building Intimacy Through Capitalization and Active-Constructive Responding

Intimacy has been defined as a close and familiar bond with another person. Intimacy has been positively related with satisfaction in marriage (Patrick, Sells, Giordano & Tollerud, 2007) and well-being in general (e.g., Waltz & Badura, 1987; Prager & Buhrmester, 1998). On the other hand, lacking marital intimacy is related to higher severity of depression (Waring & Patton, 1984). Thus, achieving intimacy with one's partner is essential for a happy marriage and happiness in general and is something worth seeking.

Given that 60% to 80% of the time, people disclose their most positive daily experiences with their partner (Gable et al., 2004), this becomes a regular opportunity for intimacy building. When we disclose certain private things about ourselves, we increase the potential intimacy

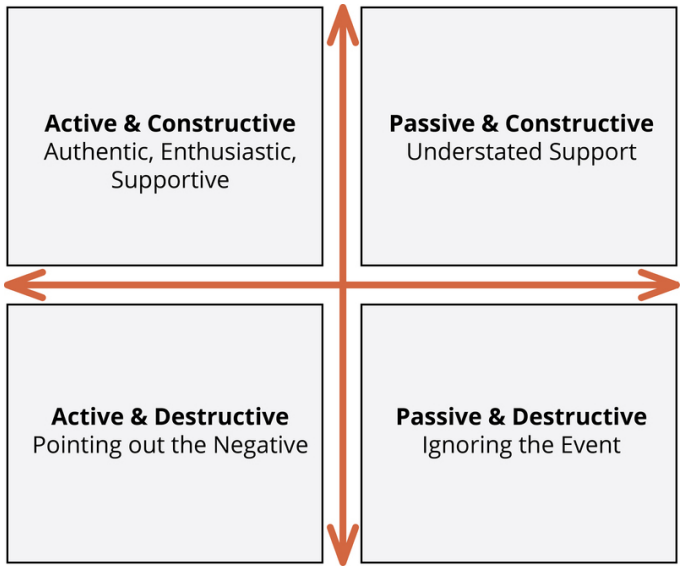


Figure 1. Types of Responding (figure used with permission from thecoachinghouse.ca)

that we can have with another person, however, we also make ourselves vulnerable to getting hurt by the other person. What if they do not like what I have disclosed or react negatively? It can be a double-edged sword. Disclosing positive news from one's day is a great opportunity for a daily deposit if the response from the other person is positive. What constitutes a positive response?

To achieve intimacy we must respond positively to remarks our partner makes. When a person responds enthusiastically to a partner's good news, this fosters higher levels of intimacy (Gable, Reis, Impett, & Asher, 2004). Thus, responding in a positive manner to a relationship partner's good news provides frequent opportunities to make deposits in the **relationship bank account**. In fact, most people are presented the chance to make this kind of relationship deposit almost every day. Most research has focused on support (partners' responses to negative events), however, one study found that responses to positive events tend to be better predictors of relationship well-being than responses to negative events (Gable, Gonzaga, & Strachman, 2006).

When one person seeks out another person with the intent to share positive news, it has been called capitalization (Gable et al., 2004). The best, supportive response to someone who shares good news has been termed active-constructive and is characterized by enthusiastic support. These active-constructive responses are positively associated with trust, satisfaction, commitment, and intimacy. On the other hand, when the listener points out something negative about what is said, it is called active-destructive responding. Ignoring what is said is termed passive-destructive, and understating support is called passive-constructive. All of these types of responses (see Figure 1) have been related to adverse relationship outcomes (Gable et al., 2004).

If partners listen and are enthusiastic about the good news of the other, they build a stronger relationship. If they ignore the good news, change the subject, devalue the good news, or refocus the good news to be about themselves, they may make a withdrawal from the account. Being aware of this research and findings can help individuals to focus on better providing helpful responses to those they care about.

Gratitude

Relationship researchers report that expressing gratitude on a regular basis is an important means by which positive deposits may be made into relationship bank accounts. In a recent study, participants were randomly assigned to write about daily events, express gratitude to a friend, discuss a positive memory with a friend, or think grateful thoughts about a friend

Being grateful is one of the ways an individual contributes positively to a relationship. [Image: LarynDawn, https://goo.gl/n1AJwg, CC BY-SA 3.0, https://goo.gl/eLCn2O]

twice a week for three weeks. At the conclusion of the three weeks, those who were randomly assigned to express gratitude to their friend reported higher positive regard for their friend and more comfort voicing relationship concerns than did those in the two control conditions (Lambert & Fincham, 2011). Also, those who expressed gratitude to a close relationship partner reported greater perceived communal strength (e. g., caring, willingness to sacrifice) than participants in all control conditions (Lambert, Clark, Durtschi, Fincham, & Graham, 2010). Similarly, Algoe, Fredrickson, and Gable (2013) found that benefactors' positive perceptions of beneficiaries were increased when gratitude was expressed for the benefit, and these perceptions enhanced relationship quality. These studies suggest that expressing gratitude to someone you are close to is an important way of making positive relationship deposits.

Forgiveness

Forgiveness is something else you can do regularly to aid relationship satisfaction (e.g., Fincham, 2000; Paleari, Regalia, & Fincham, 2003) and commitment (e.g., Finkel, Rusbult, Kumashiro, & Hannon, 2002; Karremans & Van Lange, 2008). Unresolved conflict can put couples at risk of developing the negative cycle of interaction that causes further harm to relationships. For instance, one study found that lack of forgiveness is linked to ineffective conflict resolution (Fincham, Beach, & Davila, 2004). For instance, if Cindy cannot forgive Joe, Cindy will struggle to effectively resolve other disagreements in their relationship. Yet, those who do forgive report much better conflict resolution a year later (Fincham, Beach, & Davila, 2007). It appears that forgiveness can be an important way of building emotional capital in the relationship. Not forgiving the people in your life can block positive deposits to the relationship bank account.

Spending Time in Meaningful Ways

Some suggest that the best way to spell love is T-I-M-E. In our fast-paced society, many

Do you and your romantic partner have similar hobbies? Research suggests that spending time in meaningful ways also positively contributes to your relationships. [Image: Lucky Sunny, https://goo.gl/IADzgz, CC BY-NC-ND 2.0, https://goo.gl/FuDJ6c]

relationships are time deprived. In the beginning phases of a relationship, this rarely seems to be an issue given the novelty and excitement of the relationship, however, discovering new things about one's partner declines and couples can slump into relationship boredom. The self-expansion model (Aron & Aron, 1996) suggests that people naturally seek to expand their capacity and that intimate relationships are an important way by which they accomplish self-expansion. They have found that couples who engaged in more challenging and novel activities felt more satisfied with their relationship immediately afterward than control couples (Aron et al., 2000). The takeaway message here is that simply watching TV with one's romantic partner will not make nearly the magnitude of a deposit in a relational bank account as would a more engaging or challenging joint activity.

Accumulated Positive Deposits and Conflict Management

When there is a positive balance of relationship deposits this can help the overall relationship in times of conflict. For instance, some research indicates that a husband's level of enthusiasm in everyday marital interactions was related to a wife's affection in the midst of conflict (Driver & Gottman, 2004), showing that being pleasant and making deposits can change the nature of conflict. Also, Gottman and Levenson (1992) found that couples rated as having more pleasant interactions (compared with couples with less pleasant interactions) reported marital problems as less severe, higher marital satisfaction, better physical health, and less risk for divorce. Finally, Janicki, Kamarck, Shiffman, and Gwaltney (2006) showed that the intensity of conflict with a spouse predicted marital satisfaction unless there was a record of positive partner interactions, in which case the conflict did not matter as much. Again, it seems as though having a positive balance through prior positive deposits helps to keep relationships strong even in the midst of conflict.

Relationships today are riddled with problems including divorce, infidelity, intimate partner violence, and chronic conflict. If you want to avoid some of these common pitfalls of

Don't neglect your relationship bank account. Make daily positive deposits and you'll be better prepared for the inevitable negative interaction. [Image: AndreaPerryAbbott, https://goo.gl/8iTE7t, CC BY-NC 2.0, https://goo.gl/VnKlK8]

relationships , if you want to build a good relationship with a partner or with your friends, it is crucial to make daily positive deposits in your relationship bank accounts. Doing so will help you enjoy each other more and also help you weather the inevitable conflicts that pop up over time. Some of the ways that have been most explored by researchers as a way to build your positive relationship bank account are through building intimacy by active constructive responding, expressing gratitude to the others, forgiving, and spending time in engaging joint activities. Although these are not the only ways that you can make positive deposits in one's relationship bank accounts, they are some of the best examined. Consider how you might do more to make positive relationship deposits through these or other means for the survival and improvement of your relationships.

Outside Resources

A Primer on Teaching Positive Psychology
http://www.apa.org/monitor/oct03/primer.aspx

An Experiment in Gratitude
https://www.youtube.com/watch?v=oHv6vTKD6lg

Positive Psychology Center
http://www.ppc.sas.upenn.edu/videolectures.htm

Relationship Matters Podcast Series
http://spr.sagepub.com/site/podcast/podcast_dir.xhtml

Understanding Forgiveness
http://www.pbs.org/thisemotionallife/topic/forgiveness/understanding-forgiveness

Discussion Questions

1. What are some of the main challenges that face relationships today?
2. How would you describe the concept of an emotional bank account?
3. What are some ways people can make deposits to their relationship bank accounts?
4. What do you think are the most effective ways for making positive relationship deposits?
5. What are some of the most powerful relationship deposits that others have made into your relationship bank account?
6. What would you consider to be some challenging or engaging activities that you would consider doing more of with a close relationship partner?
7. Are there relationships of yours that have gotten into a negative spiral and could profit from positive relationship deposits?

Vocabulary

Active-constructive responding
Demonstrating sincere interest and enthusiasm for the good news of another person.

Capitalization
Seeking out someone else with whom to share your good news.

Relationship bank account
An account you hold with every person in which a positive deposit or a negative withdrawal can be made during every interaction you have with the person.

Self-expansion model
Seeking to increase one's capacity often through an intimate relationship.

References

Algoe, S. B., Fredrickson, B. L. & Gable, S. L. (2013) The social functions of the emotion of gratitude via expression. *Emotion, 13*, 605-609.

Allen, E. S., Atkins, D. C., Baucom, D. H., Snyder, D. K., Gordon, K. C., & Glass, S. P. (2005). Intrapersonal, interpersonal, and contextual factors in engaging in and responding to extramarital involvement. *Clinical Psychology: Science and Practice, 12*, 101–130.

Aron, A., & Aron, E. N. (1996). Self and self-expansion in relationships. In G. J. O. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 325–344). Mahway, NJ: Lawrence Erlbaum Associates

Aron, A., Norman, C., Aron, E., McKenna, C., & Heyman, R. (2000). Couples' shared participation in novel and arousing activities and experienced relationship quality. *Journal of Personality and Social Psychology, 78*, 273–284.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology, 5*, 323-370.

Covey, S. R. (1989). *The seven habits of highly effective people*. New York, NY: Simon and Schuster.

Driver, J., & Gottman, J. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. *Family Process, 4*3, 301–314.

Fincham, F., Beach, S., & Davila, J. (2004). Conflict resolution in marriage and forgiveness. *Journal of Family Psychology, 18*, 72–81.

Fincham, F. D. (2000). The kiss of the porcupines: From attributing responsibility to forgiving. *Personal Relationships, 7*,1–23.

Fincham, F. D., Beach, S. R. H., & Davila, J. (2007). Longitudinal relations between forgiveness and conflict resolution in marriage. *Journal of Family Psychology, 21*, 542–545.

Finkel, E. J., Rusbult, C. E., Kumashiro, M., & Hannon, P. A. (2002). Dealing with betrayal in close relationships: Does commitment promote forgiveness? *Journal of Personality and Social Psychology, 82*, 956–974.

Gable, S., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology, 9*, 103–110.

Gable, S., Reis, H., Impett, E., & Asher, E. (2004). What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *Journal of Personality and Social Psychology, 87*, 228–245.

Gable, S. L., Gonzaga, G., & Strachman, A. (2006). Will you be there for me when things go right? Social support for positive events. *Journal of Personality and Social Psychology, 91*,

904–917.

Gottman, J. M. (1994). *Why marriages succeed or fail and how you can make yours last*. New York, NY: Fireside.

Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology and health. *Journal of Personality and Social Psychology, 63*, 221–233.

Janicki, D., Kamarck, T., Shiffman, S., & Gwaltney, C. (2006). Application of ecological momentary assessment to the study of marital adjustment and social interactions during daily life. *Journal of Family Psychology, 20*, 168–172.

Karremans, J. C., & Van Lange, P. A. M. (2008). Forgiveness in interpersonal relationships: Its malleability and powerful consequences. *European Review of Social Psychology, 19*, 202–241.

Lambert, N. M., & Fincham, F. D. (2011). Expressing gratitude to a partner leads to more relationship maintenance behavior. *Emotion, 11*, 52–60.

Lambert, N. M., Clarke, M. S., Durtschi, J. A., Fincham, F. D., & Graham, S. M. (2010). Benefits of expressing gratitude: Expressing gratitude to a partner changes one's view of the relationship. *Psychological Science, 21*, 574–580.

Paleari, G., Regalia, C., & Fincham, F. D. (2003). Adolescents' willingness to forgive parents: An empirical model. *Parenting: Science and Practice, 3*, 155–174.

Patrick, S., Sells, J. N., Giordano, F. G., & Tollerud, T. R. (2007). Intimacy, differentiation, and personality variables as predictors of marital satisfaction. *The Family Journal, 15*, 359–367.

Pinsof, W. M. (2002). The death of "till death us do part": The transformation of pair-bonding in the 20th century. *Family Process, 41*(2), 135–157.

Prager, K. J., & Buhrmester, D. (1998). Intimacy and need fulfillment in couple relationships. *Journal of Social & Personal Relationships, 15*, 435–469.

Schafer, J., Caetano, R., & Clark, C. L. (1998). Rates of intimate partner violence in the United States. *American Journal of Public Health, 88*, 1702-1704.

Waltz, M., & Badura, B. (1987). Subjective health, intimacy, and perceived self-efficacy after heart attack: Predicting life quality five years afterwards. *Social Indicators Research, 20*, 303–332.

Waring, E. M., & Patton, D. (1984). Marital intimacy and depression. *British Journal of Psychiatry, 145*, 641–644.

23
Prejudice, Discrimination, and Stereotyping

Susan T. Fiske

People are often biased against others outside of their own social group, showing prejudice (emotional bias), stereotypes (cognitive bias), and discrimination (behavioral bias). Biases can explicit (overt and conscious) or more implicit (automatic, ambiguous, and ambivalent). In the 21st century, however, with social group categories even more complex, biases may be transforming.

Learning Objectives

- Distinguish prejudice, stereotypes, and discrimination.
- Distinguish blatant biases from subtle biases.
- Understand biases such as social dominance orientation and right-wing authoritarianism.
- Understand subtle, unexamined biases that are automatic, ambiguous, and ambivalent.
- Understand 21st century biases that may break down as identities get more complicated.

Introduction

We commonly say that we "should not label" others but we cannot help but do so. We categorize people according to their citizenship, gender, allegiance to a sports team, and university affiliation, among other qualities. Although categorizing can be useful, it can also result in serious and negative consequences when labels are associated with a person or group's worth. This module focuses on biases against individuals based on group membership and against groups.

You are an individual, full of beliefs, identities, and more that help make you unique. You don't want to be labeled just by your gender or race or religion. But as complex as we perceive ourselves to be, we often define others merely by their most distinct social group. [Image: caseorganic, https://goo.gl/PuLI4E, CC BY-NC 2.0, https://goo.gl/VnKlK8]

From Category to Combative

People naturally create mental categories. We group household objects together as "furniture," certain domestic animals as "pets," and certain books as "classics." Categories are helpful because they provide a mental roadmap for how to interact in novel situations. For example, a person might not have ever been to a Hindu wedding, but their experience of "weddings" as a general category can help them know what to expect and how to behave. Weddings are generally happy occasions (it is more appropriate to say "congratulations" than "I am so sorry"), they are formal affairs (people typically dress up), and they usually include food (you don't need to stop and eat before attending the wedding).

Categories get more complicated when we apply them to humans. We naturally categorize people by age, language, occupation, ethnicity, income, and many other qualities. In the abstract these mental maps can help us understand how to interact with new people based on educated guesses about their category. Unfortunately, problems can also arise from our tendency to categorize.

First, there is the problem of stereotyping. **Stereotypes** are biased thoughts about a person due to the incorrect belief that the category accurately describes them. For instance, Margaret might not be "typical" (or stereotypical) of an 80-year-old in that she regularly competes in organized half-marathons. She goes against the common idea of older adults as being weak or unhealthy.

Next, categorization can also lead to prejudice. Like stereotypes, **prejudice** is a bias against people based on their group membership. Where stereotypes are related to thinking, prejudices are more emotional in nature. If people hold a negative view of Margaret because they hold negative views about older adults in general, this is prejudice.

Finally, the tendency to categorize can be associated with discrimination. **Discrimination** is a behavior bias against a person (or group) based on stereotyped beliefs about that group. If people do not want to invite Margaret on vacation because they fear that she will move too slowly (a common view of older people) then they are discriminating against her.

Historical Biases

Today, many nations have equality clearly articulated in their constitutions. Iceland, for example, guarantees legal equality between men and women. Similarly, Ecuador guarantees the fundamental right to sexual orientation and gender identity. Unfortunately, even when some countries have created legal protections, they thought that "equality" applied to only select groups. For instance, the constitution of the United States attempted to ensure that all people were represented by the government and could participate in the creation of government. At the time it was written, however, women and minorities (especially enslaved people) were not included in this sentiment. How is it that entire groups of people were left out of political participation, justice, and freedom?

One explanation is that historical biases were widespread and institutionalized. It was considered acceptable to openly disparage entire groups of people and to pass laws that restricted or harmed these groups. Just 80 years ago, American college students unabashedly thought Turkish people were "cruel, very religious, and treacherous" (Katz & Braly, 1933). These types of stereotypes were overt, unapologetic, and expected to be shared by others—what we now call "blatant biases." They were generalizations about a group, since most of the college students did not interact with people from Turkey.

Blatant biases (also called "explicit biases") are conscious beliefs, feelings, and behavior that people are perfectly willing to admit, which express hostility toward other groups (outgroups)

while unduly favoring one's own group (in-group). Classic examples of blatant bias include the views of members of hate groups such as the Ku Klux Klan and members of Hitler's Nazi party.

Blatant bias is not a thing of the past, however. People have always and still do openly dehumanize outgroup members and harbor hostile attitudes toward them. That said, the targets of bias sometimes shift across time. In the United States, for instance, waves of new immigrants such as Chinese people, Irish people, and Italians, were met with open hostility, with attitudes often shifting to the most recent group of immigrants. More recently, during the COVID-19 pandemic, some people held hostile views of Asian-Americans, who they perceived as being associated with the coronavirus (Misra, Le, Goldmann & Yang, 2020).

These blatant biases tend to run in packs: People who openly hate one outgroup also hate many others. To illustrate this pattern, we turn to two ideologies related to bias.

What are Biased People Thinking?

Social Dominance Orientation

People with a social dominance orientation are more likely to be attracted to certain types of careers, such as law enforcement, that maintain group hierarchies. [Image: Thomas Hawk, https://goo.gl/qWQ7jE, CC BY-NC 2.0, https://goo.gl/VnKlK8]

Social dominance orientation (SDO) describes a belief that group hierarchies are inevitable in all societies and are even a good idea to maintain order and stability (Sidanius & Pratto, 1999). People who score high on SDO believe that some groups are inherently better than others, and because of this, there is no such thing as group "equality." At the same time, though, SDO is not just about being personally dominant and controlling of others; SDO describes a preferred arrangement of groups with some on top (preferably one's own group) and some on the bottom. For example, someone high in SDO would likely be upset if someone from an outgroup moved into her neighborhood. It's not that the person high in SDO wants to "control" what this outgroup member does; it's that moving

into this "nice neighborhood" disrupts the social hierarchy the person high in SDO believes in (i.e. living in a nice neighborhood denotes one's place in the social hierarchy—a place reserved for one's in-group members).

Although research has shown that people higher in SDO are more likely to be politically conservative, there are other traits that more strongly predict one's SDO. For example, researchers have found that those who score higher on SDO are usually lower than average on tolerance, empathy, altruism, and community orientation. In general, those high in SDO have a strong belief in work ethic—that hard work always pays off and leisure is a waste of time. People higher on SDO tend to choose and thrive in occupations that maintain existing group hierarchies (police, prosecutors, business), compared to those lower in SDO, who tend to pick more equalizing occupations (social work, public defense, psychology).

The point is that SDO—a preference for inequality as normal and natural—also predicts endorsing the superiority of certain groups: men, native-born residents, heterosexuals, and believers in the dominant religion. This means seeing women, minorities, homosexuals, and non-believers as inferior. Understandably, people from the first list of groups tends to score higher on SDO, while those from the second group tend to score lower. For example, the SDO gender difference (men higher, women lower) appears all over the world. At its heart, SDO rests on a fundamental belief that the world is tough and competitive with only a limited number of resources. Thus, those high in SDO see groups as battling each other for these resources, with winners at the top of the social hierarchy and losers at the bottom (see Table 1).

	Social Dominance Orientation	Right-Wing Authoritarianism
Core Belief	Groups compete for economic resources	Groups compete over values
Intergroup Belief	Group hierarchies are inevitable, good	Groups must follow authority
Ingroup Belief	Ingroup must be tough, competitive	Ingroup must unite, protect
Outgroup Belief	"They" are trying to beat "us"	"They" have bad values

Table 1. Biases

Right-wing Authoritarianism

Right-wing authoritarianism (RWA) is an ideology that emphasizes conformity or obedience to authority (Altemeyer, 1988). Whereas SDO emphasizes potential economic conflicts, RWA focuses on value conflicts. Returning to an example from earlier, the homeowner high in SDO may dislike the outgroup member moving into her neighborhood because it "threatens" one's economic resources (e.g. lowering the value of one's house; fewer openings in the school; etc.). By contrast, those high in RWA may equally dislike the outgroup member moving into the neighborhood but for different reasons. Here, it is because this outgroup member brings in values or beliefs that the person high in RWA disagrees with, thus "threatening" the collective values of his or her group. RWA respects group unity over individual preferences, wanting to maintain group values in the face of differing opinions. Calls for national unity and patriotism that do not tolerate dissenting voices are an example.

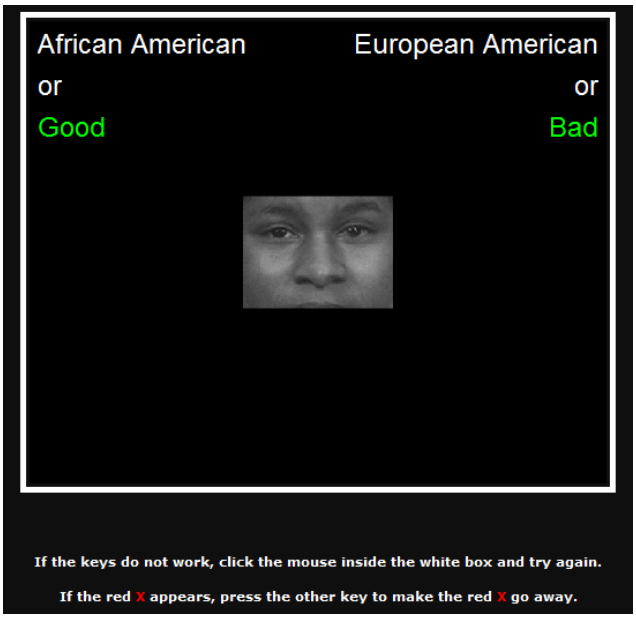
Despite its name, though, RWA is not necessarily limited to people on the right (conservatives). Like SDO, there does appear to be an association between this ideology (i.e. the preference for order, clarity, and conventional values) and conservative beliefs. However, regardless of political ideology, RWA focuses on competing frameworks of values. This means, potentially, that there is left-wing authoritarianism that promotes conventional progressive values and seeks to silence dissenting voices (Manson, 2020). Notably, the combination of high RWA and high SDO predicts joining hate groups that openly endorse aggression against minority groups, immigrants, homosexuals, and believers in non-dominant religions (Altemeyer, 2004).

Implicit Biases

Today, there is a greater appreciation of the fact that not all biases are overt hostility based on a personal animosity toward members of a group. **Subtle biases** (also called "automatic" or "implicit" biases) are unexamined and sometimes unconscious, but just as real in their consequences. They are automatic, ambiguous, and ambivalent, but nonetheless biased, unfair, and disrespectful to a belief in equality.

Automatic Biases

Most people have a positive view of themselves. They believe they have good values, rational thoughts, and strengths. Most people also identify as members of certain groups but not others. They are Canadian, or fans of Manchester United, or are doctors. Logic suggests, then, that because we like ourselves, we also like the groups in which we are members. We might feel affinity toward people from our home town, a connection with those who attend our university, or commiserate with the experience of people who share our gender identity, religion, or ethnicity. Liking yourself and the groups to which you belong is natural. The larger



An actual screenshot from an IAT (Implicit Association Test) that is designed to test a person's reaction time (measured in milliseconds) to an array of stimuli that are presented on the screen. This particular item is testing an individual's unconscious reaction towards members of various ethnic groups. [Image: Courtesy of Anthony Greenwald from Project Implicit]

issue, however, is that own-group preference often results in liking other groups less. And whether you recognize this "favoritism" as wrong, this trade-off is relatively automatic (unintended, immediate, and irresistible).

Social psychologists have developed several ways to measure this automatic preference, the most famous being the Implicit Association Test (IAT; Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002; Greenwald, McGhee, & Schwartz, 1998). The test itself is rather simple (and you can experience it yourself **here**). The IAT measures how quickly you can sort words or pictures into different categories. For example, if you were asked to categorize "ice cream" as good or bad, you might quickly categorize it as good. However, imagine if every time you ate ice cream, you got a brain freeze. When it comes time to categorize ice cream as good or bad, you may still categorize it as "good," but you will likely be a little slower—perhaps even fractions of a second slower-- in arriving at this judgment. This is how the IAT works: measuring tiny differences in the time it takes you to make judgments.

This is an especially useful way to measure potential biases because it does not simply ask people to openly report on the extent to which they discriminate against others. Instead, it measures how quickly people make judgments about the goodness or badness of various groups. The IAT is sensitive to very slight hesitations that result from having automatic or unconscious biases. People are generally faster at pairing their own group with "good" categories. In fact, this finding generally holds regardless of whether one's group is measured according race, age, religion, nationality, and even temporary, insignificant memberships.

It might be easy to dismiss the IAT findings of the all-too-human tendency toward faster, more favorable processing of one's own group. It turns out, however, that people's reaction time on the IAT predicts actual feelings about out-group members, decisions about them, and behavior toward them, especially nonverbal behavior (Greenwald, Poehlman, Uhlmann, & Banaji, 2009).

Type of Bias	Example	What It Shows
Automatic	Implicit Association Test	People link "good" & ingroup, "bad" & outgroup
Ambiguous	Social identity theory Self-categorized theory Aversive racism	People favor ingroup, distance from outgroup Same but emphasizes self as a member of ingroup People avoid outgroup, avoid their own prejudices
Ambivalent	Stereotype Content Model	People divide groups by warmth and competence

Table 2: Subtle Biases

For example, a job interviewer might have two qualified applicants; a man and a woman. Although the interviewer may not be "blatantly biased," their "automatic or implicit biases" may be harmful to one of the applicants. For example, the interviewer might hold a negative view of women and, without even realizing it, act distant and withdrawn while interviewing the female candidate. This sends subtle cues to the applicant that she is not being taken seriously, is not a good fit for the job, or is not likely to get hired. These small interactions can have devastating effects on the hopeful interviewee's ability to perform well (Word, Zanna, & Cooper, 1974).

Although this is unfair, sometimes the automatic associations—often driven by society's stereotypes—trump our own explicit values (Devine, 1989). Sadly, this can result in consequential discrimination, such as allocating fewer resources to disliked outgroups (Rudman & Ashmore, 2009).

Whether we are aware of it or not (and usually we're not), we sort the world into "us" and "them" categories. We are more likely to treat with bias or discrimination anyone we feel is outside our own group. [Image: Keira McPhee, https://goo.gl/gkaKBe, CC BY 2.0, https://goo.gl/BRvSA7]

Ambiguous Biases

The results from research using the IAT are consistent with social identity theory. Social identity theory (Tajfel, Billig, Bundy, & Flament, 1971) describes this tendency to favor one's own in-group over another's outgroup. As a result, outgroup disliking stems from this in-group liking (Brewer & Brown, 1998). For example, if two classes of

children want to play on the same soccer field, the classes will come to dislike each other not because of any real, objectionable traits about the other group. The dislike originates from each class's favoritism toward itself and the fact that only one group can play on the soccer field at a time. With this preferential perspective for one's own group, people are not punishing the other one so much as neglecting it in favor of their own. In our soccer example, one set of children will focus on their own desire to play without really regarding the similar desire of the other class as equal and legitimate. However, to justify preferential treatment, people often exaggerate the differences between their in-group and an outgroup. Specifically, people see members of an outgroup as more similar to one another in personality than they actually are. The result is seeing people who live in subsidized housing, or who like comic books, or who are religious, or who have autism as one homogenous group with little variation.

Spontaneously, people categorize people into groups just as we categorize furniture or food into one type or another. The difference is that we categories ourselves, as **self-categorization theory** points out (Turner, 1975). Because the attributes of group categories can be either good or bad, we tend to favor the groups with people like us and incidentally disfavor the others. In-group favoritism is an ambiguous form of bias because it disfavors the outgroup by exclusion. For example, authoritarian leaders tend to allocate more national resources to members of their own tribe, religious sect, or political party.

A specific case of comfort with the ingroup is called **aversive racism**, so-called because people do not like to admit their own racial biases to themselves or others (Dovidio & Gaertner, 2010). Tensions between, say, a White person's own good intentions, on the one hand, and discomfort with closely interacting with a Black person, on the other hand, may cause the White person to behave stiffly or be distracted. As a result, the White person may give a good excuse to avoid such awkward situations. Such a reaction will be ambiguous to both parties and difficult to interpret. Was the White person right to avoid the situation so that neither person would feel uncomfortable? Was the White person wrong because they will never learn to be comfortable if they avoid contact? Indicators of aversive racism correlate with discriminatory behavior, despite being the ambiguous result of good intentions gone bad.

Ambivalent Biases

Not all stereotypes of outgroups are all bad. For example, ethnic Asians living in the United States are commonly referred to as the **model minority** because of their perceived success in areas such as education, income, and social stability. Another example includes people who feel benevolent toward traditional women but hostile toward nontraditional women. Or even ageist people who feel fond of older adults but, at the same time, view them as incompetent

to support themselves and worry about the burden they place on public welfare programs. A simple way to understand these mixed feelings, across a variety of groups, results from the Stereotype Content Model shows that social groups are viewed according to their perceived warmth and competence. (Fiske, Cuddy, & Glick, 2007).

The stereotype content model attends to two major dimensions of evaluating other people: warmth and competence. First, people are interested in understanding the intentions of others. Like the guard at night saying: "Who goes there, friend or foe?" If the other group has good, cooperative intentions, we view them as "warm" and often consider them part of "our side." However, if the other group is "cold," we often view them as a threat and treat them accordingly. We also want to know whether the members of the group are competent enough to act on their good or ill intentions. These two simple dimensions—warmth and competence—together map how groups relate to each other in society.

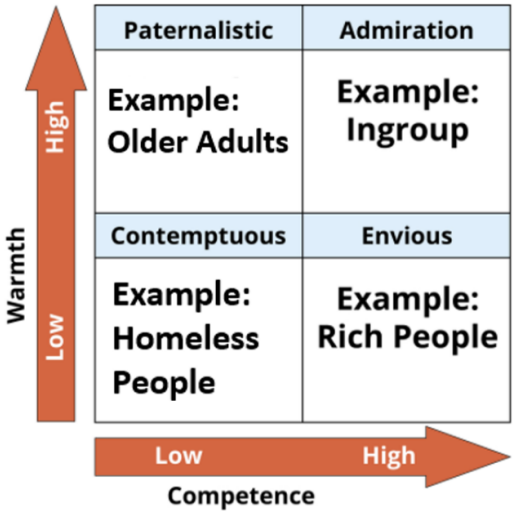


Figure 1: Stereotype Content Model - 4 kinds of stereotypes that form from perceptions of competence and warmth

Common stereotypes of people from all sorts of categories and occupations turn out to classify them along these two dimensions (see Figure 1). For example, the ingroup in most societies is the average citizen, seen as warm and competent. At another end of the spectrum are homeless people and drug addicts, stereotyped as not having good intentions (perhaps untrustworthy) and likewise being incompetent (unable) to do anything useful. Some group stereotypes are mixed, high on one dimension and low on the other. For example, rich people are often viewed as competent but cold. And a stereotypical "old person" would be seen as high in warmth but lower in competence. This is not to suggest that actual older people are

not competent, of course, but that they are not widely admired for their accumulated wisdom.

A group's position on the dimensions of warmth and competence dictate whether we relate to its members with admiration, dehumanizing contempt, competitive envy, or paternalistic caretaking. These four kinds of stereotypes and their associated emotional prejudices (see Figure 2) occur all over the world and apply to each society's own groups. These maps of the group terrain predict specific types of discrimination for specific kinds of groups.

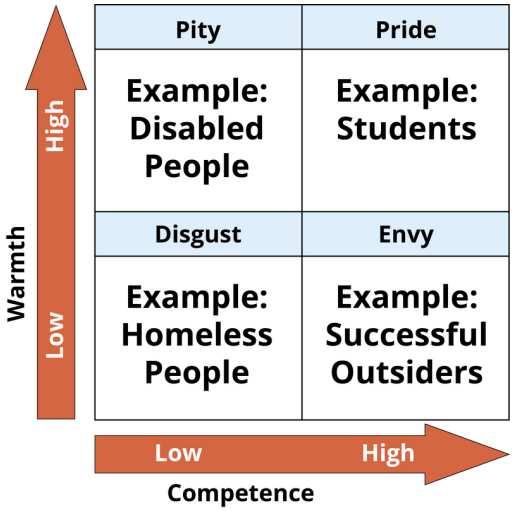


Figure 2: Combinations of perceived warmth and competence and the associated behaviors/ emotional prejudices.

Conclusion: Today's Prejudices

As the world becomes more interconnected—more collaborations between countries, more intermarrying between different groups—more and more people are encountering greater diversity of others in everyday life. Just ask yourself if you've ever been asked, "What are you?" This question is frequently asked to people about their ethnicity, national origin, gender identity, religion, and other group affiliations. Such a question would be preposterous if you were only surrounded by members of your own group. Categories, then, are becoming more and more uncertain, unclear, volatile, and complex (Bodenhausen & Peery, 2009). People's identities are multifaceted, intersecting across gender, race, class, age, region, and more. Identities are not so simple, but maybe as the 21st century unfurls, we will recognize each other by the content of our individual character instead of against the backdrop of stereotypes.

Outside Resources

Web: Website exploring the causes and consequences of prejudice.
http://www.understandingprejudice.org/

Web: Website that provides helpful information about prejudice including definition and statistics. This content is provided by OnlinePsychology@Pepperdine, the Online Master of Psychology program from Pepperdine University.
https://onlinepsych.pepperdine.edu/blog/prejudice-discrimination-coping-skills/

Discussion Questions

1. Do you know more people from different kinds of social groups than your parents did?
2. How often do you hear people criticizing groups without knowing anything about them?
3. Take the IAT. Could you feel that some associations are easier than others?
4. What groups illustrate ambivalent biases, seemingly competent but cold, or warm but incompetent?
5. Do you or someone you know believe that group hierarchies are inevitable? Desirable?
6. How can people learn to get along with people who seem different from them?

Vocabulary

Automatic
Automatic biases are unintended, immediate, and irresistible.

Aversive racism
Aversive racism is unexamined racial bias that the person does not intend and would reject, but that avoids inter-racial contact.

Blatant biases
Blatant biases are conscious beliefs, feelings, and behavior that people are perfectly willing to admit, are mostly hostile, and openly favor their own group.

Discrimination
Discrimination is behavior that advantages or disadvantages people merely based on their group membership.

Implicit Association Test
Implicit Association Test (IAT) measures relatively automatic biases that favor own group relative to other groups.

Model minority
A minority group whose members are perceived as achieving a higher degree of socioeconomic success than the population average.

Prejudice
Prejudice is an evaluation or emotion toward people merely based on their group membership.

Right-wing authoritarianism
Right-wing authoritarianism (RWA) focuses on value conflicts but endorses respect for obedience and authority in the service of group conformity.

Self-categorization theory
Self-categorization theory develops social identity theory's point that people categorize themselves, along with each other into groups, favoring their own group.

Social dominance orientation

Social dominance orientation (SDO) describes a belief that group hierarchies are inevitable in all societies and even good, to maintain order and stability.

Social identity theory
Social identity theory notes that people categorize each other into groups, favoring their own group.

Stereotype Content Model
Stereotype Content Model shows that social groups are viewed according to their perceived warmth and competence.

Stereotypes
Stereotype is a belief that characterizes people based merely on their group membership.

Subtle biases
Subtle biases are automatic, ambiguous, and ambivalent, but real in their consequences.

References

Altemeyer, B. (2004). Highly dominating, highly authoritarian personalities. *The Journal of Social Psychology, 144*(4), 421-447. doi:10.3200/SOCP.144.4.421-448

Altemeyer, B. (1988). *Enemies of freedom: Understanding right-wing authoritarianism.* San Francisco: Jossey-Bass.

Bodenhausen, G. V., & Peery, D. (2009). Social categorization and stereotyping in vivo: The VUCA challenge. *Social and Personality Psychology Compass, 3*(2), 133-151. doi:10.1111/j.1751-9004.2009.00167.x

Brewer, M. B., & Brown, R. J. (1998). Intergroup relations. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The Handbook of Social Psychology, Vols. 1 and 2* (4th ed.) (pp. 554-594). New York: McGraw-Hill.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*(1), 5-18. doi:10.1037/0022-3514.56.1.5

Dovidio, J. F., & Gaertner, S. L. (2010). Intergroup bias. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of Social Psychology, Vol. 2* (5th ed.) (pp. 1084-1121). Hoboken, NJ: John Wiley.

Fiske, S. T., Cuddy, A. J. C., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences, 11*(2), 77-83. doi:10.1016/j.tics.2006.11.005

Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 109*(1), 3-25. doi:10.1037/0033-295X.109.1.3

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*(6), 1464-1480. doi:10.1037/0022-3514.74.6.1464

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*(1), 17-41. doi:10.1037/a0015575

Katz, D., & Braly, K. (1933). Racial stereotypes of one hundred college students. *The Journal of Abnormal and Social Psychology, 28*(3), 280-290. doi:10.1037/h0074049

Manson, J. H. (2020). Right-wing authoritarianism, left-wing authoritarianism, and pandemic-mitigation authoritarianism. *Personality and Individual Differences, 167*, 1-6. doi: 10.1016/j.paid.2020.110251

Misra, S., Le, P.T., Goldmann, E. & Yang, L.H. (2020). Psychological impact of anti-Asian stigma due to COVID-19 pandemic: A call for research, practice, and policy responses. *Psychological*

Trauma: Theory, research, practice, and policy, 12(5), 461-464. doi:10.1037/tra0000821

Rudman, L. A., & Ashmore, R. D. (2007). Discrimination and the implicit association test. *Group Processes & Intergroup Relations, 10*(3), 359-372. doi:10.1177/1368430207078696

Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression.* New York: Cambridge University Press.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology, 1*(2), 149-178. doi:10.1002/ejsp.2420010202

Turner, J. C. (1975). Social comparison and social identity: Some prospects for intergroup behaviour. *European Journal of Social Psychology, 5*(1), 5-34. doi:10.1002/ejsp.2420050102

Word, C. O., Zanna, M. P., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology, 10*(2), 109-120. doi:10.1016/0022-1031(74)90059-6

24
Aggression and Violence

Brad J. Bushman

This module discusses the causes and consequences of human aggression and violence. Both internal and external causes are considered. Effective and ineffective techniques for reducing aggression are also discussed.

Learning Objectives

- Explain the important components of the definition of aggression, and explain how aggression differs from violence.
- Explain whether people think the world is less violent now than in the past, and whether it actually is less violent. If there is a discrepancy between perception and reality, how can it be resolved?
- Identify the internal causes and external causes of aggression. Compare and contrast how the inner and external causes differ.
- Identify effective and ineffective approaches to reducing aggression.

Introduction

"*Beware of the dark side. Anger, fear, aggression; the dark side of the Force are they.*"

-Yoda, renowned Jedi master in the *Star Wars* universe

Aggression is indeed the dark side of human nature. Although aggression may have been

adaptive in our ancient past, it hardly seems adaptive today. For example, on 14 December 2012 Adam Lanza, age 20, first killed his mother in their home, and then went to an elementary school in Newtown, Connecticut and began shooting, killing 20 children and 6 school employees, before killing himself. When incidents such as these happen, we want to know what caused them. Although it is impossible to know what motivated a particular individual such as Lanza to commit the Newtown school shooting, for decades researchers have studied the internal and external factors that influence aggression and violence. We consider some of these factors in this module.

How much do internal causes such as personality versus external causes such as situations play in aggression? [Image: Dan4th Nicolas, https://goo.gl/RtC4Hi, CC BY 2.0, https://goo.gl/9uSnqN]

Before we get too far, let's begin by defining the term "aggression." Laypeople and researchers often use the term "aggression" differently. Laypeople might describe a salesperson that tries really hard to sell them something as "aggressive." The salesperson does not, however, want to harm potential customers. Most researchers define **aggression** as any behavior intended to harm another person who does not want to be harmed (Baron & Richardson, 1994). This definition includes three important features. First, aggression is a behavior—you can see it. Aggression is not an internal response, such as having angry feelings or aggressive thoughts (although such internal responses can increase the likelihood of actual aggression). Second, aggression is intentional rather than accidental. For example, a dentist might intentionally give a patient a shot of Novocain (which hurts!), but the goal is to help rather than harm the patient. Third, the victim wants to avoid the harm. Thus, suicide and sadomasochistic sex play would not be called aggression because the victim actively seeks to be harmed.

Researchers and laypeople also differ in their use of the term violence. A meteorologist might call a storm "violent" if it has intense winds, rain, thunder, lightning, or hail. Researchers define **violence** as aggression intended to cause extreme physical harm (e.g., injury, death). Thus, all violent acts are aggressive, but not all aggressive acts are violent. For example, screaming and swearing at another person is aggressive, but not violent.

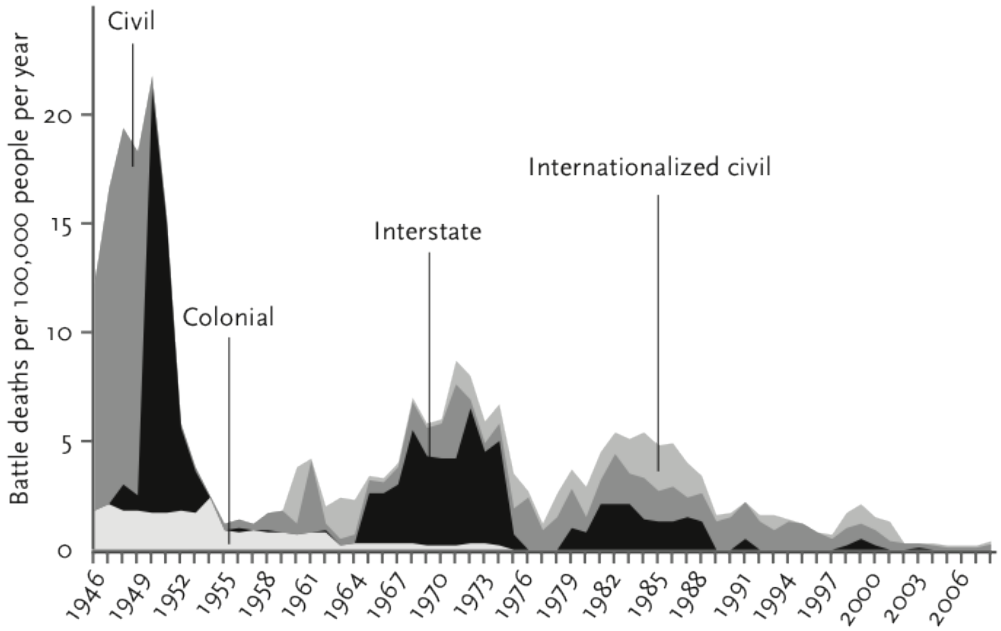


Figure 1. Rate of battle deaths in state-based armed conflicts, 1946-2008. Civilian and military battle deaths in state-based armed conflicts, divided by world population. Sources: UCDP/PRIO Armed Conflict Dataset; see Human Security Report Project (2007), based on data from Lacina and Gleditsch (2005), updated in 2010 by Tara Cooper. "Best" estimate used when available; otherwise the geometric mean of the "High" and "Low" estimates is used. World population figures from U.S. Census Bureau (2010). Population data for 1946-1949 were taken from McEvedy and Jones (1978), and multiplied by 1.01 to make them commensurate with the rest. From Pinker (2011, p. 301). Copyright permission granted by Steven Pinker.

The good news is that the level of violence in the world is decreasing over time—by millennia, century, and even decade (Pinker, 2011). Studies of body counts, such as the proportion of prehistoric skeletons with axe and arrowhead wounds, suggest that prehistoric societies were far more violent than those today. Estimates show that if the wars of the 20th century had killed the same proportion of the population as ancient tribal wars did, then the death toll would have been 20 times higher—2 billion rather than 100 million. More recent data show that murder rates in Europe have decreased dramatically since the Middle Ages. For example, estimated murders in England dropped from 24 per 100,000 in the 14th century to 0.6 per 100,000 by the early 1960s. The major decline in violence occurred in the 17th century during the "Age of Reason," which began in the Netherlands and England and then spread to other European countries. Global violence has also steadily decreased since the middle of the 20th century. For example, the number of battle deaths in interstate wars has declined from more than 65,000 per year in the 1950s to fewer than 2,000 per year in the 2000s. There have also been global declines in the number of armed conflicts and combat deaths, the number of military coups, and the number of deadly violence campaigns waged against civilians. For example, Figure 1 shows the number of battle deaths per 100,000 people per year over 60

years (see Pinker, 2011, p. 301). As can be seen, battle deaths of all types (civil, colonial, interstate, internationalized civil) have decreased over time. The claim that violence has decreased dramatically over time may seem hard to believe in today's digital age when we are constantly bombarded by scenes of violence in the media. In the news media, the top stories are the most violent ones—"If it bleeds it leads," so the saying goes. Citizen journalists around the world also use social media to "show and tell" the world about unjustified acts of violence. Because violent images are more available to us now than ever before, we incorrectly assume that violence levels are also higher. Our tendency to overestimate the amount of violence in the world is due to the **availability heuristic**, which is the tendency to judge the frequency or likelihood of an event by the ease with which relevant instances come to mind. Because we are frequently exposed to scenes of violence in the mass media, acts of violence are readily accessible in memory and come to mind easily, so we assume violence is more common than it actually is.

Human aggression is very complex and is caused by multiple factors. We will consider a few of the most important internal and external causes of aggression. Internal causes include anything the individual brings to the situation that increases the probability of aggression. External causes include anything in the environment that increases the probability of aggression. Finally, we will consider a few strategies for reducing aggression.

Internal Factors

Age

At what age are people most aggressive? You might be surprised to learn that toddlers 1 to 3 years old are most aggressive. Toddlers often rely on physical aggression to resolve conflict and get what they want. In free play situations, researchers have found that 25 percent of their interactions are aggressive (Tremblay, 2000). No other group of individuals (e.g., Mafia, street gangs) resorts to aggression 25 percent of the time. Fortunately for the rest of us, most toddler aggression isn't severe enough to qualify as violence because they don't use weapons, such as guns and knives. As children grow older, they learn to inhibit their aggressive impulses and resolve conflict using nonaggressive means, such as compromise and negotiation. Although most people become less aggressive over time, a small subset of people becomes *more* aggressive over time. The most dangerous years for this small subset of people (and for society as a whole) are late adolescence and early adulthood. For example, 18- to 24-year-olds commit most murders in the U.S. (U.S. Federal Bureau of Investigation, 2012).

Gender

At all ages, males tend to be more physically aggressive than females. However, it would be wrong to think that females are never physically aggressive. Females do use physical aggression, especially when they are provoked by other females (Collins, Quigley, & Leonard, 2007). Among heterosexual partners, women are actually slightly *more* likely than men to use physical aggression (Archer, 2000). However, when men do use physical aggression, they are more likely than women to cause serious injuries and even death to their partners. When people are strongly provoked, gender differences in aggression shrink (Bettencourt & Miller, 1996).

Females are much more likely than males to engage in **relational aggression**, defined as intentionally harming another person's social relationships, feelings of acceptance, or inclusion within a group (Crick & Grotpeter, 1995). Examples of relational aggression include gossiping, spreading rumors, withdrawing affection to get what you want, excluding someone from your circle of friends, and giving someone the "silent treatment."

Both physical and relational aggression are serious problems in schools and among adolescents. [Image: Elizabet21, https://goo.gl/klf5Pg, CC BY-SA 4.0, https://goo.gl/vUS6LW]

Personality Traits Related to Aggression

Some people seem to be cranky and aggressive almost all the time. Aggressiveness is almost as stable as intelligence over time (Olweus, 1979). Individual differences in aggressiveness are often assessed using self-report questionnaires such as the "Aggression Questionnaire" (Buss & Perry, 1992), which includes items such as "I get into fights a little more than the average person" and "When frustrated, I let my irritation show." Scores on these questionnaires are positively related to actual aggressive and violent behaviors (Anderson & Bushman, 1997).

The components of the "Dark Triad of Personality"—narcissism, psychopathy, and Machiavellianism—are also related to aggression (Paulhus & Williams, 2002). The term "narcissism" comes from the mythical Greek character Narcissus who fell in love with his own image reflected in the water. Narcissists have inflated egos, and they lash out aggressively against others when their inflated egos are threatened (e.g., Bushman & Baumeister, 1998). It is a common myth that aggressive people have low self-esteem (Bushman et al., 2009). Psychopaths are people who lack empathy for others. One of the strongest deterrents of aggression is empathy, which psychopaths lack. The term "Machiavellianism" comes from the Italian philosopher and writer Niccolò Machiavelli, who advocated using any means necessary to gain raw political power, including aggression and violence.

Hostile Cognitive Biases

One key to keeping aggression in check is to give people the benefit of the doubt. Some people, however, do just the opposite. There are three hostile cognitive biases. The **hostile attribution bias** is the tendency to perceive ambiguous actions by others as hostile actions (Dodge, 1980). For example, if a person bumps into you, a hostile attribution would be that the person did it on purpose and wants to hurt you. The **hostile perception bias** is the tendency to perceive social interactions in general as being aggressive (Dill et al., 1997). For example, if you see two people talking in an animated fashion, a hostile perception would be that they are fighting with each other. The **hostile expectation bias** is the tendency to expect others to react to potential conflicts with aggression (Dill et al., 1997). For example, if you bump into another person, a hostile expectation would be that the person will assume that you did it on purpose and will attack you in return. People with hostile cognitive biases view the world as a hostile place.

External Factors

Frustration and Other Unpleasant Events

Are there some situations that are particularly frustrating to you – friends not texting you back, no wi-fi connection available, someone walking at a slow pace in front of you? These situations make make you more likely than usual to behave aggressively. [Image: Syd Daoust, https://goo.gl/Qn9HMu, CC BY-NC-SA 2.0, https://goo.gl/iF4hmM]

One of the earliest theories of aggression proposed that aggression is caused by frustration, which was defined as blocking goal-directed behavior (Dollard et al., 1939). For example, if you are standing in a long line to purchase a ticket, it is frustrating when someone crowds in front of you. This theory was later expanded to say that all unpleasant events, not just frustrations, cause aggression (Berkowitz, 1989). Unpleasant events such as frustrations, provocations, social rejections, hot temperatures, loud noises, bad air (e.g., pollution, foul odors, secondhand smoke), and crowding can all cause aggression. Unpleasant events automatically trigger a fight–flight response.

Alcohol

Alcohol has long been associated with aggression and violence. In fact, sometimes alcohol is deliberately used to promote aggression. It has been standard practice for many centuries to issue soldiers some alcohol before they went into battle, both to increase aggression and reduce fear (Keegan, 1993). There is ample evidence of a link between alcohol and aggression, including evidence from experimental studies showing that consuming alcohol can *cause* an increase in aggression (e.g., Lipsey, Wilson, Cohen, & Derzon, 1997). Most theories of intoxicated aggression fall into one of two categories: (a) pharmacological theories that focus on how alcohol disrupts cognitive processes, and (b) expectancy theories that focus on how social attitudes about alcohol facilitate aggression. Normally, people have strong inhibitions against behaving aggressively, and pharmacological models focus on how alcohol reduces these inhibitions. To use a car analogy, alcohol increases aggression by cutting the brake line rather than by stepping on the gas. How does alcohol cut the brake line? Alcohol disrupts cognitive executive functions that help us organize, plan, achieve goals, and inhibit inappropriate behaviors (Giancola, 2000). Alcohol also reduces glucose, which provides energy to the brain for self-control (Gailliot & Baumeister, 2007). Alcohol has a "myopic" effect on attention—it causes people to focus attention only on the most salient features of a situation and not pay attention to more subtle features (Steele & Josephs, 1990). In some places where

alcohol is consumed (e.g., crowded bar), provocations can be salient. Alcohol also reduces self-awareness, which decreases attention to internal standards against behaving aggressively (Hull, 1981).

According to expectancy theories, alcohol increases aggression because people expect it to. In our brains, alcohol and aggression are strongly linked together. Indeed, research shows that subliminally exposing people to alcohol-related words (e.g., vodka) can make them more aggressive, even though they do not drink one drop of alcohol (Subra et al., 2010). In many cultures, drinking occasions are culturally agreed-on "time out" periods where people are not held responsible for their actions (MacAndrew & Edgerton, 1969). Those who behave aggressively when intoxicated sometimes "blame the bottle" for their aggressive actions.

Does this research evidence mean that aggression is somehow contained in alcohol? No. Alcohol increases rather than causes aggressive tendencies. Factors that normally increase aggression (e.g., frustrations and other unpleasant events, aggressive cues) have a stronger effect on intoxicated people than on sober people (Bushman, 1997). In other words, alcohol mainly seems to increase aggression in combination with other factors. If someone insults or attacks you, your response will probably be more aggressive if you are drunk than sober. When there is no provocation, however, the effect of alcohol on aggression may be negligible. Plenty of people enjoy an occasional drink without becoming aggressive.

Reducing Aggression

Most people are greatly concerned about the amount of aggression in society. Aggression directly interferes with our basic needs of safety and security. Thus, it is urgent to find ways to reduce aggression. Because there is no single cause for aggression, it is difficult to design effective treatments. A treatment that works for one individual may not work for another individual. And some extremely aggressive people, such as psychopaths, are considered to be untreatable. Indeed, many people have started to accept the fact that aggression and violence have become an inevitable, intrinsic part of our society. This being said, there certainly are things that can be done to reduce aggression and violence. Before discussing some effective methods for reducing aggression, two ineffective methods need to be debunked: catharsis and punishment.

Catharsis

The term **catharsis** dates back to Aristotle and means to cleanse or purge. Aristotle taught that viewing tragic plays gave people emotional release from negative emotions. In Greek

tragedy, the heroes didn't just grow old and retire—they are often murdered. Sigmund Freud revived the ancient notion of catharsis by proposing that people should express their bottled-up anger. Freud believed if they repressed it, negative emotions would build up inside the individual and surface as psychological disorders. According to catharsis theory, acting aggressively or even viewing aggression purges angry feelings and aggressive impulses into harmless channels. Unfortunately for catharsis theory, research shows the opposite often occurs (e.g., Geen & Quanty, 1977).

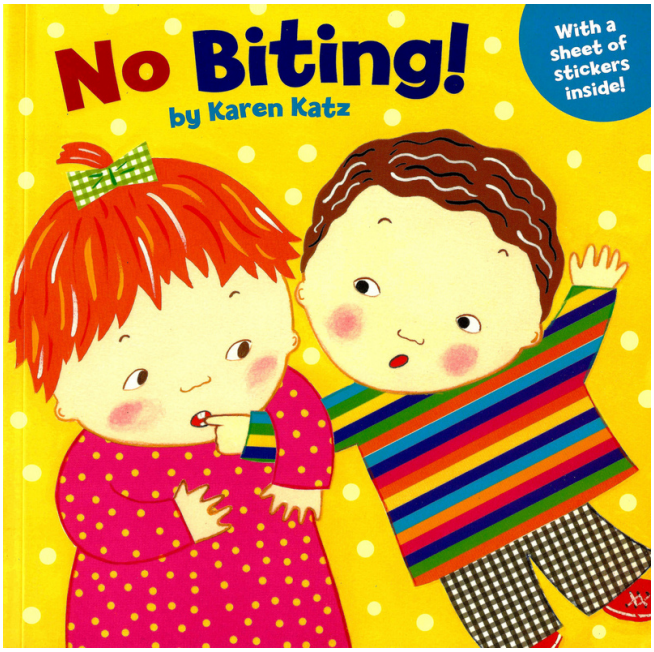
Catharsis is one of the ways to appropriately deal with aggression because it make anger impossible to sustain. [Image: Peter Conlan https://unsplash.com/photos/LEgwEaBVGMo https://unsplash.com/license]

If venting anger doesn't get rid of it, what does? All emotions, including anger, consist of bodily states (e.g., arousal) and mental meanings. To get rid of anger, you can focus on either of those. Anger can be reduced by getting rid of the arousal state, such as by relaxing, listening to calming music, or counting to 10 before responding. Mental tactics can also reduce anger, such as by reframing the situation or by distracting oneself and turning one's attention to more pleasant topics. Incompatible behaviors can also help get rid of anger. For example, petting a puppy, watching a comedy, kissing your lover, or helping someone in need, because those acts are incompatible with anger and, therefore, they make the angry state impossible to sustain (e.g., Baron, 1976). Viewing the provocative situation from a more distant perspective, such as that of a fly on the wall, also helps (Mischkowski, Kross, & Bushman, 2012).

Punishment

Most cultures assume that punishment is an effective way to deter aggression and violence. Punishment is defined as inflicting pain or removing pleasure for a misdeed. Punishment can range in intensity from spanking a child to executing a convicted killer. Parents use it, organizations use it, and governments use it, but does it work? Today, aggression researchers have their doubts. Punishment is most effective when it is: (a) intense, (b) prompt, (c) applied consistently and with certainty, (d) perceived as justified, and (e) possible to replace the undesirable punished behavior with a desirable alternative behavior (Berkowitz, 1993). Even if punishment occurs under these ideal conditions, it may only suppress aggressive behavior temporarily, and it has several undesirable long-term consequences. Most important, punishment models the aggressive behavior it seeks to prevent. Longitudinal studies have shown that children who are physically punished by their parents at home are more aggressive outside the home, such as in school (e.g., Lefkowitz, Huesmann, & Eron, 1978). Because punishment is unpleasant, it can also trigger aggression just like other unpleasant events.

Successful Interventions



One of the ways to circumvent the violent reactions of children who may eventually grow up to be aggressive adults is to model constructive responses to stress and frustration. [Image: Vernon Barford School Library, https://goo.gl/ByOiBc, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Although specific aggression intervention strategies cannot be discussed in any detail here, there are two important general points to be made. First, successful interventions target as many causes of aggression as possible and attempt to tackle them collectively. Interventions that are narrowly focused at removing a single cause of aggression, however well conducted, are bound to fail. In general, external causes are easier to change than internal causes. For example, one can reduce alcohol consumption, and make unpleasant situations more tolerable (e.g., use air conditioners when it is hot, reduce crowding in stressful environments such as prisons and psychiatric wards).

Second, aggression problems are best

treated in early development, when people are still malleable. As was mentioned previously, aggression is very stable over time, almost as stable as intelligence. If young children display excessive levels of aggression (often in the form of hitting, biting, or kicking), it places them at high risk for becoming violent adolescents and even violent adults. It is much more difficult to alter aggressive behaviors when they are part of an adult personality, than when they are still in development.

Yoda warned that anger, fear, and aggression are the dark side of the Force. They are also the dark side of human nature. Fortunately, aggression and violence are decreasing over time, and this trend should continue. We also know a lot more now than ever before about what factors increase aggression and how to treat aggressive behavior problems. When Luke Skywalker was going to enter the dark cave on Degobah (the fictional *Star Wars* planet), Yoda said, "Your weapons, you will not need them." Hopefully, there will come a time in the not-too-distant future when people all over the world will no longer need weapons.

Outside Resources

Book: Bushman, B. J., & Huesmann, L. R. (2010). Aggression. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), Handbook of social psychology (5th ed.) (pp. 833-863). New York: John Wiley & Sons.

TED Talk: Zak Ebrahim
https://www.ted.com/talks/zak_ebrahim_i_am_the_son_of_a_terrorist_here_s_how_i_chose_peace?language=en#t-528075

Video: From the Inquisitive Mind website, Brad Bushman conducts a short review of terminology and important research concerning aggression and violence.
https://www.youtube.com/watch?v=hGfwflwazJ4

Discussion Questions

1. Discuss whether different examples (hypothetical and real) meet the definition of aggression and the definition of violence.
2. Consider the various causes of aggression described in this module and elsewhere, and discuss whether they can be changed to reduce aggression, and if so how.

Vocabulary

Aggression
Any behavior intended to harm another person who does not want to be harmed.

Availability heuristic
The tendency to judge the frequency or likelihood of an event by the ease with which relevant instances come to mind.

Catharsis
Greek term that means to cleanse or purge. Applied to aggression, catharsis is the belief that acting aggressively or even viewing aggression purges angry feelings and aggressive impulses into harmless channels.

Hostile attribution bias
The tendency to perceive ambiguous actions by others as aggressive.

Hostile expectation bias
The tendency to assume that people will react to potential conflicts with aggression.

Hostile perception bias
The tendency to perceive social interactions in general as being aggressive.

Punishment
Inflicting pain or removing pleasure for a misdeed. Punishment decreases the likelihood that a behavior will be repeated.

Relational aggression
Intentionally harming another person's social relationships, feelings of acceptance, or inclusion within a group.

Violence
Aggression intended to cause extreme physical harm, such as injury or death.

References

Anderson, C. A., & Bushman, B. J. (1997). External validity of "trivial" experiments: The case of laboratory aggression. *Review of General Psychology, 1* (pp. 19-41).

Archer, J. (2000). Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin, 126* (pp. 651-680).

Baron, R. A. (1976). The reduction of human aggression: A field study of the influence of incompatible reactions. *Journal of Applied Social Psychology, 6* (pp. 260-274).

Baron, R. A., & Richardson, D. R. (1994). *Human aggression (2nd ed.)*. New York: Plenum Press.

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106*, 59-73.

Bettencourt, B. A., & Miller, N. (1996). Gender differences in aggression as a function of provocation: A meta-analysis. *Psychological Bulletin, 119* (pp. 422-447).

Bushman, B. J. (1997). Effects of alcohol on human aggression: Validity of proposed explanations. In D. Fuller, R. Dietrich, & E. Gottheil (Eds.), *Recent developments in alcoholism: Alcohol and violence (Vol. 13)* (pp. 227-243). New York: Plenum Press.

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology, 75*, 219-229.

Bushman, B. J., Baumeister, R. F., Thomaes, S., Ryu, E., Begeer, S., & West, S. G. (2009). Looking again, and harder, for a link between low self-esteem and aggression. *Journal of Personality, 77(2)* (pp. 427-446).

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63* (pp. 452-459).

Collins, R. L., Quigley, B., Leonard, K. (2007). Women's physical aggression in bars: An event-based examination of precipitants and predictors of severity. *Aggressive Behavior, 33(4)* (pp. 304-313).

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66* (pp. 710-722).

Dill, K. E., Anderson, C. A., Anderson, K. B., & Deuser, W. E. (1997). Effects of aggressive personality on social expectations and social perceptions. *Journal of Research in Personality, 31* (pp. 272-292).

Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development, 51* (pp. 620-635).

Dollard, J., Doob, L., Miller, N., Mowrer, O., & Sears, R. (1939). *Frustration and aggression.* New Haven, CT: Yale University Press.

Gailliot, M. T., & Baumeister, R. F. (2007). The physiology of willpower: Linking blood glucose to self-control. *Personality and Social Psychology Review, 11(4)* (pp. 303-327).

Geen, R. G. & Quanty M. B. (1977). The catharsis of aggression: An evaluation of a hypothesis. In L. Berkowitz (Ed.), *Advances in experimental social psychology (Vol. 10)* (pp. 1-37). New York: Academic Press.

Giancola, P. R. (2000). Executive functioning: A conceptual framework for alcohol-related aggression. *Experimental Clinical Psychopharmacology, 8* (pp. 576-597).

Hull, J. G. (1981). A self-awareness model of the causes and effects of alcohol consumption. *Journal of Abnormal Psychology, 90* (pp. 586-600).

Human Security Report Project (2007). *Human Security Brief 2007.* Vancouver, B.C., Canada: Human Security Report Project

Keegan, J. (1993). *A history of warfare*. New York: Knopf.

Lacina, B., & Gleditsch, N. P. (2005). Monitoring trends in global conflict: A new database in battle deaths. *European Journal of Population, 21*, 145-166.

Lefkowitz, M. M., Huesmann, L. R., & Eron, L. D. (1978). Parental punishment: A longitudinal analysis of effects. *Archives of General Psychiatry, 35(2*), 186-191.

Lipsey, M. W., Wilson, D. B., Cohen M. A., & Derzon, J. H. (1997). Is there a causal relationship between alcohol use and violence? A synthesis of the evidence. In M. Galanter (Ed.), *Recent developments in alcoholism: Vol. 13. Alcohol and violence: Epidemiology, neurobiology, psychology, and family issues,* (pp. 245-282). New York: Plenum Press.

MacAndrew, C., & Edgerton, R. (1969). *Drunken comportment: A social explanation.* Chicago: Aldine.

McEvedy, C., & Jones, R. (1978). *Atlas of world population history.* London: A. Lane.

Mischkowski, D., Kross, E., & Bushman, B. J. (2012). Flies on the wall are less aggressive: Self-distanced reflection reduces angry feelings, aggressive thoughts, and aggressive behaviors. *Journal of Experimental Social Psychology, 48*, 1187-1191.

Olweus, D. (1979). The stability of aggressive reaction patterns in males: A review. *Psychological Bulletin, 86,* 852-875.

Paulhus, D. L, & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality, 36(6)* (pp. 556-563).

Pinker, S. (2011). *The better angels of our nature*. New York: Viking.

Steele, C. M., & Josephs, R. A. (1990). Alcohol myopia: Its prized and dangerous effects. *American Psychologist, 45* (pp. 921-933).

Subra, B., Muller, D., Bègue, L., Bushman, B. J., & Delmas, F. (2010). Effects of alcohol and weapon cues on aggressive thoughts and behaviors. *Personality and Social Psychology Bulletin, 36(8)* (pp. 1052-1057).

Tremblay, R. E. (2000). The development of aggressive behavior during childhood: What have we learned in the past century? *International Journal of Behavioral Development, 24(2)* (pp. 129-141).

U.S. Census Bureau (2010). International data base (IDB): Total midyear population for the world: 1950-2020. http://www.census.gov/ipc/wwww/idb/worldpop.php

U.S. Federal Bureau of Investigation. (2012). *Uniform crime reports.* Washington, DC: U.S. Government Printing Office.

25
Attraction and Beauty

Robert G. Franklin & Leslie Zebrowitz

More attractive people elicit more positive first impressions. This effect is called the attractiveness halo, and it is shown when judging those with more attractive faces, bodies, or voices. Moreover, it yields significant social outcomes, including advantages to attractive people in domains as far-reaching as romance, friendships, family relations, education, work, and criminal justice. Physical qualities that increase attractiveness include youthfulness, symmetry, averageness, masculinity in men, and femininity in women. Positive expressions and behaviors also raise evaluations of a person's attractiveness. Cultural, cognitive, evolutionary, and overgeneralization explanations have been offered to explain why we find certain people attractive. Whereas the evolutionary explanation predicts that the impressions associated with the halo effect will be accurate, the other explanations do not. Although the research evidence does show some accuracy, it is too weak to satisfactorily account for the positive responses shown to more attractive people.

Learning Objectives

- Learn the advantages of attractiveness in social situations.
- Know what features are associated with facial, body, and vocal attractiveness.
- Understand the universality and cultural variation in attractiveness.
- Learn about the mechanisms proposed to explain positive responses to attractiveness.

We are ambivalent about attractiveness. We are enjoined not to "judge a book by its cover," and told that "beauty is only skin deep." Just as these warnings indicate, our natural tendency

is to judge people by their appearance and to prefer those who are beautiful. The attractiveness of peoples' faces, as well as their bodies and voices, not only influences our choice of romantic partners, but also our impressions of people's traits and important social outcomes in areas that have nothing to do with romance. This module reviews these effects of attractiveness and examines what physical qualities increase attractiveness and why.

The Advantages of Attractiveness

Advertisements and films tend to showcase attractive people. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Attractiveness is an asset. Although it may be no surprise that attractiveness is important in romantic settings, its benefits are found in many other social domains. More attractive people are perceived more positively on a wide variety of traits, being seen as more intelligent, healthy, trustworthy, and sociable. Although facial attractiveness has received the most research attention (Eagly, Ashmore, Makhijani, & Longo, 1991), people higher in body or vocal attractiveness also create more positive impressions (Riggio, Widaman, Tucker, & Salinas, 1991; Zuckerman & Driver, 1989). This advantage is termed the attractiveness halo effect, and it is widespread. Not only are attractive adults judged more positively than their less attractive peers, but even attractive babies are viewed more positively by their own parents, and strangers consider them more healthy, affectionate, attached to mother, cheerful, responsive, likeable, and smart (Langlois et al., 2000). Teachers not only like attractive children better but also perceive them as less likely to misbehave, more intelligent, and even more likely to get advanced degrees. More positive impressions of those judged facially attractive are shown across many cultures, even within an isolated indigenous tribe in the Bolivian rainforest (Zebrowitz et al., 2012).

Advantages of High Attractiveness
First Impressions
Mating Prospects
Parent and Peer Favoritism
Education and Employment
Electoral Success
Judicial Outcomes

Attractiveness not only elicits positive trait

impressions, but it also provides advantages in a wide variety of social situations. In a classic study, attractiveness, rather than measures of personality or intelligence, predicted whether individuals randomly paired on a blind date wanted to contact their partner again (Walster, Aronson, Abrahams, & Rottman, 1966). Although attractiveness has a greater influence on men's romantic preferences than women's (Feingold, 1990), it has significant effects for both sexes. Attractive men and women become sexually active earlier than their less attractive peers. Also, attractiveness in men is positively related to the number of short-term, but not long-term, sexual partners, whereas the reverse is true for women (Rhodes, Simmons, & Peters, 2005). These results suggest that attractiveness in both sexes is associated with greater reproductive success, since success for men depends more on short-term mating opportunities—more mates increases the probability of offspring—and success for women depends more on long-term mating opportunities—a committed mate increases the probability of offspring survival. Of course, not everyone can win the most attractive mate, and research shows a "matching" effect. More attractive people expect to date individuals higher in attractiveness than do unattractive people (Montoya, 2008), and actual romantic couples are similar in attractiveness (Feingold, 1988). The appeal of attractive people extends to platonic friendships. More attractive people are more popular with their peers, and this is shown even in early childhood (Langlois et al., 2000).

The *attractiveness halo* is also found in situations where one would not expect it to make such a difference. For example, research has shown that strangers are more likely to help an attractive than an unattractive person by mailing a lost letter containing a graduate school application with an attached photograph (Benson, Karabenick, & Lerner, 1976). More attractive job applicants are preferred in hiring decisions for a variety of jobs, and attractive people receive higher salaries (Dipboye, Arvey, & Terpstra, 1977; Hamermesh & Biddle, 1994; Hosoda, Stone-Romero, & Coats, 2003). Facial attractiveness also affects political and judicial outcomes. More attractive congressional candidates are more likely to be elected, and more attractive defendants convicted of crimes receive lighter sentences (Stewart, 1980; Verhulst, Lodge, & Lavine, 2010). Body attractiveness also contributes to social outcomes. A smaller percentage of overweight than normal-weight college applicants are admitted despite similar high school records (Canning & Mayer, 1966), parents are less likely to pay for the education of their heavier weight children (Crandall, 1991), and overweight people are less highly recommended for jobs despite equal qualifications (Larkin & Pines, 1979). Voice qualities also have social outcomes. College undergraduates express a greater desire to affiliate with other students who have more attractive voices (Miyake & Zuckerman, 1993), and politicians with more attractive voices are more likely to win elections (Gregory & Gallagher, 2002; Tigue, Borak, O'Connor, Schandl, & Feinberg, 2012). These are but a few of the research findings clearly demonstrating that we are unable to adhere to the conventional wisdom not to judge a book by its cover.

What Makes a Person Attractive?

Most research investigating what makes a person attractive has focused on sexual attraction. However, attraction is a multifaceted phenomenon. We are attracted to infants (nurturant attraction), to friends (communal attraction), and to leaders (respectful attraction). Although some facial qualities may be universally attractive, others depend on the individual being judged as well as the "eye of the beholder." For example, babyish facial qualities are essential to the facial attractiveness of infants, but detract from the charisma of male leaders (Hildebrandt & Fitzgerald, 1979; Sternglanz, Gray, & Murakami, 1977; Mueller & Mazur, 1996), and the sexual attractiveness of particular facial qualities depends on whether the viewer is evaluating someone as a short-term or a long-term mate (Little, Jones, Penton-Voak, Burt, & Perrett, 2002). The fact that attractiveness is multifaceted is highlighted in research suggesting that attraction is a dual process, combining sexual and aesthetic preferences. More specifically, women's overall ratings of men's attractiveness are explained both by their ratings of how appealing a man is for a sexual situation, such as a potential date, and also by their ratings of how appealing he is for a nonsexual situation, such as a potential lab partner (Franklin & Adams, 2009). The dual process is further revealed in the finding that different brain regions are involved in judging sexual versus nonsexual attractiveness (Franklin & Adams, 2010).

More attractive facial features include youthfulness, unblemished skin, symmetry, a facial configuration that is close to the population average, and femininity in women or masculinity in men, with smaller chins, higher eyebrows, and smaller noses being some of the features that are more feminine/less masculine. Similarly, more feminine, higher-pitched voices are more attractive in women and more masculine, lower-pitched voices are more attractive in men (Collins, 2000; Puts, Barndt, Welling, Dawood, & Burriss, 2011). In the case of bodies, features that increase attractiveness include a more sex-typical waist-to-hip ratio—narrower waist than hips for women but not for men—as well as a physique that is not emaciated or grossly obese. Negative reactions to obesity are present from a young age. For example, a classic study found that when children were asked to rank-order their preferences for children with various disabilities who were depicted in pictures, the overweight child was

Hallmarks of High Attractiveness
Youthfulness
Unblemished Skin
Symmetry
Averageness
Femininity in Women
Masculinity in Men
Positive Expressions
Positive Behaviors

ranked the lowest, even lower than a child who was missing a hand, one who was seated in a wheelchair, and one with a facial scar (Richardson, Goodman, Hastorf, & Dornbusch, 1961).

Although there are many physical qualities that influence attractiveness, no single quality seems to be a necessary or sufficient condition for high attractiveness. A person with a perfectly symmetrical face may not be attractive if the eyes are too close together or too far apart. One can also imagine a woman with beautiful skin or a man with a masculine facial features who is not attractive. Even a person with a perfectly average face may not be attractive if the face is the average of a population of 90-year-olds. These examples suggest that a combination of features are required for high attractiveness. In the case of men's attraction to women, a desirable combination appears to include perceived youthfulness, sexual maturity, and approachability (Cunningham, 1986). In contrast, a single quality, like extreme distance from the average face, is sufficient for low attractiveness. Although certain physical qualities are generally viewed as more attractive, anatomy is not destiny. Attractiveness is positively related to smiling and facial expressivity (Riggio & Friedman, 1986), and there also is some truth to the maxim "pretty is as pretty does." Research has shown that students are more likely to judge an instructor's physical appearance as appealing when his behavior is warm and friendly than when it is cold and distant (Nisbett & Wilson, 1977), and people rate a woman as more physically attractive when they have a favorable description of her personality (Gross & Crofton, 1977).

Figure 1. The Kayan people are known for accentuating the neck line with neck rings. [Image: Leslie Zebrowitz, used with permission]

Why Are Certain People Attractive?

Cultural, cognitive, evolutionary, and overgeneralization explanations have been offered to account for why certain people are deemed attractive. Early explanations suggested that attractiveness was based on what a culture preferred. This is supported by the many variations in ornamentation, jewelry, and body modification that different cultures use to convey attractiveness.

For example, the long neck on the woman shown in Figure 1 is unlikely to be judged attractive by Westerners. Yet, long necks have been preferred in a traditional

Myanmar tribe, because they are thought to resemble a mythological dragon who spawned them. Despite cultural variations like this, research has provided strong evidence against the claim that attractiveness is only due to social learning. Indeed, young infants prefer to look at faces that adults have judged to be highly attractive rather than those judged to be less attractive (Kramer, Zebrowitz, San Giovanni, & Sherak, 1995; Langlois et al., 1987). Moreover, 12-month-olds are less likely to smile at or play with a stranger who is wearing a lifelike mask judged unattractive by adults than a mask judged as attractive (Langlois, Roggman, & Rieser-Danner, 1990). In addition, people across many cultures, including individuals in the Amazon rainforest who are isolated from Western culture, view the same faces as attractive (Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Zebrowitz et al. 2012). On the other hand, there are more cultural variations in body attractiveness. In particular, whereas people from diverse cultures agree that very thin, emaciated-looking bodies are unattractive, they differ more in their appraisal of heavier bodies. Larger bodies are viewed more negatively in Western European cultures than other countries, especially those with lower socioeconomic statuses (Swami et al., 2010). There also is evidence that African Americans judge overweight women less harshly than do European Americans (Hebl & Heatherton, 1997).

Although cultural learning makes some contribution to who we find attractive, the universal elements of attractiveness require a culturally universal explanation. One suggestion is that attractiveness is a by-product of a more general cognitive mechanism that leads us to recognize and prefer familiar stimuli. People prefer category members that are closer to a category **prototype**, or the average member of the category, over those that are at the extremes of a category. Thus, people find average stimuli more attractive whether they are human faces, cars, or animals (Halberstadt, 2006). Indeed, a face **morph** that is the average of many individuals' faces is more attractive than the individual faces used to create it (Langlois & Roggman, 1990). Also, individual faces that have been morphed toward an average face are more attractive than those that have been morphed away from average (see Figure 2; face from Martinez & Benevente, 1998). The preference for stimuli closer to a category prototype is also consistent with the fact that we prefer men with more masculine physical qualities and women with more feminine ones. This preference would further predict that the people who are most attractive depend on our learning experiences, since what is average or prototypical in a face, voice, or body will depend on the people we have seen. Consistent with an effect of learning experiences, young infants prefer face morphs that are an average of faces they have previously seen over morphs that are an average of novel faces (Rubenstein, Kalakanis, & Langlois, 1999). Short-term perceptual experiences can influence judgments of attractiveness even in adults. Brief exposure to a series of faces with the same distortion increases the rated attractiveness of new faces with that distortion (Rhodes, Jeffery, Watson, Clifford, & Nakayama, 2003), and exposure to morphs of human and chimpanzee faces increases the rated attractiveness of new human faces morphed with a small degree of chimpanzee face (Principe

& Langlois, 2012).

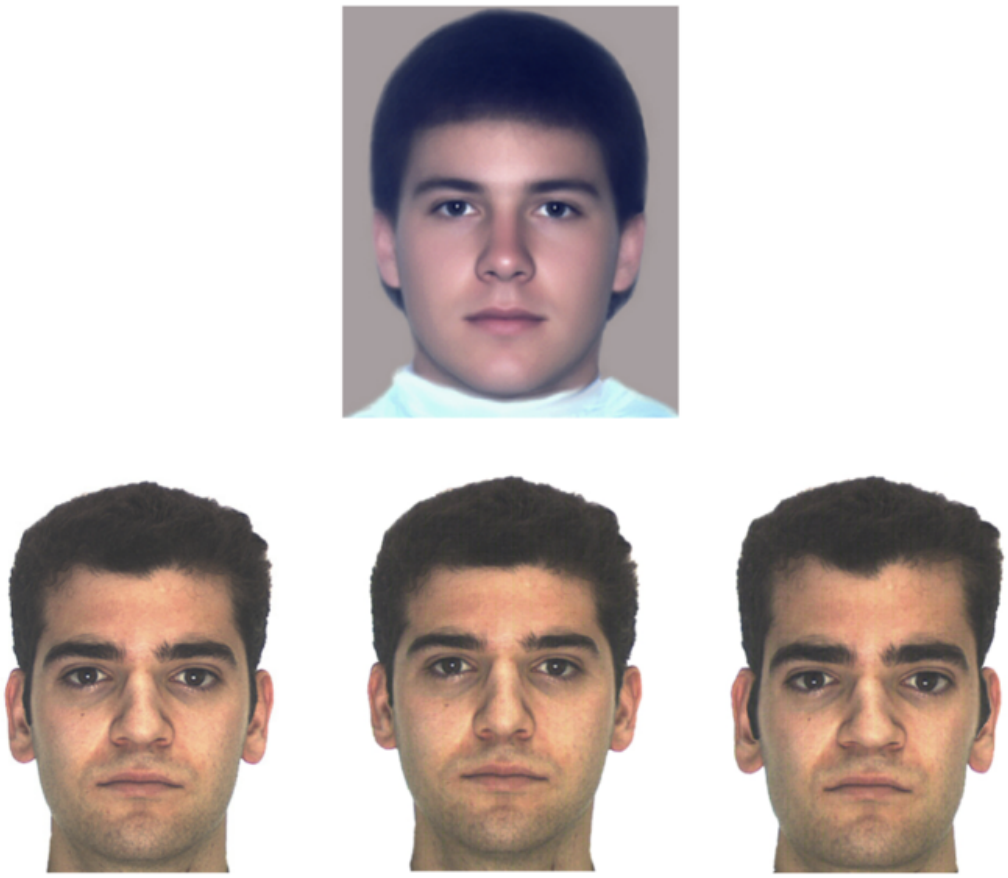


Figure 2.
Top. An averaged face created from 32 individual faces.
Bottom left. Original face from Martinez & Benevente (1998).
Bottom middle. Original face morphed toward the average face.
Bottom right. Original face morphed away from the average face.

One reason average stimuli, including faces, may be preferred is that they are easy to categorize, and when a stimulus is easy to categorize, it elicits positive emotion (Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). Another possible reason average stimuli may be preferred is that we may be less apprehensive about familiar-looking stimuli (Zajonc, 2001). All other things equal, we prefer stimuli we have seen before over novel ones, a **mere-exposure effect**, and we also prefer stimuli that are similar to those we have seen before, a generalized mere-exposure effect. Consistent with a reduced apprehensiveness mechanism, exposure to other-race faces reduced neural activation in a region that responds to negatively valenced stimuli, not only for the faces the participants saw, but also new faces from the familiarized other-race category (Zebrowitz & Zhang, 2012). Such a generalized mere-exposure effect also

could explain the preference for average stimuli, which look more familiar, although the effect may be more reliable for judgments of likeability than attractiveness (Rhodes, Halberstadt, & Brajkovich, 2001; Rhodes, Halberstadt, Jeffery, & Palermo, 2005). Whether due to ease of categorization or less apprehensiveness, the cognitive explanation holds that certain people are more attractive because perceptual learning has rendered them more familiar.

Origins of High Attractiveness
Cultural Learning
Preferences for Prototypes
Signal of Mate Quality
Overgeneralized Reactions to Disease or Bad Genes

In contrast to the cognitive explanation for why we find particular people attractive, the evolutionary explanation argues that preferences developed because it was adaptive to prefer those individuals. More specifically, the good genes hypothesis proposes that people with physical qualities like averageness, symmetry, sex prototypicality, and youthfulness are more attractive because they are better-quality mates. Mate quality may reflect better health, greater fertility, or better genetic traits that lead to better offspring and hence greater reproductive success (Thornhill & Gangestad, 1999). Theoretically, averageness and symmetry provide evidence of genetic fitness because they show the ability to develop normally despite environmental stressors (Scheib, Gangestad, & Thornhill, 1999). Averageness also signals genetic diversity (Thornhill & Gangestad, 1999), which is associated with a strong immune system (Penn, Damjanovich, & Potts, 2002). High masculinity in male faces may indicate fitness because it shows an ability to withstand the stress that testosterone places on the immune system (Folstad & Karter, 1992). High femininity in female faces may signal fitness by indicating sexual maturity and fertility. The evolutionary account also can explain the attractiveness of youthfulness, since aging is often associated with declines in cognitive and physical functioning and decreased fertility.

What do you look for in a mate – attractiveness, intelligence, both or something completely different? [Image: Will Fisher, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Some researchers have investigated whether attractiveness actually does signal

mate quality by examining the relationship between facial attractiveness and health (see Rhodes, 2006, for a review). Support for such a relationship is weak. In particular, people rated very low in attractiveness, averageness, or masculinity (in the case of men) tend to have poorer health than those who are average in these qualities. However, people rated high in attractiveness, averageness, or masculinity do not differ from those who are average (Zebrowitz & Rhodes, 2004). Low body attractiveness, as indexed by overweight or a sex-atypical waist-to-hip ratio, also may be associated with poorer health or lower fertility in women (Singh & Singh, 2011). Others have assessed whether attractiveness signals mate quality by examining the relationship with intelligence, since more intelligent mates may increase reproductive success. In particular, more intelligent mates may provide better parental care. Also, since intelligence is heritable, more intelligent mates may yield more intelligent offspring, who have a better chance of passing genes on to the next generation (Miller & Todd, 1998). The evidence indicates that attractiveness is positively correlated with intelligence. However, as in the case of health, the relationship is weak, and it appears to be largely due to lower-than-average intelligence among those who are very low in attractiveness rather than higher-than-average intelligence among those who are highly attractive (Zebrowitz & Rhodes, 2004). These results are consistent with the fact that subtle negative deviations from average attractiveness can signal low fitness. For example, minor facial anomalies that are too subtle for the layperson to recognize as a genetic anomaly are associated with lower intelligence (Foroud et al., 2012). Although the level of attractiveness provides a valid cue to low, but not high, intelligence or health, it is important to bear in mind that attractiveness is only a weak predictor of these traits, even in the range where it has some validity.

The finding that low, but not high, attractiveness can be diagnostic of actual traits is consistent with another explanation for why we find particular people attractive. This has been dubbed **anomalous face overgeneralization**, but it could equally apply to anomalous voices or bodies. The evolutionary account has typically assumed that as attractiveness increases, so does fitness, and it has emphasized the greater fitness of highly attractive individuals, a *good genes* effect (Buss, 1989). In contrast, the overgeneralization hypothesis argues that the level of attractiveness provides an accurate index *only* of low fitness. On this account, the *attractiveness halo* effect is a by-product of reactions to low fitness. More specifically, we overgeneralize the adaptive tendency to use low attractiveness as an indication of lower-than-average health and intelligence, and we mistakenly use higher-than-average attractiveness as an indication of higher-than-average health and intelligence (Zebrowitz & Rhodes, 2004). The overgeneralization hypothesis differs from the evolutionary hypothesis in another important respect. It is concerned with the importance of detecting low fitness not only when choosing a mate, but also in other social interactions. This is consistent with the fact that the attractiveness halo effect is present in many domains.

Whereas the cultural, cognitive, and overgeneralization accounts of attractiveness do not necessarily predict that the halo effect in impressions will be accurate, the evolutionary "good genes" account does. As we have seen, there is some support for this prediction, but the effects are too weak and circumscribed to fully explain the strong halo effect in response to highly attractive people. In addition, it is important to recognize that whatever accuracy there is does not necessarily imply a genetic link between attractiveness and adaptive traits, such as health or intelligence. One non-genetic mechanism is an influence of environmental factors. For example, the quality of nutrition and that a person receives may have an impact on the development of both attractiveness and health (Whitehead, Ozakinci, Stephen, & Perrett, 2012). Another non-genetic explanation is a self-fulfilling prophecy effect (Snyder, Tanke, & Berscheid, 1977). For example, the higher expectations that teachers have for more attractive students may nurture higher intelligence, an effect that has been shown when teachers have high expectations for reasons other than appearance (Rosenthal, 2003).

Conclusions

Although it may seem unfair, attractiveness confers many advantages. More attractive people are favored not only as romantic partners but, more surprisingly, by their parents, peers, teachers, employers, and even judges and voters. Moreover, there is substantial agreement about who is attractive, with infants and perceivers from diverse cultures showing similar responses. Although this suggests that cultural influences cannot completely explain attractiveness, experience does have an influence. There is controversy about why certain people are attractive to us. The cognitive account attributes higher attractiveness to the ease of processing *prototypes* or the safety associated with familiar stimuli. The evolutionary account attributes higher attractiveness to the adaptive value of preferring physical qualities that signal better health or genetic fitness when choosing mates. The overgeneralization account attributes higher attractiveness to the overgeneralization of an adaptive avoidance of physical qualities that signal poor health or low genetic fitness.

If you were to be asked to imagine an attractive person, what would they look like? What would they be like? Why? [Image: WOCinTech Chat, https://goo.gl/R8zJJu, CC BY 2.0, https://goo.gl/BRvSA7]

Although there is debate as to which explanation is best, it is important to realize that all of the proposed mechanisms may have some validity.

Outside Resources

Article: For Couples, Time Can Upend the Laws of Attraction - This is an accessible New York Times article, summarizing research findings that show romantic couples' level of attractiveness is correlated if they started dating soon after meeting (predicted by the matching hypothesis). However, if they knew each other or were friends for a while before dating, they were less likely to match on physical attractiveness. This research highlights that while attractiveness is important, other factors such as acquaintanceship length can also be important.
http://nyti.ms/1HtIkFt

Article: Is Faceism Spoiling Your Life? - This is an accessible article that describes faceism, as well as how our expectations of people (based on their facial features) influence our reactions to them. It presents the findings from a few studies, such as how participants making snap judgments of political candidates' faces predicted who won the election with almost 70% accuracy. It includes example photos of faces we would consider more or less competent, dominant, extroverted, or trustworthy.
http://www.bbc.com/future/story/20150707-is-faceism-spoiling-your-life

Video: Is Your Face Attractive? - This is a short video. The researcher in the video discusses and shows examples of face morphs, and then manipulates pictures of faces, making them more or less masculine or feminine. We tend to prefer women with more feminized faces and men with more masculine faces, and the video briefly correlates these characteristics to good health.
http://www.discovery.com/tv-shows/other-shows/videos/science-of-sex-appeal-is-your-face-attractive/

Video: Multiple videos realted to the science of beauty
http://dsc.discovery.com/search.htm?terms=science+of+beauty

Video: Multiple videos related to the science of sex appeal
http://dsc.discovery.com/search.htm?terms=science+of+sex+appeal

Video: The Beauty of Symmetry - A short video about facial symmetry. It describes facial symmetry, and explains why our faces aren't always symmetrical. The video shows a demonstration of a researcher photographing a man and a woman and then manipulating the photos.
http://www.discovery.com/tv-shows/other-shows/videos/science-of-sex-appeal-the-beauty-of-symmetry/

Video: The Economic Benefits of Being Beautiful - Less than 2-minute video with cited statistics about the advantages of being beautiful. The video starts with information about how babies are treated differently, and it quickly cites 14 facts about the advantages of being attractive, including the halo effect.
https://youtu.be/b_gx2Uc95os

Discussion Questions

1. Why do you think the attractiveness halo exists even though there is very little evidence that attractive people are more intelligent or healthy?
2. What cultural influences affect whom you perceive as attractive? Why?
3. How do you think evolutionary theories of why faces are attractive apply in a modern world, where people are much more likely to survive and reproduce, regardless of how intelligent or healthy they are?
4. Which of the theories do you think provides the most compelling explanation for why we find certain people attractive?

Vocabulary

Anomalous face overgeneralization hypothesis
Proposes that the attractiveness halo effect is a by-product of reactions to low fitness. People overgeneralize the adaptive tendency to use low attractiveness as an indicator of negative traits, like low health or intelligence, and mistakenly use higher-than-average attractiveness as an indicator of high health or intelligence.

Attractiveness halo effect
The tendency to associate attractiveness with a variety of positive traits, such as being more sociable, intelligent, competent, and healthy.

Good genes hypothesis
Proposes that certain physical qualities, like averageness, are attractive because they advertise mate quality—either greater fertility or better genetic traits that lead to better offspring and hence greater reproductive success.

Mere-exposure effect
The tendency to prefer stimuli that have been seen before over novel ones. There also is a generalized mere-exposure effect shown in a preference for stimuli that are similar to those that have been seen before.

Morph
A face or other image that has been transformed by a computer program so that it is a mixture of multiple images.

Prototype
A typical, or average, member of a category. Averageness increases attractiveness.

References

Benson, P. L., Karabenick, S. A., & Lerner, R. M. (1976). Pretty pleases: The effects of physical attractiveness, race, and sex on receiving help. *Journal of Experimental Social Psychology, 12*, 409–415.

Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences, 12*, 1–49.

Canning, H., & Mayer, J. (1966). Obesity—its possible effect on college acceptance. *New England Journal of Medicine, 275*, 1172–1174.

Collins, S. A. (2000). Men's voices and women's choices. *Animal Behaviour, 60*, 773–780.

Crandall, C. S. (1991). Do heavy-weight students have more difficulty paying for college? *Personality and Social Psychology Bulletin, 17*, 606–611.

Cunningham, M. R. (1986). Measuring the physical in physical attractiveness: Quasi-experiments on the sociobiology of female facial beauty. *Journal of Personality and Social Psychology, 50*, 925–935.

Cunningham, M. R., Roberts, A. R., Barbee, A. P., Druen, P. B., & Wu, C. (1995). 'Their ideas of beauty are, on the whole, the same as ours': Consistency and variability in the cross-cultural perception of female physical attractiveness. *Journal of Personality and Social Psychology, 68*, 261–279.

Dipboye, R. L., Arvey, R. D., & Terpstra, D. E. (1977). Sex and physical attractiveness of raters and applicants as determinants of résumé evaluations. *Journal of Applied Psychology, 62*, 288–294.

Eagly, A. H., Ashmore, R. D., Makhijani, M. G., & Longo, L. C. (1991). What is beautiful is good, but . . . : A meta-analytic review of research on the physical attractiveness stereotype. *Psychological Bulletin, 110*, 109–128.

Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction: A comparison across five research paradigms. *Journal of Personality and Social Psychology, 59*, 981–993.

Feingold, A. (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin, 104*, 226–235.

Folstad, I., & Karter, A. J. (1992). Parasites, bright males, and the immunocompetence handicap. *American Naturalist, 139*, 603–622.

Foroud, T. W., Wetherill, L., Vinci-Booher, S., Moore, E. S., Ward, R. E., Hoyme, H. E.... Jacobson, S. W. (2012). Relation over time between facial measurements and cognitive outcomes in

fetal alcohol-exposed children. *Alcoholism: Clinical and Experimental Research, 36*, 1634–1646.

Franklin, R. G., Jr., & Adams, R. B., Jr. (2010). The two halves of beauty: Laterality and the duality of facial attractiveness. *Brain and Cognition, 72*, 300–305.

Franklin, R. G., Jr., & Adams, R. B., Jr. (2009). A dual-process account of female facial attractiveness preferences: Sexual and nonsexual routes. *Journal of Experimental Social Psychology, 45*, 1156–1159.

Gregory, S. W., & Gallagher, T. J. (2002). Spectral analysis of candidates' nonverbal vocal communication: Predicting U.S. presidential election outcomes. *Social Psychology Quarterly, 65*, 298–308.

Gross, A. E., & Crofton, C. (1977). What is good is beautiful. *Sociometry, 40*, 85–90.

Halberstadt, J. B. (2006). The generality and ultimate origins of the attractiveness of prototypes. *Personality and Social Psychology Review, 10*, 166–183.

Hamermesh, D. S., & Biddle, J. E. (1994). Beauty and the labor market. *American Economic Review, 84*, 1174–1194.

Hebl, M., & Heatherton, T. F. (1997). The stigma of obesity: The differences are black and white. *Personality and Social Psychology Bulletin, 24*, 417–426.

Hildebrandt, K. A., & Fitzgerald, H. E. (1979). Facial feature determinants of perceived infant attractiveness. *Infant Behavior and Development, 2*, 329–339.

Hosoda, M., Stone-Romero, E. F., & Coats, G. (2003). The effects of physical attractiveness on job-related outcomes: A meta-analysis of experimental studies. *Personnel Psychology, 56*, 431-462.

Kramer, S., Zebrowitz, L. A., San Giovanni, J. P., & Sherak, B. (1995). Infants' preferences for attractiveness and babyfaceness. In B. G. Bardy, R. J. Bootsma, & Y. Guiard (Eds.), *Studies in Perception and Action III* (pp. 389–392). Hillsdale, N.J.: Erlbaum.

Langlois, J. H., & Roggman, L. A. (1990). Attractive faces are only average. *Psychological Science, 1*, 115–121.

Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin, 126*, 390–423.

Langlois, J. H., Roggman, L. A., & Rieser-Danner, L. A. (1990). Infants' differential social responses to attractive and unattractive faces. *Developmental Psychology, 26*(1), 153–159.

Langlois, J. H., Roggman, L. A., Casey, R. J., Ritter, J. M., Rieser-Danner, L. A., & Jenkins, V. Y. (1987). Infant preferences for attractive faces: Rudiments of a stereotype? *Developmental*

Psychology, 23, 363–369.

Larkin, J. C., & Pines, H. A. (1979). No fat persons need apply: Experimental studies of the overweight stereotype and hiring preference. *Work and Occupations, 6*, 312–327.

Little, A. C., Jones, B. C., Penton-Voak, I. S., Burt, D. M., & Perrett, D. I. (2002). Partnership status and the temporal context of relationships influence human female preferences for sexual dimorphism in male face shape. *Proceedings of the Royal Society of London B, 269*, 1095–1100.

Martinez, A. M., & Benavente, R. (1998). The AR face database, CVC Tech. Report #24.

Miller, G. F., & Todd, P. M. (1998). Mate choice turns cognitive. *Trends in Cognitive Sciences, 2*, 190–198.

Miyake, K., & Zuckerman, M. (1993). Beyond personality impressions: Effects of physical and vocal attractiveness on false consensus, social comparison, affiliation, and assumed and perceived similarity. *Journal of Personality, 61*, 411–437.

Montoya, R. M. (2008). I'm hot, so I'd say you're not: The influence of objective physical attractiveness on mate selection. *Personality and Social Psychology Bulletin, 34*, 1315–1331.

Mueller, U., & Mazur, A. (1996). Facial dominance of West Point cadets as a predictor of later military rank. *Social Forces, 74*, 823–850.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84*, 231–259.

Penn, D. J., Damjanovich, K., & Potts, W. K. (2002). MHC heterozygosity confers a selective advantage against multiple-strain infections. *Proceedings of the National Academy of Sciences, 99*, 11260–11264.

Principe, C. P., & Langlois, J. H. (2012). Shifting the prototype: Experience with faces influences affective and attractiveness preferences. *Social Cognition, 30*, 109–120.

Puts, D. A., Barndt, J. L., Welling, L. L., Dawood, K., & Burriss, R. P. (2011). Intrasexual competition among women: Vocal femininity affects perceptions of attractiveness and flirtatiousness. *Personality and Individual Differences, 50*, 111–115.

Rhodes, G. (2006). The evolutionary psychology of facial beauty. *Annual Review of Psychology, 57*, 199–226.

Rhodes, G., Halberstadt, J., & Brajkovich, G. (2001) Generalization of mere-exposure effects to averaged composite faces. *Social Cognition, 19*, 57–70.

Rhodes, G., Halberstadt, J., Jeffery, L., & Palermo, R. (2005). The attractiveness of average faces is not a generalized mere-exposure effect. *Social Cognition, 23*, 205–217.

Rhodes, G., Jeffery, L., Watson, T. L., Clifford, C. W. G., & Nakayama, K. (2003) Fitting the mind to the world: Face adaptation and attractiveness aftereffects. *Psychological Science, 14*, 558–

566.

Rhodes, G. Simmons, L. W. Peters, M. (2005). Attractiveness and sexual behavior: Does attractiveness enhance mating success? *Evolution and Human Behavior, 26*, 186–201

Richardson, S. A., Goodman, N., Hastorf, A. H., & Dornbusch, S.M. (1961). Cultural uniformity in reaction to physical disabilities. *American Sociology Review, 26*, 241–247.

Riggio, R. E., & Friedman, H. S. (1986). Impression formation: The role of expressive behavior. *Journal of Personality and Social Psychology, 50*, 421–427.

Riggio, R. E., Widaman, K. F., Tucker, J. S., & Salinas, C. (1991). Beauty is more than skin deep: Components of attractiveness. *Basic and Applied Social Psychology, 12*, 423–439.

Rosenthal, R. (2003). Covert communication in laboratories, classrooms, and the truly real world. *Current Directions in Psychological Science, 12*, 151–154.

Rubenstein, A. J., Kalakanis, L., & Langlois, J. H. (1999). Infant preferences for attractive faces: A cognitive explanation. *Developmental Psychology, 35*, 848–855.

Scheib, J. E., Gangestad, S. W., & Thornhill, R. (1999). Facial attractiveness, symmetry, and cues of good genes. *Proceedings of the Royal Society of London. Series B: Biological Sciences, 266*, 1913–1917.

Singh, D., & Singh, D. (2011). Shape and significance of feminine beauty: An evolutionary perspective. *Sex Roles, 64*, 723–731.

Snyder, M., Tanke, E. D., & Berscheid, E. (1977). Social perception and interpersonal behavior: On the self-fulfilling nature of social stereotypes. *Journal of Personality and Social Psychology, 35*, 655–666.

Sternglanz, S. H., Gray, J. L., & Murakami, M. (1977). Adult preferences for infantile facial features: An ethological approach. *Animal Behaviour, 25*, 108–115.

Stewart, J. E. (1980). Defendant's attractiveness as a factor in the outcome of criminal trials: An observational study. *Journal of Applied Social Psychology, 10*, 348–361.

Swami, V., Furnham, A., Chamorro-Premuzic, T., Akbar, K., Gordon, N., Harris, T., . . . Tovée, M. J. (2010). More than just skin deep? Personality information influences men's ratings of the attractiveness of women's body sizes. *The Journal of Social Psychology, 150*, 628–647.

Thornhill, R., & Gangestad, S. W. (1999). Facial attractiveness. *Trends in Cognitive Sciences, 3*, 452–460.

Tigue, C. C., Borak, D. J., O'Connor, J. J. M., Schandl, C., & Feinberg, D. R. (2012). Voice pitch influences voting behavior. *Evolution and Human Behavior, 33*, 210–216.

Verhulst, B., Lodge, M., & Lavine, H. (2010). The attractiveness halo: Why some candidates are perceived more favorably than others. *Journal of Nonverbal Behavior, 34*, 111–117.

Walster, E., Aronson, V., Abrahams, D., & Rottman, L. (1966). Importance of physical attractiveness in dating behavior. *Journal of Personality and Social Psychology, 4*, 508–516.

Whitehead, R. D., Ozakinci, G., Stephen, I. D., & Perrett, D. I. (2012). Appealing to vanity: Could potential appearance improvement motivate fruit and vegetable consumption? *American Journal of Public Health, 102*, 207–211.

Winkielman, P., Halberstadt, J., Fazendeiro, T., & Catty, S. (2006). Prototypes are attractive because they are easy on the mind. *Psychological Science, 17*, 799–806.

Zajonc, R. B. (2001). Mere exposure: A gateway to the subliminal. *Current Directions in Psychological Science, 10*, 224–228.

Zebrowitz, L. A., & Zhang, E., (2012). Neural evidence for reduced apprehensiveness of familiarized stimuli in a mere exposure paradigm. *Social Neuroscience, 7*, 347–358.

Zebrowitz, L. A. & Rhodes, G. (2004). Sensitivity to "bad genes" and the anomalous face overgeneralization effect: Accuracy, cue validity, and cue utilization in judging intelligence and health. *Journal of Nonverbal Behavior. 28*, 167–185.

Zebrowitz, L. A., Wang, R., Bronstad, P. M., Eisenberg, D., Undurraga, E., Reyes-García, V., & Godoy, R., (2012). First impressions from faces among U.S. and culturally isolated Tsimane' people in the Bolivian rainforest. *Journal of Cross-Cultural Psychology, 43*, 119–134.

Zuckerman, M., & Driver, R. E. (1989). What sounds beautiful is good: The vocal attractiveness stereotype. *Journal of Nonverbal Behavior, 13*, 67–82.

26
Helping and Prosocial Behavior

Dennis L. Poepsel & David A. Schroeder

People often act to benefit other people, and these acts are examples of prosocial behavior. Such behaviors may come in many guises: helping an individual in need; sharing personal resources; volunteering time, effort, and expertise; cooperating with others to achieve some common goals. The focus of this module is on helping—prosocial acts in dyadic situations in which one person is in need and another provides the necessary assistance to eliminate the other's need. Although people are often in need, help is not always given. Why not? The decision of whether or not to help is not as simple and straightforward as it might seem, and many factors need to be considered by those who might help. In this module, we will try to understand how the decision to help is made by answering the question: Who helps when and why?

Learning Objectives

- Learn which situational and social factors affect when a bystander will help another in need.
- Understand which personality and individual difference factors make some people more likely to help than others.
- Discover whether we help others out of a sense of altruistic concern for the victim, for more self-centered and egoistic motives, or both.

Introduction

Go to YouTube and search for episodes of "Primetime: What Would You Do?" You will find

People often overestimate their willingness to help others in need especially when they are asked about a hypothetical situation rather than encountering one in real life. [Image: Ed Yourdon, https://goo.gl/BYFmcu, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

video segments in which apparently innocent individuals are victimized, while onlookers typically fail to intervene. The events are all staged, but they are very real to the bystanders on the scene. The entertainment offered is the nature of the bystanders' responses, and viewers are outraged when bystanders fail to intervene. They are convinced that they would have helped. But would they? Viewers are overly optimistic in their beliefs that they would play the hero. Helping may occur frequently, but help is not always given to those in need. So *when* do people help, and when do they not? All people are not equally helpful—*who* helps? *Why* would a person help another in the first place? Many factors go into a person's decision to help—a fact that the viewers do not fully appreciate. This module will answer the question: Who helps when and why?

When Do People Help?

Social psychologists are interested in answering this question because it is apparent that people vary in their tendency to help others. In 2010 for instance, Hugo Alfredo Tale-Yax was stabbed when he apparently tried to intervene in an argument between a man and woman. As he lay dying in the street, only one man checked his status, but many others simply glanced at the scene and continued on their way. (One passerby did stop to take a cellphone photo, however.) Unfortunately, failures to come to the aid of someone in need are not unique, as the segments on "What Would You Do?" show. Help is not always forthcoming for those who may need it the most. Trying to understand why people do not always help became the focus of **bystander intervention** research (e.g., Latané & Darley, 1970).

To answer the question regarding when people help, researchers have focused on

1. how bystanders come to define emergencies,
2. when they decide to take responsibility for **helping**, and

3. how the costs and benefits of intervening affect their decisions of whether to help.

Defining the situation: The role of pluralistic ignorance

The decision to help is not a simple yes/no proposition. In fact, a series of questions must be addressed before help is given—even in emergencies in which time may be of the essence. Sometimes help comes quickly; an onlooker recently jumped from a Philadelphia subway platform to help a stranger who had fallen on the track. Help was clearly needed and was quickly given. But some situations are ambiguous, and potential helpers may have to decide whether a situation is one in which help, in fact, *needs* to be given.

To define ambiguous situations (including many emergencies), potential helpers may look to the action of others to decide what should be done. But those others are looking around too, also trying to figure out what to do. Everyone is looking, but no one is acting! Relying on others to define the situation and to then erroneously conclude that no intervention is necessary when help is actually needed is called pluralistic ignorance (Latané & Darley, 1970). When people use the *inactions* of others to define their own course of action, the resulting pluralistic ignorance leads to less help being given.

Do I have to be the one to help?: Diffusion of responsibility

Simply being with others may facilitate or inhibit whether we get involved in other ways as well. In situations in which help is needed, the presence or absence of others may affect whether a bystander will assume personal responsibility to give the assistance. If the bystander is alone, personal responsibility to help falls solely on the shoulders of that person. But what if others are present? Although it might seem that having more potential helpers around would increase the chances of the victim getting help, the opposite is often the case. Knowing that someone else *could* help seems to relieve bystanders of

How does being in a crowd decrease someone's chance of being helped? How does being in a crowd increase someone's chance of being helped? [Image: flowcomm, https://goo.gl/tiRPch, CC BY 2.0, https://goo.gl/BRvSA7]

personal responsibility, so bystanders do not intervene. This phenomenon is known as **diffusion of responsibility** (Darley & Latané, 1968).

On the other hand, watch the video of the race officials following the 2013 Boston Marathon after two bombs exploded as runners crossed the finish line. Despite the presence of many spectators, the yellow-jacketed race officials immediately rushed to give aid and comfort to the victims of the blast. Each one no doubt felt a personal responsibility to help by virtue of their official capacity in the event; fulfilling the obligations of their roles overrode the influence of the diffusion of responsibility effect.

There is an extensive body of research showing the negative impact of pluralistic ignorance and diffusion of responsibility on helping (Fisher et al., 2011), in both emergencies and everyday need situations. These studies show the tremendous importance potential helpers place on the social situation in which unfortunate events occur, especially when it is not clear what should be done and who should do it. Other people provide important social information about how we should act and what our personal obligations might be. But does knowing a person needs help and accepting responsibility to provide that help mean the person will get assistance? Not necessarily.

The costs and rewards of helping

The nature of the help needed plays a crucial role in determining what happens next. Specifically, potential helpers engage in a **cost–benefit analysis** before getting involved (Dovidio et al., 2006). If the needed help is of relatively low cost in terms of time, money, resources, or risk, then help is more likely to be given. Lending a classmate a pencil is easy; confronting someone who is bullying your friend is an entirely different matter. As the unfortunate case of Hugo Alfredo Tale-Yax demonstrates, intervening may cost the life of the helper.

The potential rewards of helping someone will also enter into the equation, perhaps offsetting the cost of helping. Thanks from the recipient of help may be a sufficient reward. If helpful acts are recognized by others, helpers may receive social rewards of praise or monetary rewards. Even avoiding feelings of guilt if one does not help may be considered a benefit. Potential helpers consider how much helping will cost and compare those costs to the rewards that might be realized; it is the economics of helping. If costs outweigh the rewards, helping is less likely. If rewards are greater than cost, helping is more likely.

Who Helps?

Do you know someone who always seems to be ready, willing, and able to help? Do you know someone who never helps out? It seems there are personality and individual differences in the helpfulness of others. To answer the question of who chooses to help, researchers have examined 1) the role that sex and gender play in helping, 2) what personality traits are associated with helping, and 3) the characteristics of the "prosocial personality."

Who are more helpful—men or women?

In terms of individual differences that might matter, one obvious question is whether men or women are more likely to help. In one of the "What Would You Do?" segments, a man takes a woman's purse from the back of her chair and then leaves the restaurant. Initially, no one responds, but as soon as the woman asks about her missing purse, a group of men immediately rush out the door to catch the thief. So, are men more helpful than women? The quick answer is "not necessarily." It all depends on the type of help needed. To be very clear, the general level of helpfulness may be pretty much equivalent between the sexes, but men and women help in different ways (Becker & Eagly, 2004; Eagly & Crowley, 1986). What accounts for these differences?

Sometimes there are situations that override the gender divide between the helpfulness of men and women and they offer help in equal numbers - for example, volunteering. [Image: Daniel Thornton, https://goo.gl/Rn7yL0, CC BY 2.0, https://goo.gl/BRvSA7]

Two factors help to explain sex and gender differences in helping. The first is related to the cost–benefit analysis process discussed previously. Physical differences between men and women may come into play (e.g., Wood & Eagly, 2002); the fact that men tend to have greater upper body strength than women makes the cost of intervening in some situations less for a man. Confronting a thief is a risky proposition, and some strength may be needed in case the perpetrator decides to fight. A bigger, stronger bystander is less likely to be injured and more likely to be successful.

The second explanation is simple socialization. Men and women have traditionally been raised to play different social roles that prepare them to respond differently to the needs of others,

and people tend to help in ways that are most consistent with their gender roles. Female gender roles encourage women to be compassionate, caring, and nurturing; male gender roles encourage men to take physical risks, to be heroic and chivalrous, and to be protective of those less powerful. As a consequence of social training and the gender roles that people have assumed, men may be more likely to jump onto subway tracks to save a fallen passenger, but women are more likely to give comfort to a friend with personal problems (Diekman & Eagly, 2000; Eagly & Crowley, 1986). There may be some specialization in the types of help given by the two sexes, but it is nice to know that there is someone out there—man or woman—who is able to give you the help that you need, regardless of what kind of help it might be.

A trait for being helpful: Agreeableness

Graziano and his colleagues (e.g., Graziano & Tobin, 2009; Graziano, Habishi, Sheese, & Tobin, 2007) have explored how **agreeableness**—one of the Big Five personality dimensions (e.g., Costa & McCrae, 1988)—plays an important role in **prosocial behavior**. Agreeableness is a core trait that includes such dispositional characteristics as being sympathetic, generous, forgiving, and helpful, and behavioral tendencies toward harmonious social relations and likeability. At the conceptual level, a positive relationship between agreeableness and helping may be expected, and research by Graziano et al. (2007) has found that those higher on the agreeableness dimension are, in fact, more likely than those low on agreeableness to help siblings, friends, strangers, or members of some other group. Agreeable people seem to expect that others will be similarly cooperative and generous in interpersonal relations, and they, therefore, act in helpful ways that are likely to elicit positive social interactions.

Searching for the prosocial personality

Rather than focusing on a single trait, Penner and his colleagues (Penner, Fritzsche, Craiger, & Freifeld, 1995; Penner & Orom, 2010) have taken a somewhat broader perspective and identified what they call the **prosocial personality orientation**. Their research indicates that two major characteristics are related to the prosocial personality and prosocial behavior. The first characteristic is called **other-oriented empathy**: People high on this dimension have a strong sense of social responsibility, empathize with and feel emotionally tied to those in need, understand the problems the victim is experiencing, and have a heightened sense of moral obligation to be helpful. This factor has been shown to be highly correlated with the trait of agreeableness discussed previously. The second characteristic, **helpfulness**, is more behaviorally oriented. Those high on the helpfulness factor have been helpful in the past, and because they believe they can be effective with the help they give, they are more likely to be helpful in the future.

Why Help?

Finally, the question of *why* a person would help needs to be asked. What motivation is there for that behavior? Psychologists have suggested that 1) evolutionary forces may serve to predispose humans to help others, 2) egoistic concerns may determine if and when help will be given, and 3) selfless, altruistic motives may also promote helping in some cases.

Evolutionary roots for prosocial behavior

Evolutionary theory suggests that being a good helper was a benefit for survival and reproductive success. And we don't just help our family members, reciprocal altruism has also been a benefit to our survival. [Image: TimJN1, https://goo.gl/iTQfWk, CC BY-SA 2.0, https://goo.gl/eH69he]

Our evolutionary past may provide keys about why we help (Buss, 2004). Our very survival was no doubt promoted by the prosocial relations with clan and family members, and, as a hereditary consequence, we may now be especially likely to help those closest to us—blood-related relatives with whom we share a genetic heritage. According to evolutionary psychology, we are helpful in ways that increase the chances that our DNA will be passed along to future generations (Burnstein, Crandall, & Kitayama, 1994)—the goal of the "selfish gene" (Dawkins, 1976). Our personal DNA may not always move on, but we can still be successful in getting some portion of our DNA transmitted if our daughters, sons, nephews, nieces, and cousins survive to produce offspring. The favoritism shown for helping our blood relatives is called **kin selection** (Hamilton, 1964).

But, we do not restrict our relationships just to our own family members. We live in groups that include individuals who are unrelated to us, and we often help them too. Why? **Reciprocal altruism** (Trivers, 1971) provides the answer. Because of reciprocal altruism, we are all better off in the long run if we help one another. If helping someone now increases the chances that you will be helped later, then your overall chances of survival are increased. There is the chance that someone will take advantage of your help and not return your favors. But people seem predisposed to identify those who fail to reciprocate, and punishments including social

exclusion may result (Buss, 2004). Cheaters will not enjoy the benefit of help from others, reducing the likelihood of the survival of themselves and their kin.

Evolutionary forces may provide a general inclination for being helpful, but they may not be as good an explanation for why we help in the here and now. What factors serve as proximal influences for decisions to help?

Egoistic motivation for helping

Most people would like to think that they help others because they are concerned about the other person's plight. In truth, the reasons why we help may be more about ourselves than others: Egoistic or selfish motivations may make us help. Implicitly, we may ask, "What's in it *for me*?" There are two major theories that explain what types of reinforcement helpers may be seeking. The **negative state relief model** (e.g., Cialdini, Darby, & Vincent, 1973; Cialdini, Kenrick, & Baumann, 1982) suggests that people sometimes help in order to make themselves feel better. Whenever we are feeling sad, we can use helping someone else as a positive mood boost to feel happier. Through socialization, we have learned that helping can serve as a secondary reinforcement that will relieve negative moods (Cialdini & Kenrick, 1976).

The **arousal: cost–reward model** provides an additional way to understand why people help (e.g., Piliavin, Dovidio, Gaertner, & Clark, 1981). This model focuses on the aversive feelings aroused by seeing another in need. If you have ever heard an injured puppy yelping in pain, you know that feeling, and you know that the best way to relieve that feeling is to help and to comfort the puppy. Similarly, when we see someone who is suffering in some way (e.g., injured, homeless, hungry), we vicariously experience a sympathetic arousal that is unpleasant, and we are motivated to eliminate that aversive state. One way to do that is to help the person in need. By eliminating the victim's pain, we eliminate our own aversive arousal. Helping is an effective way to alleviate our own discomfort.

As an egoistic model, the arousal: cost–reward model explicitly includes the cost/reward considerations that come into play. Potential helpers will find ways to cope with the aversive arousal that will minimize their costs—maybe by means other than direct involvement. For example, the costs of directly confronting a knife-wielding assailant might stop a bystander from getting involved, but the cost of some *indirect* help (e.g., calling the police) may be acceptable. In either case, the victim's need is addressed. Unfortunately, if the costs of helping are too high, bystanders may reinterpret the situation to justify not helping at all. For some, fleeing the situation causing their distress may do the trick (Piliavin et al., 1981).

The egoistically based negative state relief model and the arousal: cost–reward model see the primary motivation for helping as being the helper's own outcome. Recognize that the victim's outcome is of relatively little concern to the helper—benefits to the victim are incidental byproducts of the exchange (Dovidio et al., 2006). The victim may be helped, but the helper's real motivation according to these two explanations is egoistic: Helpers help to the extent that it makes them feel better.

Altruistic help

Altruism is helping with the aim of improving the wellbeing of others. Having a feeling of empathy for others is an important aspect of altruism. [Image: Ed Yourdon, https://goo.gl/MWCLk1, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Although many researchers believe that egoism is the only motivation for helping, others suggest that altruism—helping that has as its ultimate goal the improvement of another's welfare—may also be a motivation for helping under the right circumstances. Batson (2011) has offered the empathy–altruism model to explain altruistically motivated helping for which the helper expects no benefits. According to this model, the key for altruism is empathizing with the victim, that is, putting oneself in the shoes of the victim and imagining how the victim must feel. When taking this perspective and having empathic concern, potential helpers become primarily interested in increasing the well-being of the victim, even if the helper must incur some costs that might otherwise be easily avoided. The empathy–altruism model does not dismiss egoistic motivations; helpers not empathizing with a victim may experience personal distress and have an egoistic motivation, not unlike the feelings and motivations explained by the arousal: cost–reward model. Because egoistically motivated individuals are primarily concerned with their own cost–benefit outcomes, they are less likely to help if they think they can escape the situation with no costs to themselves. In contrast, altruistically motivated helpers are willing to accept the cost of helping to benefit a person with whom they have empathized—this "self-sacrificial" approach to helping is the hallmark of altruism (Batson, 2011).

Although there is still some controversy about whether people can ever act for purely altruistic

motives, it is important to recognize that, while helpers may derive some personal rewards by helping another, the help that has been given is also benefitting someone who was in need. The residents who offered food, blankets, and shelter to stranded runners who were unable to get back to their hotel rooms because of the Boston Marathon bombing undoubtedly received positive rewards because of the help they gave, but those stranded runners who were helped got what they needed badly as well. "In fact, it is quite remarkable how the fates of people who have never met can be so intertwined and complementary. Your benefit is mine; and mine is yours" (Dovidio et al., 2006, p. 143).

Conclusion

Helping feels good to the one who helps and the one who is being helped. [Image: International of Red Cross and Red Crescent Societies, https://goo.gl/0DXo8S, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

We started this module by asking the question, "Who helps when and why?" As we have shown, the question of when help will be given is not quite as simple as the viewers of "What Would You Do?" believe. The power of the situation that operates on potential helpers in real time is not fully considered. What might appear to be a split-second decision to help is actually the result of consideration of multiple situational factors (e.g., the helper's interpretation of the situation, the presence and ability of others to provide the help, the results of a cost–benefit analysis) (Dovidio et al., 2006). We have found that men and women tend to help in different ways—men are more impulsive and physically active, while women are more nurturing and supportive. Personality characteristics such as agreeableness and the prosocial personality orientation also affect people's likelihood of giving assistance to others. And, why would people help in the first place? In addition to evolutionary forces (e.g., kin selection, reciprocal altruism), there is extensive evidence to show that helping and prosocial acts may be motivated by selfish, egoistic desires; by selfless, altruistic goals; or by some combination of egoistic and altruistic motives. (For a fuller consideration of the field of prosocial behavior, we refer you to Dovidio et al. [2006].)

Outside Resources

Article: Alden, L. E., & Trew, J. L. (2013). If it makes you happy: Engaging in kind acts increases positive affect in socially anxious individuals. Emotion, 13, 64-75. doi:10.1037/a0027761 Review available at:
http://nymag.com/scienceofus/2015/07/one-way-to-get-over-your-social-anxiety-be-nice.html

Book: Batson, C.D. (2009). Altruism in humans. New York, NY: Oxford University Press.

Book: Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). The social psychology of prosocial behavior. Mahwah, NJ: Erlbaum.

Book: Mikuliner, M., & Shaver, P. R. (2010). Prosocial motives, emotions, and behavior: The better angels of our nature. Washington, DC: American Psychological Association.

Book: Schroeder, D. A. & Graziano, W. G. (forthcoming). The Oxford handbook of prosocial behavior. New York, NY: Oxford University Press.

Institution: Center for Generosity, University of Notre Dame, 936 Flanner Hall, Notre Dame, IN 46556.
http://www.generosityresearch.nd.edu

Institution: The Greater Good Science Center, University of California, Berkeley.
http://www.greatergood.berkeley.edu

News Article: Bystanders Stop Suicide Attempt
http://jfmueller.faculty.noctrl.edu/crow/bystander.pdf

Social Psychology Network (SPN)
http://www.socialpsychology.org/social.htm#prosocial

Video: Episodes (individual) of "Primetime: What Would You Do?"
http://www.YouTube.com

Video: Episodes of "Primetime: What Would You Do?" that often include some commentary from experts in the field may be available at
http://www.abc.com

Video: From The Inquisitive Mind website, a great overview of different aspects of helping and pro-social behavior including - pluralistic ignorance, diffusion of responsibility, the bystander effect, and empathy.
https://www.youtube.com/watch?v=i2aVjU3F_t0

Discussion Questions

1. Pluralistic ignorance suggests that inactions by other observers of an emergency will decrease the likelihood that help will be given. What do you think will happen if even one other observer begins to offer assistance to a victim?
2. In addition to those mentioned in the module, what other costs and rewards might affect a potential helper's decision of whether to help? Receiving help to solve some problem is an obvious benefit for someone in need; are there any costs that a person might have to bear as a result of receiving help from someone?
3. What are the characteristics possessed by your friends who are most helpful? By your friends who are least helpful? What has made your helpful friends and your unhelpful friends so different? What kinds of help have they given to you, and what kind of help have you given to them? Are you a helpful person?
4. Do you think that sex and gender differences in the frequency of helping and the kinds of helping have changed over time? Why? Do you think that we might expect more changes in the future?
5. What do you think is the primary motive for helping behavior: egoism or altruism? Are there any professions in which people are being "pure" altruists, or are some egoistic motivations always playing a role?
6. There are other prosocial behaviors in addition to the kind of helping discussed here. People volunteer to serve many different causes and organizations. People come together to cooperate with one another to achieve goals that no one individual could reach alone. How do you think the factors that affect helping might affect prosocial actions such as volunteering and cooperating? Do you think that there might be other factors that make people more or less likely to volunteer their time and energy or to cooperate in a group?

Vocabulary

Agreeableness
A core personality trait that includes such dispositional characteristics as being sympathetic, generous, forgiving, and helpful, and behavioral tendencies toward harmonious social relations and likeability.

Altruism
A motivation for helping that has the improvement of another's welfare as its ultimate goal, with no expectation of any benefits for the helper.

Arousal: cost–reward model
An egoistic theory proposed by Piliavin et al. (1981) that claims that seeing a person in need leads to the arousal of unpleasant feelings, and observers are motivated to eliminate that aversive state, often by helping the victim. A cost–reward analysis may lead observers to react in ways other than offering direct assistance, including indirect help, reinterpretation of the situation, or fleeing the scene.

Bystander intervention
The phenomenon whereby people intervene to help others in need even if the other is a complete stranger and the intervention puts the helper at risk.

Cost–benefit analysis
A decision-making process that compares the cost of an action or thing against the expected benefit to help determine the best course of action.

Diffusion of responsibility
When deciding whether to help a person in need, knowing that there are others who could also provide assistance relieves bystanders of some measure of personal responsibility, reducing the likelihood that bystanders will intervene.

Egoism
A motivation for helping that has the improvement of the helper's own circumstances as its primary goal.

Empathic concern
According to Batson's empathy–altruism hypothesis, observers who empathize with a person in need (that is, put themselves in the shoes of the victim and imagine how that person feels)

will experience empathic concern and have an altruistic motivation for helping.

Empathy–altruism model
An altruistic theory proposed by Batson (2011) that claims that people who put themselves in the shoes of a victim and imagining how the victim feel will experience empathic concern that evokes an altruistic motivation for helping.

Helpfulness
A component of the prosocial personality orientation; describes individuals who have been helpful in the past and, because they believe they can be effective with the help they give, are more likely to be helpful in the future.

Helping
Prosocial acts that typically involve situations in which one person is in need and another provides the necessary assistance to eliminate the other's need.

Kin selection
According to evolutionary psychology, the favoritism shown for helping our blood relatives, with the goals of increasing the likelihood that some portion of our DNA will be passed on to future generations.

Negative state relief model
An egoistic theory proposed by Cialdini et al. (1982) that claims that people have learned through socialization that helping can serve as a secondary reinforcement that will relieve negative moods such as sadness.

Other-oriented empathy
A component of the prosocial personality orientation; describes individuals who have a strong sense of social responsibility, empathize with and feel emotionally tied to those in need, understand the problems the victim is experiencing, and have a heightened sense of moral obligations to be helpful.

Personal distress
According to Batson's empathy–altruism hypothesis, observers who take a detached view of a person in need will experience feelings of being "worried" and "upset" and will have an egoistic motivation for helping to relieve that distress.

Pluralistic ignorance
Relying on the actions of others to define an ambiguous need situation and to then erroneously

conclude that no help or intervention is necessary.

Prosocial behavior
Social behavior that benefits another person.

Prosocial personality orientation
A measure of individual differences that identifies two sets of personality characteristics (other-oriented empathy, helpfulness) that are highly correlated with prosocial behavior.

Reciprocal altruism
According to evolutionary psychology, a genetic predisposition for people to help those who have previously helped them.

References

Batson, C. D. (2011). *Altruism in humans*. New York, NY: Oxford University Press.

Becker, S. W., & Eagly, A. H. (2004). The heroism of women and men. *American Psychologist, 59*, 163–178.

Burnstein, E., Crandall, C., & Kitayama, S. (1994). Some neo-Darwinian decision rules for altruism: Weighing cues for inclusive fitness as a function of the biological importance of the decision. *Journal of Personality and Social Psychology, 67*, 773–789.

Buss, D. M. (2004). *Evolutionary psychology: The new science of the mind*. Boston, MA: Allyn Bacon.

Cialdini, R. B., & Kenrick, D. T. (1976). Altruism as hedonism: A social developmental perspective on the relationship of negative mood state and helping. *Journal of Personality and Social Psychology, 34*, 907–914.

Cialdini, R. B., Darby, B. K. & Vincent, J. E. (1973). Transgression and altruism: A case for hedonism. *Journal of Experimental Social Psychology, 9*, 502–516.

Cialdini, R. B., Kenrick, D. T., & Baumann, D. J. (1982). Effects of mood on prosocial behavior in children and adults. In N. Eisenberg (Ed.), *The development of prosocial behavior* (pp. 339–359). New York, NY: Academic Press.

Costa, P. T., & McCrae, R. R. (1998). Trait theories in personality. In D. F. Barone, M. Hersen, & V. B. Van Hasselt (Eds.), *Advanced Personality* (pp. 103–121). New York, NY: Plenum.

Darley, J. M. & Latané, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology, 8*, 377–383.

Dawkins, R. (1976). *The selfish gene*. Oxford, U.K.: Oxford University Press.

Diekman, A. B., & Eagly, A. H. (2000). Stereotypes as dynamic structures: Women and men of the past, present, and future. *Personality and Social Psychology Bulletin, 26*, 1171–1188.

Dovidio, J. F., Piliavin, J. A., Schroeder, D. A., & Penner, L. A. (2006). *The social psychology of prosocial behavior*. Mahwah, NJ: Erlbaum.

Eagly, A. H., & Crowley, M. (1986). Gender and helping behavior: A meta-analytic review of the social psychological literature. *Psychological Review, 66*, 183–201.

Fisher, P., Krueger, J. I., Greitemeyer, T., Vogrincie, C., Kastenmiller, A., Frey, D., Henne, M., Wicher, M., & Kainbacher, M. (2011). The bystander-effect: A meta-analytic review of bystander intervention in dangerous and non-dangerous emergencies. *Psychological Bulletin, 137*, 517–537.

Graziano, W. G., & Tobin, R. (2009). Agreeableness. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior*. New York, NY: Guilford Press.

Graziano, W. G., Habashi, M. M., Sheese, B. E., & Tobin, R. M. (2007). Agreeableness, empathy, and helping: A person x situation perspective. *Journal of Personality and Social Psychology, 93*, 583–599.

Hamilton, W. D. (1964). The genetic evolution of social behavior. *Journal of Theoretical Biology, 7*, 1–52.

Latané, B., & Darley, J. M. (1970). *The unresponsive bystander: Why doesn't he help?* New York, NY: Appleton-Century-Crofts.

Penner, L. A., & Orom, H. (2010). Enduring goodness: A Person X Situation perspective on prosocial behavior. In M. Mikuliner & P.R. Shaver, P.R. (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 55–72). Washington, DC: American Psychological Association.

Penner, L. A., Fritzsche, B. A., Craiger, J. P., & Freifeld, T. R. (1995). Measuring the prosocial personality. In J. Butcher & C.D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 10, pp. 147–163). Hillsdale, NJ: Erlbaum.

Piliavin, J. A., Dovidio, J. F., Gaertner, S. L., & Clark, R. D., III (1981). *Emergency intervention*. New York, NY: Academic Press.

Trivers, R. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology, 46*, 35–57.

Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin, 128*, 699–727.

27
Industrial/Organizational (I/O) Psychology

Berrin Erdogan & Talya N. Bauer

This module provides an introduction to industrial and organizational (I/O) psychology. I/O psychology is an area of psychology that specializes in the scientific study of behavior in organizational settings and the application of psychology to understand work behavior. The U.S. Department of Labor estimates that I/O psychology, as a field, will grow 26% by the year 2018. I/O psychologists typically have advanced degrees such as a Ph.D. or master's degree and may work in academic, consulting, government, military, or private for-profit and not-for-profit organizational settings. Depending on the state in which they work, I/O psychologists may be licensed. They might ask and answer questions such as "What makes people happy at work?" "What motivates employees at work?" "What types of leadership styles result in better performance of employees?" "Who are the best applicants to hire for a job?" One hallmark of I/O psychology is its basis in data and evidence to answer such questions, and I/O psychology is based on the scientist-practitioner model. The key individuals and studies in the history of I/O psychology are addressed in this module. Further, professional I/O associations are discussed, as are the key areas of competence developed in I/O master's programs.

Learning Objectives

- Define industrial and organizational (I/O) psychology.
- Describe what an I/O psychologist does.
- List the professional associations of I/O psychologists.
- Identify major milestones in the history of I/O psychology.

What is Industrial and Organizational (I/O) Psychology?

The term Industrial Organizational psychology can be applied to businesses, schools, clubs, and even to sports teams. [Image: Kevin Dooley, https://goo.gl/b45OFM, CC BY 2.0, https://goo.gl/BRvSA7]

Psychology as a field is composed of many different areas. When thinking of psychology, the person on the street probably imagines the clinical psychologist who studies and treats dysfunctional behavior or maybe the criminal psychologist who has become familiar due to popular TV shows such as *Law & Order*. I/O psychology may be underrepresented on TV, but it is a fast-growing and influential branch of psychology.

What is I/O psychology? Briefly, it can be defined as the scientific study of behavior in organizational settings and the application of psychology to understand work behavior. In other words, while general psychology concerns itself with behavior of individuals in general, I/O psychology focuses on understanding employee behavior in work settings. For example, they ask questions such as: *How can organizations recruit and select the people they need in order to remain productive? How can organizations assess and improve the performance of their employees? What work and non-work factors contribute to the happiness, effectiveness, and well-being of employees in the workplace? How does work influence non-work behavior and happiness? What motivates employees at work?* All of these important queries fall within the domain of I/O psychology. Table 1 presents a list of tasks I/O psychologists may perform in their work. This is an extensive list, and one person will not be responsible for all these tasks. The I/O psychology field prepares and trains individuals to be more effective in performing the tasks listed in this table.

At this point you may be asking yourself: *Does psychology really need a special field to study work behaviors? In other words, wouldn't the findings of general psychology be sufficient to understand how individuals behave at work?* The answer is an underlined *no*. Employees behave differently at work compared with how they behave in general. While some fundamental principles of psychology definitely explain how employees behave at work (such as selective perception or the desire to relate to those who are similar to us), organizational settings are

Task	Description
Job Analysis	Conducting interviews or distributing surveys to collect information about jobs, and then determining skill, knowledge, and ability requirements of jobs, as well as preparing job descriptions.
Developing Employee Selection Systems	Ensuring that job candidates fit job requirements by developing employee selection systems. Evaluating tests and other selection procedures such as interviews or work samples to determine whether test scores actually predict future high and low performers, and ensuring that the selection method in place is legal and effective in meeting the current and future talent needs of the organization.
Designing Performance Appraisal Systems	Measuring employee performance to differentiate between high and low performers and identify improvement opportunities. Performance assessment systems are used for the purposes of making decisions about employees, such as promotion, termination, or reward, as well as providing feedback to employees to improve future performance.
Developing Compensation Systems	Designing pay systems that ensure employees are compensated in an equitable way. Effective compensation systems are fair when compared with how similar employees are rewarded in other organizations, rewards competencies that are strategically important to the organization, and differentiates between high and low performers.
Training and Development	Creating systems to identify employees with training and development needs, designing training programs to meet these needs, conducting these training programs, and assessing the effectiveness of these training programs.
Solve Talent Management Problems	Helping resolve problems relating to talent management using data-driven approaches. For example, I/O psychologists may conduct exit interviews and analyze employee attitude survey data to determine causes of employee engagement problems and derive solutions to solve these problems.

Table 1. Sample Tasks I/O Psychologists May Perform

unique. To begin with, organizations have a hierarchy. They have job descriptions for employees. Individuals go to work not only to seek fulfillment and to remain active, but also to receive a paycheck and satisfy their financial needs. Even when they dislike their jobs, many stay and continue to work until a better alternative comes along. All these constraints suggest that how we behave at work may be somewhat different from how we would behave without these constraints. According to the U.S. Bureau of Labor Statistics, in 2011, more than 149 million individuals worked at least part time and spent many hours of the week working—see Figure 1 for a breakdown (U.S. Department of Labor, 2011). In other words, we spend a large portion of our waking hours at work. How happy we are with our jobs and our careers is a primary predictor of how happy and content we are with our lives in general (Erdogan, Bauer, Truxillo, & Mansfield, 2012). Therefore, the I/O psychology field has much to offer to individuals and organizations interested in increasing employee productivity, retention, and effectiveness while at the same time ensuring that employees are happy and healthy.

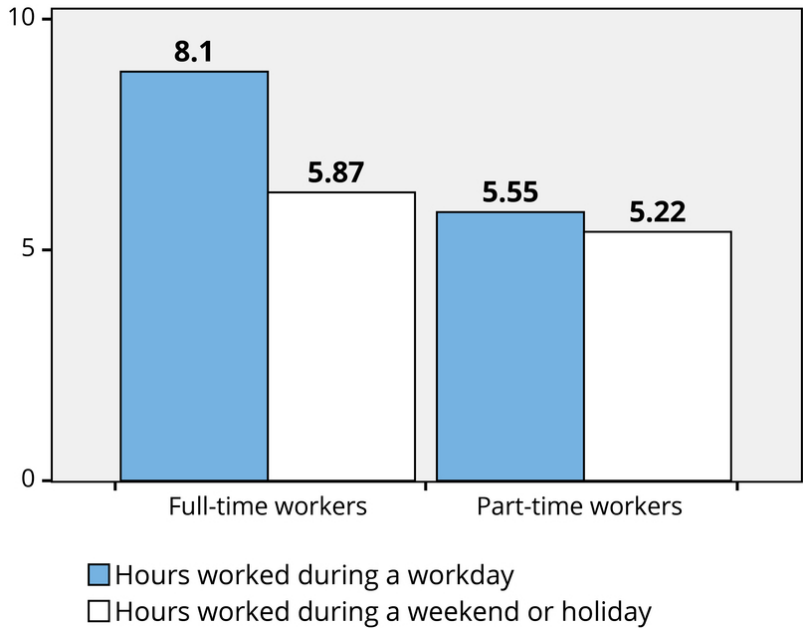


Figure 1. Average Hours Worked by Full Time and Part Time Workers

It seems that I/O psychology is useful for organizations, but how is it helpful to you? Findings of I/O psychology are useful and relevant to everyone who is planning to work in an organizational setting. Note that we are not necessarily taking about a business setting. Even if you are planning to form your own band, or write a novel, or work in a not-for-profit organization, you will likely be working in, or interacting with, organizations. Understanding why people behave the way they do will be useful to you by helping you motivate and influence your coworkers and managers, communicate your message more effectively, negotiate a contract, and manage your own work life and career in a way that fits your life and career goals.

I/O psychologists conduct studies that look at important questions such as "What makes people happy at work?" and "What types of leadership styles result in better performance of employees?"

What Does an I/O Psychologist Do?

I/O psychology is a scientific discipline. Similar to other scientific fields, it uses

research methods and approaches, and tests hypotheses. However, I/O psychology is a social science. This means that its findings will always be less exact than in physical sciences. Physical sciences study natural matter in closed systems and in controlled conditions. Social sciences study human behavior in its natural setting, with multiple factors that can affect behavior, so their predictive ability will never be perfect. While we can expect that two hydrogen and one oxygen atom will always make water when combined, combining job satisfaction with fair treatment will not always result in high performance. There are many influences on employee behaviors at work, and how they behave depends on the person interacting with a given situation on a given day.

Despite the lack of precise results, I/O psychology uses scientific principles to study organizational phenomena. Many of those who conduct these studies are located at universities, in psychology or management departments, but there are also many who work in private, government, or military organizations who conduct studies about I/O-related topics. These scholars conduct studies to understand topics such as "What makes people happy at work?" "What motivates employees at work?" "What types of leadership styles result in better performance of employees?" I/O psychology researchers tend to have a Ph.D. degree, and they develop hypotheses, find ways of reasonably testing those hypotheses in organizational settings, and distribute their findings by publishing in academic journals.

I/O psychology is based on the **scientist-practitioner model**. In other words, while the science part deals with understanding how and why things happen at work, the practitioner side takes a data-driven approach to understand organizational problems and to apply these findings to solving these specific problems facing the organization. While practitioners may learn about the most recent research findings by reading the journals that publish these results, some conduct their own research in their own companies, and some companies employ many I/O psychologists. Google is one company that collects and analyzes data to deal with talent-related issues. Google uses an annual *Googlegeist* (roughly translating to the spirit of Google) survey to keep tabs on how happy employees are. When survey results as well as turnover data showed that new mothers were twice as likely to leave the company as the average employee, the company made changes in its maternity leave policy and mitigated the problem (Manjoo, 2013). In other words, I/O psychologists both contribute to the science of workplace behavior by generating knowledge and solve actual problems organizations face by designing the workplace recruitment, selection, and workforce management policies using this knowledge.

While the scientist-practitioner model is the hoped-for ideal, not everyone agrees that it captures the reality. Some argue that practitioners are not always up to date about what scientists know and, conversely, that scientists do not study what practitioners really care

about often enough (Briner & Rousseau, 2011). At the same time, consumers of research should be wary, as there is some pseudo-science out there. The issues related to I/O psychology are important to organizations, which are sometimes willing to pay a lot of money for solutions to their problems, with some people trying to sell their most recent invention in employee testing, training, performance appraisal, and coaching to organizations. Many of these claims are not valid, and there is very little evidence that some of these products, in fact, improve the performance or retention of employees. Therefore, organizations and consumers of I/O-related knowledge and interventions need to be selective and ask to see such evidence (which is not the same as asking to see the list of other clients who purchased their products!).

Careers in I/O Psychology

The U.S. Department of Labor estimates that I/O psychology as a field is expected to grow 26% by the year 2018 (American Psychological Association, 2011) so the job outlook for I/O psychologists is good. Helping organizations understand and manage their workforce more effectively using science-based tools is important regardless of the shape of the economy, and I/O psychology as a field remains a desirable career option for those who have an interest in psychology in a work-related context coupled with an affinity for research methods and statistics.

I/O Psychologists work in a variety of settings that include, but are not limited to education, research and government organizations. [Image: WOCinTech Chat, https://goo.gl/RxTG7B, CC BY 2.0, https://goo.gl/BRvSA7]

If you would like to refer to yourself as a psychologist in the United States, then you would need to be licensed, and this requirement also applies to I/O psychologists. Licensing requirements vary by state (see **www.siop.org** for details). However, it is possible to pursue a career relating to I/O psychology without holding the title psychologist. Licensing requirements usually include a doctoral degree in psychology. That said, there are many job opportunities for those with a master's degree in I/O psychology, or in related fields such as organizational behavior and human resource management.

Academics and practitioners who work in I/O psychology or related fields are often members of the **Society for Industrial and Organizational Psychology (SIOP)**. Students with an interest in I/O psychology are eligible to become an affiliated member of this organization, even if they are not pursuing a degree related to I/O psychology. SIOP membership brings benefits including networking opportunities and subscriptions to an academic journal of I/O research and a newsletter detailing current issues in I/O. The organization supports its members by providing forums for information and idea exchange, as well as monitoring developments about the field for its membership. SIOP is an independent organization but also a subdivision of American Psychological Association (APA), which is the scientific organization that represents psychologists in the United States. Different regions of the world have their own associations for I/O psychologists. For example, the European Association for Work and Organizational Psychology (EAWOP) is the premiere organization for I/O psychologists in Europe, where I/O psychology is typically referred to as **work and organizational psychology**. A global federation of I/O psychology organizations, named the Alliance for Organizational Psychology, was recently established. It currently has three member organizations (SIOP, EAWOP, and the Organizational Psychology Division of the International Association for Applied Psychology, or Division 1), with plans to expand in the future. The Association for Psychological Science (APS) is another association to which many I/O psychologists belong.

Those who work in the I/O field may be based at a university, teaching and researching I/O-related topics. Some private organizations employing I/O psychologists include DDI, HUMRRO, Corporate Executive Board (CEB), and IBM Smarter Workforce. These organizations engage in services such as testing, performance management, and administering attitude surveys. Many organizations also hire in-house employees with expertise in I/O psychology–related fields to work in departments including human resource management or "people analytics." According to a 2011 membership survey of SIOP, the largest percentage of members were employed in academic institutions, followed by those in consulting or independent practice, private sector organizations, and public sector organizations (Society for Industrial and Organizational Psychology, 2011). Moreover, the majority of respondents (86%) were not licensed.

History of I/O Psychology

The field of I/O psychology is almost as old as the field of psychology itself. In order to understand any field, it helps to understand how it started and evolved. Let's look at the pioneers of I/O psychology and some defining studies and developments in the field (see Koppes, 1997; Landy, 1997).

The term "founding father" of I/O psychology is usually associated with Hugo Munsterberg of Harvard University. His 1913 book on *Psychology and Industrial Efficiency*, is considered to be the first textbook in I/O psychology. The book is the first to discuss topics such as how to find the best person for the job and how to design jobs to maintain efficiency by dealing with fatigue.

Hugo Munsterberg, the founding father of I/O psychology who in turn was influenced by the writings of Wilhelm Wundt, the founding father of experimental psychology. [Image: CC0 Public Domain, https://goo.gl/m25gce]

One of his contemporaries, Frederick Taylor, was not a psychologist and is considered to be a founding father not of I/O psychology but of scientific management. Despite his non-psychology background, his ideas were important to the development of the I/O psychology field, because they evolved at around the same time, and some of his innovations, such as job analysis, later became critically important aspects of I/O psychology. Taylor was an engineer and management consultant who pioneered time studies where management observed how work was being performed and how it could be performed better. For example, after analyzing how workers shoveled coal, he decided that the optimum weight of coal to be lifted was 21 pounds, and he designed a shovel to be distributed to workers for this purpose. He instituted mandatory breaks to prevent fatigue, which increased efficiency of workers. His book *Principles of Scientific Management* was highly influential in pointing out how management could play a role in increasing efficiency of human factors.

Lillian Gilbreth was an engineer and I/O psychologist, arguably completing the first Ph.D. in I/O psychology. She and her husband, Frank Gilbreth, developed Taylor's ideas by conducting time and motion studies, but also bringing more humanism to these efforts. Gilbreth underlined the importance of how workers felt about their jobs, in addition to how they could perform their jobs more efficiently. She was also the first to bring attention to the value of observing job candidates while they performed their jobs, which is the foundation behind work sample tests. The Gilbreths ran a successful consulting business based on these ideas. Her advising of GE in kitchen redesign resulted in foot-pedal trash cans and shelves in refrigerator doors. Her life with her husband and 12 kids is detailed in a book later made into a 1950 movie, *Cheaper by the Dozen*, authored by two of her children.

World War I was a turning point for the field of I/O psychology, as it popularized the notion of testing for placement purposes. During and after the war, more than 1 million Americans were tested, which exposed a generation of men to the idea of using tests as part of selection and placement. Following the war, the idea of testing started to take root in the private industry. American Psychological Association President Robert Yerkes, as well as Walter Dill Scott and Walter Van Dyke Bingham from the Carnegie Institute of Technology (later Carnegie Mellon University) division of applied psychology department were influential in popularizing the idea of testing by offering their services to the U.S. Army.

Another major development in the field was the **Hawthorne Studies**, conducted under the leadership of Harvard University researchers Elton Mayo and Fritz Roethlisberger at the Western Electric Co. in the late 1920s. Originally planned as a study of the effects of lighting on productivity, this series of studies revealed unexpected and surprising findings. For example, one study showed that regardless of the level of change in lighting, productivity remained high and started worsening only when it was reduced to the level of moonlight. Further exploration resulted in the hypothesis that employees were responding to being paid attention to and being observed, rather than the level of lighting (called the "**Hawthorne effect**"). Another study revealed the phenomenon of group pressure on individuals to limit production to be below their capacity. These studies are considered to be classics in I/O psychology due to their underlining the importance of understanding employee psychology to make sense of employee behavior in the workplace.

Since then, thousands of articles have been published on topics relating to I/O psychology, and it is one of the influential subdimensions of psychology. I/O psychologists generate scholarly knowledge and have a role in recruitment, selection, assessment and development of talent, and design and improvement of the workplace. One of the major projects I/O psychologists contributed to is **O*Net**, a vast database of occupational information sponsored by the U.S. government, which contains information on hundreds of jobs, listing tasks, knowledge, skill, and ability requirements of jobs, work activities, contexts under which work is performed, as well as personality and values that are critical to effectiveness on those jobs. This database is free and a useful resource for students, job seekers, and HR professionals.

Findings of I/O psychology have the potential to contribute to the health and happiness of people around the world. When people are asked how happy they are with their lives, their feelings about the work domain are a big part of how they answer this question. I/O psychology research uncovers the secrets of a happy workplace (see Table 2). Organizations designed around these principles will see direct benefits, in the form of employee happiness, well-being, motivation, effectiveness, and retention.

Need Satisfaction	Make sure that employee basic needs are met. Work is how people around the world satisfy their financial, belonging, status, and power needs.
Meaningful Engagement	Ensure that work provides a challenge and is meaningful. Be sure that work provides growth opportunities.
Stress	Work is a major source of stress. Make stress manageable by ensuring that work does not overly interfere with personal life. Be aware of work related stressors such as poor quality management, unreasonable deadlines, harassment, and unfairness.

Table 2. Designing Work for Happiness: Research Based Recommendations. Based on research summarized in Erdogan et al., 2012.

We have now reviewed what I/O psychology is, what I/O psychologists do, the history of I/O, associations related to I/O psychology, and accomplishments of I/O psychologists. Those interested in finding out more about I/O psychology are encouraged to visit the outside resources below to learn more.

Outside Resources

Careers: Occupational information via O*Net\'s database containing information on hundreds of standardized and occupation-specific descriptors
http://www.onetonline.org/

Organization: Society for Industrial/Organizational Psychology (SIOP)
http://www.siop.org

Organization: Alliance for Organizational Psychology (AOP)
http://www.allianceorgpsych.org

Organization: American Psychological Association (APA)
http://www.apa.org

Organization: Association for Psychological Science (APS)
http://www.psychologicalscience.org/

Organization: European Association of Work and Organizational Psychology (EAWOP)
http://www.eawop.org

Organization: International Association for Applied Psychology (IAAP)
http://www.iaapsy.org/division1/

Training: For more about graduate training programs in I/O psychology and related fields
http://www.siop.org/gtp/

Video: An introduction to I/O Psychology produced by the Society for Industrial and Organizational Psychology.
https://www.youtube.com/watch?v=oG5ew9rhkBg

Discussion Questions

1. How would an I/O psychologist go about establishing whether a selection test is better than an alternative?
2. What would be the advantages and downsides of pursuing a career in I/O psychology?

3. If your organization is approached by a company stating that it has an excellent training program in leadership, how would you assess if the program is good or not? What information would you seek before making a decision?
4. After reading this module, what topics in I/O psychology seemed most interesting to you?

Vocabulary

Hawthorne Effect
An effect in which individuals change or improve some facet of their behavior as a result of their awareness of being observed.

Hawthorne Studies
A series of well-known studies conducted under the leadership of Harvard University researchers, which changed the perspective of scholars and practitioners about the role of human psychology in relation to work behavior.

Industrial/Organizational psychology
Scientific study of behavior in organizational settings and the application of psychology to understand work behavior.

O*Net
A vast database of occupational information containing data on hundreds of jobs.

Scientist-practitioner model
The dual focus of I/O psychology, which entails practical questions motivating scientific inquiry to generate knowledge about the work-person interface and the practitioner side applying this scientific knowledge to organizational problems.

Society for Industrial and Organizational Psychology (SIOP)
A professional organization bringing together academics and practitioners who work in I/O psychology and related areas. It is Division 14 of the American Psychological Association (APA).

Work and organizational psychology
Preferred name for I/O psychology in Europe.

References

American Psychological Association. (2011). Psychology job forecast: Partly sunny. Retrieved on 1/25/2013 from http://www.apa.org/gradpsych/2011/03/cover-sunny.aspx

Briner, R. B., & Rousseau, D. M. (2011). Evidence-based I-O psychology: Not there yet. *Industrial and Organizational Psychology*, 4, 3–22.

Erdogan, B., Bauer, T. N., Truxillo, D. M., & Mansfield, L. R. (2012). Whistle while you work: A review of the life satisfaction literature. *Journal of Management*, 38, 1038–1083.

Koppes, L. L. (1997). American female pioneers of industrial and organizational psychology during the early years. *Journal of Applied Psychology*, 82, 500–515.

Landy, F. J. (1997). Early influences on the development of industrial and organizational psychology. *Journal of Applied Psychology*, 82, 467–477.

Manjoo, F. (2013). The happiness machine: How Google became such a great place to work. Retrieved on 2/1/2013 from http://www.slate.com/articles/technology/technology/2013/-01/google_people_operations_the_secrets_of_the_world_s_most_scientific_human.html

Society for Industrial and Organizational Psychology. (2011). SIOP 2011 membership survey, employment setting report. Retrieved on 2/5/2013 from http://www.siop.org/userfiles/image/2011MemberSurvey/Employment_Setting_Report.pdf

U.S. Department of Labor, Bureau of Labor Statistics. (2011). Economic news release. Retrieved on 1/20/2013 from http://www.bls.gov/news.release/atus.t04.htm

Personality

28
Personality Traits

Edward Diener & Richard E. Lucas

Personality traits reflect people's characteristic patterns of thoughts, feelings, and behaviors. Personality traits imply consistency and stability—someone who scores high on a specific trait like Extraversion is expected to be sociable in different situations and over time. Thus, trait psychology rests on the idea that people differ from one another in terms of where they stand on a set of basic trait dimensions that persist over time and across situations. The most widely used system of traits is called the Five-Factor Model. This system includes five broad traits that can be remembered with the acronym OCEAN: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Each of the major traits from the Big Five can be divided into facets to give a more fine-grained analysis of someone's personality. In addition, some trait theorists argue that there are other traits that cannot be completely captured by the Five-Factor Model. Critics of the trait concept argue that people do not act consistently from one situation to the next and that people are very influenced by situational forces. Thus, one major debate in the field concerns the relative power of people's traits versus the situations in which they find themselves as predictors of their behavior.

Learning Objectives

- List and describe the "Big Five" ("OCEAN") personality traits that comprise the Five-Factor Model of personality.
- Describe how the facet approach extends broad personality traits.
- Explain a critique of the personality-trait concept.
- Describe in what ways personality traits may be manifested in everyday behavior.
- Describe each of the Big Five personality traits, and the low and high end of the dimension.
- Give examples of each of the Big Five personality traits, including both a low and high example.

- Describe how traits and social learning combine to predict your social activities.
- Describe your theory of how personality traits get refined by social learning.

Introduction

When we observe people around us, one of the first things that strikes us is how different people are from one another. Some people are very talkative while others are very quiet. Some are active whereas others are couch potatoes. Some worry a lot, others almost never seem anxious. Each time we use one of these words, words like "talkative," "quiet," "active," or "anxious," to describe those around us, we are talking about a person's **personality**—the characteristic ways that people differ from one another. Personality psychologists try to describe and understand these differences.

Although there are many ways to think about the personalities that people have, Gordon Allport and other "personologists" claimed that we can best understand the differences between individuals by understanding their personality traits. **Personality traits** reflect basic dimensions on which people differ (Matthews, Deary, & Whiteman, 2003). According to trait psychologists, there are a limited number of these dimensions (dimensions like Extraversion, Conscientiousness, or Agreeableness), and each individual falls somewhere on each dimension, meaning that they could be low, medium, or high on any specific trait.

"Are you an introvert"? In popular culture it's common to talk about people being introverts or extroverts as if these were precise descriptions that meant the same thing for everyone. But research shows that these traits and others are quite variable within individuals. [Image: Nguyen Hung Vu, https://goo.gl/qKJUAC, CC BY 2.0, https://goo.gl/BRvSA7]

An important feature of personality traits is that they reflect **continuous distributions** rather than distinct personality types. This means that when personality psychologists talk about Introverts and Extraverts, they are not really talking about two distinct types of people who are completely and qualitatively different from one another. Instead, they are talking about people who score relatively low or relatively high along a

continuous distribution. In fact, when personality psychologists measure traits like Extraversion, they typically find that most people score somewhere in the middle, with smaller numbers showing more extreme levels. The figure below shows the distribution of Extraversion scores from a survey of thousands of people. As you can see, most people report being moderately, but not extremely, extraverted, with fewer people reporting very high or very low scores.

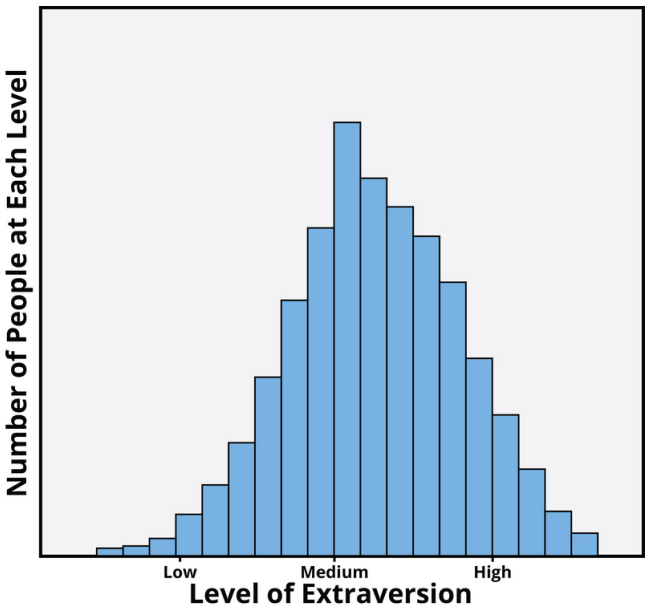


Figure 1. Distribution of Extraversion Scores in a Sample Higher bars mean that more people have scores of that level. This figure shows that most people score towards the middle of the extraversion scale, with fewer people who are highly extraverted or highly introverted.

There are three criteria that are characterize personality traits: (1) consistency, (2) stability, and (3) individual differences.

1. To have a personality trait, individuals must be somewhat consistent across situations in their behaviors related to the trait. For example, if they are talkative at home, they tend also to be talkative at work.

2. Individuals with a trait are also somewhat stable over time in behaviors related to the trait. If they are talkative, for example, at age 30, they will also tend to be talkative at age 40.

3. People differ from one another on behaviors related to the trait. Using speech is not a personality trait and neither is walking on two feet—virtually all individuals do these activities, and there are almost no individual differences. But people differ on how frequently they talk and how active they are, and thus personality traits such as Talkativeness and Activity Level do exist.

A challenge of the trait approach was to discover the major traits on which all people differ. Scientists for many decades generated hundreds of new traits, so that it was soon difficult to keep track and make sense of them. For instance, one psychologist might focus on individual differences in "friendliness," whereas another might focus on the highly related concept of "sociability." Scientists began seeking ways to reduce the number of traits in some systematic way and to discover the basic traits that describe most of the differences between people.

The way that Gordon Allport and his colleague Henry Odbert approached this was to search

the dictionary for all descriptors of personality (Allport & Odbert, 1936). Their approach was guided by the **lexical hypothesis**, which states that all important personality characteristics should be reflected in the language that we use to describe other people. Therefore, if we want to understand the fundamental ways in which people differ from one another, we can turn to the words that people use to describe one another. So if we want to know what words people use to describe one another, where should we look? Allport and Odbert looked in the most obvious place—the dictionary. Specifically, they took all the personality descriptors that they could find in the dictionary (they started with almost 18,000 words but quickly reduced that list to a more manageable number) and then used statistical techniques to determine which words "went together." In other words, if everyone who said that they were "friendly" also said that they were "sociable," then this might mean that personality psychologists would only need a single trait to capture individual differences in these characteristics. Statistical techniques were used to determine whether a small number of dimensions might underlie all of the thousands of words we use to describe people.

The Five-Factor Model of Personality

Research that used the lexical approach showed that many of the personality descriptors found in the dictionary do indeed overlap. In other words, many of the words that we use to describe people are synonyms. Thus, if we want to know what a person is like, we do not necessarily need to ask how sociable they are, how friendly they are, and how gregarious they are. Instead, because sociable people tend to be friendly and gregarious, we can summarize this personality dimension with a single term. Someone who is sociable, friendly, and gregarious would typically be described as an "Extravert." Once we know she is an extravert, we can assume that she is sociable, friendly, and gregarious.

Statistical methods (specifically, a technique called **factor analysis**) helped to determine whether a small number of dimensions underlie the diversity of words that people like Allport and Odbert identified. The most widely accepted system to emerge from this approach was "The Big Five" or "**Five-Factor Model**" (Goldberg, 1990; McCrae & John, 1992; McCrae & Costa, 1987). The Big Five comprises five major traits shown in the Figure 2 below. A way to remember these five is with the acronym OCEAN (O is for **Openness**; C is for **Conscientiousness**; E is for **Extraversion**; A is for **Agreeableness**; N is for **Neuroticism**). Figure 3 provides descriptions of people who would score high and low on each of these traits.

Scores on the Big Five traits are mostly independent. That means that a person's standing on one trait tells very little about their standing on the other traits of the Big Five. For example, a person can be extremely high in Extraversion and be either high or low on Neuroticism.

Big 5 Trait	Definition
Openness	The tendency to appreciate new art, ideas, values, feelings, and behaviors.
Conscientiousness	The tendency to be careful, on-time for appointments, to follow rules, and to be hardworking.
Extraversion	The tendency to be talkative, sociable, and to enjoy others; the tendency to have a dominant style.
Agreeableness	The tendency to agree and go along with others rather than to assert one's own opinions and choices.
Neuroticism	The tendency to frequently experience negative emotions such as anger, worry, and sadness, as well as being interpersonally sensitive.

Figure 2. Descriptions of the Big Five Personality Traits

Similarly, a person can be low in Agreeableness and be either high or low in Conscientiousness. Thus, in the Five-Factor Model, you need five scores to describe most of an individual's personality.

In the Appendix to this module, we present a short scale to assess the Five-Factor Model of personality (Donnellan, Oswald, Baird, & Lucas, 2006). You can take this test to see where you stand in terms of your Big Five scores. John Johnson has also created a helpful website that has personality scales that can be used and taken by the general public:

http://www.personal.psu.edu/j5j/IPIP/ipipneo120.htm

After seeing your scores, you can judge for yourself whether you think such tests are valid.

Traits are important and interesting because they describe stable patterns of behavior that persist for long periods of time (Caspi, Roberts, & Shiner, 2005). Importantly, these stable patterns can have broad-ranging consequences for many areas of our life (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). For instance, think about the factors that determine success in college. If you were asked to guess what factors predict good grades in college, you might guess something like intelligence. This guess would be correct, but we know much more about who is likely to do well. Specifically, personality researchers have also found the personality traits like Conscientiousness play an important role in college and beyond, probably because highly conscientious individuals study hard, get their work done on time, and are less distracted by nonessential activities that take time away from school work. In addition, highly conscientious people are often healthier than people low in conscientiousness because they are more likely to maintain healthy diets, to exercise, and to follow basic safety procedures like wearing seat belts or bicycle helmets. Over the long term, this consistent pattern of

Big 5 Trait	Example Behavior for LOW Scorers	Example Behavior for HIGH Scorers
Openness	Prefers not to be exposed to alternative moral systems; narrow interests; inartistic; not analytical; down-to-earth	Enjoys seeing people with new types of haircuts and body piercing; curious; imaginative; untraditional
Conscientiousness	Prefers spur-of-the-moment action to planning; unreliable; hedonistic; careless; lax	Never late for a date; organized; hardworking; neat; persevering; punctual; self-disciplined
Extraversion	Preferring a quiet evening reading to a loud party; sober; aloof; unenthusiastic	Being the life of the party; active; optimistic; fun-loving; affectionate
Agreeableness	Quickly and confidently asserts own rights; irritable; manipulative; uncooperative; rude	Agrees with others about political opinions; good-natured; forgiving; gullible; helpful; forgiving
Neuroticism	Not getting irritated by small annoyances; calm, unemotional; hardy; secure; self-satisfied	Constantly worrying about little things; insecure; hypochondriacal; feeling inadequate

Figure 3. Example behaviors for those scoring low and high for the big 5 traits

behaviors can add up to meaningful differences in health and longevity. Thus, personality traits are not just a useful way to describe people you know; they actually help psychologists predict how good a worker someone will be, how long he or she will live, and the types of jobs and activities the person will enjoy. Thus, there is growing interest in personality psychology among psychologists who work in applied settings, such as health psychology or organizational psychology.

Facets of Traits (Subtraits)

So how does it feel to be told that your entire personality can be summarized with scores on just five personality traits? Do you think these five scores capture the complexity of your own and others' characteristic patterns of thoughts, feelings, and behaviors? Most people would probably say no, pointing to some exception in their behavior that goes against the general pattern that others might see. For instance, you may know people who are warm and friendly and find it easy to talk with strangers at a party yet are terrified if they have to perform in front of others or speak to large groups of people. The fact that there are different ways of being extraverted or conscientious shows that there is value in considering lower-level units of personality that are more specific than the Big Five traits. These more specific, lower-level units of personality are often called facets.

To give you a sense of what these narrow units are like, Figure 4 shows facets for each of the

Trait	Facets of Trait
Openness	• Fantasy prone • Open to feelings • Open to diverse behaviors • Open to new and different ideas • Open to various values and beliefs
Conscientiousness	• Competent • Orderly • Dutiful • Achievement oriented • Self-disciplined • Deliberate
Extraversion	• Gregarious (sociable) • Warm • Assertive • Active • Excitement-seeking • Positive emotionality
Agreeableness	• Trusting • Straightforward • Altruistic • Compliant • Modest • Tender-minded
Neuroticism	• Anxious • Angry • Depressed • Self-consciousness • Impulsive • Vulnerable

Figure 4. Facets of Traits

Big Five traits. It is important to note that although personality researchers generally agree about the value of the Big Five traits as a way to summarize one's personality, there is no widely accepted list of facets that should be studied. The list seen here, based on work by researchers Paul Costa and Jeff McCrae, thus reflects just one possible list among many. It should, however, give you an idea of some of the facets making up each of the Five-Factor Model.

Facets can be useful because they provide more specific descriptions of what a person is like. For instance, if we take our friend who loves parties but hates public speaking, we might say that this person scores high on the "gregariousness" and "warmth" facets of extraversion, while scoring lower on facets such as "assertiveness" or "excitement-seeking." This precise profile of facet scores not only provides a better description, it might also allow us to better predict how this friend will do in a variety of different jobs (for example, jobs that require public speaking versus jobs that involve one-on-one interactions with customers; Paunonen & Ashton, 2001). Because different facets within a broad, global trait like extraversion tend to go together (those who are gregarious are often but not always assertive), the broad trait often provides a useful summary of what a person is like. But when we really want to know a person, facet scores add to our knowledge in important ways.

Other Traits Beyond the Five-Factor Model

Despite the popularity of the Five-Factor Model, it is certainly not the only model that exists. Some suggest that there are more than five major traits, or perhaps even fewer. For example, in one of the first comprehensive models to be proposed, Hans Eysenck suggested that

Extraversion and Neuroticism are most important. Eysenck believed that by combining people's standing on these two major traits, we could account for many of the differences in personality that we see in people (Eysenck, 1981). So for instance, a neurotic introvert would be shy and nervous, while a stable introvert might avoid social situations and prefer solitary activities, but he may do so with a calm, steady attitude and little anxiety or emotion. Interestingly, Eysenck attempted to link these two major dimensions to underlying differences in people's biology. For instance, he suggested that introverts experienced too much sensory stimulation and arousal, which made them want to seek out quiet settings and less stimulating environments. More recently, Jeffrey Gray suggested that these two broad traits are related to fundamental reward and avoidance systems in the brain—extraverts might be motivated to seek reward and thus exhibit assertive, reward-seeking behavior, whereas people high in neuroticism might be motivated to avoid punishment and thus may experience anxiety as a result of their heightened awareness of the threats in the world around them (Gray, 1981. This model has since been updated; see Gray & McNaughton, 2000). These early theories have led to a burgeoning interest in identifying the physiological underpinnings of the individual differences that we observe.

Another revision of the Big Five is the **HEXACO model** of traits (Ashton & Lee, 2007). This model is similar to the Big Five, but it posits slightly different versions of some of the traits, and its proponents argue that one important class of individual differences was omitted from the Five-Factor Model. The HEXACO adds Honesty-Humility as a sixth dimension of personality. People high in this trait are sincere, fair, and modest, whereas those low in the trait are manipulative, narcissistic, and self-centered. Thus, trait theorists are agreed that personality traits are important in understanding behavior, but there are still debates on the exact number and composition of the traits that are most important.

There are other important traits that are not included in comprehensive models like the Big Five. Although the five factors capture much that is important about personality, researchers have suggested other traits that capture interesting aspects of our behavior. In Figure 5 below we present just a few, out of hundreds, of the other traits that have been studied by personologists.

Not all of the above traits are currently popular with scientists, yet each of them has experienced popularity in the past. Although the Five-Factor Model has been the target of more rigorous research than some of the traits above, these additional personality characteristics give a good idea of the wide range of behaviors and attitudes that traits can cover.

The Person-Situation Debate and Alternatives to the Trait Perspective

Personality Trait	Description
Machiavellianism	Named after the famous political philosopher, Niccolo Machiavelli, this trait refers to individuals who manipulate the behavior of others, often through duplicity. Machiavellians are often interested in money and power, and pragmatically use others in this quest.
Need for Achievement	Those high in need for achievement want to accomplish a lot and set high standards of excellence for themselves. They are able to work persistently and hard for distant goals. David McClelland argued that economic growth depends in part on citizens with high need for achievement.
Need for Cognition	People high in need for cognition find it rewarding to understand things, and are willing to use considerable cognitive effort in this quest. Such individuals enjoy learning, and the process of trying to understand new things.
Authoritarianism	Authoritarians believe in strict social hierarchies, in which they are totally obedient to those above them, and expect complete obedience from their subordinates. Rigid in adherence to rules, the authoritarian personality is very uncomfortable with uncertainty.
Narcissism	The narcissistic personality has self-love that is so strong that it results in high levels of vanity, conceit, and selfishness. The narcissistic individual often has problems feeling empathetic toward others and grateful to others.
Self-esteem	The tendency to evaluate oneself positively. Self-esteem does not imply that one believes that he or she is better than others, only that he or she is a person of worth.
Optimism	The tendency to expect positive outcomes in the future. People who are optimistic expect good things to happen, and indeed they often have more positive outcomes, perhaps because they work harder to achieve them.
Alexithymia	The inability to recognize and label emotions in oneself. The individual also has a difficult time recognizing emotions in others, and often has difficulties in relationships.

Figure 5. Other Traits Beyond Those Included in the Big Five

The ideas described in this module should probably seem familiar, if not obvious to you. When asked to think about what our friends, enemies, family members, and colleagues are like, some of the first things that come to mind are their personality characteristics. We might think about how warm and helpful our first teacher was, how irresponsible and careless our brother is, or how demanding and insulting our first boss was. Each of these descriptors reflects a personality trait, and most of us generally think that the descriptions that we use for individuals accurately reflect their "characteristic pattern of thoughts, feelings, and behaviors," or in other

words, their personality.

The way people behave is only in part a product of their natural personality. Situations also influence how a person behaves. Are you for instance a "different person" as a student in a classroom compared to when you're a member of a close-knit social group? [Image: UO Education, https://goo.gl/ylgV9T, CC BY-NC 2.0, https://goo.gl/VnKlK8]

But what if this idea were wrong? What if our belief in personality traits were an illusion and people are not consistent from one situation to the next? This was a possibility that shook the foundation of personality psychology in the late 1960s when Walter Mischel published a book called *Personality and Assessment* (1968). In this book, Mischel suggested that if one looks closely at people's behavior across many different situations, the consistency is really not that impressive. In other words, children who cheat on tests at school may steadfastly follow all rules when playing games and may never tell a lie to their parents. In other words, he suggested, there may not be any general trait of honesty that links these seemingly related behaviors. Furthermore, Mischel suggested that observers may believe that broad personality traits like honesty exist, when in fact, this belief is an illusion. The debate that followed the publication of Mischel's book was called the **person-situation debate** because it pitted the power of personality against the power of situational factors as determinants of the behavior that people exhibit.

Because of the findings that Mischel emphasized, many psychologists focused on an alternative to the trait perspective. Instead of studying broad, context-free descriptions, like the trait terms we've described so far, Mischel thought that psychologists should focus on people's distinctive reactions to specific situations. For instance, although there may not be a broad and general trait of honesty, some children may be especially likely to cheat on a test when the risk of being caught is low and the rewards for cheating are high. Others might be motivated by the sense of risk involved in cheating and may do so even when the rewards are not very high. Thus, the behavior itself results from the child's unique evaluation of the risks and rewards present at that moment, along with her evaluation of her abilities and values. Because of this, the same child might act very differently in different situations. Thus, Mischel thought that specific behaviors were driven by the interaction between very specific, psychologically meaningful features of the situation in which people found themselves, the person's unique way of perceiving that situation, and his or her abilities for dealing with it.

Mischel and others argued that it was these social-cognitive processes that underlie people's reactions to specific situations that provide some consistency when situational features are the same. If so, then studying these broad traits might be more fruitful than cataloging and measuring narrow, context-free traits like Extraversion or Neuroticism.

In the years after the publication of Mischel's (1968) book, debates raged about whether personality truly exists, and if so, how it should be studied. And, as is often the case, it turns out that a more moderate middle ground than what the situationists proposed could be reached. It is certainly true, as Mischel pointed out, that a person's behavior in one specific situation is not a good guide to how that person will behave in a very different specific situation. Someone who is extremely talkative at one specific party may sometimes be reticent to speak up during class and may even act like a wallflower at a different party. But this does not mean that personality does not exist, nor does it mean that people's behavior is completely determined by situational factors. Indeed, research conducted after the person-situation debate shows that on average, the effect of the "situation" is about as large as that of personality traits. However, it is also true that if psychologists assess a broad range of behaviors across many different situations, there are general tendencies that emerge. Personality traits give an indication about how people will act on average, but frequently they are not so good at predicting how a person will act in a specific situation at a certain moment in time. Thus, to best capture broad traits, one must assess *aggregate* behaviors, averaged over time and across many different types of situations. Most modern personality researchers agree that there is a place for broad personality traits and for the narrower units such as those studied by Walter Mischel.

Appendix

The Mini-IPIP Scale

(Donnellan, Oswald, Baird, & Lucas, 2006)

Instructions: Below are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. Please read each statement carefully, and put a number from 1 to 5 next to it to describe how accurately the statement describes you.

1 = Very inaccurate

2 = Moderately inaccurate

3 = Neither inaccurate nor accurate

4 = Moderately accurate

5 = Very accurate

1. _____ Am the life of the party (E)
2. _____ Sympathize with others' feelings (A)
3. _____ Get chores done right away (C)
4. _____ Have frequent mood swings (N)
5. _____ Have a vivid imagination (O)
6. _____Don't talk a lot (E)
7. _____ Am not interested in other people's problems (A)
8. _____ Often forget to put things back in their proper place (C)
9. _____ Am relaxed most of the time (N)
10. _____ Am not interested in abstract ideas (O)
11. _____ Talk to a lot of different people at parties (E)
12. _____ Feel others' emotions (A)
13. _____ Like order (C)
14. _____ Get upset easily (N)
15. _____ Have difficulty understanding abstract ideas (O)
16. _____ Keep in the background (E)
17. _____ Am not really interested in others (A)
18. _____ Make a mess of things (C)
19. _____ Seldom feel blue (N)
20. _____ Do not have a good imagination (O)

Scoring: The first thing you must do is to reverse the items that are worded in the opposite direction. In order to do this, subtract the number you put for that item from 6. So if you put a 4, for instance, it will become a 2. Cross out the score you put when you took the scale, and

put the new number in representing your score subtracted from the number 6.

Items to be reversed in this way: 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20

Next, you need to add up the scores for each of the five OCEAN scales (including the reversed numbers where relevant). Each OCEAN score will be the sum of four items. Place the sum next to each scale below.

_____ Openness: Add items 5, 10, 15, 20

_____ Conscientiousness: Add items 3, 8, 13, 18

_____ Extraversion: Add items 1, 6, 11, 16

_____ Agreeableness: Add items 2, 7, 12, 17

_____ Neuroticism: Add items 4, 9,14, 19

Compare your scores to the norms below to see where you stand on each scale. If you are low on a trait, it means you are the opposite of the trait label. For example, low on Extraversion is Introversion, low on Openness is Conventional, and low on Agreeableness is Assertive.

19–20 Extremely High, 17–18 Very High, 14–16 High,

11–13 Neither high nor low; in the middle, 8–10 Low, 6–7 Very low, 4–5 Extremely low

Outside Resources

Video 1: Gabriela Cintron's – 5 Factors of Personality (OCEAN Song). This is a student-made video which cleverly describes, through song, common behavioral characteristics of the Big 5 personality traits. It was one of the winning entries in the 2016-17 Noba + Psi Chi Student Video Award.
https://www.youtube.com/watch?feature=youtu.be&v=Rk8CDXMb8_U&app=desktop

Video 2: Michael Harris' – Personality Traits: The Big 5 and More. This is a student-made video that looks at characteristics of the OCEAN traits through a series of funny vignettes. It also presents on the Person vs Situation Debate. It was one of the winning entries in the 2016-17 Noba + Psi Chi Student Video Award.
https://vimeo.com/218245492

Video 3: David M. Cole's – Grouchy with a Chance of Stomping. This is a student-made video that makes a very important point about the relationship between personality traits and behavior using a handy weather analogy. It was one of the winning entries in the 2016-17 Noba + Psi Chi Student Video Award.
https://www.youtube.com/watch?v=GnaFMjaJtlY

Web: International Personality Item Pool
http://ipip.ori.org/

Web: John Johnson personality scales
http://www.personal.psu.edu/j5j/IPIP/ipipneo120.htm

Web: Personality trait systems compared
http://www.personalityresearch.org/bigfive/goldberg.html

Web: Sam Gosling website
http://homepage.psy.utexas.edu/homepage/faculty/gosling/samgosling.htm

Discussion Questions

1. Consider different combinations of the Big Five, such as O (Low), C (High), E (Low), A (High), and N (Low). What would this person be like? Do you know anyone who is like this? Can you select politicians, movie stars, and other famous people and rate them on the Big Five?

2. How do you think learning and inherited personality traits get combined in adult personality?
3. Can you think of instances where people do not act consistently—where their personality traits are not good predictors of their behavior?
4. Has your personality changed over time, and in what ways?
5. Can you think of a personality trait not mentioned in this module that describes how people differ from one another?
6. When do extremes in personality traits become harmful, and when are they unusual but productive of good outcomes?

Vocabulary

Agreeableness
A personality trait that reflects a person's tendency to be compassionate, cooperative, warm, and caring to others. People low in agreeableness tend to be rude, hostile, and to pursue their own interests over those of others.

Conscientiousness
A personality trait that reflects a person's tendency to be careful, organized, hardworking, and to follow rules.

Continuous distributions
Characteristics can go from low to high, with all different intermediate values possible. One does not simply have the trait or not have it, but can possess varying amounts of it.

Extraversion
A personality trait that reflects a person's tendency to be sociable, outgoing, active, and assertive.

Facets
Broad personality traits can be broken down into narrower facets or aspects of the trait. For example, extraversion has several facets, such as sociability, dominance, risk-taking and so forth.

Factor analysis
A statistical technique for grouping similar things together according to how highly they are associated.

Five-Factor Model
(also called the Big Five) The Five-Factor Model is a widely accepted model of personality traits. Advocates of the model believe that much of the variability in people's thoughts, feelings, and behaviors can be summarized with five broad traits. These five traits are Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

HEXACO model
The HEXACO model is an alternative to the Five-Factor Model. The HEXACO model includes six traits, five of which are variants of the traits included in the Big Five (Emotionality [E], Extraversion [X], Agreeableness [A], Conscientiousness [C], and Openness [O]). The sixth

factor, Honesty-Humility [H], is unique to this model.

Independent
Two characteristics or traits are separate from one another-- a person can be high on one and low on the other, or vice-versa. Some correlated traits are relatively independent in that although there is a tendency for a person high on one to also be high on the other, this is not always the case.

Lexical hypothesis
The lexical hypothesis is the idea that the most important differences between people will be encoded in the language that we use to describe people. Therefore, if we want to know which personality traits are most important, we can look to the language that people use to describe themselves and others.

Neuroticism
A personality trait that reflects the tendency to be interpersonally sensitive and the tendency to experience negative emotions like anxiety, fear, sadness, and anger.

Openness to Experience
A personality trait that reflects a person's tendency to seek out and to appreciate new things, including thoughts, feelings, values, and experiences.

Personality
Enduring predispositions that characterize a person, such as styles of thought, feelings and behavior.

Personality traits
Enduring dispositions in behavior that show differences across individuals, and which tend to characterize the person across varying types of situations.

Person-situation debate
The person-situation debate is a historical debate about the relative power of personality traits as compared to situational influences on behavior. The situationist critique, which started the person-situation debate, suggested that people overestimate the extent to which personality traits are consistent across situations.

References

Allport, G. W., & Odbert, H. S. (1936). Trait names: A psycholexical study. *Psychological Monographs, 47*, 211.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychological Review, 11*, 150–166.

Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality development: Stability and change. *Annual Reviews of Psychology, 56*, 453–484.

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment, 18*, 192–203.

Eysenck, H. J. (1981). *A model for personality*.New York: Springer Verlag.

Goldberg, L. R. (1990). An alternative description of personality: The Big Five personality traits. *Journal of Personality and Social Psychology, 59*, 1216–1229.

Gray, J. A. (1981). A critique of Eysenck's theory of personality. In H. J. Eysenck (Ed.), *A Model for Personality* (pp. 246-276). New York: Springer Verlag.

Gray, J. A. & McNaughton, N. (2000). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system (second edition)*.Oxford: Oxford University Press.

Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). *Personality traits*. Cambridge, UK: Cambridge University Press.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*, 81–90.

McCrae, R. R. & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60*, 175–215.

Mischel, W. (1968). *Personality and assessment*. New York: John Wiley.

Paunonen, S. V., & Ashton, M. S. (2001). Big five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology, 81*, 524–539.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Golberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science, 2*, 313-345.

29
Self and Identity

Dan P. McAdams

For human beings, the self is what happens when "I" encounters "Me." The central psychological question of selfhood, then, is this: How does a person apprehend and understand who he or she is? Over the past 100 years, psychologists have approached the study of self (and the related concept of identity) in many different ways, but three central metaphors for the self repeatedly emerge. First, the self may be seen as a social actor, who enacts roles and displays traits by performing behaviors in the presence of others. Second, the self is a motivated agent, who acts upon inner desires and formulates goals, values, and plans to guide behavior in the future. Third, the self eventually becomes an autobiographical author, too, who takes stock of life — past, present, and future — to create a story about who I am, how I came to be, and where my life may be going. This module briefly reviews central ideas and research findings on the self as an actor, an agent, and an author, with an emphasis on how these features of selfhood develop over the human life course.

Learning Objectives

- Explain the basic idea of reflexivity in human selfhood—how the "I" encounters and makes sense of itself (the "Me").
- Describe fundamental distinctions between three different perspectives on the self: the self as actor, agent, and author.
- Describe how a sense of self as a social actor emerges around the age of 2 years and how it develops going forward.
- Describe the development of the self's sense of motivated agency from the emergence of the child's theory of mind to the articulation of life goals and values in adolescence and beyond.
- Define the term narrative identity, and explain what psychological and cultural functions

narrative identity serves.

Introduction

In the Temple of Apollo at Delphi, the ancient Greeks inscribed the words: "Know thy*self*." For at least 2,500 years, and probably longer, human beings have pondered the meaning of the ancient aphorism. Over the past century, psychological scientists have joined the effort. They have formulated many theories and tested countless hypotheses that speak to the central question of human selfhood: *How does a person know who he or she is?*

We work on ourselves as we would any other interesting project. And when we do we generally focus on three psychological categories - The Social Actor, The Motivated Agent, and The Autobiographical Author. [Image: MakuKulden, https://goo.gl/sMUsnJ, CC BY-NC 2.0, https://goo.gl/VnKlK8]

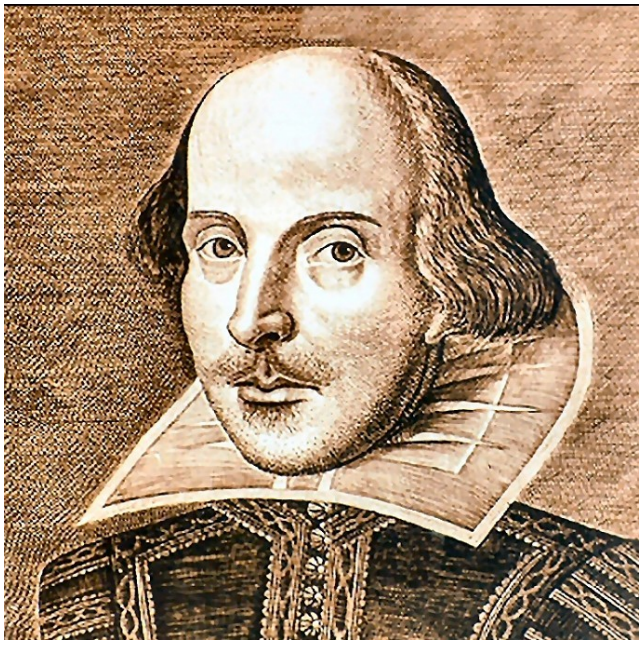
The ancient Greeks seemed to realize that the self is inherently **reflexive**—it reflects back on itself. In the disarmingly simple idea made famous by the great psychologist William James (1892/1963), the self is what happens when "I" reflects back upon "Me." The self is both the I and the Me—it is the knower, and it is what the knower knows when the knower reflects upon itself. When you look back at yourself, what do you see? When you look inside, what do you find? Moreover, when you try to *change* your self in some way, what is it that you are trying to change? The philosopher Charles Taylor (1989) describes the self as a reflexive *project*. In modern life, Taylor agues, we often try to manage, discipline, refine, improve, or develop the self. We *work on* our selves, as we might work on any other interesting project. But what exactly is it that we work on?

Imagine for a moment that you have decided to improve your*self*. You might, say, go on a diet to improve your appearance. Or you might decide to be nicer to your mother, in order to improve that important social role. Or maybe the problem is at work—you need to find a

better job or go back to school to prepare for a different career. Perhaps you just need to work harder. Or get organized. Or recommit yourself to religion. Or maybe the key is to begin thinking about your whole life story in a completely different way, in a way that you hope will bring you more happiness, fulfillment, peace, or excitement.

Although there are many different ways you might reflect upon and try to improve the self, it turns out that many, if not most, of them fall roughly into three broad psychological categories (McAdams & Cox, 2010). The I may encounter the Me as (a) a social actor, (b) a motivated agent, or (c) an autobiographical author.

The Social Actor



In some ways people are just like actors on stage. We play roles and follow scripts every day. [Image: Brian, https://goo.gl/z0Vl3t, CC BY-SA 2.0, https://goo.gl/i4GXf5]

Shakespeare tapped into a deep truth about human nature when he famously wrote, "All the world's a stage, and all the men and women merely players." He was wrong about the "merely," however, for there is nothing more important for human adaptation than the manner in which we perform our roles as actors in the everyday theatre of social life. What Shakespeare may have sensed but could not have fully understood is that human beings evolved to live in social groups. Beginning with Darwin (1872/1965) and running through contemporary conceptions of human evolution, scientists have portrayed human nature as profoundly *social* (Wilson, 2012). For a few million years, *Homo sapiens* and their evolutionary forerunners have survived and flourished by virtue of their ability to live and work together in complex social groups, cooperating with each other to solve problems and overcome threats and competing with each other in the face of limited resources. As social animals, human beings strive to *get along* and *get ahead* in the presence of each other (Hogan, 1982). Evolution has prepared us to care deeply about social acceptance and social status, for those unfortunate individuals who do not get along well in social groups or who fail to attain a requisite status among their peers have typically been severely compromised when it comes to survival and reproduction. It makes

consummate evolutionary sense, therefore, that the human "I" should apprehend the "Me" first and foremost as a *social actor*.

For human beings, the sense of the self as a social actor begins to emerge around the age of 18 months. Numerous studies have shown that by the time they reach their second birthday most toddlers recognize themselves in mirrors and other reflecting devices (Lewis & Brooks-Gunn, 1979; Rochat, 2003). What they see is an embodied actor who moves through space and time. Many children begin to use words such as “me” and “mine” in the second year of life, suggesting that the I now has linguistic labels that can be applied reflexively to itself: I call myself “me.” Around the same time, children also begin to express social emotions such as embarrassment, shame, guilt, and pride (Tangney, Stuewig, & Mashek, 2007). These emotions tell the social actor how well he or she is performing in the group. When I do things that win the approval of others, I feel proud of myself. When I fail in the presence of others, I may feel embarrassment or shame. When I violate a social rule, I may experience guilt, which may motivate me to make amends.

Many of the classic psychological theories of human selfhood point to the second year of life as a key developmental period. For example, Freud (1923/1961) and his followers in the psychoanalytic tradition traced the emergence of an autonomous **ego** back to the second year. Freud used the term “ego” (in German *das Ich*, which also translates into “the I”) to refer to an executive self in the personality. Erikson (1963) argued that experiences of trust and interpersonal attachment in the first year of life help to consolidate the autonomy of the ego in the second. Coming from a more sociological perspective, Mead (1934) suggested that the I comes to know the Me through reflection, which may begin quite literally with mirrors but later involves the reflected appraisals of others. I come to know who I am as a social actor, Mead argued, by noting how *other people* in my social world react to my performances. In the development of the self as a social actor, other people function like mirrors—they reflect who I am back to me.

Research has shown that when young children begin to make attributions about themselves, they start simple (Harter, 2006). At age 4, Jessica knows that she has dark hair, knows that she lives in a white house, and describes herself to others in terms of simple behavioral *traits*. She may say that she is “nice,” or “helpful,” or that she is “a good girl most of the time.” By the time, she hits fifth grade (age 10), Jessica sees herself in more complex ways, attributing traits to the self such as “honest,” “moody,” “outgoing,” “shy,” “hard-working,” “smart,” “good at math but not gym class,” or “nice except when I am around my annoying brother.” By late childhood and early adolescence, the personality traits that people attribute to themselves, as well as those attributed to them by others, tend to correlate with each other in ways that conform to a well-established taxonomy of five broad trait domains, repeatedly derived in studies of

adult personality and often called the **Big Five**: (1) extraversion, (2) neuroticism, (3) agreeableness, (4) conscientiousness, and (5) openness to experience (Roberts, Wood, & Caspi, 2008). By late childhood, moreover, self-conceptions will likely also include important social *roles*: "I am a good student," "I am the oldest daughter," or "I am a good friend to Sarah."

Traits and roles, and variations on these notions, are the main currency of the **self as social actor** (McAdams & Cox, 2010). Trait terms capture perceived consistencies in social performance. They convey what I reflexively perceive to be my overall acting style, based in part on how I think others see me as an actor in many different social situations. Roles capture the quality, as I perceive it, of important structured relationships in my life. Taken together, traits and roles make up the main features of my **social reputation**, as I apprehend it in my own mind (Hogan, 1982).

If you have ever tried hard to change yourself, you may have taken aim at your social reputation, targeting your central traits or your social roles. Maybe you woke up one day and decided that you must become a more optimistic and emotionally upbeat person. Taking into consideration the reflected appraisals of others, you realized that even your friends seem to avoid you because you bring them down. In addition, it feels bad to feel so bad all the time: Wouldn't it be better to feel good, to have more energy and hope? In the language of traits, you have decided to "work on" your "neuroticism." Or maybe instead, your problem is the trait of "conscientiousness": You are undisciplined and don't work hard enough, so you resolve to make changes in that area. Self-improvement efforts such as these—aimed at changing one's traits to become a more effective social actor—are sometimes successful, but they are very hard—kind of like dieting. Research suggests that broad traits tend to be stubborn, resistant to change, even with the aid of psychotherapy. However, people often have more success working directly on their social roles. To become a more effective social actor, you may want to take aim at the important roles you play in life. What can I do to become a better son or daughter? How can I find new and meaningful roles to perform at work, or in my family, or among my friends, or in my church and community? By doing concrete things that enrich your performances in important social roles, you may begin to see yourself in a new light, and others will notice the change, too. Social actors hold the potential to transform their performances across the human life course. Each time you walk out on stage, you have a chance to start anew.

The Motivated Agent

Whether we are talking literally about the theatrical stage or more figuratively, as I do in this module, about the everyday social environment for human behavior, observers can never

When we observe others we only see how they act but are never able to access the entirety of their internal experience. [Iamge: CC0 Public Domain, https://goo.gl/m25gce]

fully know what is in the actor's head, no matter how closely they watch. We can see actors act, but we cannot know for sure what they *want* or what they *value*, unless they tell us straightaway. As a social actor, a person may come across as friendly and compassionate, or cynical and mean-spirited, but in neither case can we infer their motivations from their traits or their roles. What does the friendly person want? What is the cynical father trying to achieve? Many broad psychological theories of the self prioritize the motivational qualities of human behavior—the inner needs, wants, desires, goals, values, plans, programs, fears, and aversions that seem to give behavior its direction and purpose (Bandura, 1989; Deci & Ryan, 1991; Markus & Nurius, 1986). These kinds of theories explicitly conceive of the self as a *motivated agent.*

To be an agent is to act with direction and purpose, to move forward into the future in pursuit of self-chosen and valued goals. In a sense, human beings are agents even as infants, for babies can surely act in goal-directed ways. By age 1 year, moreover, infants show a strong preference for observing and imitating the goal-directed, intentional behavior of others, rather than random behaviors (Woodward, 2009). Still, it is one thing to act in goal-directed ways; it is quite another for the I to know itself (the Me) as an intentional and purposeful force who moves forward in life in pursuit of self-chosen goals, values, and other desired end states. In order to do so, the person must first realize that people indeed have desires and goals in their minds and that these inner desires and goals *motivate* (initiate, energize, put into motion) their behavior. According to a strong line of research in developmental psychology, attaining this kind of understanding means acquiring a **theory of mind** (Wellman, 1993), which occurs for most children by the age of 4. Once a child understands that other people's behavior is often motivated by inner desires and goals, it is a small step to apprehend the self in similar terms.

Building on theory of mind and other cognitive and social developments, children begin to construct the self as a motivated agent in the elementary school years, layered over their still-developing sense of themselves as social actors. Theory and research on what developmental psychologists call **the age 5-to-7 shift** converge to suggest that children become more planful,

intentional, and systematic in their pursuit of valued goals during this time (Sameroff & Haith, 1996). Schooling reinforces the shift in that teachers and curricula place increasing demands on students to work hard, adhere to schedules, focus on goals, and achieve success in particular, well-defined task domains. Their relative success in achieving their most cherished goals, furthermore, goes a long way in determining children's **self-esteem** (Robins, Tracy, & Trzesniewski, 2008). Motivated agents feel good about themselves to the extent they believe that they are making good progress in achieving their goals and advancing their most important values.

Goals and values become even more important for the self in adolescence, as teenagers begin to confront what Erikson (1963) famously termed the developmental challenge of **identity**. For adolescents and young adults, establishing a psychologically efficacious identity involves exploring different options with respect to life goals, values, vocations, and intimate relationships and eventually committing to a motivational and ideological agenda for adult life—an integrated and realistic sense of what I want and value in life and how I plan to achieve it (Kroger & Marcia, 2011). Committing oneself to an integrated suite of life goals and values is perhaps the greatest achievement for the **self as motivated agent**. Establishing an adult identity has implications, as well, for how a person moves through life as a social actor, entailing new role commitments and, perhaps, a changing understanding of one's basic dispositional traits. According to Erikson, however, identity achievement is always provisional, for adults continue to work on their identities as they move into midlife and beyond, often relinquishing old goals in favor of new ones, investing themselves in new projects and making new plans, exploring new relationships, and shifting their priorities in response to changing life circumstances (Freund & Riediger, 2006; Josselson, 1996).

There is a sense whereby *any* time you try to change yourself, you are assuming the role of a motivated agent. After all, to strive to change something is inherently what an agent does. However, what particular feature of selfhood you try to change may correspond to your self as actor, agent, or author, or some combination. When you try to change your traits or roles, you take aim at the social actor. By contrast, when you try to change your values or life goals, you are focusing on yourself as a motivated agent. Adolescence and young adulthood are periods in the human life course when many of us focus attention on our values and life goals. Perhaps you grew up as a traditional Catholic, but now in college you believe that the values inculcated in your childhood no longer function so well for you. You no longer believe in the central tenets of the Catholic Church, say, and are now working to replace your old values with new ones. Or maybe you still want to be Catholic, but you feel that your new take on faith requires a different kind of personal ideology. In the realm of the motivated agent, moreover, changing values can influence life goals. If your new value system prioritizes alleviating the suffering of others, you may decide to pursue a degree in social work, or to

become a public interest lawyer, or to live a simpler life that prioritizes people over material wealth. A great deal of the identity work we do in adolescence and young adulthood is about values and goals, as we strive to articulate a personal vision or dream for what we hope to accomplish in the future.

The Autobiographical Author

Even as **the "I"** continues to develop a sense of **the "Me"** as both a social actor and a motivated agent, a third standpoint for selfhood gradually emerges in the adolescent and early-adult years. The third perspective is a response to Erikson's (1963) challenge of identity. According to Erikson, developing an identity involves more than the exploration of and commitment to life goals and values (the self as motivated agent), and more than committing to new roles and re-evaluating old traits (the self as social actor). It also involves achieving a sense of *temporal continuity* in life—a reflexive understanding of *how I have come to be the person I am becoming*, or put differently, how my past self has developed into my present self, and how my present self will, in turn, develop into an envisioned future self. In his analysis of identity formation in the life of the 15th-century Protestant reformer Martin Luther, Erikson (1958) describes the culmination of a young adult's search for identity in this way:

"To be adult means among other things to see one's own life in continuous perspective, both in retrospect and prospect. By accepting some definition of who he is, usually on the basis of a function in an economy, a place in the sequence of generations, and a status in the structure of society, the adult is able *to selectively reconstruct his past in such a way that, step for step, it seems to have planned him, or better, he seems to have planned it*. In this sense, psychologically we do choose our parents, our family history, and the history of our kings, heroes, and gods. By making them our own, we maneuver ourselves into the inner position of proprietors, of creators."

-- (Erikson, 1958, pp. 111–112; emphasis added).

In this rich passage, Erikson intimates that the development of a mature identity in young adulthood involves the I's ability to construct a retrospective and prospective *story* about the Me (McAdams, 1985). In their efforts to find a meaningful identity for life, young men and women begin "to selectively reconstruct" their past, as Erikson wrote, and imagine their future to create an integrative life story, or what psychologists today often call a **narrative identity**. A narrative identity is an internalized and evolving story of the self that reconstructs the past and anticipates the future in such a way as to provide a person's life with some degree of unity, meaning, and purpose over time (McAdams, 2008; McLean, Pasupathi, & Pals, 2007).

The self typically becomes an *autobiographical author* in the early-adult years, a way of being that is layered over the motivated agent, which is layered over the social actor. In order to provide life with the sense of temporal continuity and deep meaning that Erikson believed identity should confer, we must author a personalized life story that integrates our understanding of who we once were, who we are today, and who we may become in the future. The story helps to explain, for the author and for the author's world, why the social actor does what it does and why the motivated agent wants what it wants, and how the person as a whole has developed over time, from the past's reconstructed beginning to the future's imagined ending.

By the time they are 5 or 6 years of age, children can tell well-formed stories about personal events in their lives (Fivush, 2011). By the end of childhood, they usually have a good sense of what a typical biography contains and how it is sequenced, from birth to death (Thomsen & Bernsten, 2008). But it is not until adolescence, research shows, that human beings express advanced storytelling skills and what psychologists call **autobiographical reasoning** (Habermas & Bluck, 2000; McLean & Fournier, 2008). In autobiographical reasoning, a narrator is able to derive substantive conclusions about the self from analyzing his or her own personal experiences. Adolescents may develop the ability to string together events into causal chains and inductively derive general themes about life from a sequence of chapters and scenes (Habermas & de Silveira, 2008). For example, a 16-year-old may be able to explain to herself and to others how childhood experiences in her family have shaped her vocation in life. Her parents were divorced when she was 5 years old, the teenager recalls, and this caused a great deal of stress in her family. Her mother often seemed anxious and depressed, but she (the now-teenager when she was a little girl—the story's protagonist) often tried to cheer her mother up, and her efforts seemed to work. In more recent years, the teenager notes that her friends often come to her with their boyfriend problems. She seems to be very adept at giving advice about love and relationships, which stems, the teenager now believes, from her early experiences with her mother. Carrying this causal narrative forward, the teenager now thinks that she would like to be a marriage

Young people often "try on" many variations of identities to see which best fits their private sense of themselves. [Image: Sangudo, https://goo.gl/Ay3UMR, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

counselor when she grows up.

Unlike children, then, adolescents can tell a full and convincing story about an entire human life, or at least a prominent line of causation within a full life, explaining continuity and change in the story's protagonist over time. Once the cognitive skills are in place, young people seek interpersonal opportunities to share and refine their developing sense of themselves as storytellers (the I) who tell stories about themselves (the Me). Adolescents and young adults author a narrative sense of the self by telling stories about their experiences to other people, monitoring the feedback they receive from the tellings, editing their stories in light of the feedback, gaining new experiences and telling stories about those, and on and on, as selves create stories that, in turn, create new selves (McLean et al., 2007). Gradually, in fits and starts, through conversation and introspection, the I develops a convincing and coherent narrative about the Me.

Contemporary research on the **self as autobiographical author** emphasizes the strong effect of *culture* on narrative identity (Hammack, 2008). Culture provides a menu of favored plot lines, themes, and character types for the construction of self-defining life stories. Autobiographical authors sample selectively from the cultural menu, appropriating ideas that seem to resonate well with their own life experiences. As such, life stories reflect the culture, wherein they are situated as much as they reflect the authorial efforts of the autobiographical I.

As one example of the tight link between culture and narrative identity, McAdams (2013) and others (e.g., Kleinfeld, 2012) have highlighted the prominence of **redemptive narratives** in American culture. Epitomized in such iconic cultural ideals as the American dream, Horatio Alger stories, and narratives of Christian atonement, redemptive stories track the move from suffering to an enhanced status or state, while scripting the development of a chosen protagonist who journeys forth into a dangerous and unredeemed world (McAdams, 2013). Hollywood movies often celebrate redemptive quests. Americans are exposed to similar narrative messages in self-help books, 12-step programs, Sunday sermons, and in the rhetoric of political campaigns. Over the past two decades, the world's most influential spokesperson for the power of redemption in human lives may be Oprah Winfrey, who tells her own story of overcoming childhood adversity while encouraging others, through her media outlets and philanthropy, to tell similar kinds of stories for their own lives (McAdams, 2013). Research has demonstrated that American adults who enjoy high levels of mental health and civic engagement tend to construct their lives as narratives of redemption, tracking the move from sin to salvation, rags to riches, oppression to liberation, or sickness/abuse to health/recovery (McAdams, Diamond, de St. Aubin, & Mansfield, 1997; McAdams, Reynolds, Lewis, Patten, & Bowman, 2001; Walker & Frimer, 2007). In American society, these kinds of stories are often

seen to be inspirational.

At the same time, McAdams (2011, 2013) has pointed to shortcomings and limitations in the redemptive stories that many Americans tell, which mirror cultural biases and stereotypes in American culture and heritage. McAdams has argued that redemptive stories support happiness and societal engagement for some Americans, but the same stories can encourage moral righteousness and a naïve expectation that suffering will always be redeemed. For better and sometimes for worse, Americans seem to love stories of personal redemption and often aim to assimilate their autobiographical memories and aspirations to a redemptive form. Nonetheless, these same stories may not work so well in cultures that espouse different values and narrative ideals (Hammack, 2008). It is important to remember that every culture offers its own storehouse of favored narrative forms. It is also essential to know that no single narrative form captures all that is good (or bad) about a culture. In American society, the redemptive narrative is but one of many different kinds of stories that people commonly employ to make sense of their lives.

What is your story? What kind of a narrative are you working on? As you look to the past and imagine the future, what threads of continuity, change, and meaning do you discern? For many people, the most dramatic and fulfilling efforts to change the self happen when the I works hard, as an autobiographical author, to construct and, ultimately, to tell a new story about the Me. Storytelling may be the most powerful form of self-transformation that human beings have ever invented. Changing one's life story is at the heart of many forms of psychotherapy and counseling, as well as religious conversions, vocational epiphanies, and other dramatic transformations of the self that people often celebrate as turning points in their lives (Adler, 2012). Storytelling is often at the heart of the little changes, too, minor edits in the self that we make as we move through daily life, as we live and experience life, and as we later tell it to ourselves and to others.

Conclusion

For human beings, selves begin as social actors, but they eventually become motivated agents and autobiographical authors, too. The I first sees itself as an embodied actor in social space; with development, however, it comes to appreciate itself also as a forward-looking source of self-determined goals and values, and later yet, as a storyteller of personal experience, oriented to the reconstructed past and the imagined future. To "know thyself" in mature adulthood, then, is to do three things: (a) to apprehend and to perform with social approval my self-ascribed traits and roles, (b) to pursue with vigor and (ideally) success my most valued goals and plans, and (c) to construct a story about life that conveys, with vividness and cultural

resonance, how I became the person I am becoming, integrating my past as I remember it, my present as I am experiencing it, and my future as I hope it to be.

Outside Resources

Web: The website for the Foley Center for the Study of Lives, at Northwestern University. The site contains research materials, interview protocols, and coding manuals for conducting studies of narrative identity.
http://www.sesp.northwestern.edu/foley/

Discussion Questions

1. Back in the 1950s, Erik Erikson argued that many adolescents and young adults experience a tumultuous identity crisis. Do you think this is true today? What might an identity crisis look and feel like? And, how might it be resolved?
2. Many people believe that they have a true self buried inside of them. From this perspective, the development of self is about discovering a psychological truth deep inside. Do you believe this to be true? How does thinking about the self as an actor, agent, and author bear on this question?
3. Psychological research shows that when people are placed in front of mirrors they often behave in a more moral and conscientious manner, even though they sometimes experience this procedure as unpleasant. From the standpoint of the self as a social actor, how might we explain this phenomenon?
4. By the time they reach adulthood, does everybody have a narrative identity? Do some people simply never develop a story for their life?
5. What happens when the three perspectives on self—the self as actor, agent, and author—conflict with each other? Is it necessary for people's self-ascribed traits and roles to line up well with their goals and their stories?
6. William James wrote that the self includes all things that the person considers to be "mine." If we take James literally, a person's self might extend to include his or her material possessions, pets, and friends and family. Does this make sense?
7. To what extent can we control the self? Are some features of selfhood easier to control than others?
8. What cultural differences may be observed in the construction of the self? How might gender, ethnicity, and class impact the development of the self as actor, as agent, and as author?

Vocabulary

Autobiographical reasoning
The ability, typically developed in adolescence, to derive substantive conclusions about the self from analyzing one's own personal experiences.

Big Five
A broad taxonomy of personality trait domains repeatedly derived from studies of trait ratings in adulthood and encompassing the categories of (1) extraversion vs. introversion, (2) neuroticism vs. emotional stability, (3) agreeable vs. disagreeableness, (4) conscientiousness vs. nonconscientiousness, and (5) openness to experience vs. conventionality. By late childhood and early adolescence, people's self-attributions of personality traits, as well as the trait attributions made about them by others, show patterns of intercorrelations that confirm with the five-factor structure obtained in studies of adults.

Ego
Sigmund Freud's conception of an executive self in the personality. Akin to this module's notion of "the I," Freud imagined the ego as observing outside reality, engaging in rational though, and coping with the competing demands of inner desires and moral standards.

Identity
Sometimes used synonymously with the term "self," identity means many different things in psychological science and in other fields (e.g., sociology). In this module, I adopt Erik Erikson's conception of identity as a developmental task for late adolescence and young adulthood. Forming an identity in adolescence and young adulthood involves exploring alternative roles, values, goals, and relationships and eventually committing to a realistic agenda for life that productively situates a person in the adult world of work and love. In addition, identity formation entails commitments to new social roles and reevaluation of old traits, and importantly, it brings with it a sense of temporal continuity in life, achieved though the construction of an integrative life story.

Narrative identity
An internalized and evolving story of the self designed to provide life with some measure of temporal unity and purpose. Beginning in late adolescence, people craft self-defining stories that reconstruct the past and imagine the future to explain how the person came to be the person that he or she is becoming.

Redemptive narratives

Life stories that affirm the transformation from suffering to an enhanced status or state. In American culture, redemptive life stories are highly prized as models for the good self, as in classic narratives of atonement, upward mobility, liberation, and recovery.

Reflexivity
The idea that the self reflects back upon itself; that the I (the knower, the subject) encounters the Me (the known, the object). Reflexivity is a fundamental property of human selfhood.

Self as autobiographical author
The sense of the self as a storyteller who reconstructs the past and imagines the future in order to articulate an integrative narrative that provides life with some measure of temporal continuity and purpose.

Self as motivated agent
The sense of the self as an intentional force that strives to achieve goals, plans, values, projects, and the like.

Self as social actor
The sense of the self as an embodied actor whose social performances may be construed in terms of more or less consistent self-ascribed traits and social roles.

Self-esteem
The extent to which a person feels that he or she is worthy and good. The success or failure that the motivated agent experiences in pursuit of valued goals is a strong determinant of self-esteem.

Social reputation
The traits and social roles that others attribute to an actor. Actors also have their own conceptions of what they imagine their respective social reputations indeed are in the eyes of others.

The Age 5-to-7 Shift
Cognitive and social changes that occur in the early elementary school years that result in the child's developing a more purposeful, planful, and goal-directed approach to life, setting the stage for the emergence of the self as a motivated agent.

The "I"
The self as knower, the sense of the self as a subject who encounters (knows, works on) itself (the Me).

The "Me"
The self as known, the sense of the self as the object or target of the I's knowledge and work.

Theory of mind
Emerging around the age of 4, the child's understanding that other people have minds in which are located desires and beliefs, and that desires and beliefs, thereby, motivate behavior.

References

Adler, J. M. (2012). Living into the story: Agency and coherence in a longitudinal study of narrative identity development and mental health over the course of psychotherapy. *Journal of Personality and Social Psychology, 102*, 367–389.

Bandura, A. (1989). Human agency in social-cognitive theory. *American Psychologist, 44*, 1175–1184.

Darwin, C. (1872/1965). *The expression of emotions in man and animals*. Chicago, IL: University of Chicago Press.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier & R. M. Ryan (Eds.), *Nebraska symposium on motivation* (Vol. 38, pp. 237–288). Lincoln, NE: University of Nebraska Press.

Erikson, E. H. (1963). *Childhood and society* (2nd ed.). New York, NY: Norton.

Erikson, E. H. (1958). *Young man Luther*. New York, NY: Norton.

Fivush, R. (2011). The development of autobiographical memory. In S. T. Fiske, D. L. Schacter, & S. E. Taylor (Eds.), *Annual review of psychology* (Vol. 62, pp. 559–582). Palo Alto, CA: Annual Reviews, Inc.

Freud, S. (1923/1961). The ego and the id. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 19). London, UK: Hogarth.

Freund, A. M., & Riediger, M. (2006). Goals as building blocks of personality and development in adulthood. In D. K. Mroczek & T. D. Little (Eds.), *Handbook of personality development* (pp. 353–372). Mahwah, NJ: Erlbaum.

Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin, 126*, 748–769.

Habermas, T., & de Silveira, C. (2008). The development of global coherence in life narrative across adolescence: Temporal, causal, and thematic aspects. *Developmental Psychology, 44*, 707–721.

Hammack, P. L. (2008). Narrative and the cultural psychology of identity. *Personality and Social Psychology Review, 12*, 222–247.

Harter, S. (2006). The self. In N. Eisenberg (Ed.) & W. Damon & R. M. Lerner (Series Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (pp. 505–570). New York, NY: Wiley.

Hogan, R. (1982). A socioanalytic theory of personality. In M. Paige (Ed.), *Nebraska symposium on motivation* (Vol. 29, pp. 55–89). Lincoln, NE: University of Nebraska Press.

James, W. (1892/1963). Psychology. Greenwich, CT: Fawcett.

Josselson, R. (1996). *Revising herself: The story of women's identity from college to midlife*. New York, NY: Oxford University Press.

Kleinfeld, J. (2012). *The frontier romance: Environment, culture, and Alaska identity*. Fairbanks, AK: University of Alaska Press.

Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings, and interpretations. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 31–53). New York, NY: Springer.

Lewis, M., & Brooks-Gunn, J. (1979). *Social cognition and the acquisition of self*. New York, NY: Plenum.

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*, 954–969.

McAdams, D. P. (2013). *The redemptive self: Stories Americans live by (revised and expanded edition)*. New York, NY: Oxford University Press.

McAdams, D. P. (2011). *George W. Bush and the redemptive dream: A psychological portrait*. New York, NY: Oxford University Press.

McAdams, D. P. (2008). Personal narratives and the life story. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 242–262). New York, NY: Guilford Press.

McAdams, D. P. (1985). *Power, intimacy, and the life story: Personological inquiries into identity*. New York, NY: Guilford Press.

McAdams, D. P., & Cox, K. S. (2010). Self and identity across the life span. In M. E. Lamb & A. M. Freund (Eds.), *The handbook of life-span development: Vol. 2. Social and emotional development* (pp. 158–207). New York, NY: Wiley.

McAdams, D. P., Diamond, A., de St. Aubin, E., & Mansfield, E. D. (1997). Stories of commitment: The psychosocial construction of generative lives. *Journal of Personality and Social Psychology, 72*, 678–694.

McAdams, D. P., Reynolds, J., Lewis, M., Patten, A., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative, and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin, 27*, 472–483.

McLean, K. C., & Fournier, M. A. (2008). The content and process of autobiographical reasoning in narrative identity. *Journal of Research in Personality, 42*, 527–545.

McLean, K. C., Pasupathi, M., & Pals, J. L. (2007). Selves creating stories creating selves: A process model of self-development. *Personality and Social Psychology Review, 11*, 262–278.

Mead, G. H. (1934). *Mind, self, and society*. Chicago, IL: University of Chicago Press.

Roberts, B. W., Wood, D., & Caspi, A. (2008). The development of personality traits in adulthood. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 375–398). New York, NY: Guilford Press.

Robins, R. W., Tracy, J. L., & Trzesniewski, K. H. (2008). Naturalizing the self. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 421–447). New York, NY: Guilford Press.

Rochat, P. (2003). Five levels of self-awareness as they unfold early in life. *Consciousness and Cognition, 12*, 717–731.

Sameroff, A. J., & Haith, M. M. (Eds.), (1996). *The five to seven year shift*. Chicago, IL: University of Chicago Press.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. In S. Fiske and D. Schacter (Eds.), *Annual review of psychology* (Vol. 58, pp. 345–372). Palo Alto, CA: Annual Reviews, Inc.

Taylor, C. (1989). *Sources of the self: The making of the modern identity*. Cambridge, MA: Harvard University Press.

Thomsen, D. K., & Bernsten, D. (2008). The cultural life script and life story chapters contribute to the reminiscence bump. *Memory, 16*, 420–435.

Walker, L. J., & Frimer, J. A. (2007). Moral personality of brave and caring exemplars. *Journal of Personality and Social Psychology, 93*, 845–860.

Wellman, H. M. (1993). Early understanding of mind: The normal case. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), *Understanding other minds: Perspectives from autism* (pp. 10–39). New York, NY: Oxford University Press.

Wilson, E. O. (2012). *The social conquest of earth*. New York, NY: Liveright.

Woodward, A. (2009). Infants' grasp of others' intentions. *Current Directions in Psychological Science, 18*, 53–57.

30
Gender

Christia Spears Brown, Jennifer A. Jewell & Michelle J. Tam

This module discusses gender and its related concepts, including sex, gender roles, gender identity, sexual orientation, and sexism. In addition, this module includes a discussion of differences that exist between males and females and how these real gender differences compare to the stereotypes society holds about gender differences. In fact, there are significantly fewer real gender differences than one would expect relative to the large number of stereotypes about gender differences. This module then discusses theories of how gender roles develop and how they contribute to strong expectations for gender differences. Finally, the module concludes with a discussion of some of the consequences of relying on and expecting gender differences, such as gender discrimination, sexual harassment, and ambivalent sexism.

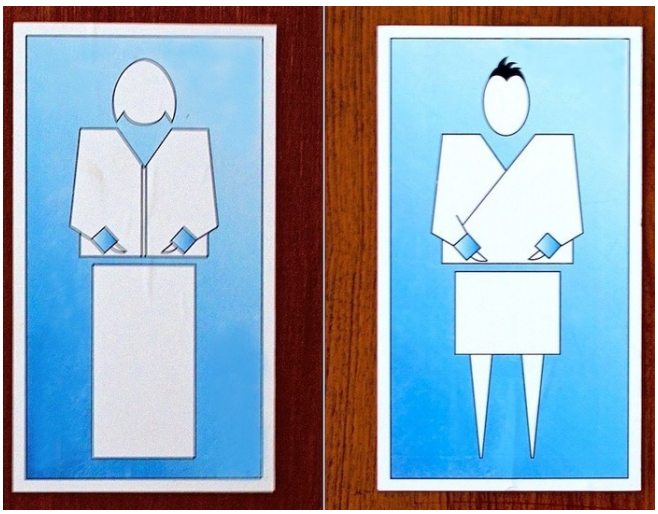
Learning Objectives

- Distinguish gender and sex, as well as gender identity and sexual orientation.
- Discuss gender differences that exist, as well as those that do not actually exist.
- Understand and explain different theories of how gender roles are formed.
- Discuss sexism and its impact on gender.

Introduction

Before we discuss gender in detail, it is important to understand what gender actually is. The terms sex and gender are frequently used interchangeably, though they have different

meanings. In this context, sex refers to the biological category of male or female, as defined by physical differences in genetic composition and in reproductive anatomy and function. On the other hand, gender refers to the cultural, social, and psychological meanings that are associated with masculinity and femininity (Wood & Eagly, 2002). You can think of "male" and "female" as distinct categories of sex (a person is typically born a male or a female), but "masculine" and "feminine" as continuums associated with gender (everyone has a certain degree of masculine and feminine traits and qualities).



Gender refers to the cultural, social, and psychological meanings that are associated with masculinity and femininity. [Photo: Michael Foley Photography, https://goo.gl/B46jym, CC BY-NC-ND 2.0, https://goo.gl/aAX82f]

Beyond sex and gender, there are a number of related terms that are also often misunderstood. Gender roles are the behaviors, attitudes, and personality traits that are designated as either masculine or feminine in a given culture. It is common to think of gender roles in terms of gender stereotypes, or the beliefs and expectations people hold about the typical characteristics, preferences, and behaviors of men and women. A person's gender identity refers to their psychological sense of being male or female. In contrast, a person's sexual orientation is the direction of their emotional and erotic attraction toward members of the opposite sex, the same sex, or both sexes. These are important distinctions, and though we will not discuss each of these terms in detail, it is important to recognize that sex, gender, gender identity, and sexual orientation do not always correspond with one another. A person can be biologically male but have a female gender identity while being attracted to women, or any other combination of identities and orientations.

Defining Gender

Historically, the terms gender and sex have been used interchangeably. Because of this, gender is often viewed as a binary – a person is either male *or* female – and it is assumed that a person's gender matches their biological sex. This is not always the case, however, and more recent research has separated these two terms. While the majority of people do identify with the gender that matches their biological sex (cisgender), an estimated 0.6% of the population

identify with a gender that does not match their biological sex (transgender; Flores, Herman, Gates, & Brown, 2016). For example, an individual who is biologically male may identify as female, or vice versa.

In addition to separating gender and sex, recent research has also begun to conceptualize gender in ways beyond the gender binary. Genderqueer or gender nonbinary are umbrella terms used to describe a wide range of individuals who do not identify with and/or conform to the gender binary. These terms encompass a variety of more specific labels individuals may use to describe themselves. Some common labels are genderfluid, agender, and bigender. An individual who is genderfluid may identify as male, female, both, or neither at different times and in different circumstances. An individual who is agender may have no gender or describe themselves as having a neutral gender, while bigender individuals identify as two genders.

It is important to remember that sex and gender do not always match and that gender is not always binary; however, a large majority of prior research examining gender has not made these distinctions. As such, the following sections will discuss gender as a binary.

The (Trans)Gender-Bathroom Debate

In recent years, there has been much cultural and political debate over the right of transgender individuals to use the public bathroom of their choosing. This debate made major headlines in 2016 when North Carolina passed the Public Facilities Privacy & Security Act (commonly called House Bill 2 or HB2). This law required individuals to use the restroom that corresponded with their birth sex, meaning that transgender individuals could not use the bathroom that matched their gender identity. This law and the similar "bathroom bills" proposed by other states were met with widespread controversy, with opponents arguing that they were discriminatory and perpetuated inequality (Barnett, Nesbit, & Sorrentino, 2018). HB2 has since been repealed, but many states still do not protect the rights of transgender individuals to use their restrooms of choice.

Text Box 1

Gender Differences

Differences between males and females can be based on (a) actual gender differences (i.e., men and women are actually different in some abilities), (b) gender roles (i.e., differences in how men and women are supposed to act), or (c) gender stereotypes (i.e., differences in how we *think* men and women are). Sometimes gender stereotypes and gender roles reflect actual

gender differences, but sometimes they do not.

What are actual gender differences? In terms of language and language skills, girls develop language skills earlier and know more words than boys; this does not, however, translate into long-term differences. Girls are also more likely than boys to offer praise, to agree with the person they're talking to, and to elaborate on the other person's comments; boys, in contrast, are more likely than girls to assert their opinion and offer criticisms (Leaper & Smith, 2004). In terms of temperament, boys are slightly less able to suppress inappropriate responses and slightly more likely to blurt things out than girls (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006).

With respect to aggression, boys exhibit higher rates of unprovoked physical aggression than girls, but no difference in provoked aggression (Hyde, 2005). Some of the biggest differences involve the play styles of children. Boys frequently play organized rough-and-tumble games in large groups, while girls often play less physical activities in much smaller groups (Maccoby, 1998). There are also differences in the rates of depression, with girls much more likely than boys to be depressed after puberty. After puberty, girls are also more likely to be unhappy with their bodies than boys.

Boys exhibit higher rates of unprovoked physical aggression than girls and are more likely to play organized rough-and-tumble games. [Image: Aislinn Ritchie, https://goo.gl/cVQ0Ab, CC BY-SA 2.0, https://goo.gl/jSSrcO]

However, there is considerable variability between individual males and individual females. Also, even when there are mean level differences, the actual size of most of these differences is quite small. This means, knowing someone's gender does not help much in predicting his or her actual traits. For example, in terms of activity level, boys are considered more active than girls. However, 42% of girls are more active than the average boy (but so are 50% of boys; see Figure 1 for a depiction of this phenomenon in a comparison of male and female self-esteem). Furthermore, many gender differences do not reflect innate differences, but instead reflect differences in specific experiences and socialization. For example, one presumed gender difference is that boys show better spatial abilities than girls. However, Tzuriel and Egozi (2010) gave girls the chance to practice their spatial skills (by imagining a line drawing was different shapes) and discovered that, with practice, this gender difference

completely disappeared.

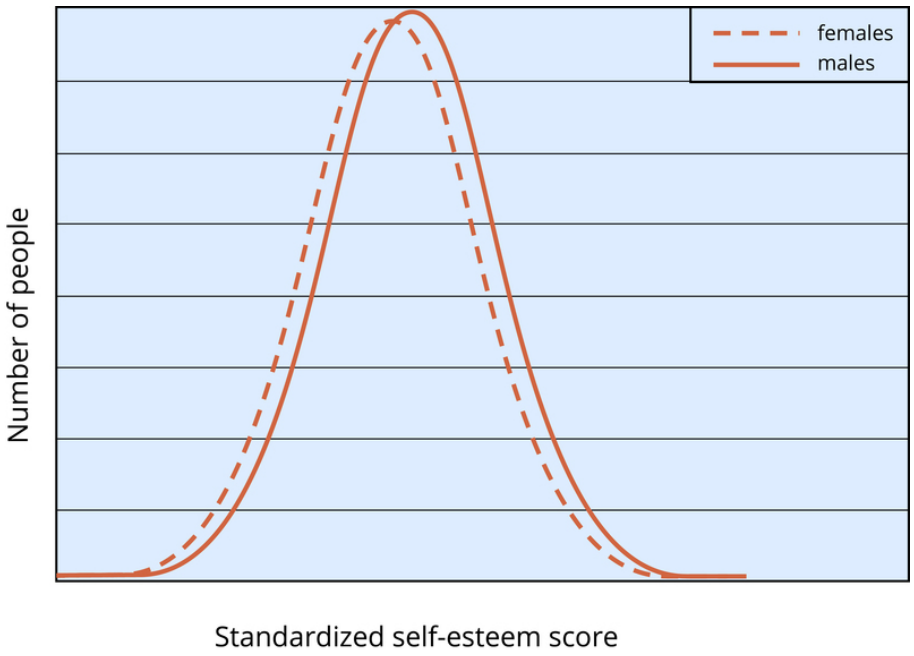


Figure 1. While our gender stereotypes paint males and females as drastically different from each other, even when a difference exists, there is considerable overlap in the presence of that trait between genders. This graph shows the average difference in self-esteem between boys and girls. Boys have a higher average self-esteem than girls, but the average scores are much more similar than different. Taken from Hyde (2005).

Many domains we assume differ across genders are really based on gender stereotypes and not actual differences. Based on large meta-analyses, the analyses of thousands of studies across more than one million people, research has shown: Girls are not more fearful, shy, or scared of new things than boys; boys are not more angry than girls and girls are not more emotional than boys; boys do not perform better at math than girls; and girls are not more talkative than boys (Hyde, 2005).

In the following sections, we'll investigate gender roles, the part they play in creating these stereotypes, and how they can affect the development of real gender differences.

Gender Roles

As mentioned earlier, gender roles are well-established social constructions that may change from culture to culture and over time. In American culture, we commonly think of gender roles in terms of gender stereotypes, or the beliefs and expectations people hold about the typical

characteristics, preferences, and behaviors of men and women.

By the time we are adults, our gender roles are a stable part of our personalities, and we usually hold many gender stereotypes. When do children start to learn about gender? Very early. By their first birthday, children can distinguish faces by gender. By their second birthday, they can label others' gender and even sort objects into gender-typed categories. By the third birthday, children can consistently identify their own gender (see Martin, Ruble, & Szkrybalo, 2002, for a review). At this age, children believe sex is determined by external attributes, not biological attributes. Between 3 and 6 years of age, children learn that gender is constant and can't change simply by changing external attributes, having developed gender constancy. During this period, children also develop strong and rigid gender stereotypes. Stereotypes can refer to play (e.g., boys play with trucks, and girls play with dolls), traits (e.g., boys are strong, and girls like to cry), and occupations (e.g., men are doctors and women are nurses). These stereotypes stay rigid until children reach about age 8 or 9. Then they develop cognitive abilities that allow them to be more flexible in their thinking about others.

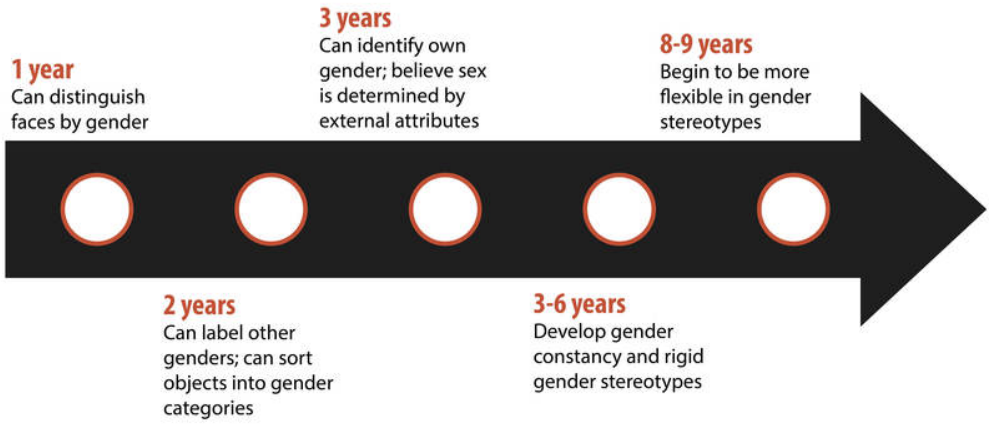


Figure 2: Children develop the ability to classify gender very early in life.

How do our gender roles and gender stereotypes develop and become so strong? Many of our gender stereotypes are so strong because we emphasize gender so much in culture (Bigler & Liben, 2007). For example, males and females are treated differently before they are even born. When someone learns of a new pregnancy, the first question asked is "Is it a boy or a girl?" Immediately upon hearing the answer, judgments are made about the child: Boys will be rough and like blue, while girls will be delicate and like pink. Developmental intergroup theory postulates that adults' heavy focus on gender leads children to pay attention to gender as a key source of information about themselves and others, to seek out any possible gender differences, and to form rigid stereotypes based on gender that are subsequently difficult to change.

There are also psychological theories that partially explain how children form their own gender roles after they learn to differentiate based on gender. The first of these theories is gender schema theory. Gender schema theory argues that children are active learners who essentially socialize themselves. In this case, children actively organize others' behavior, activities, and attributes into gender categories, which are known as schemas. These schemas then affect what children notice and remember later. People of all ages are more likely to remember schema-consistent behaviors and attributes than schema-inconsistent behaviors and attributes. So, people are more likely to remember men, and forget women, who are firefighters. They also misremember schema-inconsistent information. If research participants are shown pictures of someone standing at the stove, they are more likely to remember the person to be cooking if depicted as a woman, and the person to be repairing the stove if depicted as a man. By only remembering schema-consistent information, gender schemas strengthen more and more over time.

People are more likely to remember schema-consistent behaviors and attributes than schema-inconsistent behaviors and attributes. For example, people are more likely to remember men, and forget women, who are firefighters. [Photo: Billy V, https://goo.gl/Kb2MuL, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

A second theory that attempts to explain the formation of gender roles in children is social learning theory. Social learning theory argues that gender roles are learned through reinforcement, punishment, and modeling. Children are rewarded and reinforced for behaving in concordance with gender roles and punished for breaking gender roles. In addition, social learning theory argues that children learn many of their gender roles by modeling the behavior of adults and older children and, in doing so, develop ideas about what behaviors are appropriate for each gender. Social learning theory has less support than gender schema theory—research shows that parents do reinforce gender-appropriate play, but for the most part treat their male and female children similarly (Lytton & Romney, 1991).

Gender Sexism and Socialization

Treating boys and girls, and men and women, differently is both a *consequence* of gender

differences and a *cause* of gender differences. Differential treatment on the basis of gender is also referred to **gender discrimination** and is an inevitable consequence of gender stereotypes. When it is based on unwanted treatment related to sexual behaviors or appearance, it is called **sexual harassment**. By the time boys and girls reach the end of high school, most have experienced some form of sexual harassment, most commonly in the form of unwanted touching or comments, being the target of jokes, having their body parts rated, or being called names related to sexual orientation.

Different treatment by gender begins with parents. A meta-analysis of research from the United States and Canada found that parents most frequently treated sons and daughters differently by encouraging gender-stereotypical activities (Lytton & Romney, 1991). Fathers, more than mothers, are particularly likely to encourage gender-stereotypical play, especially in sons. Parents also talk to their children differently based on stereotypes. For example, parents talk about numbers and counting twice as often with sons than daughters (Chang, Sandhofer, & Brown, 2011) and talk to sons in more detail about science than with daughters. Parents are also much more likely to discuss emotions with their daughters than their sons.

Children do a large degree of socializing themselves. By age 3, children play in gender-segregated play groups and expect a high degree of conformity. Children who are perceived as gender atypical (i.e., do not conform to gender stereotypes) are more likely to be bullied and rejected than their more gender-conforming peers.

Gender stereotypes typically maintain gender inequalities in society. The concept of **ambivalent sexism** recognizes the complex nature of gender attitudes, in which women are often associated with positive and negative qualities (Glick & Fiske, 2001). It has two components. First, **hostile sexism** refers to the negative attitudes of women as inferior and incompetent relative to men. Second, **benevolent sexism** refers to the perception that women need to be protected, supported, and adored by men. There has been considerable empirical support for benevolent sexism, possibly because it is seen as more socially acceptable than hostile sexism. Gender stereotypes are found not just in American culture. Across cultures, males tend to be associated with stronger and more active characteristics than females (Best, 2001).

In recent years, gender and related concepts have become a common focus of social change and social debate. Many societies, including American society, have seen a rapid change in perceptions of gender roles, media portrayals of gender, and legal trends relating to gender. For example, there has been an increase in children's toys attempting to cater to both genders (such as Legos marketed to girls), rather than catering to traditional stereotypes. Nationwide, the drastic surge in acceptance of homosexuality and gender questioning has resulted in a

rapid push for legal change to keep up with social change. Laws such as "Don't Ask, Don't Tell" and the Defense of Marriage Act (DOMA), both of which were enacted in the 1990s, have met severe resistance on the grounds of being discriminatory toward sexual minority groups and have been accused of unconstitutionality less than 20 years after their implementation. Change in perceptions of gender is also evident in social issues such as sexual harassment, a term that only entered the mainstream mindset in the 1991 Clarence Thomas/Anita Hill scandal. As society's gender roles and gender restrictions continue to fluctuate, the legal system and the structure of American society will continue to change and adjust.

Important Gender-related Events in the United States

1920 -- *19th Amendment* (women's Suffrage Ratified)

1941-1945 -- World War II forces millions of women to enter the workforce

1948 -- Universal Declaration of Human Rights

1963 -- Congress passes *Equal Pay Act*

1964 -- Congress passes *Civil Rights Act*, which outlaws sex discrimination

1969 -- Stonewall riots in NYC, forcing gay rights into the American spotlight

1972 --Congress passes *Equal Rights Amendment*; *TitleIX* prohibits sex discrimination is schools and sports

1973 -- American Psychiatric Association removes homosexuality from the DSM

1981 -- First woman appointed to the US Supreme Court

1987 -- Average woman earned $0.68 for every $1.00 earned by a man

1992 -- World Health Organization no longer considers homosexuality an illness

1993 -- Supreme Court rules that sexual harassment in the workplace is illegal

2011 -- *Don't Ask Don't Tell* is repealed, allowing people who identify as gay serve openly in the US military

2012 -- President Barack Obama becomes the first American president to openly support LGBT rights and marriage equality

Outside Resources

PFLAG National Glossary of Terms
https://pflag.org/glossary

Resources for Transgender, Non-binary, and Gender Non-Conforming Individuals and their Allies
https://sites.sph.harvard.edu/unity/resources-transgender/

Video: Human Sexuality is Complicated
http://www.youtube.com/watch?v=xXAoG8vAyzI

Web: Big Think with Professor of Neuroscience Lise Eliot
http://bigthink.com/users/liseeliot

Web: Understanding Prejudice: Sexism
http://www.understandingprejudice.org/links/sexism.htm

Discussion Questions

1. What are the differences and associations among gender, sex, gender identity, and sexual orientation?
2. Are the gender differences that exist innate (biological) differences or are they caused by other variables?
3. Discuss the theories relating to the development of gender roles and gender stereotypes. Which theory do you support? Why?
4. Using what you've read in this module: a. Why do you think gender stereotypes are so inflated compared with actual gender differences? b. Why do you think people continue to believe in such strong gender differences despite evidence to the contrary?
5. Brainstorm additional forms of gender discrimination aside from sexual harassment. Have you seen or experienced gender discrimination personally?
6. How is benevolent sexism detrimental to women, despite appearing positive?

Vocabulary

Agender
An individual who may have no gender or may describe themselves as having a neutral gender.

Ambivalent sexism
A concept of gender attitudes that encompasses both positive and negative qualities.

Benevolent sexism
The "positive" element of ambivalent sexism, which recognizes that women are perceived as needing to be protected, supported, and adored by men.

Bigender
An individual who identifies as two genders.

Binary
The idea that gender has two separate and distinct categories (male and female) and that a person must be either one or the other.

Cisgender
A term used to describe individuals whose gender matches their biological sex.

Developmental intergroup theory
A theory that postulates that adults' focus on gender leads children to pay attention to gender as a key source of information about themselves and others, to seek out possible gender differences, and to form rigid stereotypes based on gender.

Gender
The cultural, social, and psychological meanings that are associated with masculinity and femininity.

Gender constancy
The awareness that gender is constant and does not change simply by changing external attributes; develops between 3 and 6 years of age.

Gender discrimination
Differential treatment on the basis of gender.

Gender identity
A person's psychological sense of being male or female.

Gender roles
The behaviors, attitudes, and personality traits that are designated as either masculine or feminine in a given culture.

Gender schema theory
This theory of how children form their own gender roles argues that children actively organize others' behavior, activities, and attributes into gender categories or schemas.

Gender stereotypes
The beliefs and expectations people hold about the typical characteristics, preferences, and behaviors of men and women.

Genderfluid
An individual who may identify as male, female, both, or neither at different times and in different circumstances.

Genderqueer or gender nonbinary
An umbrella term used to describe a wide range of individuals who do not identify with and/or conform to the gender binary.

Hostile sexism
The negative element of ambivalent sexism, which includes the attitudes that women are inferior and incompetent relative to men.

Schemas
The gender categories into which, according to gender schema theory, children actively organize others' behavior, activities, and attributes.

Sex
Biological category of male or female as defined by physical differences in genetic composition and in reproductive anatomy and function.

Sexual harassment
A form of gender discrimination based on unwanted treatment related to sexual behaviors or appearance.

Sexual orientation
Refers to the direction of emotional and erotic attraction toward members of the opposite sex, the same sex, or both sexes.

Social learning theory
This theory of how children form their own gender roles argues that gender roles are learned through reinforcement, punishment, and modeling.

Transgender
A term used to describe individuals whose gender does not match their biological sex.

References

Barnett, B. S., Nesbit, A. E., & Sorrentino, R. M. (2018). The transgender bathroom debate at the intersection of politics, law, ethics, and science. *The Journal of the American Academy of Psychiatry and the Law, 46*(2), 232-241.

Best, D. L. (2001). Gender concepts: Convergence in cross-cultural research and methodologies. Cross-Cultural Research: *The Journal of Comparative Social Science, 35(1)*, 23–43. doi: 10.1177/106939710103500102

Bigler, R. S., & Liben, L. S. (2007). Developmental intergroup theory: Explaining and reducing children\'s social stereotyping and prejudice. *Current Directions in Psychological Science, 16 (3)*, 162–166. doi: 10.1111/j.1467-8721.2007.00496.x

Chang, A. Sandhofer, C., & Brown, C. S. (2011). Gender biases in early number exposure to preschool-aged children. *Journal of Language and Social Psychology*. doi: 10.1177/0261927X11416207

Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin, 132(1)*, 33–72. doi: 10.1037/0033-2909.132.1.33

Flores, A.R., Herman, J.L., Gates, G.J., & Brown, T.N.T. (2016). *How Many Adults Identify as Transgender in the United States?* Los Angeles, CA: The Williams Institute.

Glick, P., & Fiske, S. T. (2001). An ambivalent alliance: Hostile and benevolent sexism as complementary justifications for gender inequality. *American Psychologist, 56(2)*, 109–118. doi: 10.1037/0003-066X.56.2.109

Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist, 60(6)*, 581–592. doi: 10.1037/0003-066X.60.6.581

Leaper, C., & Smith, T. E. (2004). A meta-analytic review of gender variations in children's language use: Talkativeness, affiliative speech, and assertive speech. *Developmental Psychology, 40(6)*, 993–1027. doi: 10.1037/0012-1649.40.6.993

Lytton, H., & Romney, D. M. (1991). Parents' differential socialization of boys and girls: A meta-analysis. *Psychological Bulletin, 109(2)*, 267–296. doi: 10.1037/0033-2909.109.2.267

Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Belknap Press/Harvard University Press.

Martin, C. L., Ruble, D. N., & Szkrybalo, J. (2002). Cognitive theories of early gender development. *Psychological Bulletin, 128(6)*, 903–933. doi: 10.1037/0033-2909.128.6.903

Tzuriel, D., & Egozi, G. (2010). Gender differences in spatial ability of young children: The effects of training and processing strategies. *Child Development, 81(5)*, 1417–1430. doi: 10.1111/

j.1467-8624.2010.01482.x

Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin, 128(5)*, 699–727. doi: 10.1037/0033-2909.128.5.699

31

Intellectual Abilities, Interests, and Mastery

David Lubinski

Psychologists interested in the study of human individuality have found that accomplishments in education, the world of work, and creativity are a joint function of talent, passion, and commitment — or how much effort and time one is willing to invest in personal development when the opportunity is provided. This module reviews models and measures that psychologists have designed to assess intellect, interests, and energy for personal development. The module begins with a model for organizing these three psychological domains, which is useful for understanding talent development. This model is not only helpful for understanding the many different ways that positive development may unfold among people, but it is also useful for conceptualizing personal development and ways of selecting opportunities in learning and work settings that are more personally meaningful. Data supporting this model are reviewed.

Learning Objectives

- Compare and contrast satisfaction and satisfactoriness.
- Discuss why the model of talent development offered in this module places equal emphasis on assessing the person and assessing the environment.
- Articulate the relationship between ability and learning and performance.
- Understand the issue of an "ability threshold" beyond which more ability may or may not matter.
- List personal attributes other than interests and abilities that are important to individual accomplishment.

Although Plato's view of human intelligence may be quite dated, modern-day analyses describe a similar model for understanding humans' intellectual application and development. [Image: A Health Blog, https://goo.gl/O8FoHH, CC BY-SA 2.0, https://goo.gl/rxiUsF]

An amalgam of intelligence, interests, and mastery are appropriate topics for an essay on the cross-cutting themes running through these vast domains of psychological diversity. For effective performance and valued accomplishments, these three classes of determinants are needed for comprehensive treatments of psychological phenomena supporting learning, occupational performance, and for advancing knowledge through innovative solutions. Historically, these personal attributes go back to at least Plato's triarchic view of the human psyche, described in *Phaedra*, wherein he depicts the *intellect* as a charioteer, and *affect*(interests) and *will*(to master) as horses that draw the chariot. Ever since that time, cognitive, affective, and conative factors have all been found in comprehensive models of human development, or "The Trilogy of Mind" (Hilgard, 1980). To predict the magnitude, nature, and sophistication of intellectual development toward learning, working, and creating, all three classes are indispensable and deficits on any one can markedly hobble the effectiveness of the others in meeting standards for typical as well as extraordinary performance. These three aspects of human individuality all operate in parallel confluences of behaviors, perceptions, and stimuli to engender stream of consciousness experiences as well as effective functioning. Hilgard (1980) was indeed justified to criticize formulations in cognitive psychology, which neglect affection and conation; technically, such truncated frameworks of human psychological phenomena are known as **under-determined or misspecified causal models** (Lubinski, 2000; Lubinski & Humphreys, 1997).

A Framework for Understanding Talent Development

Figure 1 is an adaptation of the Theory of Work Adjustment (TWA; Dawis & Lofquist, 1984; Lubinski & Benbow, 2000). It provides a useful organizational scheme for this treatment by outlining critical dimensions of human individuality for performance in learning and work settings (and in transitioning between such settings). Here, the dominant models of intellectual abilities and educational–occupational interests are assembled. Because this review will be

restricted to measures of individual differences that harbor real-world significance, these two models are linked to corresponding features of learning and work environments, ability requirements and incentive or reward structures, which set standards for meeting expectations (performance) and rewarding valued performance (compensation). Correspondence between abilities and ability requirements constitutes satisfactoriness ("competence"), whereas correspondence between an interests and reward structures constitutes satisfaction ("fulfillment"). To the extent that satisfactoriness and satisfaction co-occur, the individual is motivated to maintain contact with the environment and the environment is motivated to retain the individual; if one of these dimensions is dis-correspondent, the individual is motivated to leave the environment or the environment is motivated to dismiss.

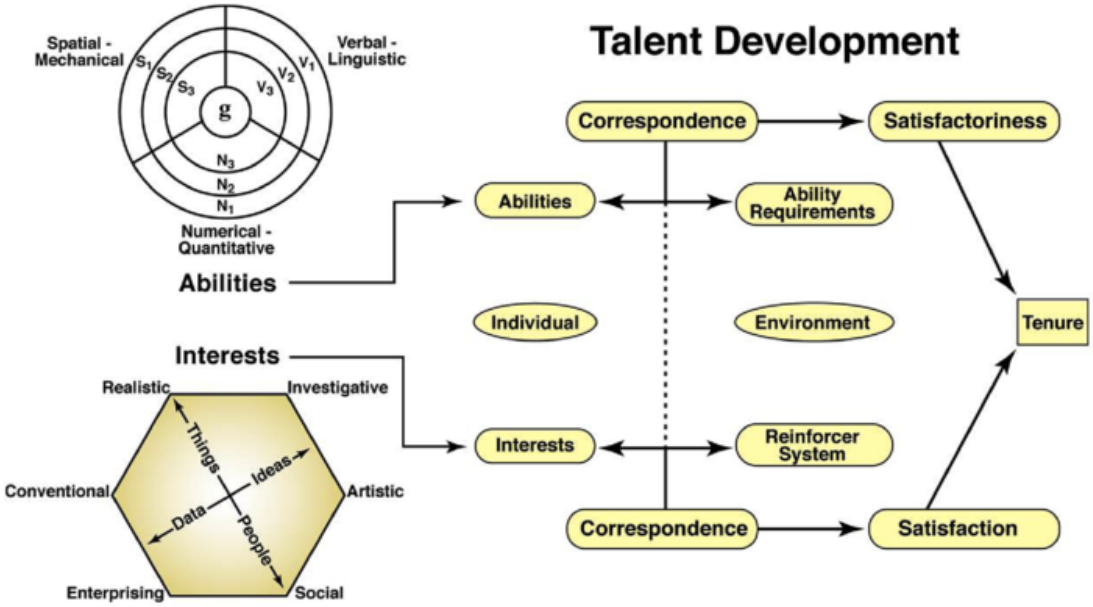


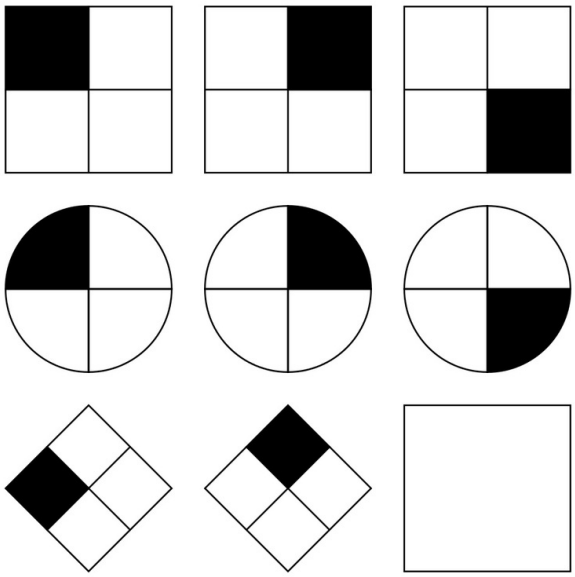
Figure 1. The above is an adaptation of the Theory of Work Adjustment (Dawis & Lofquist, 1984), following Lubinski and Benbow (2000) to highlight its general role in talent development over the life span. The radex scaling of cognitive abilities (upper left) and the RIASEC hexagon of interests (lower left) outline personal attributes relevant to learning and work. The letters within the cognitive ability arrangement denote different regions of concentration, whereas their accompanying numbers increase as a function of complexity. Contained within the RIASEC is a simplification of this hexagon. Following Prediger (1982), it amounts to a two-dimensional structure of independent dimensions: people/things and data/ideas, which underlie RIASEC. The dotted line running down the individual and environment sectors underscores the idea that equal emphasis is placed on assessing personal attributes (abilities and interests) and assessing the environment (abilities requirements and reward structure). Correspondence between abilities and ability requirements constitutes satisfactoriness whereas correspondence between interests and reinforce systems constitutes satisfaction. Jointly, these two dimensions predict tenure or a longstanding relationship between the individual and the environment.

This model of talent development places equal emphasis on assessing the individual (abilities and interests) and the environment (response requirements and reward structures). Comprehensive reviews of outcomes within education (Lubinski, 1996; Lubinski & Benbow, 2000), counseling (Dawis, 1992; Gottfredson, 2003; Rounds & Tracey, 1990), and industrial/organizational psychology all emphasize this person/environment tandem (Dawis, 1991; Katzell, 1994; Lubinski & Dawis, 1992; Strong, 1943): aligning competency/motivational proclivities to performance standards and reward structures for learning and work (Bouchard, 1997; Scarr, 1996; Scarr & McCartney, 1983). And indeed, educational, counseling, and industrial psychology can be contiguously sequenced by this framework. They all share a common feature: the scientific study of implementing interventions or opportunities, based on individual differences, for maximizing positive psychological growth across different stages of life span development (Lubinski, 1996). For making individual decisions about personal development, or institutional decisions about organizational development, it is frequently useful to go beyond a minimum requisite approach of "do you like it" (satisfaction) and "can you do it" (satisfactoriness), and instead consider what individuals like the most and can do the best (Lubinski & Benbow, 2000, 2001). This framework is useful for identifying "optimal promise" for personal as well as organizational development. For now, however, cognitive abilities and interests will be reviewed and, ultimately, linked to conative determinants that mobilize, and in part account for, individual differences in how capabilities and motives are expressed.

Cognitive Abilities

Over the past several decades—the past 20 years in particular—a remarkable consensus has emerged that cognitive abilities are organized hierarchically (Carroll, 1993). A general outline of this hierarchy is represented graphically by a radex (Guttman, 1954), depicted in the upper left region of Figure 1. This illustrates the reliable finding that cognitive ability assessments covary as a function of their content or complexity (Corno, Cronbach et al., 2002; Lubinski & Dawis, 1992; Snow & Lohman, 1989). Cognitive ability tests can be scaled in this space based on how highly they covary with one another. The more that two tests share complexity and content, the more they covary and the closer they are to one another as points within the radex. Test *complexity* is scaled from the center of the radex ("*g*") out, and, along lines emanating from the origin, complexity decreases but test content remains the same. Test *content* is scaled around the circular bands with equal distance from the center of the radex and, progressing around these bands, the relative density of test content changes from spatial/mechanical to verbal/linguistic to quantitative/numerical, but test complexity remains constant. Therefore, test content varies *within* each band (but complexity remains constant), whereas test complexity varies *between* bands (but on lines from the origin to the periphery, content remains

constant). Because the extent to which tests covary is represented by how close together they are within this space (Lubinski & Dawis, 1992; Snow & Lohman, 1989; Wai, Lubinski, & Benbow, 2009), this model is helpful in organizing the many different kinds of specific ability tests.



As you can tell already, trying to document one's intelligence in problem-solving tests is very complicated. So although online "IQ tests" can be fun, rarely are they actually accurate. [Image: Life of Riley, https://goo.gl/siweyC, CC BY-SA 3.0, https://goo.gl/eLCn2O]

As Piaget astutely pointed out, "Intelligence is what you use when you don't know what to do," and this model affords an excellent overview of the content and sophistication of thought applied to familiar and novel problem-solving tasks. Mathematical, spatial, and verbal reasoning constitute the chief specific abilities with implications for different choices and performance after those choices in learning and work settings (Corno et al., 2002; Dawis, 1992; Gottfredson, 2003; Lubinski, 2004; Wai et al., 2009). The content of measures or tests of these specific abilities index individual differences in different modalities of thought: reasoning with numbers, words, and figures or shapes. Yet, despite this disparate content and focus, contrasting specific ability tests are all positively correlated, because they all index an underlying general property of intellectual thought.

This general (common) dimension, identified over 100 years ago (Spearman, 1904) and corroborated by a massive quantity of subsequent research (Carroll, 1993; Jensen, 1998), is *general mental ability*, the *general factor*, or simply *g* (Gottfredson, 1997). General mental ability represents the complexity/sophistication of a person's intellectual repertoire (Jensen, 1998; Lubinski & Dawis, 1992). The more complex a test is, regardless of its content, the better a measure of *g* it is. Further, because *g* underlies all cognitive reasoning processes, any test that assesses a specific ability is also, to some extent, a measure of *g* (Lubinski, 2004). In school, work, and a variety of everyday life circumstances, assessments of this general dimension covary more broadly and deeper than any other measure of human individuality (Hunt, 2011; Jensen, 1998; Lubinski, 2000, 2004).

Measures of *g* manifest their life importance by going beyond educational settings (where

they covary with educational achievement assessments in the .70–.80 range), by playing a role in shaping phenomena within Freud's two important life domains, *arbeiten* and *lieben*, working and loving (or, resource acquisition and mating). Measures of *g* covary .20–.60 with work performance as a function of job complexity, .30–.40 with income, and –.20 with criminal behavior, .40 with SES of origin, and .50–.70 with achieved SES; assortative mating correlations on *g* are around .50 (Jensen, 1998; Lubinski, 2004; Schmidt & Hunter, 1998). Furthermore, Malcolm Gladwell (2008) notwithstanding, there does *not* appear to be an ability threshold; that is, the idea that after a certain point more ability does not matter. More ability does matter.

Although other determinants are certainly needed (interests, persistence, opportunity), more ability does make a difference in learning, working, and creating, even among the top 1% of ability, or IQ equivalents ranging from approximately 137 to over 200 (see Figure 2). When appropriate assessment and criterion measures are utilized to capture the breadth of ability and accomplishment differences among the profoundly talented, individual differences within the top 1% of ability are shown to matter a great deal. In the past this has been difficult to demonstrate, because intellectual assessments and criterion measures lacked sufficient scope in gifted or intellectually talented populations, which resulted in no variation in assessments among the able and exceptionally able (ceiling effects). Without variation there cannot be co-variation, but modern methods have now corrected for this (Kell, Lubinski, & Benbow, 2013a; Lubinski, 2009; Park, Lubinski, & Benbow, 2007, 2008). Yet, even when *g* is measured in its full scope, and validated with large samples and appropriate low-base-rate-criteria over protracted longitudinal intervals, there is much more to intellectual functioning than measures of *g* or general ability.

To reveal how general and **specific abilities** operate over the course of development, Figure 3 contains data from over 400,000 high schools students assessed between grades 9 through 12, and tracked for 11 years. Specifically, Figure 3 graphs the general and specific ability profiles of students earning terminal degrees in nine disciplines (Wai et al., 2009). Given that highly congruent findings were observed for all four cohorts (grades 9 through 12), the cohorts were combined. High general intelligence and an intellectual orientation dominated by high mathematical and spatial abilities, relative to verbal ability, were salient characteristics of individuals who pursued advanced education credentials in science, technology, engineering, and mathematics (STEM). These participants occupy a region in the intellectual space defined by the dimensions of ability level and ability pattern different from participants who earn undergraduate and graduate degrees in other domains.

Two major differences distinguish the STEM from the non-STEM educational groups. First, students who ultimately secure educational credentials in STEM domains are more capable than those earning degrees in other areas, especially in nonverbal intellectual abilities. Within

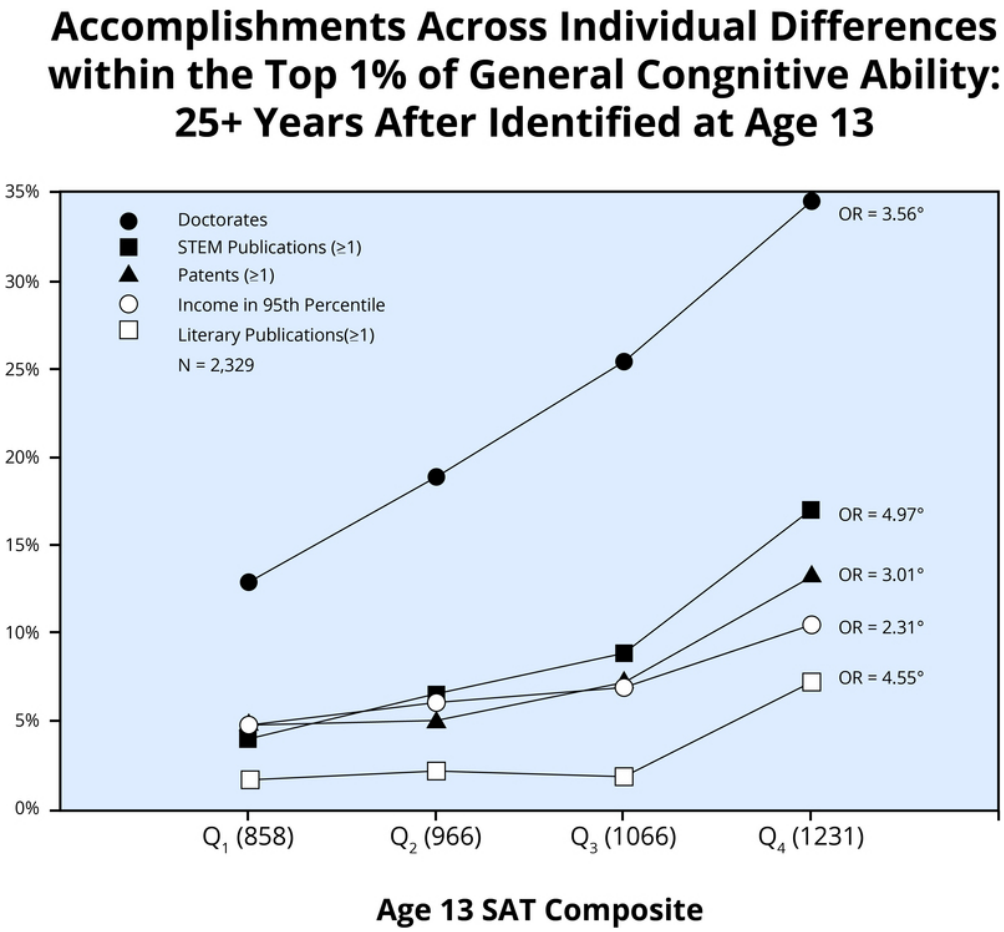


Figure 2. Frey and Detterman (2004) have shown that the SAT composite is an excellent measure of general intelligence for high ability samples; here, intellectually precocious youth were assessed on this composite at age 13 and separated into quartiles (Lubinski, 2009). The mean age 13 SAT composite scores for each quartile are displayed in parentheses along the x-axis. Odds ratios comparing the likelihood of each outcome in the top (Q4) and bottom (Q1) SAT quartiles are displayed at the end of every respective criterion line. An asterisk indicates that the 95% confidence interval for the odds ratio did not include 1.0, meaning that the likelihood of the outcome in Q4 was significantly greater than in Q1. These SAT assessments by age 13 were conducted before the re-centering of the SAT in the mid-1990s (i.e., during the 1970s and early 1980s); at that time, cutting scores for the top 1 in 200 were SAT-M ≥ 500, SAT-V ≥ 430; for the top 1 in 10,000, cutting scores were SAT-M ≥ 700, SAT-V ≥ 630 by age 13.

all educational domains, more advanced degrees are associated with more general *and* specific abilities. Second, for all three STEM educational groupings (and the advanced degrees within these groupings), spatial ability > verbal ability—whereas for all others, ranging from education to biology, spatial ability < verbal ability (with business being an exception). Young adolescents who subsequently secured advanced educational credentials in STEM manifested a spatial–verbal ability pattern opposite that of those who ultimately earned educational

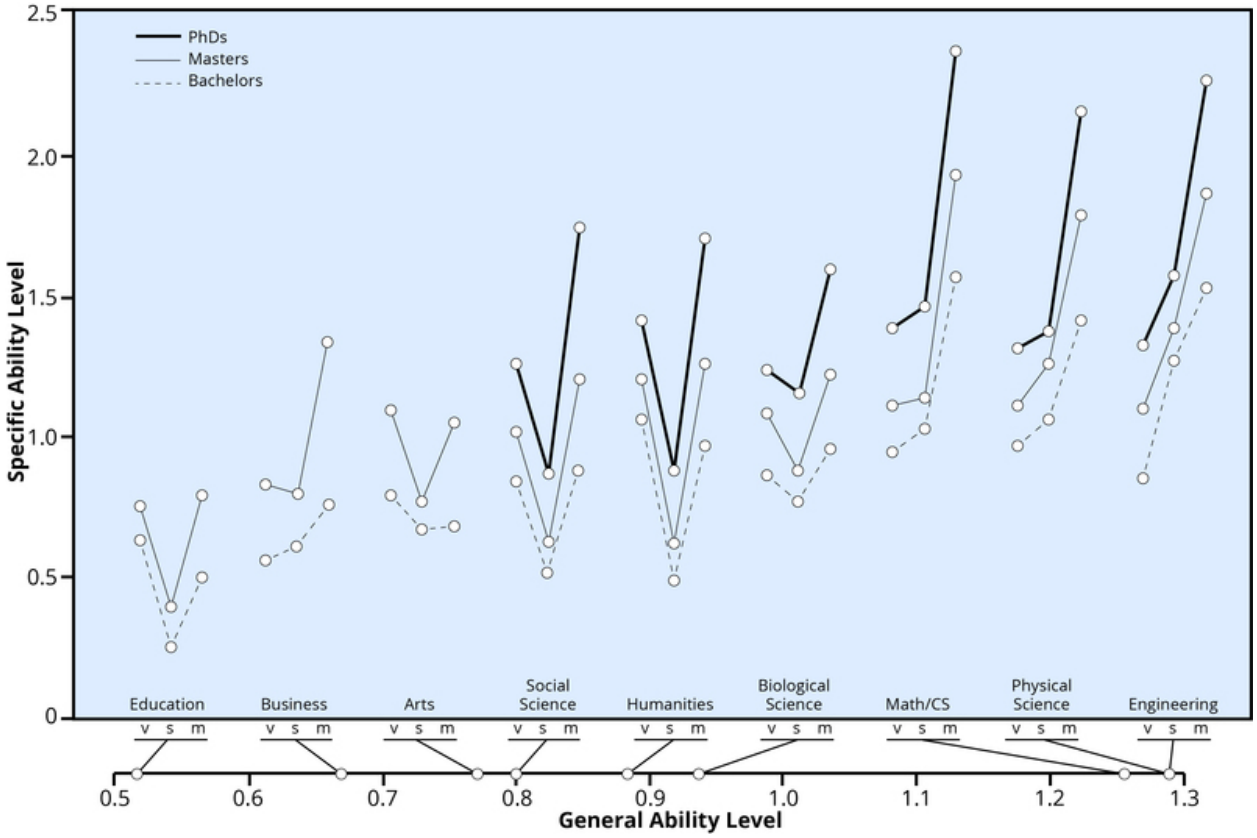


Figure 3. Average z scores of participants on verbal, spatial, and mathematical ability for terminal bachelor's degrees, terminal master's degrees, and doctoral degrees are plotted by field. The groups are plotted in rank order of their normative standing on g (verbal [V] + spatial [S] + mathematical [M]) along the x-axis, and the line with the arrows from each field pointing to it indicates on the continuous scale where they are in general mental ability in z-score units. This figure is standardized in relation to all participants with complete ability data at the time of initial testing. Respective Ns for each group (men + women) were as follows for bachelor's, master's, and doctorates, respectively: engineering (1,143, 339, 71), physical science (633, 182, 202), math/computer science (877, 266, 57), biological science (740, 182, 79), humanities (3,226, 695, 82), social science (2,609, 484, 158), arts (615, 171 [master's only]), business (2,386, 191 [master's + doctorate]), and education (3,403, 1,505 [master's + doctorate]). For education and business, master's degrees and doctorates were combined because the doctorate samples for these groups were too small to obtain stability (N = 30). For the specific N for each degree by sex that composed the major groupings, see Appendix A in Wai et al. (2009).

credentials in other areas. These same patterns play out in occupational arenas in predictable ways (Kell, Lubinski, Benbow, & Steiger, 2013b). In the past decade, individual differences within the top 1% of ability have revealed that these patterns portend important outcomes for technical innovation and creativity, with respect to both ability level (Lubinski, 2009; Park et al., 2008) and pattern (Kell et al. 2013a, Kell et al., 2013b; Park et al., 2007). Level of general ability has predictive validity for the *magnitude* of accomplishment (how extraordinary they are), whereas ability pattern has predictive validity for the nature of accomplishments (the domains they occur in).

Interests

Just because people can do something well doesn't mean they like doing it. Psychological information on motivational differences (personal passions) is needed to understand attractions and aversions, different ways to create a meaningful life, and how differential development unfolds. Even people with the same intellectual equipment vary widely in their motivational proclivities. Paraphrasing Plato, different horses drive intellectual development down different life paths. The lower left region of Figure 1 provides the dominant model of vocational interests, one developed from decades of large-scale longitudinal and cross-cultural research. It shows a hexagonal structure consisting of six general themes: Realistic (R) = working with gadgets and things, the outdoors, need for structure; Investigative (I) = scientific pursuits, especially mathematics and the physical science, an interest in theory; Artistic (A) = creative expression in art and writing, little need for structure; Social (S) = people interests, the helping professions, teaching, nursing, counseling; Enterprising (E) = likes leadership roles directed toward economic objectives; and Conventional (C) = liking of well-structured environments and clear chains of command, such as office practices.

It's pretty easy to think of things you're skilled at but don't enjoy doing. However, can you think of something you're not very skilled at but still enjoy doing? [Image: CC0 Public Domain, https://goo.gl/m25gce]

These six themes covary inversely with the distance between them, hence, the hexagonal structure circling around R-I-A-S-E-C. John Holland (1959, 1996) justifiably receives most of the credit for this model (Day & Rounds, 1998), although Guilford et al. (1954) uncovered a similar framework based on military data and labeled them Mechanical, Scientific, Aesthetic Expression, Social Welfare, Business, and Clerical. Although each theme contains multiple subcomponents, Holland's hexagon, like the radex of cognitive abilities, captures the general outlines of the educational/occupational interest domain, but there are molecular strands of intellective and interest dimensions that add nuance to these general outlines (for abilities, see Carroll, 1993; for interests, see Dawis, 1991; Savickas & Spokane, 1999). There are also super-ordinal themes such as *people*

versus things (Su, Rounds, & Armstrong, 2009), which manifest arguably the largest sex-difference on a psychological dimension of human individuality.

At superordinate levels of *people versus things* or *data versus ideas* (Prediger, 1982), or at the RIASEC level of analysis, interest dimensions covary in different ways with mathematical, spatial, and verbal abilities (Ackerman, 1996; Ackerman & Heggestad, 1997; Schmidt, Lubinski, & Benbow, 1998); and intense selection, when exclusively restricted to a specific ability, will eventuate in distinctive interest profiles across the three abilities with implications for differential development (Humphreys, Lubinski, & Yao, 1993; Webb, Lubinski, & Benbow, 2007). Although correlations between abilities and interests are "only" in the .20–.30 range, when selection is extreme, distinct profiles emerge and reflect different "types" (Lubinski & Benbow, 2000, 2006). For basic science, this shows how ostensibly different kinds of intelligence at the extreme do not stem from different qualities, but rather from endpoint extremes within a multivariate space of systematic sources of individual differences, which "pull" with them constellations of nonintellectual personal attributes. For applied practice, skilled educational–vocational counselors routinely combine information on abilities and interests to distill learning and work environments that individuals are likely to thrive in competence and experience fulfillment (Dawis, 1992; Rounds & Tracy, 1990). For further insights, a final class of important psychological determinants is needed, however.

Mastery

As all parents of more than one child know, there are huge individual differences in the extent to which individuals embrace opportunities for positive development. Seasoned faculty at top institutions for graduate training have observed the same phenonemon—among highly select graduate students, task commitment varies tremendously. Even among the intellectual elite, individual differences in accomplishments stem from more than abilities, interests, and opportunity; conative determinants are critical catalysts. Galton (1869) called it "zeal," Hull (1928) called it "industriousness," and Webb (1915) called it "will." Such labels as "grit" or "strivers" are sometimes used

According to some researchers, it takes about 10,000 hours of practicing a skill to become an "expert" in it. Of course, one's natural ability would vary this amount. However, either way, get to practicing! [Image: CC0 Public Domain, https://goo.gl/m25gce]

to define resources that people call upon to mobilize their abilities and interests over protracted intervals. Conative factors are distinct from abilities and preferences, having more to do with individual differences in energy or psychological tempo rather than the content of what people can do or how rapidly they learn. Indeed, characteristic across scientific studies of expertise and world-class accomplishment are attributes specifically indicative of indefatigable capacities for study and work. This is an underappreciated class of individual differences, although Ackerman (1996) has discussed *typical intellectual engagement* (TIE) and Dawis and Lofquist (1984) have discussed *pace* and *endurance*. This class of attributes simply has not received the attention it deserves.

Nevertheless, in the field of talent development and identification, the greatest consensus appears to be found on the topic of conation, rather than cognition or affect. Exceptional performers are deeply committed to what they do, and they devote a great deal of time to doing it. Regardless of the theorist, Howard Gardner, Dean Simonton, Arthur Jensen, Anders Erikson, and Harriet Zuckerman all agree that this is a uniform characteristic of world class performers at the top of their game. In the words of Dean Simonton and E. O. Wilson, respectively:

> [M]aking it big [becoming a star] is a career. People who wish to do so must organize their whole lives around a single enterprise. They must be monomaniacs, even megalomaniacs, about their pursuits. They must start early, labor continuously, and never give up the cause. Success is not for the lazy, procrastinating, or mercurial. (Simonton, 1994, p. 181)

> I have been presumptuous enough to counsel new Ph.D.'s in biology as follows: If you choose an academic career you will need forty hours a week to perform teaching and administrative duties, another twenty hours on top of that to conduct respectable research, and still another twenty hours to accomplish really important research. This formula is not boot-camp rhetoric. (Wilson, 1998, pp. 55–56)

Figure 4 contains data from two extraordinary populations of individuals (Lubinski, Benbow, Webb, Bleske-Rechek, 2006). One group consists of a sample of profoundly gifted adolescents identified at age 12 as in the top 1 in 10,000 in mathematical or verbal reasoning ability; they were subsequently tracked for 20 years. Members of the second group were identified in their early twenties, as first- or second-year STEM graduate students enrolled in a top-15 U.S. university; they were subsequently tracked for 10 years. Now in their mid-thirties, subjects were asked how much they would be *willing to work* in their "ideal job" and, second, how much they actually *do work*. The data are clear. There are huge individual differences associated with how much time people are willing to invest in their career development and work. The STEM graduate students are particularly interesting inasmuch as in their mid-twenties they

were assessed on abilities, interests, and personality, and both sexes were found to be highly similar on these psychological dimensions (Lubinski, Benbow, Shea, Eftekhari-Sanjani, & Halvorson, 2001). But subsequently, over the life span, they markedly diverged in time allocation and life priorities (Ceci & Williams, 2011; Ferriman, Lubinski, & Benbow, 2009).

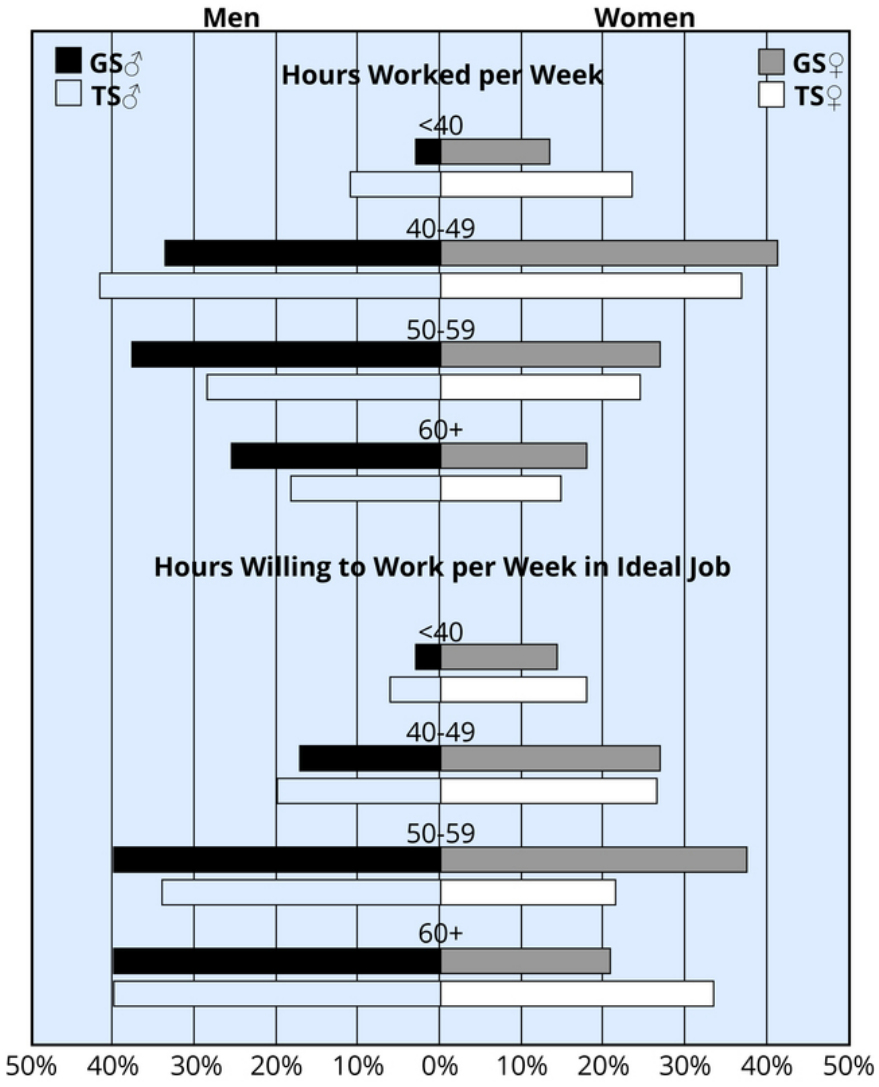


Figure 4: Hours worked per week (top) and hours willing to work per week in ideal job (bottom) for top STEM Graduate Students (GS) and Profoundly Gifted Talent Search (TS) participants now in their mid-thirties (from Lubinski et al., 2006).

These figures reveal huge *noncognitive* individual differences among individuals with exceptional intellectual talent. One only needs to imagine the ticking of a tenure clock and the differences likely to accrue over a 5-year interval between two faculty working 45- versus 65-hour weeks (other things being equal). Making partner in a prestigious law firm is no different, nor is achieving genuine excellence in most intellectually demanding areas.

Conclusion

Since Spearman (1904) advanced the idea of general intelligence, a steady stream of systematic scientific knowledge has accrued in the psychological study of human individuality. We have learned that the intellect is organized hierarchically, that interests are multidimensional and only covary slightly with abilities, and that individual differences are huge in terms of investing in personal development. When these aspects of human psychological diversity are combined with commensurate attention devoted to opportunities for learning, work, and personal growth, a framework for understanding human development begins to take shape. Because frameworks may be found that emphasize only one set of these determinants, this essay closes with the recommendation—based on the empirical evidence—to stress all three.

Outside Resources

Book: Human Cognitive Abilities, by John Carroll constitutes a definitive treatment of the nature and hierarchical organization of cognitive abilities, based on a conceptual and empirical analysis of the past century's factor analytic research.
http://www.amazon.com/Human-Cognitive-Abilities-Factor-Analytic-Studies/dp/0521382750-/ref=sr_1_1?s=books&ie=UTF8&qid=1390944516&sr=1-1&keywords=human+cognitive+abilities

Book: Human Intelligence, by Earl Hunt, provides a superb overview of empirical research on cognitive abilities. Collectively, these three sources capture the psychological significance of what this important domain of human psychological diversity affords.
http://www.amazon.com/Human-Intelligence-Earl-Hunt/dp/0521707811

Book: The g Factor, by Arthur Jensen, explicates the depth and breadth of the central dimension running through all cognitive abilities, the summit of Carroll's (1993) hierarchical organization: general intelligence (or "g"). Revealed here is the practical and scientific significance for coming to terms with a rich array of critical human outcomes found in schools, work, and everyday life.
http://www.amazon.com/The-Factor-Evolution-Behavior-Intelligence/dp/0275961036

Book: For additional reading on the history of intellectual assessment, read Century of Ability Testing, by Robert Thorndike and David F. Lohman
http://www.amazon.com/Century-Ability-Testing-Robert-Thorndike/dp/0829251561

Discussion Questions

1. Why are abilities and interests insufficient for conceptualizing educational and occupational development?
2. Why does the model of talent development discussed in this module place equal emphasis on assessing the individual and assessing the environment.
3. What is the most widely agreed on empirical finding, among investigators who study the development of truly outstanding careers?
4. Besides what you can do and what you like, what other factors are important to consider when making choices about your personal development in learning and work settings?

Vocabulary

g or general mental ability
The general factor common to all cognitive ability measures, "a very general mental capacity that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings—'catching on,' 'making sense of things,' or 'figuring out' what to do" (Gottfredson, 1997, p. 13).

Satisfaction
Correspondence between an individual's needs or preferences and the rewards offered by the environment.

Satisfactoriness
Correspondence between an individual's abilities and the ability requirements of the environment.

Specific abilities
Cognitive abilities that contain an appreciable component of g or general ability, but also contain a large component of a more content-focused talent such as mathematical, spatial, or verbal ability; patterns of specific abilities channel development down different paths as a function of an individual's relative strengths and weaknesses.

Under-determined or misspecified causal models
Psychological frameworks that miss or neglect to include one or more of the critical determinants of the phenomenon under analysis.

References

Ackerman, P. L. (1996). A theory of adult intellectual development: Process, personality, interests, and knowledge. *Intelligence, 22*, 227–257.

Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*, 218–245.

Bouchard, T. J., Jr. (1997). Genetic influence on mental abilities, personality, vocational interests, and work attitudes. *International Review of Industrial and Organizational Psychology, 12*, 373–395.

Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. Cambridge, England: Cambridge University Press.

Ceci, S. J., & Williams, W. M. (2011). Understanding current causes of women's underrepresentation in science. *Proceedings of the National Academy of Sciences, 108*, 3157–3162.

Corno, L., Cronbach, L. J., et al. (Eds.) (2002). *Remaking the concept of aptitude: Extending the legacy of Richard E. Snow*. Mahwah, NJ: Erlbaum.

Dawis, R. V. (1992). The individual differences tradition in counseling psychology. *Journal of Counseling Psychology, 39*, 7–19.

Dawis, R. V. (1991). Vocational interests, values and preferences. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial & organizational psychology* (2nd ed., Vol. 2, pp. 833–872). Palo Alto, CA: Consulting Psychologists Press.

Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment*. Minneapolis, MN: University of Minnesota Press.

Day, S. X., & Rounds, J. (1998). Universality of vocational interest structure among racial and ethnic minorities. *American Psychologist, 53*, 728–736.

Ferriman, K., Lubinski, D., & Benbow, C. P. (2009). Work preferences, life values, and personal views of top math/science graduate students and the profoundly gifted: Developmental changes and sex differences during emerging adulthood and parenthood. *Journal of Personality and Social Psychology, 97*, 517–532.

Frey, M. C., & Detterman, D. K. (2004). Scholastic assessment or g? The relationship between the Scholastic Assessment Test and general cognitive ability. *Psychological Science, 15*, 373–378.

Galton, F. (1869). *Hereditary genius: An inquiry into its laws and consequences*. New York, NY: Appleton.

Gladwell, M. (2008). *Outliers: The story of success*. New York, NY: Little, Brown.

Gottfredson, L. S. (2003). The challenge and promise of cognitive career assessment. *Journal of Career Assessment, 11*, 115–135.

Gottfredson, L. S. (1997). Intelligence and social policy [Special issue]. *Intelligence, 24*(1).

Guilford, J. P., Christensen, P. R., Bond, N. A., & Sutton, M. A. (1954). A factor analytic study of human interests. *Psychological Monographs, 68*(4, whole No. 35).

Guttman, L. (1954). A new approach to factor analysis: The radex. In P. Lazarfield (Ed.), *Mathematical thinking in the social sciences* (pp. 258–348). Glencoe, IL: Free Press.

Hilgard, E. R. (1980). The trilogy of mind: Cognition, affect, and conation. *Journal of the History of the Behavioral Sciences, 16*, 107–117.

Holland, J. L. (1996). Exploring careers with a typology: What we have learned and some new directions. *American Psychologist, 51*, 397–406.

Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology, 6*, 35–45.

Hull, C. L. (1928). *Aptitude testing*. Chicago, IL: World Book Company.

Humphreys, L. G., Lubinski, D., & Yao, G. (1993). Utility of predicting group membership and the role of spatial visualization in becoming an engineer, physical scientist, or artist. *Journal of Applied Psychology, 78*, 250–261.

Hunt, E. (2011). *Human intelligence*. Cambridge, England: Cambridge University Press.

Jensen, A.R. (1998). *The g factor*. Westport, CT: Praeger.

Katzell, R. A. (1994). Contemporary meta-trends in industrial and organizational psychology. In H. C. Triandis, M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial/organizational psychology* (2nd ed., Vol. 4, pp. 1–89). Palo Alto, CA: Consulting Psychology Press.

Kell, H. J., Lubinski, D., & Benbow, C. P. (2013a). Who rises to the top? Early indicators. *Psychological Science, 24*, 648-659.

Kell, H. J., Lubinski, D., Benbow, C. P., & Steiger, J. H. (2013b). Creativity and technical innovation: Spatial ability's unique role. *Psychological Science, 24*, 1831-1836.

Lubinski, D. (2009). Exceptional cognitive ability: The phenotype. *Behavior Genetics, 39*, 350–358.

Lubinski, D. (2004). Introduction to the special section on cognitive abilities: 100 years after Spearman's (1904) "'General intelligence,' objectively determined and measured." *Journal of Personality and Social Psychology, 86*, 96–111.

Lubinski, D. (2000). Scientific and social significance of assessing individual differences: "Sinking shafts at a few critical points." *Annual Review of Psychology, 51*, 405–444.

Lubinski, D. (1996). Applied individual differences research and its quantitative methods. *Psychology, Public Policy, and Law, 2*, 187–203.

Lubinski, D., & Benbow, C. P. (2006). Study of mathematically precocious youth after 35 years: Uncovering antecedents for the development of math–science expertise. *Perspectives on Psychological Science, 1*, 316–345.

Lubinski, D., & Benbow, C. P. (2000). States of excellence. *American Psychologist, 55*, 137–150.

Lubinski, D., & Dawis, R. V. (1992). Aptitudes, skills, and proficiencies. In M. D. Dunnette & L. M. Hough (Eds.), *The handbook of industrial/organizational psychology* (2nd ed., pp. 1–59). Palo Alto, CA: Consulting Psychologists Press.

Lubinski, D., & Humphreys, L. G. (1997). Incorporating general intelligence into epidemiology and the social sciences. *Intelligence, 24*, 159–201.

Lubinski, D., Benbow, C. P., Shea, D. L., Eftekhari-Sanjani, H., & Halvorson, M. B. J. (2001). Men and women at promise for scientific excellence: Similarity not dissimilarity. *Psychological Science, 12*, 309–317.

Lubinski, D., Benbow, C. P., Shea, D. L., Eftekhari-Sanjani, H., & Halvorson, M. B. J. (2001). Men and women at promise for scientific excellence: Similarity not dissimilarity. *Psychological Science, 12*, 309–317.

Lubinski, D., Benbow, C. P., Webb, R. M., & Bleske-Rechek, A. (2006). Tracking exceptional human capital over two decades. *Psychological Science, 17*, 194–199.

Park, G., Lubinski, D., & Benbow, C. P. (2008). Ability differences among people who have commensurate degrees matter for scientific creativity. *Psychological Science, 19*, 957–961.

Park, G., Lubinski, D., & Benbow, C. P. (2007). Contrasting intellectual patterns for creativity in the arts and sciences: Tracking intellectually precocious youth over 25 years. *Psychological Science, 18*, 948–952.

Prediger, D. J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations? *Journal of Vocational Behavior, 21*, 259–287.

Rounds, J. B., & Tracey, T. J. (1990). From trait-and-factor to person–environment fit counseling: Theory and process. In W. B. Walsh & S. H. Osipow (Eds.), *Career counseling: Contemporary topics in vocational psychology* (pp. 1–44). Hillsdale, NJ: Erlbaum.

Savickas, M. L., & Spokane, A. R. (1999). *Vocational interests: Meaning, measurement, and counseling use*. Pale Alto, CA: Davies-Black/Counseling Psychologists Press.

Scarr, S. (1996). How people make their own environments: Implications for parents and policy makers. *Psychology, Public Policy, and Law, 2*, 204–228.

Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of

genotype → environment effects. *Child Development, 54*, 424–435.

Schmidt, D. B., Lubinski, D., & Benbow, C. P. (1998). Validity of assessing educational–vocational preference dimensions among intellectually talented 13-year-olds. *Journal of Counseling Psychology, 45*, 436–453.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin, 124*, 262–274.

Simonton, D. (1994). *Greatness: Who makes history and why*. New York, NY: Guilford Press.

Snow, R. E., & Lohman, D. F. (1989). Implications of cognitive psychology for educational measurement. In R. L. Linn (Ed.), *Educational measurement* (3rd ed., pp. 263–332). New York, NY: Macmillan.

Snow, R. E., Corno, L., & Jackson, D., III. (1996). Individual differences in affective and conative functions. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 243–310). New York, NY: Macmillan.

Spearman, C. (1904). "General intelligence," objectively determined and measured. *American Journal of Psychology, 15*, 201–292.

Strong, E. K., Jr. (1943). *Vocational interests for men and women*. Stanford, CA: Stanford University Press.

Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: A meta-analysis of sex differences in interests. *Psychological Bulletin, 35*, 859–884.

Wai, J., Lubinski, D., & Benbow, C. P. (2009). Spatial ability for STEM domains: Aligning over fifty years of cumulative psychological knowledge solidifies its importance. *Journal of Educational Psychology, 101*, 817–835.

Webb, E. (1915). Character and intelligence. *British Journal of Psychology*, monograph supplement III.

Webb, R. M., Lubinski, D., & Benbow, C. P. (2007). Spatial ability: A neglected dimension in talent searches for intellectually precocious youth. *Journal of Educational Psychology, 99*, 397–420.

Wilson, E. O. (1998). *Consilience: The unity of knowledge*. New York, NY: Knopf.

Emotions and Motivation

32
Functions of Emotions

Hyisung Hwang & David Matsumoto

Emotions play a crucial role in our lives because they have important functions. This module describes those functions, dividing the discussion into three areas: the intrapersonal, the interpersonal, and the social and cultural functions of emotions. The section on the intrapersonal functions of emotion describes the roles that emotions play within each of us individually; the section on the interpersonal functions of emotion describes the meanings of emotions to our relationships with others; and the section on the social and cultural functions of emotion describes the roles and meanings that emotions have to the maintenance and effective functioning of our societies and cultures at large. All in all we will see that emotions are a crucially important aspect of our psychological composition, having meaning and function to each of us individually, to our relationships with others in groups, and to our societies as a whole.

Learning Objectives

- Gain an appreciation of the importance of emotion in human life.
- Understand the functions and meanings of emotion in three areas of life: the intrapersonal, interpersonal, and social–cultural.
- Give examples of the role and function of emotion in each of the three areas described.

Introduction

It is impossible to imagine life without emotion. We treasure our feelings—the joy at a ball

game, the pleasure of the touch of a loved one, or the fun with friends on a night out. Even negative emotions are important, such as the sadness when a loved one dies, the anger when violated, the fear that overcomes us in a scary or unknown situation, or the guilt or shame toward others when our sins are made public. Emotions color life experiences and give those experiences meaning and flavor.

Emotions help us navigate the complex social landscape of our lives. [Image: Gwenaël Piase, https://goo.gl/d4EDKS, CC BY-NC-SA 2.0, https://goo.gl/hSpkVI]

In fact, emotions play many important roles in people's lives and have been the topic of scientific inquiry in psychology for well over a century (Cannon, 1927; Darwin, 1872; James, 1890). This module explores why we have emotions and why they are important. Doing so requires us to understand the function of emotions, and this module does so below by dividing the discussion into three sections. The first concerns the intrapersonal functions of emotion, which refer to the role that emotions play within each of us individually. The second concerns the interpersonal functions of emotion, which refer to the role emotions play between individuals within a group. The third concerns the social and cultural functions of emotion, which refer to the role that emotions play in the maintenance of social order within a society. All in all, we will see that emotions inform us of who we are, what our relationships with others are like, and how to behave in social interactions. Emotions give meaning to events; without emotions, those events would be mere facts. Emotions help coordinate interpersonal relationships. And emotions play an important role in the cultural functioning of keeping human societies together.

Intrapersonal Functions of Emotion

Emotions Help us Act Quickly with Minimal Conscious Awareness

Emotions are rapid information-processing systems that help us act with minimal thinking (Tooby & Cosmides, 2008). Problems associated with birth, battle, death, and seduction have occurred throughout evolutionary history and emotions evolved to aid humans in adapting

to those problems rapidly and with minimal conscious cognitive intervention. If we did not have emotions, we could not make rapid decisions concerning whether to attack, defend, flee, care for others, reject food, or approach something useful, all of which were functionally adaptive in our evolutionary history and helped us to survive. For instance, drinking spoiled milk or eating rotten eggs has negative consequences for our welfare. The emotion of disgust, however, helps us immediately take action by not ingesting them in the first place or by vomiting them out. This response is adaptive because it aids, ultimately, in our survival and allows us to act immediately without much thinking. In some instances, taking the time to sit and rationally think about what to do, calculating cost–benefit ratios in one's mind, is a luxury that might cost one one's life. Emotions evolved so that we can act without that depth of thinking.

Emotions Prepare the Body for Immediate Action

The emotion of disgust serves to protect us from toxins and contamination, of the physical and moral variety. [Image: Runs with Scissors, https://goo.gl/FQRxGa, CC BY-NC 2.0, https://goo.gl/tgFydH]

Emotions prepare us for behavior. When triggered, emotions orchestrate systems such as perception, attention, inference, learning, memory, goal choice, motivational priorities, physiological reactions, motor behaviors, and behavioral decision making (Cosmides & Tooby, 2000; Tooby & Cosmides, 2008). Emotions simultaneously activate certain systems and deactivate others in order to prevent the chaos of competing systems operating at the same time, allowing for coordinated responses to environmental stimuli (Levenson, 1999). For instance, when we are afraid, our bodies shut down temporarily unneeded digestive processes, resulting in saliva reduction (a dry mouth); blood flows disproportionately to the lower half of the body; the visual field expands; and air is breathed in, all preparing the body to flee. Emotions initiate a system of components that includes subjective experience, expressive behaviors, physiological reactions, action tendencies, and cognition, all for the purposes of specific actions; the term "emotion" is, in reality, a metaphor for these reactions.

One common misunderstanding many people have when thinking about emotions, however,

is the belief that emotions must always directly produce action. This is not true. Emotion certainly *prepares* the body for action; but whether people actually engage in action is dependent on many factors, such as the context within which the emotion has occurred, the target of the emotion, the perceived consequences of one's actions, previous experiences, and so forth (Baumeister, Vohs, DeWall, & Zhang, 2007; Matsumoto & Wilson, 2008). Thus, emotions are just one of many determinants of behavior, albeit an important one.

Emotions Influence Thoughts

Emotions are also connected to thoughts and memories. Memories are not just facts that are encoded in our brains; they are colored with the emotions felt at those times the facts occurred (Wang & Ross, 2007). Thus, emotions serve as the neural glue that connects those disparate facts in our minds. That is why it is easier to remember happy thoughts when happy, and angry times when angry. Emotions serve as the affective basis of many attitudes, values, and beliefs that we have about the world and the people around us; without emotions those attitudes, values, and beliefs would be just statements without meaning, and emotions give those statements meaning. Emotions influence our thinking processes, sometimes in constructive ways, sometimes not. It is difficult to think critically and clearly when we feel intense emotions, but easier when we are not overwhelmed with emotions (Matsumoto, Hirayama, & LeRoux, 2006).

Emotions Motivate Future Behaviors

Because emotions prepare our bodies for immediate action, influence thoughts, and can be felt, they are important motivators of future behavior. Many of us strive to experience the feelings of satisfaction, joy, pride, or triumph in our accomplishments and achievements. At the same time, we also work very hard to avoid strong negative feelings; for example, once we have felt the emotion of disgust when drinking the spoiled milk, we generally work very hard to avoid having those feelings again (e.g., checking the expiration date on the label before buying the milk, smelling the milk before drinking it, watching if the milk curdles in one's coffee before drinking it). Emotions, therefore, not only influence immediate actions but also serve as an important motivational basis for future behaviors.

Interpersonal Functions of Emotion

Emotions are expressed both verbally through words and nonverbally through facial expressions, voices, gestures, body postures, and movements. We are constantly expressing

emotions when interacting with others, and others can reliably judge those emotional expressions (Elfenbein & Ambady, 2002; Matsumoto, 2001); thus, emotions have signal value to others and influence others and our social interactions. Emotions and their expressions communicate information to others about our feelings, intentions, relationship with the target of the emotions, and the environment. Because emotions have this communicative signal value, they help solve social problems by evoking responses from others, by signaling the nature of interpersonal relationships, and by providing incentives for desired social behavior (Keltner, 2003).

Emotions can act as signals to our friends and partners, conveying information about the quality of the relationship. [Image: mynameisharsha, https://goo.gl/HY2XgV, CC BY-SA 2.0, https://goo.gl/rxiUsF]

Emotional Expressions Facilitate Specific Behaviors in Perceivers

Because facial expressions of emotion are universal social signals, they contain meaning not only about the expressor's psychological state but also about that person's intent and subsequent behavior. This information affects what the perceiver is likely to do. People observing fearful faces, for instance, are more likely to produce approach-related behaviors, whereas people who observe angry faces are more likely to produce avoidance-related behaviors (Marsh, Ambady, & Kleck, 2005). Even subliminal presentation of smiles produces increases in how much beverage people pour and consume and how much they are willing to pay for it; presentation of angry faces decreases these behaviors (Winkielman, Berridge, & Wilbarger, 2005). Also, emotional displays evoke specific, complementary emotional responses from observers; for example, anger evokes fear in others (Dimberg & Ohman, 1996; Esteves, Dimberg, & Ohman, 1994), whereas distress evokes sympathy and aid (Eisenberg et al., 1989).

Emotional Expressions Signal the Nature of Interpersonal Relationships

Emotional expressions provide information about the nature of the relationships among

interactants. Some of the most important and provocative set of findings in this area come from studies involving married couples (Gottman & Levenson, 1992; Gottman, Levenson, & Woodin, 2001). In this research, married couples visited a laboratory after having not seen each other for 24 hours, and then engaged in intimate conversations about daily events or issues of conflict. Discrete expressions of contempt, especially by the men, and disgust, especially by the women, predicted later marital dissatisfaction and even divorce.

Emotional Expressions Provide Incentives for Desired Social Behavior

Facial expressions of emotion are important regulators of social interaction. In the developmental literature, this concept has been investigated under the concept of social referencing (Klinnert, Campos, & Sorce, 1983); that is, the process whereby infants seek out information from others to clarify a situation and then use that information to act. To date, the strongest demonstration of social referencing comes from work on the visual cliff. In the first study to investigate this concept, Campos and colleagues (Sorce, Emde, Campos, & Klinnert, 1985) placed mothers on the far end of the "cliff" from the infant. Mothers first smiled to the infants and placed a toy on top the safety glass to attract them; infants invariably began crawling to their mothers. When the infants were in the center of the table, however, the mother then posed an expression of fear, sadness, anger, interest, or joy. The results were clearly different for the different faces; no infant crossed the table when the mother showed fear; only 6% did when the mother posed anger, 33% crossed when the mother posed sadness, and approximately 75% of the infants crossed when the mother posed joy or interest.

Other studies provide similar support for facial expressions as regulators of social interaction. In one study (Bradshaw, 1986), experimenters posed facial expressions of neutral, anger, or disgust toward babies as they moved toward an object and measured the amount of inhibition the babies showed in touching the object. The results for 10- and 15-month olds were the same: anger produced the greatest inhibition, followed by disgust, with neutral the least. This study was later replicated (Hertenstein & Campos, 2004) using joy and disgust expressions, altering the method so that the infants were not allowed to touch the toy (compared with a distractor object) until one hour after exposure to the expression. At 14 months of age, significantly more infants touched the toy when they saw joyful expressions, but fewer touched the toy when the infants saw disgust.

Social and Cultural Functions of Emotion

Although there are cultural differences in the display of emotion, almost all infants start showing emotion such as smiling or reacting to their caretaker as early as 6 weeks after their birth. [Image: vgm8383, https://goo.gl/jgfRDN, CC BY-NC 2.0, https://goo.gl/VnKlK8]

If you stop to think about many things we take for granted in our daily lives, we cannot help but come to the conclusion that modern human life is a colorful tapestry of many groups and individual lives woven together in a complex yet functional way. For example, when you're hungry, you might go to the local grocery store and buy some food. Ever stop to think about how you're able to do that? You might buy a banana that was grown in a field in southeast Asia being raised by farmers there, where they planted the tree, cared for it, and picked the fruit. They probably handed that fruit off to a distribution chain that allowed multiple people somewhere to use tools such as cranes, trucks, cargo bins, ships or airplanes (that were also created by multiple people somewhere) to bring that banana to your store. The store had people to care for that banana until you came and got it and to barter with you for it (with your money). You may have gotten to the store riding a vehicle that was produced somewhere else in the world by others, and you were probably wearing clothes produced by some other people somewhere else.

Thus, human social life is complex. Individuals are members of multiple groups, with multiple social roles, norms, and expectations, and people move rapidly in and out of the multiple groups of which they are members. Moreover, much of human social life is unique because it revolves around cities, where many people of disparate backgrounds come together. This creates the enormous potential for social chaos, which can easily occur if individuals are not coordinated well and relationships not organized systematically.

One of the important functions of culture is to provide this necessary coordination and organization. Doing so allows individuals and groups to negotiate the social complexity of human social life, thereby maintaining social order and preventing social chaos. Culture does this by providing a meaning and information system to its members, which is shared by a group and transmitted across generations, that allows the group to meet basic needs of survival, pursue happiness and well-being, and derive meaning from life (Matsumoto & Juang, 2013). Culture is what allowed the banana from southeast Asia to appear on your table.

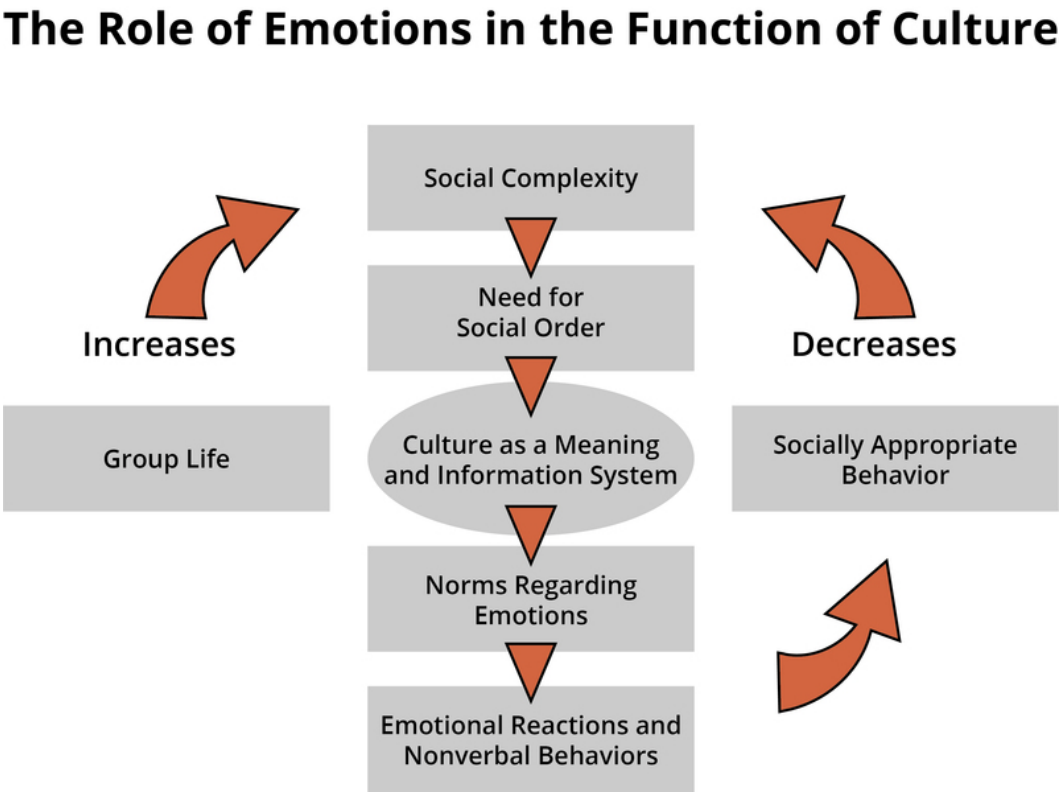


Figure 1: The Role of Emotions in the Function of Culture

Cultural transmission of the meaning and information system to its members is, therefore, a crucial aspect of culture. One of the ways this transmission occurs is through the development of worldviews (including attitudes, values, beliefs, and norms) related to emotions (Matsumoto & Hwang, 2013; Matsumoto et al., 2008). Worldviews related to emotions provide guidelines for desirable emotions that facilitate norms for regulating individual behaviors and interpersonal relationships. Our cultural backgrounds tell us which emotions are ideal to have, and which are not (Tsai, Knutson, & Fung, 2006). The cultural transmission of information related to emotions occurs in many ways, from childrearers to children, as well as from the cultural products available in our world, such as books, movies, ads, and the like (Schönpflug, 2009; Tsai, Louie, Chen, & Uchida, 2007).

Cultures also inform us about what to do with our emotions—that is, how to manage or modify them—when we experience them. One of the ways in which this is done is through the management of our emotional expressions through cultural display rules (Friesen, 1972). These are rules that are learned early in life that specify the management and modification of our emotional expressions according to social circumstances. Thus, we learn that "big boys don't cry" or to laugh at the boss's jokes even though they're not funny. By affecting how individuals express their emotions, culture also influences how people experience them as

well.

Cultural display rules teach us how to manage our emotions. For example, in many Asian countries children are taught to mute their emotions, especially negative emotions like anger. [Image: john.gillespie, https://goo.gl/gTdPYb, CC BY-SA 3.0, https://goo.gl/eLCn2O]

Because one of the major functions of culture is to maintain social order in order to ensure group efficiency and thus survival, cultures create worldviews, rules, guidelines, and norms concerning emotions because emotions have important intra- and interpersonal functions, as described above, and are important motivators of behavior. Norms concerning emotion and its regulation in all cultures serve the purpose of maintaining social order. Cultural worldviews and norms help us manage and modify our emotional reactions (and thus behaviors) by helping us to have certain kinds of emotional experiences in the first place and by managing our reactions and subsequent behaviors once we have them. By doing so, our culturally moderated emotions can help us engage in socially appropriate behaviors, as defined by our cultures, and thus reduce social complexity and increase social order, avoiding social chaos. All of this allows us to live relatively harmonious and constructive lives in groups. If cultural worldviews and norms about emotions did not exist, people would just run amok having all kinds of emotional experiences, expressing their emotions and then behaving in all sorts of unpredictable and potentially harmful ways. If that were the case, it would be very difficult for groups and societies to function effectively, and even for humans to survive as a species, if emotions were not regulated in culturally defined ways for the common, social good. Thus, emotions play a critical role in the successful functioning of any society and culture.

Outside Resources

Alberta, G. M., Rieckmann, T. R., & Rush, J. D. (2000). Issues and recommendations for teaching an ethnic/culture-based course. Teaching of Psychology, 27,102-107. doi:10.1207/S15328023TOP2702_05
http://top.sagepub.com/content/27/2/102.short

CrashCourse (2014, August 4). Feeling all the feels: Crash course psychology #25. [Video file]. Retrieved from:
https://www.youtube.com/watch?v=gAMbkJk6gnE

Hughesm A. (2011). Exercises and demonstrations to promote student engagement in motivation and courses. In R. Miller, E. Balcetis, S. Burns, D. Daniel, B. Saville, & W. Woody (Eds.), Promoting Student Engagement: Volume 2: Activities, Exercises and Demonstrations for Psychology Courses. (pp. 79-82) Washington DC, Society for the Teaching of Psychology, American Psychological Association.
http://teachpsych.org/ebooks/pse2011/vol2/index.php

Johnston, E., & Olson, L. (2015). The feeling brain: The biology and psychology of emotions. New York, NY: W.W. Norton & Company.
http://books.wwnorton.com/books/The-Feeling-Brain/

NPR News: Science Of Sadness And Joy: 'Inside Out' Gets Childhood Emotions Right
http://www.npr.org/sections/health-shots/2015/06/13/413980258/science-of-sadness-and-joy-inside-out-gets-childhood-emotions-right

Online Psychology Laboratory: Motivation and Emotion resources
http://opl.apa.org/Resources.aspx#Motivation

Web: See how well you can read other people's facial expressions of emotion
http://www.humintell.com/free-demos/

Discussion Questions

1. When emotions occur, why do they simultaneously activate certain physiological and psychological systems in the body and deactivate others?

2. Why is it difficult for people to act rationally and think happy thoughts when they are angry? Conversely, why is it difficult to remember sad memories or have sad thoughts when people are happy?
3. You're walking down a deserted street when you come across a stranger who looks scared. What would you say? What would you do? Why?
4. You're walking down a deserted street when you come across a stranger who looks angry. What would you say? What would you do? Why?
5. Think about the messages children receive from their environment (such as from parents, mass media, the Internet, Hollywood movies, billboards, and storybooks). In what ways do these messages influence the kinds of emotions that children should and should not feel?

Vocabulary

Cultural display rules
These are rules that are learned early in life that specify the management and modification of emotional expressions according to social circumstances. Cultural display rules can work in a number of different ways. For example, they can require individuals to express emotions "as is" (i.e., as they feel them), to exaggerate their expressions to show more than what is actually felt, to tone down their expressions to show less than what is actually felt, to conceal their feelings by expressing something else, or to show nothing at all.

Interpersonal
This refers to the relationship or interaction between two or more individuals in a group. Thus, the interpersonal functions of emotion refer to the effects of one's emotion on others, or to the relationship between oneself and others.

Intrapersonal
This refers to what occurs within oneself. Thus, the intrapersonal functions of emotion refer to the effects of emotion to individuals that occur physically inside their bodies and psychologically inside their minds.

Social and cultural
Society refers to a system of relationships between individuals and groups of individuals; culture refers to the meaning and information afforded to that system that is transmitted across generations. Thus, the social and cultural functions of emotion refer to the effects that emotions have on the functioning and maintenance of societies and cultures.

Social referencing
This refers to the process whereby individuals look for information from others to clarify a situation, and then use that information to act. Thus, individuals will often use the emotional expressions of others as a source of information to make decisions about their own behavior.

References

Baumeister, R. F., Vohs, K. D., DeWall, N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review, 11*(2), 167–203.

Bradshaw, D. (1986). *Immediate and prolonged effectiveness of negative emotion expressions in inhibiting infants' actions* (Unpublished doctoral dissertation). Berkeley, CA: University of California, Berkeley.

Cannon, W. B. (1927). The James–Lange theory of emotions: A critical examination and an alternative theory. *American Journal of Psychology, 39*, 106–124.

Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 91–115). New York, NY: Guilford Press.

Darwin, C. (1872). *The expression of emotion in man and animals*. New York, NY: Oxford University Press.

Dimberg, U., & Ohman, A. (1996). Behold the wrath: Psychophysiological responses to facial stimuli. *Motivation & Emotion, 20*(2), 149–182.

Eisenberg, N., Fabes, R. A., Miller, P. A., Fultz, J., Shell, R., Mathy, R. M., & Reno, R. R. (1989). Relation of sympathy and distress to prosocial behavior: A multimethod study. *Journal of Personality and Social Psychology, 57*, 55–66.

Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin, 128*(2), 205–235.

Esteves, F., Dimberg, U., & Ohman, A. (1994). Automatically elicited fear: Conditioned skin conductance responses to masked facial expressions. *Cognition and Emotion, 8*(5), 393–413.

Friesen, W. V. (1972). *Cultural differences in facial expressions in a social situation: An experimental test of the concept of display rules* (Unpublished doctoral dissertation). San Francisco, CA: University of California, San Francisco.

Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology, 63*(2), 221–223.

Gottman, J. M., Levenson, R. W., & Woodin, E. (2001). Facial expressions during marital conflict. *Journal of Family Communication, 1*, 37–57.

Hertenstein, M. J., & Campos, J. J. (2004). The retention effects of an adult's emotional displays on infant behavior. *Child Development, 75*(2), 595–613.

James, W. (1890). *The principles of psychology*. New York, NY: Holt.

Keltner, D. (2003). Expression and the course of life: Studies of emotion, personality, and psychopathology from a social-functional perspective. In P. Ekman, J. Campos, R. J. Davidson, & F.B.M. De Waal (Eds.), *Emotions inside out: 130 years after Darwin's "The expression of the emotions in man and animals"* (Vol. 1000, pp. 222–243). New York, NY: New York Academy of Sciences.

Klinnert, M. D., Campos, J. J., & Sorce, J. F. (1983). Emotions as behavior regulators: Social referencing in infancy. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience* (pp. 57–86). New York, NY: Academic Press.

Levenson, R. W. (1999). The intrapersonal functions of emotion. *Cognition and Emotion, 13*(5), 481–504.

Marsh, A. A., Ambady, N., & Kleck, R. E. (2005). *The effects of fear and anger facial expressions on approach- and avoidance-related behaviors. Emotion, 5*(1), 119–124.

Matsumoto, D. (2001). Culture and emotion. In D. Matsumoto (Ed.), *The handbook of culture and psychology* (pp. 171–194). New York, NY: Oxford University Press.

Matsumoto, D., & Hwang, H. C. (2013). Assessing cross-cultural competence: A review of available tests. *Journal of Cross-Cultural Psychology, 44*(6), 849–873.

Matsumoto, D., & Juang, L. (2013). *Culture and psychology* (5th ed.). Belmont, CA: Cengage.

Matsumoto, D., & Wilson, J. (2008). Culture, emotion, and motivation. In R. M. Sorrentino & S. Yamaguchi (Eds.), *Handbook of motivation and cognition across cultures* (pp. 541–563). New York, NY: Elsevier.

Matsumoto, D., Hirayama, S., & LeRoux, J. A. (2006). Psychological skills related to adjustment. In P.T.P. Wong & L.C.J. Wong (Eds.), *Handbook of multicultural perspectives on stress and coping* (pp. 387–405). New York, NY: Springer.

Matsumoto, D., Yoo, S. H., Nakagawa, S., Alexandre, J., Altarriba, J., Anguas-Wong, A. M., et al. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology, 94*(6), 925–937.

Schönpflug, U. (Ed.). (2009). *Cultural transmission: Developmental, psychological, social and methodological aspects*. New York, NY: Cambridge University Press.

Sorce, J. F., Emde, J. J., Campos, J. J., & Klinnert, M. D. (1985). Maternal emotional signaling: Its effect on the visual cliff behavior of 1-year-olds. *Developmental Psychology, 21*, 195–200.

Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. Feldman Barrett (Eds.), *Handbook of Emotions* (3rd ed., pp. 114–137). New York, NY: The Guilford Press.

Tsai, J. L., Knutson, B., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of*

Personality and Social Psychology, 90(2), 288–307.

Tsai, J. L., Louie, J. Y., Chen, E. E., & Uchida, Y. (2007). Learning what feelings to desire: Socialization of ideal affect through children's storybooks. *Personality and Social Psychology Bulletin, 33*(1), 17–30.

Wang, Q., & Ross, M. (2007). Culture and memory. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 645–667). New York, NY: Guilford.

Winkielman, P., Berridge, K. C., & Wilbarger, J. L. (2005). Unconscious affective reactions to masked happy versus angry faces influence consumption behavior and judgments of value. *Personality and Social Psychology Bulletin, 31*(1), 121–135.

33
Emotional Intelligence

Marc Brackett, Sarah Delaney & Peter Salovey

In this module, we review the construct of emotional intelligence by examining its underlying theoretical model, measurement tools, validity, and applications in real-world settings. We use empirical research from the past few decades to support and discuss competing definitions of emotional intelligence and possible future directions for the field.

Learning Objectives

- Understand the theoretical foundations of emotional intelligence and the relationship between emotion and cognition.
- Distinguish between mixed and ability models of emotional intelligence.
- Understand various methods for measuring emotional intelligence.
- Describe emotional intelligence's evolution as a theoretical, success-oriented, and achievement-based framework.
- Identify and define key concepts of emotional intelligence (including emotion regulation, expression of emotion, understanding emotion, etc.) and the ways they contribute to decision making, relationship building, and overall well-being.

Introduction

Imagine you are waiting in line to buy tickets to see your favorite band. Knowing tickets are limited and prices will rise quickly, you showed up 4 hours early. Unfortunately, so did everyone else. The line stretches for blocks and hasn't moved since you arrived. It starts to rain. You

are now close to Will Call when you notice three people jump ahead of you to join their friends, who appear to have been saving a spot for them. They talk loudly on their cellphones as you inch forward, following the slow procession of others waiting in line. You finally reach the ticket counter only to have the clerk tell you the show is sold out. You notice the loud group off to the side, waving their tickets in the air. At this exact moment, a fiery line of emotion shoots through your whole body. Your heart begins to race, and you feel the urge to either slam your hands on the counter or scream in the face of those you believe have slighted you. What are these feelings, and what will you do with them?

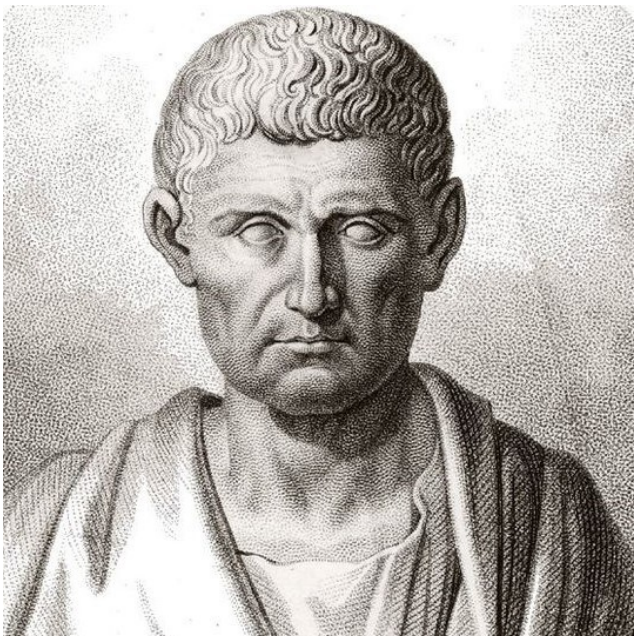
After a serious disappointment or injustice how hard is it to keep control of your emotions? [Image: DCist, https://goo.gl/o9EZOG, CC BY-2.0, https://goo.gl/zHmGV2]

Emotional intelligence (EI) involves the idea that cognition and emotion are interrelated. From this notion stems the belief that emotions influence decision making, relationship building, and everyday behavior. After spending hours waiting eagerly in the pouring rain and having nothing to show for it, is it even possible to squelch such intense feelings of anger due to injustice? From an EI perspective, emotions are active mental processes that can be managed, so long as individuals develop the knowledge and skills to do so. But how, exactly, do we reason with our emotions? In other words, how intelligent is our emotion system?

To begin, we'll briefly review the concept of standard, or general, intelligence. The late American psychologist, David Wechsler, claimed that intelligence is the "global capacity of an individual to think rationally, act purposefully, and deal effectively with their environment" (Wechsler, 1944). If we choose to accept this definition, then intelligence is an operational process through which we learn to utilize our internal abilities in order to better navigate our surroundings—a process that is most certainly similar to, if not impacted by, our emotions. In 1990, Drs. Peter Salovey and John D. Mayer first explored and defined EI. They explained EI as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and use this information to guide one's thinking and actions" (Salovey & Mayer, 1990). EI, according to these researchers, asserts that all individuals possess the ability to leverage their emotions to enhance thinking, judgment, and behavior. This module aims to unpack this theory by exploring the growing

empirical research on EI, as well as what can be learned about its impact on our daily lives.

History of EI



Perhaps Aristotle might have revised his statement about people not being "defeated by their emotion" if he was ever stuck in rush hour traffic. [CC0 Public Domain, https://goo.gl/m25gce]

Traditionally, many psychologists and philosophers viewed cognition and emotion as separate domains, with emotion posing a threat to productive and rational thinking. Have you ever been told not to let your emotions get in the way of your decisions? This separation of passion and reason stretches as far back as early ancient Greece (Lyons, 1999). Additionally, mid-20th century scholars explained emotions as mentally destabilizing forces (Young, 1943). Yet, there are traces throughout history where the intersection of emotion and cognition has been theoretically questioned. In 350 B.C.E., the famous Greek philosopher Aristotle wrote, "some men . . . if they have first perceived and seen what is coming and have first roused themselves and their calculative faculty, are not defeated by their emotion, whether it be pleasant or painful"(Aristotle, trans. 2009, Book VII, Chapter 7, Section 8). Still, our social interactions and experiences suggest this belief has undergone centuries of disregard, both in Western and Eastern cultures. These are the same interactions that teach us to "toughen up" and keep our emotions hidden. So, how did we arrive at EI—a scientific theory that claims *all* individuals have access to a "calculative faculty" through emotion?

In the early 1970s, many scientists began to recognize the limitations of the Intelligence Quotient (IQ)—the standardized assessment of intelligence. In particular, they noticed its inability to explain differences among individuals unrelated to just cognitive ability alone. These frustrations led to the advancement of more inclusive theories of intelligence such as Gardner's multiple intelligences theory (1983/1993) and Sternberg's triarchic theory of intelligence (1985). Researchers also began to explore the influence of moods and emotions on thought processes, including judgment (Isen, Shalker, Clark, & Karp, 1978) and memory (Bower, 1981). It was through these theoretical explorations and empirical studies that the

concept of EI began to take shape.

Today, the field of EI is extensive, encompassing varying perspectives and measurement tools. Some attribute this growth to Daniel Goleman's popularization of the construct in his 1995 book, *Emotional Intelligence: Why It Can Matter More Than IQ*. Generating public appeal, he focused on EI's connection to personal and professional success. Goleman's model of EI includes a blend of emotion-related skills, traditional cognitive intelligence, and distinct personality traits. This embellished conceptualization of EI, followed by an increase in EI literature, contributed, at least in part, to conflicting definitional and measurement models within the field.

Models and Measures of EI

Many researchers would agree that EI theory will only be as successful as its form of measurement. Today, there are three primary models of EI: the ability model (Mayer & Salovey 1997; Salovey & Mayer, 1990), mixed models (Bar-On, 2006; Boyatzis & Sala, 2004), and the trait EI model (Petrides & Furnham, 2003).

Ability models approach EI as a standard intelligence that utilizes a distinct set of mental abilities that (1) are intercorrelated, (2) relate to other extant intelligences, and (3) develop with age and experience (Mayer, Caruso, & Salovey, 1999; Mayer, Salovey, Caruso, & Sitarenios, 2003). In contrast, both mixed and trait models define and measure EI as a set of perceived abilities, skills, and personality traits.

Ability Models: Mayer and Salovey Four-Branch Model of EI

In this section, we describe the EI (Four-Branch) model espoused by Mayer and Salovey (1997). This model proposes that four fundamental emotion-related abilities comprise EI: (1) perception/expression of emotion, (2) use of emotion to facilitate thinking, (3) understanding of emotion, and (4) management of emotion in oneself and others.

1. Perception of Emotion

Perception of emotion refers to people's capacity to identify emotions in themselves and others using facial expressions, tone of voice, and body language (Brackett et al., 2013). Those skilled in the perception of emotion also are able to express emotion accordingly and communicate emotional needs. For example, let's return to our opening scenario. After being

turned away at the ticket booth, you slowly settle into the reality that you cannot attend the concert. A group of your classmates, however, managed to buy tickets and are discussing their plans at your lunch table. When they ask if you are excited for the opening band, you shrug and pick at your food. If your classmates are skilled at perception of emotion, then they will read your facial expression and body language and determine that you might be masking your true feelings of disappointment, frustration, or disengagement from the conversation. As a result, they might ask you if something is wrong or choose not to talk about the concert in your presence.

2. Use of Emotion to Facilitate Thinking

Using emotion to enhance cognitive activities and adapt to various situations is the second component of EI. People who are skilled in this area understand that some emotional states are more optimal for targeted outcomes than others. Feeling frustrated over the concert tickets may be a helpful mindset as you are about to play a football game or begin a wrestling match. The high levels of adrenaline associated with frustration may boost your energy and strength, helping you compete. These same emotions, however, will likely impede your ability to sit at your school desk and solve algebra problems or write an essay.

Which emotions would serve you best during a football game? Would the same emotions be useful for a chess match? Matching the emotion to the task at hand is valuable skill to have. [Image: Ian Sane, https://goo.gl/lKuqyz, CC BY 2.0, https://goo.gl/zHmGV2]

Individuals who have developed and practiced this area of EI actively generate emotions that support certain tasks or objectives. For example, a teacher skilled in this domain may recognize that her students need to experience positive emotions, like joy or excitement, in order to succeed when doing creative work such as brainstorming or collaborative art projects. She may plan accordingly by scheduling these activities for after recess, knowing students will likely come into the classroom cheerful and happy from playing outside. Making decisions based on the impact that emotional experiences may have on actions and behavior is an essential component of EI.

3. Understanding of Emotion

EI also includes the ability to differentiate between emotional states, as well as their specific causes and trajectories. Feelings of sadness or disappointment can result from the loss of a person or object, such as your concert tickets. Standing in the rain, by most standards, is merely a slight annoyance. However, waiting in the rain for hours in a large crowd will likely result in irritation or frustration. Feeling like you have been treated unfairly when someone cuts in line and takes the tickets you feel you deserved can cause your unpleasantness to escalate into anger and resentment. People skilled in this area are aware of this emotional trajectory and also have a strong sense of how multiple emotions can work together to produce another. For instance, it is possible that you may feel contempt for the people who cut in front of you in line. However, this feeling of contempt does not arise from anger alone. Rather, it is the combination of anger and disgust by the fact that these individuals, unlike you, have disobeyed the rules. Successfully discriminating between negative emotions is an important skill related to understanding of emotion, and it may lead to more effective emotion management (Feldman Barret, Gross, Christensen, & Benvenuto, 2001).

4. Management of Emotion

Emotion management includes the ability to remain open to a wide range of emotions, recognize the value of feeling certain emotions in specific situations, and understand which short- and long-term strategies are most efficient for emotion regulation (Gross, 1998). Anger seems an appropriate response to falling short of a goal (concert tickets) that you pursued both fairly and patiently. In fact, you may even find it valuable to allow yourself the experience of this feeling. However, this feeling will certainly need to be managed in order to prevent aggressive, unwanted behavior. Coming up with strategies, such as taking a deep breath and waiting until you feel calm before letting the group ahead of you know they cut in line, will allow you to regulate your anger and prevent the situation from escalating. Using this strategy may even let you gain insight into other perspectives—perhaps you learn they had already purchased their tickets and were merely accompanying their friends.

Measuring EI with Performance Measures

While self-report tests are common in psychology, ability models of EI require a different approach: performance measures. Performance measures require respondents to demonstrate their four emotion skills (Mayer & Salovey, 1997) by solving emotion-related problems. Among these measures, the Mayer-Salovey-Caruso Emotional Intelligence Test

(MSCEIT) (Mayer, Salovey, & Caruso, 2002) is the most commonly used. The MSCEIT is a 141-item test comprised of a total of eight tasks, two per each of the four emotion abilities. To measure emotion management, for example, respondents are asked to read through scenarios involving emotionally charged conflicts and then asked to evaluate the effectiveness of different resolutions. For a comprehensive review of the MSCEIT and other performance-assessment tools, please see Rivers, Brackett, Salovey, and Mayer (2007).

Mixed and Trait Models of EI

Unlike ability models, mixed models offer a broad definition of EI that combines mental abilities with personality traits such as optimism, motivation, and stress tolerance (see Cherniss, 2010, for a review). The two most widely used mixed models are the Boyatzis-Goleman model (Boyatzis & Sala, 2004) and the Bar-On model of emotional-social intelligence (Bar-On, 2006). The Boyatzis-Goleman model divides EI competencies into four groups: self-awareness, self-management, social awareness, and relationship management. Similarly, the Bar-On model offers five main components of EI: intrapersonal skills, interpersonal skills, adaptability, stress management, and mood. Developers of the trait EI model (Petrides & Furnham, 2003) explain EI as a constellation of self-perceived, emotion-related personality traits.

As an alternative to somewhat unreliable self-report measures, researchers have been using fMRI studies to detect changes in brain function when a self-report type of question is given to a participant. [Image: NIH Image Gallery, https://goo.gl/aWZBvl, CC BY-NC 2.0, https://goo.gl/VnKlK8]

Mixed and Trait Model Assessment: Self-Report

Self-report assessments—surveys that ask respondents to report their own emotional skills—are most often associated with mixed and trait models. Self-report measures are usually quick to administer. However, many researchers argue that their vulnerability to social-desirability biases and faking are problematic (Day & Carroll, 2008). In addition, there is wide speculation concerning the potential for inaccurate judgments of personal ability and skill on behalf of responders (e.g., Paulhus, Lysy, & Yik, 1998). Self-report measures have been shown to lack

discriminant validity from existing personality measures and have very low correlations with ability measures of EI (Brackett & Mayer, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). According to Mayer and colleagues (2008), self-report tests may show reliability for individual personalities, but should not be considered EI because performance tests are the gold standard for measuring intelligence.

Although tensions between ability and mixed or trait model approaches appear to divide the field, competing definitions and measurements can only enhance the quality of research devoted to EI and its impact on real-world outcomes.

Room for Debate

While mixed and trait models shed some light on the concept of EI, many researchers feel these approaches undermine the EI construct as a discrete and measurable mental ability. EI, when conceptualized as an ability, most accurately describes the relationship between cognition and emotion by accounting for changes in individual outcomes that are often missed when focusing solely on cognitive intelligence or personality traits (O'Boyle, Humphrey, Pollack, Hawver, & Story, 2010). What's more, among adults, personality traits provide little room for malleability, making development in these areas difficult even when combined with emotional skills. For example, characteristics such as agreeableness and neuroticism, while contributing to personal and professional success, are seen as innate traits that are likely to remain static over time. Distinguishing EI from personality traits helps us better target the skills that can improve desirable outcomes (Brackett et al., 2013). Approaching EI with language that provides the opportunity for personal growth is crucial to its application. Because the ability model aligns with this approach, the remainder of this module will focus on ability EI and the ways in which it can be applied both in professional and academic settings.

Outcomes

Historically, emotions have been thought to have no place in the classroom or workplace (Sutton & Wheatly, 2003). Yet today, we know empirical research supports the belief that EI has the potential to influence decision making, health, relationships, and performance in both professional and academic settings (e.g., Brackett et al., 2013; Brackett, Rivers, & Salovey, 2011).

Workplace

Research conducted in the workplace supports positive links between EI and enhanced job

performance, occupational well-being, and leadership effectiveness. In one study, EI was associated with performance indicators such as company rank, percent merit increase, ratings of interpersonal facilitation, and affect and attitudes at work (Lopes, Grewal, Kadis, Gall, & Salovey, 2006). Similar correlations have been found between EI and a variety of managerial simulations involving problem solving, determining employee layoffs, adjusting claims, and negotiating successfully (Day & Carroll, 2004; Feyerherm & Rice, 2002; Mueller & Curhan, 2006). Emotion management is seen as most likely to affect job performance by influencing social and business interactions across a diverse range of industries (O'Boyle et al., 2010).

Think of a time when you made a choice to demonstrate emotional intelligence at work – what happened? [Image: Pricenfees, https://goo.gl/8GOJPR, CC BY 2.0, https://goo.gl/BRvSA7]

Leaders in the workplace also benefit from high EI. Experts in the field of organizational behavior are beginning to view leadership as a process of social interactions where leaders motivate, influence, guide, and empower followers to achieve organizational goals (Bass & Riggio, 2006). This is known as transformational leadership—where leaders create a vision and then inspire others to work in this direction (Bass, 1985). In a sample of 24 managers, MSCEIT scores correlated positively with a leader's ability to inspire followers to emulate their own actions and attend to the needs and problems of each individual (Leban & Zulauf, 2004).

Schools

When applied in educational settings, theoretical foundations of EI are often integrated into social and emotional learning (SEL) programs. SEL is the process of merging thinking, feeling, and behaving. These skills enable individuals to be aware of themselves and of others, make responsible decisions, and manage their own behaviors and those of others (Elias et al., 1997; Elbertson, Brackett, & Weissberg, 2010). SEL programs are designed to enhance the climate of a classroom, school, or district, with the ultimate goal of enhancing children's social and emotional skills and improving their academic outcomes (Greenberg et al., 2003). Adopting curricula that focus on these elements is believed to enable success in academics,

relationships, and, ultimately, in life (Becker & Luthar, 2002; Catalino, Berglundh, Ryan, Lonczek, & Hawkins, 2004).

Take a moment to think about the role of a teacher. How might emotions impact the climate of a classroom? If a teacher enters a classroom feeling anxious, disgruntled, or unenthused, these states will most likely be noticed, and felt, by the students. If not managed well, these negative emotions can hurt the classroom dynamic and prevent student learning (Travers, 2001). Research suggests that the abilities to perceive, use, understand, and manage emotions are imperative for effective teaching (Reyes, Brackett, Rivers, White, & Salovey, 2012; Brackett, Reyes, Rivers, Elbertson, & Salovey, 2011; Hargreaves, 2001). In a study that examined the relationship between emotion regulation and both job satisfaction and burnout among secondary-school teachers, researchers found that emotion regulation among teachers was associated with positive affect, support from principals, job satisfaction, and feelings of personal accomplishment (Brackett, Palomera, Mojsa-Kaja, Reyes, & Salovey, 2010).

EI, when embedded into SEL programs, has been shown to contribute positively to personal and academic success in students (Durlak, Weissberg, Dymnicki, Tayloer, & Schellinger, 2011). Research also shows that strong emotion regulation can help students pay attention in class, adjust to the school environment, and manage academic anxiety (Lopes & Salovey, 2004; Mestre, Guil, Lopes, Salovey, & Gil-Olarte, 2006). A recent randomized control trial of RULER* also found that, after one year, schools that used RULER—compared with those that used only the standard curriculum—were rated by independent observers as having higher degrees of warmth and connectedness between teachers and students, more autonomy and leadership, less bullying among students, and teachers who focused more on students' interests and motivations (Rivers, Brackett, Reyes, Elbertson, & Salovey, 2013).

*RULER - Recognize emotions in oneself and in other people. Understand the causes and consequences of a wide range of emotions. Label emotions using a sophisticated vocabulary. Express emotions in socially appropriate way. Regulate emotions effectively.

Limitations and Future Directions

There is a need for further development in EI theory and measurement, as well as more empirical research on its associated outcomes (Mayer, Salovey, & Caruso, 2008). Despite its prominent role as the signature performance assessment of EI, the MSCEIT has a number of limitations. For example, it does not allow for the assessment of several abilities. These abilities include the expression of emotion and monitoring or reflecting on one's own emotions. (Brackett et al. 2013). Researchers must also address growing criticisms, particularly

Future directions for EI research include more study of those in cultures outside North America and Europe, and more attention to the dynamics of EI in the workplace and schools. [Image: CC0 Public Domain, https://goo.gl/m25gce]

those that stretch beyond the measurement debate and question the validity of the EI construct when defined too broadly (Locke, 2005). In order to advance EI research, there is a great need for investigators to address these issues by reconciling disparate definitions and refining existing measures. Potential considerations for future research in the field should include deeper investigation into the genetic (versus acquired) and fluid (versus crystallized) aspects of EI. The cultural implications and differences of EI also are important to consider. Studies should expand beyond the United States and Europe in order for the theory of EI to be cross-culturally valid and for its applications and outcomes to be achieved more universally. Greater attention should also be paid to developmental trajectories, gender differences, and how EI operates in the workplace and educational settings (Brackett et al., 2013).

Although further explorations and research in the field of EI are needed, current findings indicate a fundamental relationship between emotion and cognition. Returning to our opening question, what will you do when denied concert tickets? One of the more compelling aspects of EI is that it grants us reign over our own emotions—forces once thought to rule the self by denying individual agency. But with this power comes responsibility. If you are enraged about not getting tickets to the show, perhaps you can take a few deep breaths, go for a walk, and wait until your physiological indicators (shaky hands or accelerated heartbeat) subside. Once you've removed yourself, your feeling of rage may lessen to annoyance. Lowering the intensity level of this feeling (a process known as *down regulating*) will help re-direct your focus on the situation itself, rather than the activated emotion. In this sense, emotion regulation allows you to objectively view the point of conflict without dismissing your true feelings. Merely down regulating the emotional experience facilitates better problem solving. Now that you are less activated, what is the best approach? Should you talk to the ticket clerk? Ask to see the sales manager? Or do you let the group know how you felt when they cut the line? All of these options present better solutions than impulsively acting out rage.

As discussed in this module, research shows that the cultivation and development of EI

contributes to more productive, supportive, and healthy experiences. Whether we're waiting in a crowded public place, delivering lesson plans, or engaging in conversation with friends, we are the ultimate decision makers when it comes how we want to feel and, in turn, behave. By engaging the right mental processes and strategies, we can better understand, regulate, and manage our emotional states in order to live the lives we desire.

Outside Resources

Article: Are you emotionally intelligent? Here's how to know for sure. Inc.com Retrieved from:
http://www.inc.com/travis-bradberry/are-you-emotionally-intelligent-here-s-how-to-know-for-sure.html

Article: Grant, A. (2014, January 2). The dark side of emotional intelligence, The Atlantic. Retrieved from:
http://www.theatlantic.com/health/archive/2014/01/the-dark-side-of-emotional-intelligence/282720/

Article: Gregoire, C. (2014, January 23) How emotionally intelligent are you? Here's how to tell. Huffington Post. Retrieved from:
http://www.huffingtonpost.com/2013/12/05/are-you-emotionally-intel_n_4371920.html

Book: Goleman, D. (1995). Emotional intelligence. New York, NY: Bantam.

Book: Goleman, D. (1998). Working with emotional intelligence. New York, NY: Bantam.

Discussion Questions

1. What are the four emotional abilities that comprise EI, and how do they relate to each other?
2. What are three possible implications for using ability-based and mixed or trait-based models of EI?
3. Discuss the ways in which EI can contribute positively to the workplace and classroom settings.

Vocabulary

Ability model
An approach that views EI as a standard intelligence that utilizes a distinct set of mental abilities that (1) are intercorrelated, (2) relate to other extant intelligences, and (3) develop with age and experience (Mayer & Salovey, 1997).

Emotional intelligence
The ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. (Salovey & Mayer, 1990). EI includes four specific abilities: perceiving, using, understanding, and managing emotions.

Four-Branch Model
An ability model developed by Drs. Peter Salovey and John Mayer that includes four main components of EI, arranged in hierarchical order, beginning with basic psychological processes and advancing to integrative psychological processes. The branches are (1) perception of emotion, (2) use of emotion to facilitate thinking, (3) understanding emotion, and (4) management of emotion.

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)
A 141-item performance assessment of EI that measures the four emotion abilities (as defined by the four-branch model of EI) with a total of eight tasks.

Mixed and Trait Models
Approaches that view EI as a combination of self-perceived emotion skills, personality traits, and attitudes.

Performance assessment
A method of measurement associated with ability models of EI that evaluate the test taker's ability to solve emotion-related problems.

Self-report assessment
A method of measurement associated with mixed and trait models of EI, which evaluates the test taker's perceived emotion-related skills, distinct personality traits, and other characteristics.

Social and emotional learning (SEL)
The real-world application of EI in an educational setting and/or classroom that involves

curricula that teach the process of integrating thinking, feeling, and behaving in order to become aware of the self and of others, make responsible decisions, and manage one's own behaviors and those of others (Elias et al., 1997)

References

Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicometha, 18* (Suppl.), 13–25.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York, NY: Free Press.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.) Mahwah, NJ: Erlbaum.

Becker, B.E., & Luthar, S.S. (2002). Social-emotional factors affecting achievement outcomes among disadvantaged studets: Closing the achievement gap. *Educational Psychologist, 37*, 197-214.

Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*, 129–148.

Boyatzis, R., & Sala, F. (2004). The Emotional Competency Inventory (ECI). In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy* (pp. 143–178). Hauppauge, NY: Nova Science.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin, 29*, 1147–1158.

Brackett, M. A., Bertoli, M., Elbertson, N., Bausseron, E., Castillo, R., and Salovey, P. (2013). Reconceptualizing the cognition-emotion link. In M. D. Robinson, E. R. Watkins, E. Harmon-Jones (Eds.), *Handbook of Cognition and Emotion* (pp. 365-379). New York, NY: Guilford.

Brackett, M. A., Palomera, R., Mojsa-kaja, J., Reyes, M. R., & Salovey, P. (2010). Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers. *Psychology in the Schools, 47*, 406–417.

Brackett, M. A., Reyes, M. R., Rivers, S. E., Elbertson, N. A., & Salovey, P. (2011). Emotional climate, teacher affiliation, and student conduct. *Journal of Classroom Interaction, 46*, 27–36.

Brackett, M. A., Rivers, S. E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. *Journal of Personality and Social Psychology, 91*, 780–795.

Brackett, M.A., Rivers, S.E., & Salovey, P. (2011). *Emotional Intelligence, Implications for Personal, Social, Academic, and Workplace Success. Social and Personality Psychology Compass, 5*, 88-103.

Catalino, R.F., Berglund, L., Ryan, J.A.M., Lonczek, H.S., & Hawkins, J.D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of American Academy of Political and Social Science, 591*, 98-124. Doi: 10.1177/0002716203260102.

Cherniss, C. (2010). Emotional intelligence: Toward clarification of a concept. *Industrial and

Organizational Psychology, 3*, 110–126.

Day, A. L., & Carroll, S. A. (2008). Faking emotional intelligence (EI): Comparing response distortion on ability and trait-based EI measures, *Journal of Organizational Behavior, 29*, 761–784.

Day, A. L., & Carroll, S. A.(2004). Using an ability-based measure of emotional intelligence to predict individual performance, group performance, and group citizenship behaviors. *Personality and Individual Differences, 36*, 1443–1458.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Tayloer, R. D., & Schellinger, K. B. (2011), The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*, 405–432.

Elbertson, N. A., Brackett, M. A., & Weissberg, R. P. (2010). School-based social and emotional learning (SEL) programming: Current perspectives. In A. Hargreaves, M. Fullan, D. Hopkins, & A. Lieberman (Eds.), *The second international handbook of educational change* (pp. 1017–1032). New York, NY: Springer.

Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N. M., Shriver, T. P. (1997). *Promoting social and emotional learning: Guidelines for educators*. Alexandria, VA: Association for Supervision and Curriculum Development.

Feldman Barrett, L., Gross, J., Christensen, T. C., & Benvenuto, M. (2001). Knowing what you're feeling and knowing what to do about it: Mapping the relation between emotion differentiation and emotion regulation. *Cognition and Emotion, 15*, 713–724.

Feyerherm, A. E., & Rice, C. I. (2002). Emotional intelligence and team performance: The good, the bad and the ugly. *International Journal of Organizational Analysis, 10*, 343–362.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences* (10th Anniversary Edition). New York, NY: Basic. (Original work published 1983)

Goleman, D. (1995). *Emotional intelligence*. New York, NY: Bantam.

Greenberg, M. T., Weissberg, R. P., O'Brien, M. U., Zins, J. E., Fredericks, L., Resnik, H., & Elias, M. J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist, 58*, 466–474. Doi: 10.1037/0003-066X.58.6-7.466

Gross, J.J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*, 271-299.

Hargreaves, A. (2001). The emotional geographies of teachers' relations with colleagues. *International Journal of Educational Research, 35*, 503–527.

Isen, A. M., Shalker, T. E., Clark, M., & Karp, L. (1978). Affect, accessibility of material in memory,

and behavior: A cognitive loop? *Journal of Personality and Social Psychology, 36*, 1–12.

Leban, W., & Zulauf, C. (2004). Linking emotional intelligence abilities and transformational leadership styles. *Leadership Organization Development Journal, 25*, 554–564.

Locke, E.A. (2005). Why emotional intelligence is an invalid concept. *Journal of Organizational Behavior, 26*, 425-431.

Lopes, P. N., & Salovey, P. (2004). Toward a broader education: Social, emotional, and practical skills. In J. E. Zins, R. P. Weissberg, M. C. Wang, & H. J. Walberg (Eds.), *Building academic success on social and emotional learning: What does the research say?* (pp. 76–93). New York, NY: Teachers College Press.

Lopes, P. N., Grewal, D., Kadis, J., Gall, M., & Salovey, P. (2006). Evidence that emotional intelligence is related to job performance and affect and attitudes at work. *Psicothema, 18* (Suppl.), 132–138.

Lyons, W. (1999). The philosophy of emotion and cognition. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 21–44). Chichester, UK: Wiley.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3–34). New York, NY: Basic.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27*, 267–298.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotional intelligence: New ability or eclectic traits? *American Psychologist, 63*, 503–517.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), Version 2.0*. Toronto, Canada: Multi Health Systems.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion, 3*, 97–105.

Mestre, J. M., Guil, R., Lopes, P. N., Salovey, P., & Gil-Olarte, P. (2006). Emotional intelligence and social and academic adaptation to school. *Psicothema, 18*(Suppl.), 112–117.

Mueller, J. S., & Curhan, J. R. (2006). Emotional intelligence and counterpart mood induction in a negotiation. *International Journal of Conflict Management, 17*, 110–128.

O'Boyle, E. H., Humphrey, R. H., Pollack, J. M., Hawver, T. H., & Story, P. A. (2010). The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior, 32*, 788–818.

Paulhus, D. L., Lysy, D. C., & Yik, M. S. M. (1998). Self-report measures of intelligence: Are they useful as proxy IQ tests? *Journal of Personality, 66*, 525–554.

Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality, 17*, 39-57.

Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology, 104*, 700–712.

Rivers, S. E., Brackett, M. A., Salovey, P., & Mayer, J. D. (2007). Measuring emotional intelligence as a set of mental abilities. In G. Matthews, M. Zeidner, & R. D. Roberts (Eds.), *The science of emotional intelligence* (pp. 230–257). New York, NY: Oxford University Press.

Rivers, S.E., Brackett, M.A., Reyes, M.R., Elbertson, N.A., & Salovey, P. (2013). Improving the social and emotional climate of classroms: A clustered randomized controlled trial testing The RULER Approach. *Prevention Science, 14*, 77-87.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality, 9*, 185–211.

Sternberg, R. J. (1985). *The triarchic mind: A new theory of human intelligence*. New York, NY: Penguin.

Sutton, R. E., & Wheatly, K. F. (2003). Teachers' emotions and teaching: A review of the literature and directions for future research. *Educational Psychology Review, 15*, 327–358.

Travers, C. J. (2001). Stress in teaching: Past, present, and future. In J. Dunham (Ed.), *Stress in the workplace: Past, present, and future* (pp. 130–163). Philadelphia, PA: Whurr.

Young, P. T. (1943). *Emotion in man and in animal: Its nature and relation to attitude and motive*. New York, NY: Wiley.

34
Culture and Emotion

Jeanne Tsai

How do people's cultural ideas and practices shape their emotions (and other types of feelings)? In this module, we will discuss findings from studies comparing North American (United States, Canada) and East Asian (Chinese, Japanese, Korean) contexts. These studies reveal both cultural similarities and differences in various aspects of emotional life. Throughout, we will highlight the scientific and practical importance of these findings and conclude with recommendations for future research.

Learning Objectives

- Review the history of cross-cultural studies of emotion
- Learn about recent empirical findings and theories of culture and emotion
- Understand why cultural differences in emotion matter
- Explore current and future directions in culture and emotion research

Take a moment and imagine you are traveling in a country you've never been to before. Everything—the sights, the smells, the sounds—seems strange. People are speaking a language you don't understand and wearing clothes unlike yours. But they greet you with a smile and you sense that, despite the differences you observe, deep down inside these people have the same feelings as you. But is this true? Do people from opposite ends of the world really feel the same emotions? While most scholars agree that members of different cultures may vary in the foods they eat, the languages they speak, and the holidays they celebrate, there is disagreement about the extent to which culture shapes people's emotions and feelings

—including what people feel, what they express, and what they do during an emotional event. Understanding how culture shapes people's emotional lives and what impact emotion has on psychological health and well-being in different cultures will not only advance the study of human behavior but will also benefit multicultural societies. Across a variety of settings—academic, business, medical—people worldwide are coming into more contact with people from foreign cultures. In order to communicate and function effectively in such situations, we must understand the ways cultural ideas and practices shape our emotions.

Historical Background

In the 1950s and 1960s, social scientists tended to fall into either one of two camps. The **universalist** camp claimed that, despite cultural differences in customs and traditions, at a fundamental level all humans feel similarly. These universalists believed that emotions evolved as a response to the environments of our primordial ancestors, so they are the same across all cultures. Indeed, people often describe their emotions as "automatic," "natural," "physiological," and "instinctual," supporting the view that emotions are hard-wired and universal.

Universalists point to our prehistoric ancestors as the source of emotions that all humans share. [Image: Stefan Sheer, https://goo.gl/x56mw9, CC BY-SA 3.0, https://goo.gl/tCiqlm]

The **social constructivist** camp, however, claimed that despite a common evolutionary heritage, different groups of humans evolved to adapt to their distinctive environments. And because human environments vary so widely, people's emotions are also culturally variable. For instance, Lutz (1988) argued that many Western views of emotion assume that emotions are "singular events situated within individuals." However, people from Ifaluk (a small island near Micronesia) view emotions as "exchanges between individuals" (p. 212). Social constructivists contended that because cultural ideas and practices are all-encompassing, people are often unaware of how their feelings are shaped by their culture. Therefore emotions can feel automatic, natural, physiological, and instinctual, and yet still be primarily culturally shaped.

In the 1970s, Paul Ekman conducted one of the first scientific studies to address the universalist–social constructivist debate. He and Wallace Friesen devised a system to measure people's facial muscle activity, called the Facial Action Coding System (FACS; Ekman & Friesen, 1978). Using FACS, Ekman and Friesen analyzed people's facial expressions and identified specific facial muscle configurations associated with specific emotions, such as happiness, anger, sadness, fear, disgust. Ekman and Friesen then took photos of people posing with these different expressions (Figure 1). With the help of colleagues at different universities around the world, Ekman and Friesen showed these pictures to members of vastly different cultures, gave them a list of emotion words (translated into the relevant languages), and asked them to match the facial expressions in the photos with their corresponding emotion words on the list (Ekman & Friesen, 1971; Ekman et al., 1987).

Across cultures, participants "recognized" the emotional facial expressions, matching each picture with its "correct" emotion word at levels greater than chance. This led Ekman and his colleagues to conclude that there are universally recognized emotional facial expressions. At the same time, though, they found considerable variability across cultures in recognition rates. For instance, whereas 95% of U.S. participants associated a smile with "happiness," only 69% of Sumatran participants did. Similarly, 86% of U.S. participants associated wrinkling of the nose with "disgust," but only 60% of Japanese did (Ekman et al., 1987). Ekman and colleagues interpreted this variation as demonstrating cultural differences in "display rules," or rules about what emotions are appropriate to show in a given situation (Ekman, 1972). Indeed, since this initial work, Matsumoto and his colleagues have demonstrated widespread cultural differences in display rules (Safdar et al., 2009). One prominent example of such differences is biting one's tongue. In India, this signals embarrassment; however, in the U.S. this expression has no such meaning (Haidt & Keltner, 1999).

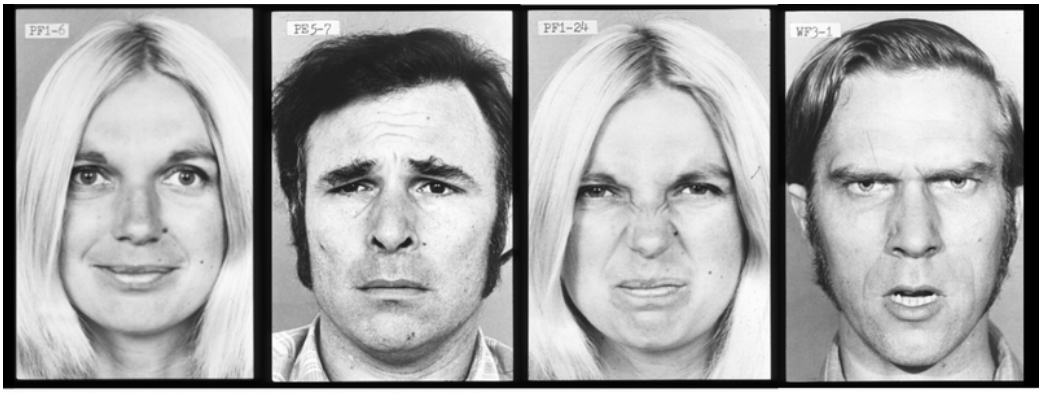


Figure 1. Facial expressions associated with happiness, sadness, disgust, and anger based on the Facial Action Coding System. [Image: Paul Eckman, used with permission]

These findings suggest both cultural similarities and differences in the recognition of emotional facial expressions (although see Russell, 1994, for criticism of this work). Interestingly, since the mid-2000s, increasing research has demonstrated cultural differences not only in display rules, but also the degree to which people focus on the face (versus other aspects of the social context; Masuda, Ellsworth, Mesquita, Leu, Tanida, & Van de Veerdonk, 2008), and on different features of the face (Yuki, Maddux, & Matsuda, 2007) when perceiving others' emotions. For example, people from the United States tend to focus on the mouth when interpreting others' emotions, whereas people from Japan tend to focus on the eyes.

But how does culture shape other aspects of emotional life—such as how people emotionally respond to different situations, how they want to feel generally, and what makes them happy? Today, most scholars agree that emotions and other related states are multifaceted, and that cultural similarities and differences exist for each facet. Thus, rather than classifying emotions as *either* universal *or* socially-constructed, scholars are now attempting to identify the specific similarities and differences of emotional life across cultures. These endeavors are yielding new insights into the effects of cultural on emotion.

Current and Research Theory

Given the wide range of cultures and facets of emotion in the world, for the remainder of the module we will limit our scope to the two cultural contexts that have received the most empirical attention by social scientists: North America (United States, Canada) and East Asia (China, Japan, and Korea). Social scientists have focused on North American and East Asian contexts because they differ in obvious ways, including their geographical locations, histories, languages, and religions. Moreover, since the 1980s large-scale studies have revealed that North American and East Asian contexts differ in their overall values and attitudes, such as the prioritization of personal vs. group needs (individualism vs. collectivism; Hofstede, 2001). Whereas North American contexts encourage members to prioritize personal over group needs (to be "individualistic"), East Asian contexts encourage members to prioritize group over personal needs (to be "collectivistic").

Cultural Models of Self in North American and East Asian Contexts

In a landmark paper, cultural psychologists Markus and Kitayama (1991) proposed that previously observed differences in individualism and collectivism translated into different models of the self—or one's personal concept of who s/he is as a person. Specifically, the researchers argued that in North American contexts, the dominant model of the self is an independent one, in which being a person means being distinct from others and behaving

accordingly across situations. In East Asian contexts, however, the dominant model of the self is an interdependent one, in which being a person means being fundamentally connected to others and being responsive to situational demands. For example, in a classic study (Cousins, 1989), American and Japanese students were administered the Twenty Statements Test, in which they were asked to complete the sentence stem, "I am _____," twenty times. U.S. participants were more likely than Japanese participants to complete the stem with psychological attributes (e.g., friendly, cheerful); Japanese participants, on the other hand, were more likely to complete the stem with references to social roles and responsibilities (e.g., a daughter, a student) (Cousins, 1989). These different models of the self result in different principles for interacting with others. An independent model of self teaches people to express themselves and try to influence others (i.e., change their environments to be consistent with their own beliefs and desires). In contrast, an interdependent model of self teaches people to suppress their own beliefs and desires and adjust to others' (i.e., fit in with their environment) (Heine, Lehman, Markus, & Kitayama, 1999; Morling, Kitayama, & Miyamoto, 2002; Weisz, Rothbaum, & Blackburn, 1984). Markus and Kitayama (1991) argue that these different models of self have significant implications for how people in Western and East Asian contexts feel.

Cultural Similarities and Differences in Emotion: Comparisons of North American and East Asian Contexts

A considerable body of empirical research suggests that these different models of self shape various aspects of emotional dynamics. Next we will discuss several ways culture shapes emotion, starting with emotional response.

People's Physiological Responses to Emotional Events Are Similar Across Cultures, but Culture Influences People's Facial Expressive Behavior

How does culture influence people's responses to emotional events? Studies of emotional response tend to focus on three components: physiology (e.g., how fast one's heart beats), subjective experience (e.g., feeling intensely happy or sad), and facial expressive behavior (e.g., smiling or frowning). Although only a few studies have simultaneously measured these different aspects of emotional response, those that do tend to observe more similarities than differences in physiological responses between cultures. That is, regardless of culture, people tend to respond similarly in terms of physiological (or bodily) expression. For instance, in one study, European American and Hmong (pronounced "muhng") American participants were

asked to relive various emotional episodes in their lives (e.g., when they lost something or someone they loved; when something good happened) (Tsai, Chentsova-Dutton, Freire-Bebeau, & Przymus, 2002). At the level of physiological arousal (e.g., heart rate), there were no differences in how the participants responded. However, their facial expressive behavior told a different story. When reliving events that elicited happiness, pride, and love, European Americans smiled more frequently and more intensely than did their Hmong counterparts—though all participants reported feeling happy, proud, and in love at similar levels of intensity. And similar patterns have emerged in studies comparing European Americans with Chinese Americans during different emotion-eliciting tasks (Tsai et al., 2002; Tsai, Levenson, & McCoy, 2006; Tsai, Levenson, & Carstensen, 2000). Thus, while the physiological aspects of emotional responses appear to be similar across cultures, their accompanying facial expressions are more culturally distinctive.

Although study participants from different cultural backgrounds reported similar emotions and levels of intensity when recalling important episodes in their lives, there were significant differences in facial expressions in response to those emotions. [Image: Andrew Sweeney, https://goo.gl/Npc7Wm, CC BY-NC-SA 4.0, https://goo.gl/H2QaA8]

Again, these differences in facial expressions during positive emotional events are consistent with findings from cross-cultural studies of *display rules*, and stem from the models of self-description discussed above: In North American contexts that promote an independent self , individuals tend to express their emotions to influence others. Conversely, in East Asian contexts that promote an interdependent self, individuals tend to control and suppress their emotions to adjust to others.

People Suppress Their Emotions Across Cultures, but Culture Influences the Consequences of Suppression for Psychological Well-Being

If the cultural ideal in North American contexts is to express oneself, then suppressing emotions (not showing how one feels) should have negative consequences. This is the

assumption underlying hydraulic models of emotion: the idea that emotional suppression and repression impair psychological functioning (Freud, 1910). Indeed, significant empirical research shows that suppressing emotions can have negative consequences for psychological well-being in North American contexts (Gross, 1998). However, Soto and colleagues (2011) find that the relationship between suppression and psychological well-being varies by culture. True, with European Americans, emotional suppression is associated with higher levels of depression and lower levels of life satisfaction. (Remember, in these individualistic societies, the expression of emotion is a fundamental aspect of positive interactions with others.) On the other hand, since for Hong Kong Chinese, emotional suppression is needed to adjust to others (in this interdependent community, suppressing emotions is how to appropriately interact with others), it is simply a part of normal life and therefore not associated with depression or life satisfaction.

These findings are consistent with research suggesting that factors related to clinical depression vary between European Americans and Asian Americans. European Americans diagnosed with depression show dampened or muted emotional responses (Bylsma, Morris, & Rottenberg, 2008). For instance, when shown sad or amusing film clips, depressed European Americans respond less intensely than their nondepressed counterparts.However, other studies have shown that depressed East Asian Americans (i.e., people of East Asian descent who live in the United States) demonstrate *similar or increased* emotional responses compared with their nondepressed counterparts (Chentsova-Dutton et al., 2007; Chentsova-Dutton, Tsai, & Gotlib, 2010). In other words, depressed European Americans show reduced emotional expressions, but depressed East Asian Americans do *not*—and, in fact, may express *more* emotion. Thus, muted responses (which resemble suppression) are associated with depression in European American contexts, but not in East Asian contexts.

Someone from a collectivist culture is more likely to think about how their own accomplishments might impact others. An otherwise positive achievement for one person could cause another to feel something negative, with mixed emotions as the result. [Image: lian xiaoxiao, https://goo.gl/js5jDw, CC BY-SA 2.0, https://goo.gl/jSSrcO]

People Feel Good During Positive Events, but Culture Influences Whether People

Feel Bad During Positive Events

What about people's subjective emotional experiences? Do people across cultures *feel* the same emotions in similar situations, despite how they show them? Recent studies indicate that culture affects whether people are likely to feel bad during good events. In North American contexts, people rarely feel bad after good experiences. However, a number of research teams have observed that, compared with people in North American contexts, people in East Asian contexts are more likely to feel bad *and* good ("mixed" emotions) during positive events (e.g., feeling worried after winning an important competition; Miyamoto, Uchida, & Ellsworth, 2010). This may be because, compared with North Americans, East Asians engage in more dialectical thinking (i.e., they are more tolerant of contradiction and change). Therefore, they accept that positive and negative feelings can occur simultaneously. In addition, whereas North Americans value maximizing positive states and minimizing negative ones, East Asians value a greater balance between the two (Sims, Tsai, Wang, Fung, & Zhang, 2013). To better understand this, think about how you would feel after getting the top score on a test that's graded on a curve. In North American contexts, such success is considered an individual achievement and worth celebrating. But what about the other students who will now receive a lower grade because you "raised the curve" with your good grade? In East Asian contexts, not only would students be more thoughtful of the overall group's success, but they would also be more comfortable acknowledging both the positive (their own success on the test) and the negative (their classmates' lower grades).

Again, these differences can be linked to cultural differences in models of the self. An interdependent model encourages people to think about how their accomplishments might affect others (e.g., make others feel bad or jealous). Thus, awareness of negative emotions during positive events may discourage people from expressing their excitement and standing out (as in East Asian contexts). Such emotional suppression helps individuals feel in sync with those around them. An independent model, however, encourages people to express themselves and stand out, so when something good happens, they have no reason to feel bad.

So far, we have reviewed research that demonstrates cultural similarities in physiological responses and in the ability to suppress emotions. We have also discussed the cultural differences in facial expressive behavior and the likelihood of experiencing negative feelings during positive events. Next, we will explore how culture shapes people's ideal or desired states.

People Want to Feel Good Across Cultures, but Culture Influences the Specific Good States People Want to Feel (Their "Ideal Affect")

Everyone welcomes positive feelings, but cultures vary in the specific types of **positive affective states** (see Figure 2) their people favor. An affective state is essentially the type of emotional arousal one feels coupled with its intensity—which can vary from pleasant to unpleasant (e.g., happy to sad), with high to low arousal (e.g., energetic to passive). Although people of all cultures experience this range of affective states, they can vary in their preferences for each. For example, people in North American contexts lean toward feeling excited, enthusiastic, energetic, and other "high arousal positive" states. People in East Asian contexts, however, generally prefer feeling calm, peaceful, and other "low arousal positive" states (Tsai, Knutson, & Fung, 2006). These cultural differences have been observed in young children between the ages of 3 and 5, college students, and adults between the ages of 60 and 80 (Tsai, Louie, Chen, & Uchida, 2007; Tsai, Sims, Thomas, & Fung, 2013), and are reflected in widely-distributed cultural products. For example, wherever you look in American contexts—women's magazines, children's storybooks, company websites, and even Facebook profiles (Figure 3)—you will find more open, excited smiles and fewer closed, calm smiles compared to Chinese contexts (Chim, Moon, Ang, Tsai, 2013; Tsai, 2007;Tsai, Louie, et al., 2007).

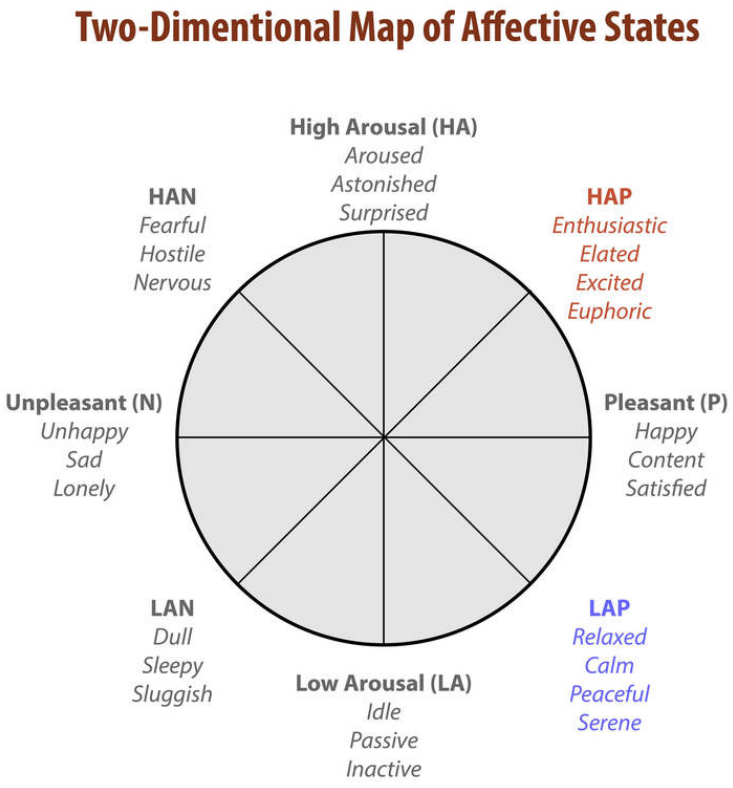


Figure 2: Adapted from Feldman, Barrett, and Russell (1999); Larsen and Diener ((1992); Russell (1991); Thayer (1989); Watson and Tellegen (1985)

Again, these differences in ideal affect (i.e., the emotional states that people believe are best) correspond to the independent and interdependent models described earlier: Independent selves want to influence others, which requires action (*doingsomething*), and action involves high arousal states. Conversely, interdependent selves want to adjust to others, which requires *suspending* action and attending to others—both of which involve low arousal states. Thus, the more that individuals and cultures want to influence others (as in North American contexts), the more they value excitement, enthusiasm, and other high arousal positive states. And, the more that individuals and cultures want to adjust to others (as in East Asian contexts), the more they value calm, peacefulness, and other low arousal positive states (Tsai, Miao, Seppala, Fung, & Yeung, 2007).

Figure 3: Sample Hong Kong Chinese (left) and European American (right) Facebook pages.

Because one's ideal affect functions as a guide for behavior and a way of evaluating one's emotional states, cultural differences in ideal affect can result in different emotional lives. For example, several studies have shown that people engage in activities (e.g., recreational pastimes, musical styles) consistent with their cultural ideal affect. That is, people from North American contexts (who value high arousal affective states) tend to prefer thrilling activities like skydiving, whereas people from East Asian contexts (who value low arousal affective states) prefer tranquil activities like lounging on the beach (Tsai, 2007). In addition, people base their conceptions of well-being and happiness on their ideal affect. Therefore, European Americans are more likely to define well-being in terms of excitement, whereas Hong Kong Chinese are more likely to define well-being in terms of calmness. Indeed, among European Americans, the less people experience *high* arousal positive states, the more depressed they are. But, among Hong Kong Chinese—you guessed it!—the less people experience *low* arousal positive states, the more depressed they are (Tsai, Knutson, & Fung, 2006).

People Base Their Happiness on Similar Factors Across Cultures, but Culture Influences the Weight Placed on Each Factor

Research has shown that self-esteem is more highly correlated with life satisfaction in individualistic cultures than in collectivist cultures. [Image: Erik, https://goo.gl/N8zccv, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

What factors make people happy or satisfied with their lives? We have seen that discrepancies between how people actually feel (actual affect) and how they want to feel (ideal affect)—as well as people's suppression of their ideal affect—are associated with depression. But happiness is based on other factors as well. For instance, Kwan, Bond, & Singelis (1997) found that while European Americans and Hong Kong Chinese subjects both based life satisfaction on how they felt about themselves (self-esteem) and their relationships (relationship harmony), their weighting of each factor was different. That is, European Americans based their life satisfaction primarily on self-esteem, whereas Hong Kong Chinese based their life satisfaction equally on self-esteem *and* relationship harmony. Consistent with these findings, Oishi and colleagues (1999) found in a study of 39 nations that self-esteem was more strongly correlated with life satisfaction in more individualistic nations compared to more collectivistic ones. Researchers also found that in individualistic cultures people rated life satisfaction based on their emotions more so than on social definitions (or norms). In other words, rather than using social norms as a guideline for what constitutes an ideal life, people in individualistic cultures tend to evaluate their satisfaction according to how they feel emotionally. In collectivistic cultures, however, people's life satisfaction tends to be based on a balance between their emotions and norms (Suh, Diener, Oishi, & Triandis, 1998). Similarly, other researchers have recently found that people in North American contexts are more likely to feel negative when they have poor mental and physical health, while people in Japanese contexts don't have this association (Curhan et al., 2013).

Again, these findings are consistent with cultural differences in models of the self. In North American, independent contexts, feelings about the self matter more, whereas in East Asian, interdependent contexts, feelings about others matter as much as or even more than feelings

about the self.

Why Do Cultural Similarities And Differences In Emotion Matter?

Understanding cultural similarities and differences in emotion is obviously critical to understanding emotions in general, and the flexibility of emotional processes more specifically. Given the central role that emotions play in our interaction, understanding cultural similarities and differences is especially critical to preventing potentially harmful miscommunications. Although misunderstandings are unintentional, they can result in negative consequences—as we've seen historically for ethnic minorities in many cultures. For instance, across a variety of North American settings, Asian Americans are often characterized as too "quiet" and "reserved," and these low arousal states are often misinterpreted as expressions of disengagement or boredom—rather than expressions of the ideal of calmness. Consequently, Asian Americans may be perceived as "cold," "stoic," and "unfriendly," fostering stereotypes of Asian Americans as "perpetual foreigners" (Cheryan & Monin, 2005). Indeed, this may be one reason Asian Americans are often overlooked for top leadership positions (Hyun, 2005).

In addition to averting cultural miscommunications, recognizing cultural similarities and differences in emotion may provide insights into other paths to psychological health and well-being. For instance, findings from a recent series of studies suggest that calm states are easier to elicit than excited states, suggesting that one way of increasing happiness in cultures that value excitement may be to increase the value placed on calm states (Chim, Tsai, Hogan, & Fung, 2013).

Current Directions In Culture And Emotion Research

What About Other Cultures?

In this brief review, we've focused primarily on comparisons between North American and East Asian contexts because most of the research in cultural psychology has focused on these comparisons. However, there are obviously a multitude of other cultural contexts in which emotional differences likely exist. For example, although Western contexts are similar in many ways, specific Western contexts (e.g., American vs. German) also differ from each other in substantive ways related to emotion (Koopmann-Holm & Matsumoto, 2011). Thus, future research examining other cultural contexts is needed. Such studies may also reveal additional, uninvestigated dimensions or models that have broad implications for emotion. In addition,

because more and more people are being raised within multiple cultural contexts (e.g., for many Chinese Americans, a Chinese immigrant culture at home and mainstream American culture at school), more research is needed to examine how people negotiate and integrate these different cultures in their emotional lives (for examples, see De Leersnyder, Mesquita, & Kim, 2011; Perunovic, Heller, & Rafaeli, 2007).

How Are Cultural Differences in Beliefs About Emotion Transmitted?

According to Kroeber and Kluckhohn (1952), cultural ideas are reflected in and reinforced by practices, institutions, and products. As an example of this phenomenon—and illustrating the point regarding cultural differences in ideal affect—bestselling children's storybooks in the United States often contain more exciting and less calm content (smiles and activities) than do bestselling children's storybooks in Taiwan (Tsai, Louie, et al., 2007). To investigate this further, the researchers randomly assigned European American, Asian American, and Taiwanese Chinese preschoolers to be read either stories with exciting content or stories with calm content. Across all of these cultures, the kids who were read stories with exciting content were afterward more likely to value excited states, whereas those who were read stories with calm content were more likely to value calm states. As a test, after hearing the stories, the kids were shown a list of toys and asked to select their favorites. Those who heard the exciting stories wanted to play with more arousing toys (like a drum that beats loud and fast), whereas those who heard the calm stories wanted to play with less arousing toys (like a drum that beats quiet and slow). These findings suggest that regardless of ethnic background, direct exposure to storybook content alters children's ideal affect. More studies are needed to assess whether a similar process occurs when children and adults are chronically exposed to various types of cultural products. As well, future studies should examine other ways cultural ideas regarding emotion are transmitted (e.g., via interactions with parents and teachers).

Children's story books offer one interesting and effective way to study how early influences can impact a person's ideal affect. [Image: Vernon Barford School Library, https://goo.gl/fghcae, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Could These Cultural Differences Be Due to Temperament?

An alternative explanation for cultural differences in emotion is that they are due to temperamental factors—that is, biological predispositions to respond in certain ways. (Might European Americans just be more emotional than East Asians because of genetics?) Indeed, most models of emotion acknowledge that both culture *and* temperament play roles in emotional life, yet few if any models indicate how. Nevertheless, most researchers believe that despite genetic differences in founder populations (i.e., the migrants from a population who leave to create their own societies), culture has a greater impact on emotions. For instance, one theoretical framework, Affect Valuation Theory, proposes that cultural factors shape how people want to feel ("ideal affect") more than how they actually feel ("actual affect"); conversely, temperamental factors influence how people actually feel more than how they want to feel (Tsai, 2007) (see Figure 4).

To test this hypothesis, European American, Asian American, and Hong Kong Chinese participants completed measures of temperament (i.e., stable dispositions, such as neuroticism or extraversion), actual affect (i.e., how people actually feel in given situations), ideal affect (i.e., how people would like to feel in given situations), and influential cultural values (i.e., personal beliefs transmitted through culture). When researchers analyzed the participants' responses, they found that differences in ideal affect between cultures were associated more with cultural factors than with temperamental factors (Tsai, Knutson, & Fung, 2006). However, when researchers examined actual affect, they found this to be reversed: actual affect was more strongly associated with temperamental factors than cultural factors. Not all of the studies described above have ruled out a temperamental explanation, though, and more studies are needed to rule out the possibility that the observed group differences

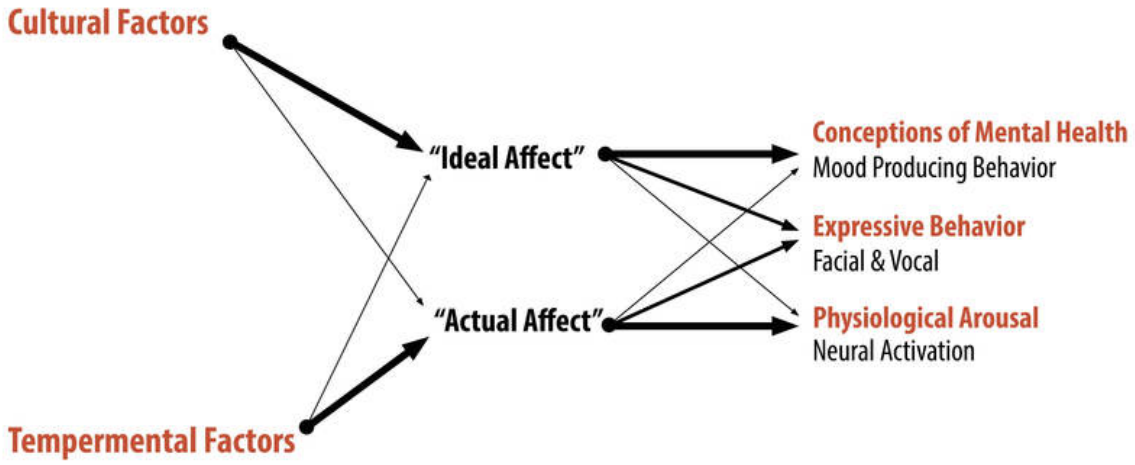


Figure 4: Affect valuation theory. Thicker lines indicate stronger predicted relationships.

are due to genetic factors instead of, or in addition to, cultural factors. Moreover, future studies should examine whether the links between temperament and emotions might vary across cultures, and how cultural and temperamental factors work together to shape emotion.

Summary

Based on studies comparing North American and East Asian contexts, there is clear evidence for cultural similarities and differences in emotions, and most of the differences can be traced to different cultural models of the self.

Consider your own concept of self for a moment. What kinds of pastimes do you prefer—activities that make you excited, or ones that make you calm? What kinds of feelings do you strive for? What is your ideal affect? Because emotions seem and feel so instinctual to us, it's hard to imagine that the way we experience them and the ones we desire are anything other than biologically programmed into us. However, as current research has shown (and as future research will continue to explore), there are myriad ways in which culture, both consciously and unconsciously, shapes people's emotional lives.

Outside Resources

Audio Interview: The Really Big Questions "What Are Emotions?" Interview with Paul Ekman, Martha Nussbaum, Dominique Moisi, and William Reddy
http://www.trbq.org/index.php?option=com_content&view=category&layout=blog&id=16&Itemid=43

Book: Ed Diener and Robert Biswas-Diener: Happiness: Unlocking the Mysteries of Psychological Wealth

Book: Eric Weiner: The Geography of Bliss

Book: Eva Hoffmann: Lost in Translation: Life in a New Language

Book: Hazel Markus: Clash: 8 Cultural Conflicts That Make Us Who We Are

Video: Social Psychology Alive
http://psychology.stanford.edu/~tsailab/PDF/socpsychalive.wmv

Video: The Really Big Questions "Culture and Emotion," Dr. Jeanne Tsai
http://youtu.be/RQaEaUwNoiw

Video: Tsai's description of cultural differences in emotion
http://youtu.be/T46EZ8LH8Ss

Web: Acculturation and Culture Collaborative at Leuven
http://ppw.kuleuven.be/home/english/research/cscp/acc-research

Web: Culture and Cognition at the University of Michigan
http://culturecognition.isr.umich.edu/

Web: Experts In Emotion Series, Dr. June Gruber, Department of Psychology, Yale University
http://www.yalepeplab.com/teaching/psych131_summer2013/expertseries.php

Web: Georgetown Culture and Emotion Lab
http://georgetownculturelab.wordpress.com/

Web: Paul Ekman's website
http://www.paulekman.com

Web: Penn State Culture, Health, and Emotion Lab
http://www.personal.psu.edu/users/m/r/mrm280/sotosite/

Web: Stanford Culture and Emotion Lab
http://www-psych.stanford.edu/~tsailab/index.htm

Web: Wesleyan Culture and Emotion Lab
http://culture-and-emotion.research.wesleyan.edu/

Discussion Questions

1. What cultural ideas and practices related to emotion were you exposed to when you were a child? What cultural ideas and practices related to emotion are you currently exposed to as an adult? How do you think they shape your emotional experiences and expressions?
2. How can researchers avoid inserting their own beliefs about emotion in their research?
3. Most of the studies described above are based on self-report measures. What are some of the advantages and disadvantages of using self-report measures to understand the cultural shaping of emotion? How might the use of other behavioral methods (e.g., neuroimaging) address some of these limitations?
4. Do the empirical findings described above change your beliefs about emotion? How?
5. Imagine you are a manager of a large American company that is beginning to do work in China and Japan. How will you apply your current knowledge about culture and emotion to prevent misunderstandings between you and your Chinese and Japanese employees?

Vocabulary

Affect
Feelings that can be described in terms of two dimensions, the dimensions of arousal and valence (Figure 2). For example, high arousal positive states refer to excitement, elation, and enthusiasm. Low arousal positive states refer to calm, peacefulness, and relaxation. Whereas "actual affect" refers to the states that people actually feel, "ideal affect" refers to the states that people ideally want to feel.

Culture
Shared, socially transmitted ideas (e.g., values, beliefs, attitudes) that are reflected in and reinforced by institutions, products, and rituals.

Emotions
Changes in subjective experience, physiological responding, and behavior in response to a meaningful event. Emotions tend to occur on the order of seconds (in contract to moods which may last for days).

Feelings
A general term used to describe a wide range of states that include emotions, moods, traits and that typically involve changes in subjective experience, physiological responding, and behavior in response to a meaningful event. Emotions typically occur on the order of seconds, whereas moods may last for days, and traits are tendencies to respond a certain way across various situations.

Independent self
A model or view of the self as distinct from others and as stable across different situations. The goal of the independent self is to express and assert the self, and to influence others. This model of self is prevalent in many individualistic, Western contexts (e.g., the United States, Australia, Western Europe).

Interdependent self
A model or view of the self as connected to others and as changing in response to different situations. The goal of the interdependent self is to suppress personal preferences and desires, and to adjust to others. This model of self is prevalent in many collectivistic, East Asian contexts (e.g., China, Japan, Korea).

Social constructivism

Social constructivism proposes that knowledge is first created and learned within a social context and is then adopted by individuals.

Universalism

Universalism proposes that there are single objective standards, independent of culture, in basic domains such as learning, reasoning, and emotion that are a part of all human experience.

References

Bylsma, L., Morris, B., & Rottenberg, J. (2008). A meta-analysis of emotional reactivity in major depressive disorder. *Clinical Psychology Review, 28*(4), 676–691.

Chentsova-Dutton, Y. E., Chu, J. P., Tsai, J. L., Rottenberg, J., Gross, J. J., & Gotlib, I. H. (2007). Depression and emotional reactivity: Variation among Asian Americans of East Asian descent and European Americans. *Journal of Abnormal Psychology, 116*(4), 776–785.

Chentsova-Dutton, Y. E., Tsai, J. L., & Gotlib, I. (2010). Further evidence for the cultural norm hypothesis: Positive emotion in depressed and control European American and Asian American women. *Cultural Diversity and Ethnic Minority Psychology, 16*, 284–295.

Cheryan, S., & Monin, B. (2005). Where are you really from?: Asian Americans and identity denial. *Journal of personality and social psychology, 89*(5), 717–731.

Chim, L., Moon, A., Ang, J., & Tsai, J. L. (2013). Magazine ads, Facebook pages, and company websites reflect cultural differences in ideal affect. In T. Masuda (Chair). *Culture and mind: Implications for art, design, and advertising*. Symposium held at International Association for Cross-Cultural Psychology, Los Angeles, CA.

Chim, L., Tsai, J.L., Hogan, C., & Fung, H. H. (2013). *Enhancing happiness by valuing calm*. Manuscript in preparation.

Cousins, S. D. (1989). Culture and self-perception in Japan and the United States. *Journal of Personality and Social Psychology, 56*(1), 124–131.

Curhan, K., Sims, T., Markus, H., Kitayama, S., Karasawa, M., Kawakami, N., . . . Ryff, C. (2013). *Negative affect predicts worse physical and mental health in the U.S. than in Japan*. Manuscript under review.

De Leersnyder, J., Mesquita, B., & Kim, H. S. (2011). Where do my emotions belong? A study of immigrants,Äô emotional acculturation. *Personality and Social Psychology Bulletin, 37*(4), 451–463.

Ekman, P. (1972). *Universals and Cultural Differences in Facial Expressions of Emotion*. Paper presented at the Nebraska Symposium on Motivation.

Ekman, P., & Friesen, W. (1978). *Facial Action Coding System: A Technique for the Measurement of Facial Movement*. Palo Alto, CA: Consulting Psychologists Press.

Ekman, P., & Friesen, W. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology, 17*(2), 124–129. doi: 10.1037/h0030377

Ekman, P., Friesen, W., O\'Sullivan, M., Chan, D., Diacoyanni-Tarlatzis, I., Heider, K., . . . Tzavaras, A. (1987). Universals and cultural differences in the judgments of facial expressions of

emotion. *Journal of Personality and Social Psychology, 53*, 712–717.

Freud, S. (1910). *Five lectures on psycho-analysis*. (Vol. XI). London: Hogarth Press.

Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of personality and social psychology, 74*(1), 224–237.

Haidt, J., & Keltner, D . (1999). Culture an d facial expression : Open-ended methods find more faces and a gradient of recognition. *Cognition and Emotion*, 13, 225-266.

Heine, S., Lehman, D., Markus, H., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review, 106*(4), 766–794.

Hofstede, G. (2001). *Culture\'s Consequences: comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: SAGE Publications.

Hyun, J. (2005). *Breaking the bamboo ceiling: Career strategies for Asians*. New York. Harper Collins.

Koopmann-Holm, B., & Matsumoto, D. (2011). Values and display rules for specific emotions. *Journal of Cross-Cultural Psychology, 42*(3), 355–371.

Kroeber, A.L. & Kluckhohn, C. (1952). Culture: A critical review of concepts and definitions. *Papers. Peabody Museum of Archaeology & Ethnology*, Harvard University, 47, (viii), 223.

Kwan, V., Bond, M., & Singelis, T. (1997). Pancultural explanations for life satisfaction: Adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology, 73*(5), 1038–1051.

Lutz, C. (1988). *Unnatural emotions: Everyday sentiments on a Micronesian atoll and their challenge to Western theory*. Chicago, IL: University of Chicago Press.

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2), 224–253. doi: 10.1037/0033-295X.98.2.224

Masuda, T., Ellsworth, P. C., Mesquita, B., Leu, J., Tanida, S., & Van de Veerdonk, E. (2008). Placing the face in context: Cultural differences in the perception of facial emotion. *Journal of Personality and Social Psychology, 94*(3), 365–381. doi: 10.1037/0022-3514.94.3.365

Miyamoto, Y., Uchida, Y., & Ellsworth, P. C. (2010). Culture and mixed emotions: Co-occurrence of positive and negative emotions in Japan and the United States. *Emotion, 10*(3), 404–415. doi: 10.1037/a0018430

Morling, B., Kitayama, S., & Miyamoto, Y. (2002). Cultural practices emphasize influence in the United States and adjustment in Japan. *Personality and Social Psychology Bulletin, 28*, 311–323.

Oishi, S., Diener, E. F., Lucas, R. E., & Suh, E. M. (1999). Cross-cultural variations in predictors

of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin, 25*(8), 980–990.

Perunovic, W., Heller, D., & Rafaeli, E. (2007). Within-person changes in the structure of emotion: The role of cultural identification and language. *Psychological Science, 18*, 607–613.

Russell, J. A. (1994). Is there universal recognition of emotion from facial expressions? A review of the cross-cultural studies. *Psychological Bulletin, 115*(1), 102–141. doi: 10.1037/0033-2909.115.1.102

Safdar, S., Friedlmeier, W., Matsumoto, D., Yoo, S. H., Kwantes, C. T., Kakai, H., & Shigemasu, E. (2009). Variations of emotional display rules within and across cultures: A comparison between Canada, USA, and Japan. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 41*(1), 1–10.

Sims, T., Tsai, J., Wang, I., Fung, H. H., & Zhang, X. L. (2013). *Whether you experience the bad with the good depends on how you want to feel: Understanding cultural differences in the relationship between positive and negative affect*. Manuscript in progress.

Soto, J., Perez, C., Kim, Y. H., Lee, E., & Minnick, M. (2011). Is expressive suppression always associated with poorer psychological functioning? A cross-cultural comparison between European Americans and Hong Kong Chinese. *Emotion, 11*(6), 1450–1455.

Suh, E., Diener, E., Oishi, S., & Triandis, H. (1998). The shifting basis of life satisfaction judgments across cultures: Emotions versus norms. *Journal of Personality and Social Psychology, 74*(2), 482.

Tsai, J. L. (2007). Ideal affect: Cultural causes and behavioral consequences. *Perspectives on Psychological Science, 2*, 242–259.

Tsai, J. L., Chentsova-Dutton, Y., Freire-Bebeau, L., & Przymus, D. (2002). Emotional expression and physiology in European Americans and Hmong Americans. *Emotion, 2*(4), 380–397. doi: 10.1037/1528-3542.2.4.380

Tsai, J. L., Knutson, B., & Fung, H. H. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology, 90*, 288–307.

Tsai, J. L., Levenson, R., & McCoy, K. (2006). Cultural and temperamental variation in emotional response. *Emotion, 6*(3), 484–497. doi: 10.1037/1528-3542.6.3.484

Tsai, J. L., Levenson, R. W., & Carstensen, L. L. (2000). Autonomic, subjective, and expressive responses to emotional films in older and younger Chinese Americans and European Americans. *Psychology and Aging, 15*(4), 684–693.

Tsai, J. L., Louie, J., Chen, E. E., & Uchida, Y. (2007). Learning what feelings to desire: Socialization of ideal affect through children's storybooks. *Personality and Social Psychology Bulletin, 33*, 17–30.

Tsai, J. L., Miao, F. F., Seppala, E., Fung, H. H., & Yeung, D. (2007). Influence and adjustment goals: Sources of cultural differences in ideal affect. *Journal of Personality and Social Psychology, 92*, 1102–1117.

Tsai, J. L., Sims, T., Thomas, E., & Fung, H. H. (2013). *Ideal affect across the life span: A comparison of European American, Chinese American, and Hong Kong Chinese*. Manuscript in progress.

Weisz, J., Rothbaum, F., & Blackburn, T. (1984). Standing out and standing in: The psychology of control in American and Japan. *American Psychologist, 39*, 955–969.

Yuki, M., Maddux, W. W., & Masuda, T. (2007). Are the windows to the soul the same in the East and West? Cultural differences in using the eyes and mouth as cues to recognize emotions in Japan and the United States. *Journal of Experimental Social Psychology, 43*(2), 303–311.

Psychological Disorders

35
History of Mental Illness

Ingrid G. Farreras

This module is divided into three parts. The first is a brief introduction to various criteria we use to define or distinguish between normality and abnormality. The second, largest part is a history of mental illness from the Stone Age to the 20th century, with a special emphasis on the recurrence of three causal explanations for mental illness; supernatural, somatogenic, and psychogenic factors. This part briefly touches upon trephination, the Greek theory of hysteria within the context of the four bodily humors, witch hunts, asylums, moral treatment, mesmerism, catharsis, the mental hygiene movement, deinstitutionalization, community mental health services, and managed care. The third part concludes with a brief description of the issue of diagnosis.

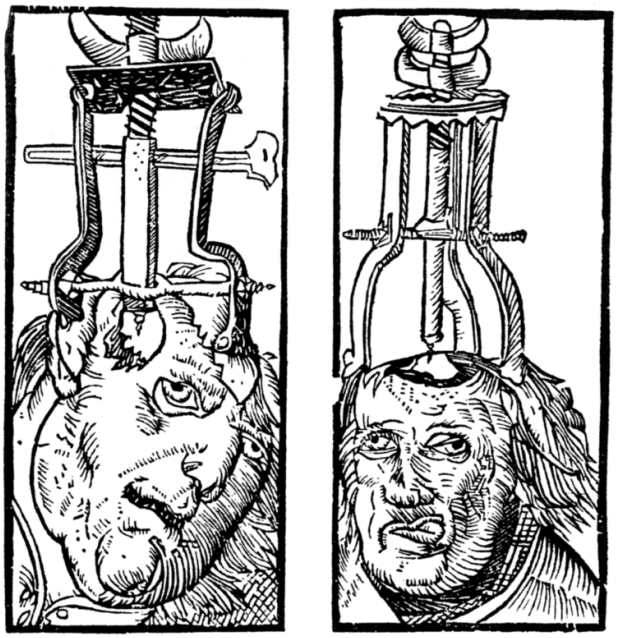
Learning Objectives

- Identify what the criteria used to distinguish normality from abnormality are.
- Understand the difference among the three main etiological theories of mental illness.
- Describe specific beliefs or events in history that exemplify each of these etiological theories (e.g., hysteria, humorism, witch hunts, asylums, moral treatments).
- Explain the differences in treatment facilities for the mentally ill (e.g., mental hospitals, asylums, community mental health centers).
- Describe the features of the "moral treatment" approach used by Chiarughi, Pinel, and Tuke.
- Describe the reform efforts of Dix and Beers and the outcomes of their work.
- Describe Kräpelin's classification of mental illness and the current DSM system.

History of Mental Illness

References to mental illness can be found throughout history. The evolution of mental illness, however, has not been linear or progressive but rather cyclical. Whether a behavior is considered normal or abnormal depends on the context surrounding the behavior and thus changes as a function of a particular time and culture. In the past, uncommon behavior or behavior that deviated from the sociocultural norms and expectations of a specific culture and period has been used as a way to silence or control certain individuals or groups. As a result, a less **cultural relativist** view of abnormal behavior has focused instead on whether behavior poses a threat to oneself or others or causes so much pain and suffering that it interferes with one's work responsibilities or with one's relationships with family and friends.

Throughout history there have been three general theories of the **etiology** of mental illness: **supernatural**, **somatogenic**, and **psychogenic**. Supernatural theories attribute mental illness to possession by evil or demonic spirits, displeasure of gods, eclipses, planetary gravitation, curses, and sin. Somatogenic theories identify disturbances in physical functioning resulting from either illness, genetic inheritance, or brain damage or imbalance. Psychogenic theories focus on traumatic or stressful experiences, **maladaptive** learned associations and cognitions, or distorted perceptions. Etiological theories of mental illness determine the care and treatment mentally ill individuals receive. As we will see below, an individual believed to be possessed by the devil will be viewed and treated differently from an individual believed to be suffering from an excess of yellow bile. Their treatments will also differ, from exorcism to blood-letting. The theories, however, remain the same. They coexist as well as recycle over time.



Engravings from 1525 showing trephination. It was believed that drilling holes in the skull could cure mental disorders. [Image: Peter Treveris, CC0 Public Domain, https://goo.gl/m25gce]

Trephination is an example of the earliest supernatural explanation for mental illness. Examination of prehistoric skulls and cave art from as early as 6500 BC has identified surgical drilling of holes in skulls to treat head injuries and epilepsy as well as to allow evil spirits

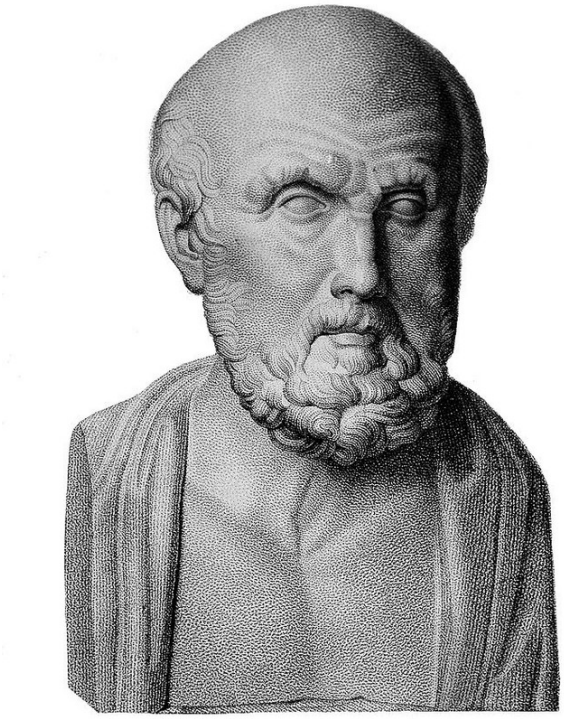
trapped within the skull to be released (Restak, 2000). Around 2700 BC, Chinese medicine's concept of complementary positive and negative bodily forces ("yin and yang") attributed mental (and physical) illness to an imbalance between these forces. As such, a harmonious life that allowed for the proper balance of yin and yang and movement of vital air was essential (Tseng, 1973).

Mesopotamian and Egyptian papyri from 1900 BC describe women suffering from mental illness resulting from a wandering uterus (later named **hysteria** by the Greeks): The uterus could become dislodged and attached to parts of the body like the liver or chest cavity, preventing their proper functioning or producing varied and sometimes painful symptoms. As a result, the Egyptians, and later the Greeks, also employed a somatogenic treatment of strong smelling substances to guide the uterus back to its proper location (pleasant odors to lure and unpleasant ones to dispel).

Throughout classical antiquity we see a return to supernatural theories of demonic possession or godly displeasure to account for abnormal behavior that was beyond the person's control. Temple attendance with religious healing ceremonies and incantations to the gods were employed to assist in the healing process. Hebrews saw madness as punishment from God, so treatment consisted of confessing sins and repenting. Physicians were also believed to be able to comfort and cure madness, however.

Greek physicians rejected supernatural explanations of mental disorders. It was around 400 BC that Hippocrates (460–370 BC) attempted to separate superstition and religion from medicine by systematizing the belief that a deficiency in or especially an excess of one of the four essential bodily fluids (i.e., humors)—blood, yellow bile, black bile, and phlegm—was responsible for physical and mental illness. For example, someone who was too temperamental suffered from too much blood and thus blood-letting would be the necessary treatment. Hippocrates classified mental illness into one of four categories—epilepsy, mania, melancholia, and brain fever—and like other prominent physicians and philosophers of his time, he did not believe mental illness was shameful or that mentally ill individuals should be held accountable for their behavior. Mentally ill individuals were cared for at home by family members and the state shared no responsibility for their care. **Humorism** remained a recurrent somatogenic theory up until the 19th century.

While Greek physician Galen (AD 130–201) rejected the notion of a uterus having an **animistic soul**, he agreed with the notion that an imbalance of the four bodily fluids could cause mental illness. He also opened the door for psychogenic explanations for mental illness, however, by allowing for the experience of psychological stress as a potential cause of abnormality. Galen's psychogenic theories were ignored for centuries, however, as physicians attributed mental



Many of Hippocrates' medical theories are no longer practiced today. However, he pioneered medicine as an empirical practice and came up with the "Hippocratic oath," which all doctors must swear to before joining the profession (i.e., the promise to never intentionally harm a patient). [Image: Wellcome Images, https://goo.gl/dX21yj, CC BY 4.0, https://goo.gl/FJluOM]

illness to physical causes throughout most of the millennium.

By the late Middle Ages, economic and political turmoil threatened the power of the Roman Catholic church. Between the 11th and 15th centuries, supernatural theories of mental disorders again dominated Europe, fueled by natural disasters like plagues and famines that lay people interpreted as brought about by the devil. Superstition, astrology, and alchemy took hold, and common treatments included prayer rites, relic touching, confessions, and atonement. Beginning in the 13th century the mentally ill, especially women, began to be persecuted as witches who were possessed. At the height of the witch hunts during the 15th through 17th centuries, with the Protestant Reformation having plunged Europe into religious strife, two Dominican monks wrote the *Malleus Maleficarum* (1486) as the ultimate manual to guide witch hunts. Johann Weyer and Reginald Scot tried to convince people in the mid- to late-16th century that accused witches were actually women with mental illnesses and that mental illness was not due to demonic possession but to faulty metabolism and disease, but the Church's Inquisition banned both of their writings. Witch-hunting did not decline until the 17th and 18th centuries, after more than 100,000 presumed witches had been burned at the stake (Schoeneman, 1977; Zilboorg & Henry, 1941).

Modern treatments of mental illness are most associated with the establishment of hospitals and asylums beginning in the 16th century. Such institutions' mission was to house and confine the mentally ill, the poor, the homeless, the unemployed, and the criminal. War and economic depression produced vast numbers of undesirables and these were separated from society and sent to these institutions. Two of the most well-known institutions, St. Mary of Bethlehem in London, known as Bedlam, and the Hôpital Général of Paris—which included La Salpêtrière, La Pitié, and La Bicêtre—began housing mentally ill patients in the mid-16th and 17th centuries. As confinement laws focused on protecting the public *from* the mentally ill, governments became responsible for housing and feeding undesirables in exchange for

their personal liberty. Most inmates were institutionalized against their will, lived in filth and chained to walls, and were commonly exhibited to the public for a fee. Mental illness was nonetheless viewed somatogenically, so treatments were similar to those for physical illnesses: purges, bleedings, and emetics.

While inhumane by today's standards, the view of insanity at the time likened the mentally ill to animals (i.e., animalism) who did not have the capacity to reason, could not control themselves, were capable of violence without provocation, did not have the same physical sensitivity to pain or temperature, and could live in miserable conditions without complaint. As such, instilling fear was believed to be the best way to restore a disordered mind to reason.

By the 18th century, protests rose over the conditions under which the mentally ill lived, and the 18th and 19th centuries saw the growth of a more humanitarian view of mental illness. In 1785 Italian physician Vincenzo Chiarughi (1759–1820) removed the chains of patients at his St. Boniface hospital in Florence, Italy, and encouraged good hygiene and recreational and occupational training. More well known, French physician Philippe Pinel (1745–1826) and former patient Jean-Baptise Pussin created a "**traitement moral**" at La Bicêtre and the Salpêtrière in 1793 and 1795 that also included unshackling patients, moving them to well-aired, well-lit rooms, and encouraging purposeful activity and freedom to move about the grounds (Micale, 1985).

In England, humanitarian reforms rose from religious concerns. William Tuke (1732–1822) urged the Yorkshire Society of (Quaker) Friends to establish the York Retreat in 1796, where patients were guests, not prisoners, and where the standard of care depended on dignity and courtesy as well as the therapeutic and moral value of physical work (Bell, 1980).

Dorothea Dix worked to change the negative perceptions of people with mental illness and helped create institutions where they could receive compassionate care. [Image: State Archives of North Carolina, https://goo.gl/wRgGsi, no known copyright restrictions]

While America had asylums for the mentally ill—such as the Pennsylvania Hospital in Philadelphia and the Williamsburg Hospital, established in 1756 and 1773—the somatogenic theory of mental illness of the time—promoted especially by the father of America psychiatry, Benjamin Rush (1745–1813)—had led to treatments

such as blood-letting, gyrators, and tranquilizer chairs. When Tuke's York Retreat became the model for half of the new private asylums established in the United States, however, psychogenic treatments such as compassionate care and physical labor became the hallmarks of the new American asylums, such as the Friends Asylum in Frankford, Pennsylvania, and the Bloomingdale Asylum in New York City, established in 1817 and 1821 (Grob, 1994).

Moral treatment had to be abandoned in America in the second half of the 19th century, however, when these asylums became overcrowded and custodial in nature and could no longer provide the space nor attention necessary. When retired school teacher Dorothea Dix discovered the negligence that resulted from such conditions, she advocated for the establishment of state hospitals. Between 1840 and1880, she helped establish over 30 mental institutions in the United States and Canada (Viney & Zorich, 1982). By the late 19th century, moral treatment had given way to the mental hygiene movement, founded by former patient Clifford Beers with the publication of his 1908 memoir *A Mind That Found Itself*. Riding on Pasteur's breakthrough germ theory of the 1860s and 1870s and especially on the early 20th century discoveries of vaccines for cholera, syphilis, and typhus, the mental hygiene movement reverted to a somatogenic theory of mental illness.

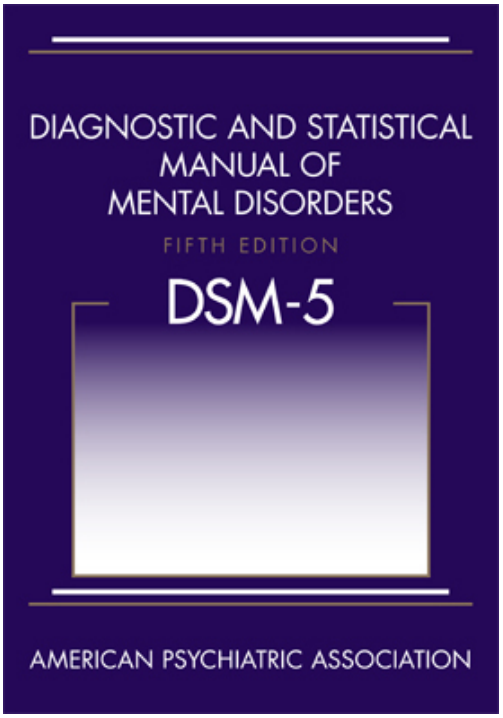
European psychiatry in the late 18th century and throughout the 19th century, however, struggled between somatogenic and psychogenic explanations of mental illness, particularly hysteria, which caused physical symptoms such as blindness or paralysis with no apparent physiological explanation. Franz Anton Mesmer (1734–1815), influenced by contemporary discoveries in electricity, attributed hysterical symptoms to imbalances in a universal magnetic fluid found in individuals, rather than to a wandering uterus (Forrest, 1999). James Braid (1795–1860) shifted this belief in **mesmerism** to one in hypnosis, thereby proposing a psychogenic treatment for the removal of symptoms. At the time, famed Salpetriere Hospital neurologist Jean-Martin Charcot (1825–1893), and Ambroise Auguste Liébault (1823–1904) and Hyppolyte Bernheim (1840–1919) of the Nancy School in France, were engaged in a bitter etiological battle over hysteria, with Charcot maintaining that the hypnotic suggestibility underlying hysteria was a neurological condition while Liébault and Bernheim believed it to be a general trait that varied in the population. Josef Breuer (1842–1925) and Sigmund Freud (1856–1939) would resolve this dispute in favor of a psychogenic explanation for mental illness by treating hysteria through hypnosis, which eventually led to the **cathartic method** that became the precursor for psychoanalysis during the first half of the 20th century.

Psychoanalysis was the dominant psychogenic treatment for mental illness during the first half of the 20th century, providing the launching pad for the more than 400 different schools of psychotherapy found today (Magnavita, 2006). Most of these schools cluster around broader behavioral, cognitive, cognitive-behavioral, psychodynamic, and client-centered

approaches to psychotherapy applied in individual, marital, family, or group formats. Negligible differences have been found among all these approaches, however; their efficacy in treating mental illness is due to factors shared among all of the approaches (not particular elements specific to each approach): the therapist-patient alliance, the therapist's allegiance to the therapy, therapist competence, and placebo effects (Luborsky et al., 2002; Messer & Wampold, 2002).

In contrast, the leading somatogenic treatment for mental illness can be found in the establishment of the first psychotropic medications in the mid-20th century. Restraints, electro-convulsive shock therapy, and lobotomies continued to be employed in American state institutions until the 1970s, but they quickly made way for a burgeoning pharmaceutical industry that has viewed and treated mental illness as a chemical imbalance in the brain.

Both etiological theories coexist today in what the psychological discipline holds as the **biopsychosocial model** of explaining human behavior. While individuals may be born with a genetic predisposition for a certain psychological disorder, certain psychological stressors need to be present for them to develop the disorder. Sociocultural factors such as sociopolitical or economic unrest, poor living conditions, or problematic interpersonal relationships are also viewed as contributing factors. However much we want to believe that we are above the treatments described above, or that the present is always the most enlightened time, let us not forget that our thinking today continues to reflect the same underlying somatogenic and psychogenic theories of mental illness discussed throughout this cursory 9,000-year history.



Up until the 1970's, homosexuality was included in the DSM as a psychological disorder. Thankfully, society and clinical understanding changed to recognize it didn't belong. [Image: Rene Walter, https://goo.gl/CcJAA1, CC BY-NC-SA 2.0, https://goo.gl/Toc0ZF]

Diagnosis of Mental Illness

Progress in the treatment of mental illness necessarily implies improvements in the diagnosis of mental illness. A standardized diagnostic classification system with agreed-upon definitions of psychological disorders creates a shared language among mental-health providers and aids in clinical research. While diagnoses were recognized as far

back as the Greeks, it was not until 1883 that German psychiatrist Emil Kräpelin (1856–1926) published a comprehensive system of psychological disorders that centered around a pattern of symptoms (i.e., **syndrome**) suggestive of an underlying physiological cause. Other clinicians also suggested popular classification systems but the need for a single, shared system paved the way for the American Psychiatric Association's 1952 publication of the first *Diagnostic and Statistical Manual* (DSM).

The DSM has undergone various revisions (in 1968, 1980, 1987, 1994, 2000, 2013), and it is the 1980 DSM-III version that began a multiaxial classification system that took into account the entire individual rather than just the specific problem behavior. Axes I and II contain the clinical diagnoses, including intellectual disability and personality disorders. Axes III and IV list any relevant medical conditions or psychosocial or environmental stressors, respectively. Axis V provides a global assessment of the individual's level of functioning. The most recent version -- the DSM-5-- has combined the first three axes and removed the last two. These revisions reflect an attempt to help clinicians streamline diagnosis and work better with other diagnostic systems such as health diagnoses outlined by the World Health Organization.

While the DSM has provided a necessary shared language for clinicians, aided in clinical research, and allowed clinicians to be reimbursed by insurance companies for their services, it is not without criticism. The DSM is based on clinical and research findings from Western culture, primarily the United States. It is also a medicalized categorical classification system that assumes disordered behavior does not differ in degree but in kind, as opposed to a dimensional classification system that would plot disordered behavior along a continuum. Finally, the number of diagnosable disorders has tripled since it was first published in 1952, so that almost half of Americans will have a diagnosable disorder in their lifetime, contributing to the continued concern of labeling and stigmatizing mentally ill individuals. These concerns appear to be relevant even in the DSM-5 version that came out in May of 2013.

Outside Resources

Video: An introduction to and overview of psychology, from its origins in the nineteenth century to current study of the brain\'s biochemistry.
http://www.learner.org/series/discoveringpsychology/01/e01expand.html

Video: The BBC provides an overview of ancient Greek approaches to health and medicine.
https://www.tes.com/teaching-resource/ancient-greek-approaches-to-health-and-medicine-6176019

Web: Images from the History of Medicine. Search \\\"mental illness\\\"
http://ihm.nlm.nih.gov/luna/servlet/view/all

Web: Science Museum Brought to Life
http://www.sciencemuseum.org.uk/broughttolife/themes/menalhealthandillness.aspx

Web: The Social Psychology Network provides a number of links and resources.
https://www.socialpsychology.org/history.htm

Web: The Wellcome Library. Search \\\"mental illness\\\".
http://wellcomelibrary.org/

Web: UCL Department of Science and Technology Studies
https://www.ucl.ac.uk/sts/

Web: US National Library of Medicine
http://vsearch.nlm.nih.gov/vivisimo/cgi-bin/query-meta?query=mental+illness&v:project=nlm-main-website

Discussion Questions

1. What does it mean to say that someone is mentally ill? What criteria are usually considered to determine whether someone is mentally ill?
2. Describe the difference between supernatural, somatogenic, and psychogenic theories of mental illness and how subscribing to a particular etiological theory determines the type of treatment used.
3. How did the Greeks describe hysteria and what treatment did they prescribe?
4. Describe humorism and how it explained mental illness.

5. Describe how the witch hunts came about and their relationship to mental illness.
6. Describe the development of treatment facilities for the mentally insane, from asylums to community mental health centers.
7. Describe the humane treatment of the mentally ill brought about by Chiarughi, Pinel, and Tuke in the late 18th and early 19th centuries and how it differed from the care provided in the centuries preceding it.
8. Describe William Tuke's treatment of the mentally ill at the York Retreat within the context of the Quaker Society of Friends. What influence did Tuke's treatment have in other parts of the world?
9. What are the 20th-century treatments resulting from the psychogenic and somatogenic theories of mental illness?
10. Describe why a classification system is important and how the leading classification system used in the United States works. Describe some concerns with regard to this system.

Vocabulary

Animism
The belief that everyone and everything had a "soul" and that mental illness was due to animistic causes, for example, evil spirits controlling an individual and his/her behavior.

Asylum
A place of refuge or safety established to confine and care for the mentally ill; forerunners of the mental hospital or psychiatric facility.

Biopsychosocial model
A model in which the interaction of biological, psychological, and sociocultural factors is seen as influencing the development of the individual.

Cathartic method
A therapeutic procedure introduced by Breuer and developed further by Freud in the late 19th century whereby a patient gains insight and emotional relief from recalling and reliving traumatic events.

Cultural relativism
The idea that cultural norms and values of a society can only be understood on their own terms or in their own context.

Etiology
The causal description of all of the factors that contribute to the development of a disorder or illness.

Humorism (or humoralism)
A belief held by ancient Greek and Roman physicians (and until the 19th century) that an excess or deficiency in any of the four bodily fluids, or humors—blood, black bile, yellow bile, and phlegm—directly affected their health and temperament.

Hysteria
Term used by the ancient Greeks and Egyptians to describe a disorder believed to be caused by a woman's uterus wandering throughout the body and interfering with other organs (today referred to as conversion disorder, in which psychological problems are expressed in physical form).

Maladaptive
Term referring to behaviors that cause people who have them physical or emotional harm, prevent them from functioning in daily life, and/or indicate that they have lost touch with reality and/or cannot control their thoughts and behavior (also called dysfunctional).

Mesmerism
Derived from Franz Anton Mesmer in the late 18th century, an early version of hypnotism in which Mesmer claimed that hysterical symptoms could be treated through animal magnetism emanating from Mesmer's body and permeating the universe (and later through magnets); later explained in terms of high suggestibility in individuals.

Psychogenesis
Developing from psychological origins.

Somatogenesis
Developing from physical/bodily origins.

Supernatural
Developing from origins beyond the visible observable universe.

Syndrome
Involving a particular group of signs and symptoms.

"Traitement moral" (moral treatment)
A therapeutic regimen of improved nutrition, living conditions, and rewards for productive behavior that has been attributed to Philippe Pinel during the French Revolution, when he released mentally ill patients from their restraints and treated them with compassion and dignity rather than with contempt and denigration.

Trephination
The drilling of a hole in the skull, presumably as a way of treating psychological disorders.

References

Bell, L. V. (1980). *Treating the mentally ill: From colonial times to the present*. New York: Praeger.

Forrest, D. (1999). *Hypnotism: A history*. New York: Penguin.

Grob, G. N. (1994). *The mad among us: A history of the care of America's mentally ill*. New York: Free Press.

Luborsky, L., Rosenthal, R., Diguer, L., Andrusyna, T. P., Berman, J. S., Levitt, J. T., . . . Krause, E. D. (2002). The dodo bird verdict is alive and well—mostly. *Clinical Psychology: Science and Practice, 9*, 2–12.

Messer, S. B., & Wampold, B. E. (2002). Let's face facts: Common factors are more potent than specific therapy ingredients. *Clinical Psychology: Science and Practice, 9*(1), 21–25.

Micale, M. S. (1985). The Salpêtrière in the age of Charcot: An institutional perspective on medical history in the late nineteenth century. *Journal of Contemporary History, 20*, 703–731.

Restak, R. (2000). *Mysteries of the mind*. Washington, DC: National Geographic Society.

Schoeneman, T. J. (1977). The role of mental illness in the European witch hunts of the sixteenth and seventeenth centuries: An assessment. *Journal of the History of the Behavioral Sciences, 13*(4), 337–351.

Tseng, W. (1973). The development of psychiatric concepts in traditional Chinese medicine. *Archives of General Psychiatry, 29*, 569–575.

Viney, W., & Zorich, S. (1982). Contributions to the history of psychology: XXIX. Dorothea Dix and the history of psychology. *Psychological Reports, 50*, 211–218.

Zilboorg, G., & Henry, G. W. (1941). *A history of medical psychology*. New York: W. W. Norton.

36
Therapeutic Orientations

Hannah Boettcher, Stefan G. Hofmann & Q. Jade Wu

In the past century, a number of psychotherapeutic orientations have gained popularity for treating mental illnesses. This module outlines some of the best-known therapeutic approaches and explains the history, techniques, advantages, and disadvantages associated with each. The most effective modern approach is cognitive behavioral therapy (CBT). We also discuss psychoanalytic therapy, person-centered therapy, and mindfulness-based approaches. Drug therapy and emerging new treatment strategies will also be briefly explored.

Learning Objectives

- Become familiar with the most widely practiced approaches to psychotherapy.
- For each therapeutic approach, consider: history, goals, key techniques, and empirical support.
- Consider the impact of emerging treatment strategies in mental health.

Introduction

The history of mental illness can be traced as far back as 1500 BCE, when the ancient Egyptians noted cases of "distorted concentration" and "emotional distress in the heart or mind" (Nasser, 1987). Today, nearly half of all Americans will experience mental illness at some point in their lives, and mental health problems affect more than one-quarter of the population in any given year (Kessler et al., 2005). Fortunately, a range of psychotherapies exist to treat mental illnesses. This module provides an overview of some of the best-known schools of thought in

psychotherapy. Currently, the most effective approach is called Cognitive Behavioral Therapy (CBT); however, other approaches, such as psychoanalytic therapy, person-centered therapy, and mindfulness-based therapies are also used—though the effectiveness of these treatments aren't as clear as they are for CBT. Throughout this module, note the advantages and disadvantages of each approach, paying special attention to their support by empirical research.

CBT is an approach to treating mental illness that involves work with a therapist as well as homework assignments between sessions. It has proven to be very effective for virtually all psychiatric illnesses. [Image: DFAT, https://goo.gl/bWmzaa, CC BY 2.0, https://goo.gl/BRvSA7]

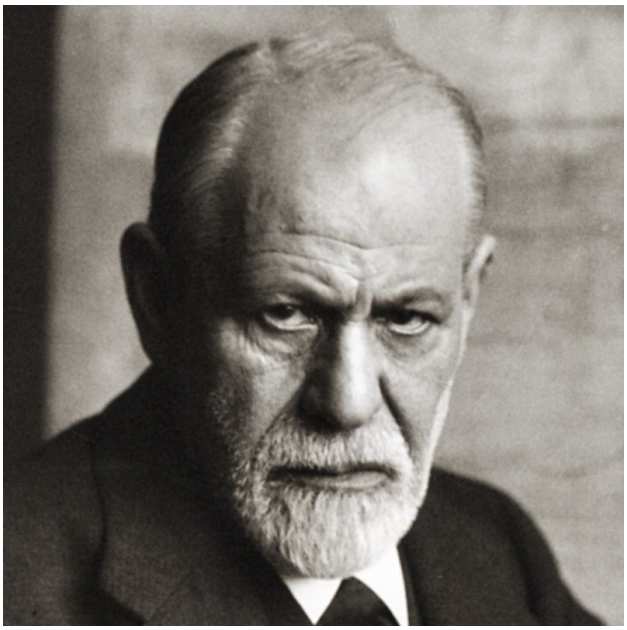
Psychoanalysis and Psychodynamic Therapy

The earliest organized therapy for mental disorders was psychoanalysis. Made famous in the early 20th century by one of the best-known clinicians of all time, Sigmund Freud, this approach stresses that mental health problems are rooted in unconscious conflicts and desires. In order to resolve the mental illness, then, these unconscious struggles must be identified and addressed. Psychoanalysis often does this through exploring one's early childhood experiences that may have continuing repercussions on one's mental health in the present and later in life. Psychoanalysis is an intensive, long-term approach in which patients and therapists may meet multiple times per week, often for many years.

History of Psychoanalytic Therapy

Freud initially suggested that mental health problems arise from efforts to push inappropriate sexual urges out of conscious awareness (Freud, 1895/1955). Later, Freud suggested more generally that psychiatric problems are the result of tension between different parts of the mind: the id, the superego, and the ego. In Freud's *structural model,* the id represents pleasure-driven unconscious urges (e.g., our animalistic desires for sex and aggression), while the superego is the semi-conscious part of the mind where morals and societal judgment are internalized (e.g., the part of you that automatically knows how society expects you to behave). The ego—also partly conscious—mediates between the id and superego. Freud believed that bringing unconscious struggles like these (where the id demands one thing and the superego another) into conscious awareness would relieve the stress of the conflict (Freud, 1920/1955) —which became the goal of psychoanalytic therapy.

Although psychoanalysis is still practiced today, it has largely been replaced by the more broadly defined psychodynamic therapy. This latter approach has the same basic tenets as psychoanalysis, but is briefer, makes more of an effort to put clients in their social and interpersonal context, and focuses more on relieving psychological distress than on changing the person.



Building on the work of Josef Breuer and others, Sigmund Freud developed psychotherapeutic theories and techniques that became widely known as psychoanalysis or psychoanalytic therapy. [Image: CC0 Public Domain, https://goo.gl/m25gce]

Techniques in Psychoanalysis

Psychoanalysts and psychodynamic therapists employ several techniques to explore patients' unconscious mind. One common technique is called free association. Here, the patient shares any and all thoughts that come to mind, without attempting to organize or censor them in any way. For example, if you took a pen and paper and just wrote down whatever came into your head, letting one thought lead to the next without allowing conscious criticism to shape what you were writing, you would be doing free association. The analyst then uses his or her expertise to discern patterns or underlying meaning in the patient's

thoughts.

Sometimes, free association exercises are applied specifically to childhood recollections. That is, psychoanalysts believe a person's childhood relationships with caregivers often determine the way that person relates to others, and predicts later psychiatric difficulties. Thus, exploring these childhood memories, through free association or otherwise, can provide therapists with insights into a patient's psychological makeup.

Because we don't always have the ability to consciously recall these deep memories, psychoanalysts also discuss their patients' dreams. In Freudian theory, dreams contain not only *manifest* (or literal) content, but also *latent* (or symbolic) content (Freud, 1900; 1955). For example, someone may have a dream that his/her teeth are falling out—the manifest or actual content of the dream. However, dreaming that one's teeth are falling out could be a reflection of the person's unconscious concern about losing his or her physical attractiveness—the latent or metaphorical content of the dream. It is the therapist's job to help discover the latent content underlying one's manifest content through dream analysis.

In psychoanalytic and psychodynamic therapy, the therapist plays a receptive role—interpreting the patient's thoughts and behavior based on clinical experience and psychoanalytic theory. For example, if during therapy a patient begins to express unjustified anger toward the therapist, the therapist may recognize this as an act of *transference.* That is, the patient may be displacing feelings for people in his or her life (e.g., anger toward a parent) onto the therapist. At the same time, though, the therapist has to be aware of his or her own thoughts and emotions, for, in a related process, called *countertransference*, the therapist may displace his/her own emotions onto the patient.

The key to psychoanalytic theory is to have patients uncover the buried, conflicting content of their mind, and therapists use various tactics—such as seating patients to face away from them—to promote a freer self-disclosure. And, as a therapist spends more time with a patient, the therapist can come to view his or her relationship with the patient as another reflection of the patient's mind.

Advantages and Disadvantages of Psychoanalytic Therapy

Psychoanalysis was once the only type of psychotherapy available, but presently the number of therapists practicing this approach is decreasing around the world. Psychoanalysis is not appropriate for some types of patients, including those with severe psychopathology or intellectual disability. Further, psychoanalysis is often expensive because treatment usually

lasts many years. Still, some patients and therapists find the prolonged and detailed analysis very rewarding.

Perhaps the greatest disadvantage of psychoanalysis and related approaches is the lack of empirical support for their effectiveness. The limited research that has been conducted on these treatments suggests that they do not reliably lead to better mental health outcomes (e.g., Driessen et al., 2010). And, although there are some reviews that seem to indicate that long-term psychodynamic therapies might be beneficial (e.g., Leichsenring & Rabung, 2008), other researchers have questioned the validity of these reviews. Nevertheless, psychoanalytic theory was history's first attempt at formal treatment of mental illness, setting the stage for the more modern approaches used today.

Humanistic and Person-Centered Therapy

One of the next developments in therapy for mental illness, which arrived in the mid-20th century, is called humanistic or person-centered therapy (PCT). Here, the belief is that mental health problems result from an inconsistency between patients' behavior and their true personal identity. Thus, the goal of PCT is to create conditions under which patients can discover their self-worth, feel comfortable exploring their own identity, and alter their behavior to better reflect this identity.

History of Person-Centered Therapy

PCT was developed by a psychologist named Carl Rogers, during a time of significant growth in the movements of humanistic theory and human potential. These perspectives were based on the idea that humans have an inherent drive to realize and express their own capabilities and creativity. Rogers, in particular, believed that all people have the potential to change and improve, and that the role of therapists is to foster self-understanding in an environment where adaptive change is most likely to occur (Rogers, 1951). Rogers suggested that the therapist and patient must engage in a

The quality of the relationship between therapist and patient is of great importance in person-centered therapy. [Image: CC0 Public Domain, https://goo.gl/m25gce]

genuine, egalitarian relationship in which the therapist is nonjudgmental and empathetic. In PCT, the patient should experience both a vulnerability to anxiety, which motivates the desire to change, and an appreciation for the therapist's support.

Techniques in Person-Centered Therapy

Humanistic and person-centered therapy, like psychoanalysis, involves a largely unstructured conversation between the therapist and the patient. Unlike psychoanalysis, though, a therapist using PCT takes a passive role, guiding the patient toward his or her own self-discovery. Rogers's original name for PCT was *non-directive therapy*, and this notion is reflected in the flexibility found in PCT. Therapists do not try to change patients' thoughts or behaviors directly. Rather, their role is to provide the therapeutic relationship as a platform for personal growth. In these kinds of sessions, the therapist tends only to ask questions and doesn't provide any judgment or interpretation of what the patient says. Instead, the therapist is present to provide a safe and encouraging environment for the person to explore these issues for him- or herself.

An important aspect of the PCT relationship is the therapist's **unconditional positive regard** for the patient's feelings and behaviors. That is, the therapist is never to condemn or criticize the patient for what s/he has done or thought; the therapist is only to express warmth and empathy. This creates an environment free of approval or disapproval, where patients come to appreciate their value and to behave in ways that are congruent with their own identity.

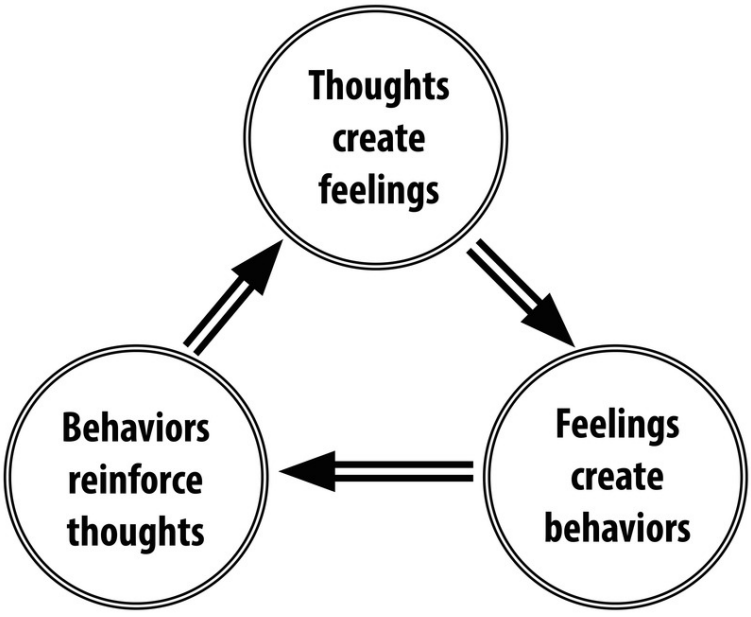
Advantages and Disadvantages of Person-Centered Therapy

One key advantage of person-centered therapy is that it is highly acceptable to patients. In other words, people tend to find the supportive, flexible environment of this approach very rewarding. Furthermore, some of the themes of PCT translate well to other therapeutic approaches. For example, most therapists of any orientation find that clients respond well to being treated with nonjudgmental empathy. The main disadvantage to PCT, however, is that findings about its effectiveness are mixed. One possibility for this could be that the treatment is primarily based on *unspecific treatment factors*. That is, rather than using therapeutic techniques that are specific to the patient and the mental problem (i.e., *specific treatment factors*), the therapy focuses on techniques that can be applied to anyone (e.g., establishing a good relationship with the patient) (Cuijpers et al., 2012; Friedli, King, Lloyd, & Horder, 1997). Similar to how "one-size-fits-all" doesn't really fit every person, PCT uses the same practices for everyone, which may work for some people but not others. Further research is necessary to evaluate its utility as a therapeutic approach.

Cognitive Behavioral Therapy

Although both psychoanalysis and PCT are still used today, another therapy, **cognitive-behavioral therapy (CBT)**, has gained more widespread support and practice. CBT refers to a family of therapeutic approaches whose goal is to alleviate psychological symptoms by changing their underlying cognitions and behaviors. The premise of CBT is that thoughts, behaviors, and emotions interact and contribute to various mental disorders. For example, let's consider how a CBT therapist would view a patient who compulsively washes her hands for hours every day. First, the therapist would identify the patient's maladaptive thought: "If I don't wash my hands like this, I will get a disease and die." The therapist then identifies how this maladaptive *thought* leads to a maladaptive *emotion*: the feeling of anxiety when her hands aren't being washed. And finally, this maladaptive emotion leads to the maladaptive behavior: the patient washing her hands for hours every day.

CBT is a present-focused therapy (i.e., focused on the "now" rather than causes from the past, such as childhood relationships) that uses behavioral goals to improve one's mental illness. Often, these behavioral goals involve between-session homework assignments. For example, the therapist may give the hand-washing patient a worksheet to take home; on this worksheet, the woman is to write down every time she feels the urge to wash her hands, how she deals with the urge, and what behavior she replaces that urge with. When the patient has her next therapy session, she and the therapist review her "homework" together. CBT is a relatively



Pattern of thoughts, feelings, and behaviors addressed through cognitive-behavioral therapy.

brief intervention of 12 to 16 weekly sessions, closely tailored to the nature of the psychopathology and treatment of the specific mental disorder. And, as the empirical data shows, CBT has proven to be highly efficacious for virtually all psychiatric illnesses (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012).

History of Cognitive Behavioral Therapy

CBT developed from clinical work conducted in the mid-20th century by Dr. Aaron T. Beck, a psychiatrist, and Albert Ellis, a psychologist. Beck used the term **automatic thoughts** to refer to the thoughts depressed patients report experiencing spontaneously. He observed that these thoughts arise from three belief systems, or **schemas**: beliefs about the self, beliefs about the world, and beliefs about the future. In treatment, therapy initially focuses on identifying automatic thoughts (e.g., "If I don't wash my hands constantly, I'll get a disease"), testing their validity, and replacing maladaptive thoughts with more adaptive thoughts (e.g., "Washing my hands three times a day is sufficient to prevent a disease"). In later stages of treatment, the patient's maladaptive schemas are examined and modified. Ellis (1957) took a comparable approach, in what he called rational-emotive-behavioral therapy (REBT), which also encourages patients to evaluate their own thoughts about situations.

Techniques in CBT

Beck and Ellis strove to help patients identify maladaptive appraisals, or the untrue judgments and evaluations of certain thoughts. For example, if it's your first time meeting new people, you may have the automatic thought, "These people won't like me because I have nothing interesting to share." That thought itself is not what's troublesome; the appraisal (or evaluation) that it might have merit is what's troublesome. The goal of CBT is to help people make adaptive, instead of maladaptive, appraisals (e.g., "I do know interesting things!"). This technique of **reappraisal, or cognitive restructuring**, is a fundamental aspect of CBT. With cognitive restructuring, it is the therapist's job to help point out when a person has an inaccurate or maladaptive thought, so that the patient can either eliminate it or modify it to be more adaptive.

In addition to *thoughts*, though, another important treatment target of CBT is maladaptive *behavior*. Every time a person engages in maladaptive behavior (e.g., never speaking to someone in new situations), he or she reinforces the validity of the maladaptive thought, thus maintaining or perpetuating the psychological illness. In treatment, the therapist and patient work together to develop healthy behavioral habits (often tracked with worksheet-like homework), so that the patient can break this cycle of maladaptive thoughts and behaviors.

For many mental health problems, especially anxiety disorders, CBT incorporates what is known as **exposure therapy**. During exposure therapy, a patient confronts a problematic situation and fully engages in the experience instead of avoiding it. For example, imagine a man who is terrified of spiders. Whenever he encounters one, he immediately screams and panics. In exposure therapy, the man would be forced to confront and interact with spiders, rather than simply avoiding them as he usually does. The goal is to reduce the fear associated with the situation through *extinction learning,* a neurobiological and cognitive process by which the patient "unlearns" the irrational fear. For example, exposure therapy for someone terrified of spiders might begin with him looking at a cartoon of a spider, followed by him looking at pictures of real spiders, and later, him handling a plastic spider. After weeks of this incremental exposure, the patient may even be able to hold a live spider. After repeated exposure (starting small and building one's way up), the patient experiences less physiological fear and maladaptive thoughts about spiders, breaking his tendency for anxiety and subsequent avoidance.

Advantages and Disadvantages of CBT

CBT interventions tend to be relatively brief, making them cost-effective for the average consumer. In addition, CBT is an intuitive treatment that makes logical sense to patients. It can also be adapted to suit the needs of many different populations. One disadvantage, however, is that CBT does involve significant effort on the patient's part, because the patient is an active participant in treatment. Therapists often assign "homework" (e.g., worksheets for recording one's thoughts and behaviors) between sessions to maintain the cognitive and behavioral habits the patient is working on. The greatest strength of CBT is the abundance of empirical support for its effectiveness. Studies have consistently found CBT to be equally or more effective than other forms of treatment, including medication and other therapies (Butler, Chapman, Forman, & Beck, 2006; Hofmann et al., 2012). For this reason, CBT is considered a first-line treatment for many mental disorders.

Focus Topic: Pioneers of CBT

The central notion of CBT is the idea that a person's behavioral and emotional responses are causally influenced by one's thinking. The stoic Greek philosopher Epictetus is quoted as saying, "men are not moved by things, but by the view they take of them." Meaning, it is not the event per se, but rather one's assumptions (including interpretations and perceptions) of the event that are responsible for one's emotional response to it. Beck calls these assumptions

about events and situations automatic thoughts (Beck, 1979), whereas Ellis (1962) refers to these assumptions as self-statements. The cognitive model assumes that these cognitive processes cause the emotional and behavioral responses to events or stimuli. This causal chain is illustrated in Ellis's ABC model, in which A stands for the antecedent event, B stands for belief, and C stands for consequence. During CBT, the person is encouraged to carefully observe the sequence of events and the response to them, and then explore the validity of the underlying beliefs through behavioral experiments and reasoning, much like a detective or scientist.

Acceptance and Mindfulness-Based Approaches

Unlike the preceding therapies, which were developed in the 20th century, this next one was born out of age-old Buddhist and yoga practices. **Mindfulness**, or a process that tries to cultivate a nonjudgmental, yet attentive, mental state, is a therapy that focuses on one's awareness of bodily sensations, thoughts, and the outside environment. Whereas other therapies work to modify or eliminate these sensations and thoughts, mindfulness focuses on nonjudgmentally accepting them (Kabat-Zinn, 2003; Baer, 2003). For example, whereas CBT may actively confront and work to change a maladaptive thought, mindfulness therapy works to acknowledge and accept the thought, understanding that the thought is spontaneous and not what the person truly believes. There are two important components of mindfulness: (1) self-regulation of attention, and (2) orientation toward the present moment (Bishop et al., 2004). Mindfulness is thought to improve mental health because it draws attention away from past and future stressors, encourages acceptance of troubling thoughts and feelings, and promotes physical relaxation.

Techniques in Mindfulness-Based Therapy

Psychologists have adapted the practice of mindfulness as a form of psychotherapy, generally called **mindfulness-based therapy** (MBT). Several types of MBT have become popular in recent years, including *mindfulness-based stress reduction* (MBSR) (e.g., Kabat-Zinn, 1982) and *mindfulness-based cognitive therapy* (MBCT) (e.g., Segal, Williams, & Teasdale, 2002).

MBSR uses meditation, yoga, and attention to physical experiences to reduce stress. The hope is that reducing a person's overall stress will allow that person to more objectively evaluate his or her thoughts. In MBCT, rather than reducing one's general stress to address a specific problem, attention is focused on one's thoughts and their associated emotions. For example,

One of the most important advantages of mindfulness based therapy is its level of accessibility to patients. [Image: Wayne MacPhail, https://goo.gl/aSZanf, CC BY-NC SA 2.0, https://goo.gl/Toc0ZF]

MBCT helps prevent relapses in depression by encouraging patients to evaluate their own thoughts objectively and without value judgment (Baer, 2003). Although cognitive behavioral therapy (CBT) may seem similar to this, it focuses on "pushing out" the maladaptive thought, whereas mindfulness-based cognitive therapy focuses on "not getting caught up" in it. The treatments used in MBCT have been used to address a wide range of illnesses, including depression, anxiety, chronic pain, coronary artery disease, and fibromyalgia (Hofmann, Sawyer, Witt & Oh, 2010).

Mindfulness and acceptance—in addition to being therapies in their own right—have also been used as "tools" in other cognitive-behavioral therapies, particularly in **dialectical behavior therapy (DBT)** (e.g., Linehan, Amstrong, Suarez, Allmon, & Heard, 1991). DBT, often used in the treatment of borderline personality disorder, focuses on skills training. That is, it often employs mindfulness and cognitive behavioral therapy practices, but it also works to teach its patients "skills" they can use to correct maladaptive tendencies. For example, one skill DBT teaches patients is called *distress tolerance*—or, ways to cope with maladaptive thoughts and emotions in the moment. For example, people who feel an urge to cut themselves may be taught to snap their arm with a rubber band instead. The primary difference between DBT and CBT is that DBT employs techniques that address the symptoms of the problem (e.g., cutting oneself) rather than the problem itself (e.g., understanding the psychological motivation to cut oneself). CBT does not teach such skills training because of the concern that the skills—even though they may help in the short-term—may be harmful in the long-term, by maintaining maladaptive thoughts and behaviors.

DBT is founded on the perspective of a **dialectical worldview**. That is, rather than thinking of the world as "black and white," or "only good and only bad," it focuses on accepting that some things can have characteristics of both "good" and "bad." So, in a case involving maladaptive thoughts, instead of teaching that a thought is entirely bad, DBT tries to help patients be less judgmental of their thoughts (as with mindfulness-based therapy) and encourages change through therapeutic progress, using cognitive-behavioral techniques as well as mindfulness

exercises.

Another form of treatment that also uses mindfulness techniques is acceptance and commitment therapy (ACT) (Hayes, Strosahl, & Wilson, 1999). In this treatment, patients are taught to observe their thoughts from a detached perspective (Hayes et al., 1999). ACT encourages patients *not* to attempt to change or avoid thoughts and emotions they observe in themselves, but to recognize which are beneficial and which are harmful. However, the differences among ACT, CBT, and other mindfulness-based treatments are a topic of controversy in the current literature.

Advantages and Disadvantages of Mindfulness-Based Therapy

Two key advantages of mindfulness-based therapies are their acceptability and accessibility to patients. Because yoga and meditation are already widely known in popular culture, consumers of mental healthcare are often interested in trying related psychological therapies. Currently, psychologists have not come to a consensus on the efficacy of MBT, though growing evidence supports its effectiveness for treating mood and anxiety disorders. For example, one review of MBT studies for anxiety and depression found that mindfulness-based interventions generally led to moderate symptom improvement (Hofmann et al., 2010).

Emerging Treatment Strategies

Recent improvements in video chat technology along with the proliferation of mobile devices like smartphones and tablets has made online delivery of therapy more commonplace. [Image: Noba, CC BY 2.0, https://goo.gl/BRvSA7]

With growth in research and technology, psychologists have been able to develop new treatment strategies in recent years. Often, these approaches focus on enhancing existing treatments, such as cognitive-behavioral therapies, through the use of technological advances. For example, *internet-* and *mobile-delivered therapies* make psychological treatments more available, through smartphones and online access. Clinician-supervised online CBT modules allow patients to access treatment from home on their own schedule—an opportunity particularly important for patients with less geographic or socioeconomic access to traditional

treatments. Furthermore, smartphones help extend therapy to patients' daily lives, allowing for symptom tracking, homework reminders, and more frequent therapist contact.

Another benefit of technology is **cognitive bias modification**. Here, patients are given exercises, often through the use of video games, aimed at changing their problematic thought processes. For example, researchers might use a mobile app to train alcohol abusers to avoid stimuli related to alcohol. One version of this game flashes four pictures on the screen—three alcohol cues (e.g., a can of beer, the front of a bar) and one health-related image (e.g., someone drinking water). The goal is for the patient to tap the healthy picture as fast as s/he can. Games like these aim to target patients' automatic, subconscious thoughts that may be difficult to direct through conscious effort. That is, by repeatedly tapping the healthy image, the patient learns to "ignore" the alcohol cues, so when those cues are encountered in the environment, they will be less likely to trigger the urge to drink. Approaches like these are promising because of their accessibility, however they require further research to establish their effectiveness.

Yet another emerging treatment employs *CBT-enhancing pharmaceutical agents*. These are drugs used to improve the effects of therapeutic interventions. Based on research from animal experiments, researchers have found that certain drugs influence the biological processes known to be involved in learning. Thus, if people take these drugs while going through psychotherapy, they are better able to "learn" the techniques for improvement. For example, the antibiotic d-cycloserine improves treatment for anxiety disorders by facilitating the learning processes that occur during exposure therapy. Ongoing research in this exciting area may prove to be quite fruitful.

Pharmacological Treatments

Up until this point, all the therapies we have discussed have been talk-based or meditative practices. However, psychiatric medications are also frequently used to treat mental disorders, including schizophrenia, bipolar disorder, depression, and anxiety disorders. Psychiatric drugs are commonly used, in part, because they can be prescribed by general medical practitioners, whereas only trained psychologists are qualified to deliver effective psychotherapy. While drugs and CBT therapies tend to be almost equally effective, choosing the best intervention depends on the disorder and individual being treated, as well as other factors—such as treatment availability and **comorbidity** (i.e., having multiple mental or physical disorders at once). Although many new drugs have been introduced in recent decades, there is still much we do not understand about their mechanism in the brain. Further research is needed to refine our understanding of both pharmacological and behavioral treatments before we can make firm claims about their effectiveness.

Integrative and Eclectic Psychotherapy

In discussing therapeutic orientations, it is important to note that some clinicians incorporate techniques from multiple approaches, a practice known as **integrative or eclectic psychotherapy**. For example, a therapist may employ distress tolerance skills from DBT (to resolve short-term problems), cognitive reappraisal from CBT (to address long-standing issues), and mindfulness-based meditation from MBCT (to reduce overall stress). And, in fact, between 13% and 42% of therapists have identified their own approaches as integrative or eclectic (Norcross & Goldfried, 2005).

Conclusion

Throughout human history we have had to deal with mental illness in one form or another. Over time, several schools of thought have emerged for treating these problems. Although various therapies have been shown to work for specific individuals, cognitive behavioral therapy is currently the treatment most widely supported by empirical research. Still, practices like psychodynamic therapies, person-centered therapy, mindfulness-based treatments, and acceptance and commitment therapy have also shown success. And, with recent advances in research and technology, clinicians are able to enhance these and other therapies to treat more patients more effectively than ever before. However, what is important in the end is that people actually seek out mental health specialists to help them with their problems. One of the biggest deterrents to doing so is that people don't understand what psychotherapy really entails. Through understanding how current practices work, not only can we better educate people about how to get the help they need, but we can continue to advance our treatments to be more effective in the future.

Outside Resources

Article: A personal account of the benefits of mindfulness-based therapy
https://www.theguardian.com/lifeandstyle/2014/jan/11/julie-myerson-mindfulness-based-cognitive-therapy

Article: The Effect of Mindfulness-Based Therapy on Anxiety and Depression: A Meta-Analytic Review
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2848393/

Video: An example of a person-centered therapy session.
https://www.youtube.com/watch?v=4wTVbzvBH0k

Video: Carl Rogers, the founder of the humanistic, person-centered approach to psychology, discusses the position of the therapist in PCT.
https://www.youtube.com/watch?v=o0neRQzudzw

Video: CBT (cognitive behavioral therapy) is one of the most common treatments for a range of mental health problems, from anxiety, depression, bipolar, OCD or schizophrenia. This animation explains the basics and how you can decide whether it's best for you or not.
https://www.youtube.com/watch?v=9c_Bv_FBE-c

Web: An overview of the purpose and practice of cognitive behavioral therapy (CBT)
http://psychcentral.com/lib/in-depth-cognitive-behavioral-therapy/

Web: The history and development of psychoanalysis
http://www.freudfile.org/psychoanalysis/history.html

Discussion Questions

1. Psychoanalytic theory is no longer the dominant therapeutic approach, because it lacks empirical support. Yet many consumers continue to seek psychoanalytic or psychodynamic treatments. Do you think psychoanalysis still has a place in mental health treatment? If so, why?
2. What might be some advantages and disadvantages of technological advances in psychological treatment? What will psychotherapy look like 100 years from now?
3. Some people have argued that all therapies are about equally effective, and that they all

affect change through common factors such as the involvement of a supportive therapist. Does this claim sound reasonable to you? Why or why not?

4. When choosing a psychological treatment for a specific patient, what factors besides the treatment's demonstrated efficacy should be taken into account?

Vocabulary

Acceptance and commitment therapy
A therapeutic approach designed to foster nonjudgmental observation of one's own mental processes.

Automatic thoughts
Thoughts that occur spontaneously; often used to describe problematic thoughts that maintain mental disorders.

Cognitive bias modification
Using exercises (e.g., computer games) to change problematic thinking habits.

Cognitive-behavioral therapy (CBT)
A family of approaches with the goal of changing the thoughts and behaviors that influence psychopathology.

Comorbidity
Describes a state of having more than one psychological or physical disorder at a given time.

Dialectical behavior therapy (DBT)
A treatment often used for borderline personality disorder that incorporates both cognitive-behavioral and mindfulness elements.

Dialectical worldview
A perspective in DBT that emphasizes the joint importance of change and acceptance.

Exposure therapy
A form of intervention in which the patient engages with a problematic (usually feared) situation without avoidance or escape.

Free association
In psychodynamic therapy, a process in which the patient reports all thoughts that come to mind without censorship, and these thoughts are interpreted by the therapist.

Integrative or eclectic psychotherapy
Also called integrative psychotherapy, this term refers to approaches combining multiple orientations (e.g., CBT with psychoanalytic elements).

Integrative or eclectic psychotherapy
Also called integrative psychotherapy, this term refers to approaches combining multiple orientations (e.g., CBT with psychoanalytic elements).

Mindfulness
A process that reflects a nonjudgmental, yet attentive, mental state.

Mindfulness-based therapy
A form of psychotherapy grounded in mindfulness theory and practice, often involving meditation, yoga, body scan, and other features of mindfulness exercises.

Person-centered therapy
A therapeutic approach focused on creating a supportive environment for self-discovery.

Psychoanalytic therapy
Sigmund Freud's therapeutic approach focusing on resolving unconscious conflicts.

Psychodynamic therapy
Treatment applying psychoanalytic principles in a briefer, more individualized format.

Reappraisal, or Cognitive restructuring
The process of identifying, evaluating, and changing maladaptive thoughts in psychotherapy.

Schema
A mental representation or set of beliefs about something.

Unconditional positive regard
In person-centered therapy, an attitude of warmth, empathy and acceptance adopted by the therapist in order to foster feelings of inherent worth in the patient.

References

Baer, R. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143.

Beck, A. T. (1979). *Cognitive therapy and the emotional disorders*. New York, NY: New American Library/Meridian.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*, 230–241.

Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*, 17–31.

Cuijpers, P., Driessen, E., Hollon, S.D., van Oppen, P., Barth, J., & Andersson, G. (2012). The efficacy of non-directive supportive therapy for adult depression: A meta-analysis. *Clinical Psychology Review, 32*, 280–291.

Driessen, E., Cuijpers, P., de Maat, S. C. M., Abbass, A. A., de Jonghe, F., & Dekker, J. J. M. (2010). The efficacy of short-term psychodynamic psychotherapy for depression: A meta-analysis. *Clinical Psychology Review, 30*, 25–36.

Ellis, A. (1962). *Reason and emotion in psychotherapy*. New York, NY: Lyle Stuart.

Ellis, A. (1957). Rational psychotherapy and individual psychology. *Journal of Individual Psychology, 13*, 38–44.

Freud, S. (1955). *The interpretation of dreams*. London, UK: Hogarth Press (Original work published 1900).

Freud, S. (1955). *Studies on hysteria*. London, UK: Hogarth Press (Original work published 1895).

Freud. S. (1955). *Beyond the pleasure principle*. H London, UK: Hogarth Press (Original work published 1920).

Friedli, K., King, M. B., Lloyd, M., & Horder, J. (1997). Randomized controlled assessment of non-directive psychotherapy versus routine general-practitioner care. *Lancet*, 350,\\n1662–1665.

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy*. New\\nYork, NY: Guilford Press.

Hofmann, S. G., Asnaani, A., Vonk, J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research, 36*, 427–440.

Hofmann, S. G., Sawyer, A. T., Witt, A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical*

Psychology, 78, 169–183

Kabat-Zinn J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*, 144–156.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients\\nbased on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*, 33–47.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age of onset distribution of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 593–602.

Leichsenring, F., & Rabung, S. (2008). Effectiveness of long-term psychodynamic psychotherapy: A meta-analysis. *Journal of the American Medical Association, 300*,1551–1565.

Linehan, M. M., Amstrong, H.-E., Suarez, A., Allmon, D., & Heard, H. L. (1991). Cognitive-behavioral treatment of chronically suicidal borderline patients. *Archives of General Psychiatry, 48*, 1060–1064.

Nasser, M. (1987). Psychiatry in ancient Egypt. *Bulletin of the Royal College of Psychiatrists*, 11, 420-422.

Norcross, J. C. & Goldfried, M. R. (2005). *Handbook of Psychotherapy Integration*. New York, NY: Oxford University Press.

Rogers, C. (1951). *Client-Centered Therapy*. Cambridge, MA: Riverside Press.

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-Based Cognitive Therapy\\nfor Depression: A New Approach to Preventing Relapse*. New York, NY: Guilford Press.

Well-Being

37
The Healthy Life

Emily Hooker & Sarah Pressman

Our emotions, thoughts, and behaviors play an important role in our health. Not only do they influence our day-to-day health practices, but they can also influence how our body functions. This module provides an overview of health psychology, which is a field devoted to understanding the connections between psychology and health. Discussed here are examples of topics a health psychologist might study, including stress, psychosocial factors related to health and disease, how to use psychology to improve health, and the role of psychology in medicine.

Learning Objectives

- Describe basic terminology used in the field of health psychology.
- Explain theoretical models of health, as well as the role of psychological stress in the development of disease.
- Describe psychological factors that contribute to resilience and improved health.
- Defend the relevance and importance of psychology to the field of medicine.

What Is Health Psychology?

Today, we face more chronic disease than ever before because we are living longer lives while also frequently behaving in unhealthy ways. One example of a chronic disease is coronary heart disease (CHD): It is the number one cause of death worldwide (World Health Organization, 2013). CHD develops slowly over time and typically appears midlife, but related

heart problems can persist for years after the original diagnosis or cardiovascular event. In managing illnesses that persist over time (other examples might include cancer, diabetes, and long-term disability) many psychological factors will determine the progression of the ailment. For example, do patients seek help when appropriate? Do they follow doctor recommendations? Do they develop negative psychological symptoms due to lasting illness (e.g., depression)? Also important is that psychological factors can play a significant role in *who* develops these diseases, the prognosis, and the nature of the symptoms related to the illness. Health psychology is a relatively new, interdisciplinary field of study that focuses on these very issues, or more specifically, the role of psychology in maintaining health, as well as preventing and treating illness.

Health psychologists are helping people to adapt behaviors to avoid disease, reduce stress, and improve overall health. [Image: Adelphi Lab Center, https://goo.gl/N9wXon, CC BY 2.0, https://goo.gl/BRvSA7]

Consideration of how psychological and social factors influence health is especially important today because many of the leading causes of illness in developed countries are often attributed to psychological and behavioral factors. In the case of CHD, discussed above, psychosocial factors, such as excessive stress, smoking, unhealthy eating habits, and some personality traits can also lead to increased risk of disease and worse health outcomes. That being said, many of these factors can be adjusted using psychological techniques. For example, clinical health psychologists can improve health practices like poor dietary choices and smoking, they can teach important stress reduction techniques, and they can help treat psychological disorders tied to poor health. Health psychology considers how the choices we make, the behaviors we engage in, and even the emotions that we feel, can play an important role in our overall health (Cohen & Herbert, 1996; Taylor, 2012).

Health psychology relies on the **Biopsychosocial Model of Health**. This model posits that biology, psychology, and social factors are just as important in the development of disease as biological causes (e.g., germs, viruses), which is consistent with the World Health Organization (1946) definition of **health**. This model replaces the older **Biomedical Model of Health**, which primarily considers the physical, or pathogenic, factors contributing to illness. Thanks to

advances in medical technology, there is a growing understanding of the physiology underlying the **mind–body connection**, and in particular, the role that different feelings can have on our body's function. Health psychology researchers working in the fields of **psychosomatic medicine** and **psychoneuroimmunology**, for example, are interested in understanding how psychological factors can "get under the skin" and influence our physiology in order to better understand how factors like stress can make us sick.

Stress And Health

You probably know exactly what it's like to feel stress, but what you may not know is that it can objectively influence your health. Answers to questions like, "How stressed do you feel?" or "How overwhelmed do you feel?" can predict your likelihood of developing both minor illnesses as well as serious problems like future heart attack (Cohen, Janicki-Deverts, & Miller, 2007). (Want to measure your own stress level? Check out the links at the end of the module.) To understand how health psychologists study these types of associations, we will describe one famous example of a stress and health study. Imagine that you are a research subject for a moment. After you check into a hotel room as part of the study, the researchers ask you to report your general levels of stress. Not too surprising; however, what happens next is that you receive droplets of *cold virus* into your nose! The researchers intentionally try to make you sick by exposing you to an infectious illness. After they expose you to the virus, the researchers will then evaluate you for several days by asking you questions about your symptoms, monitoring how much mucus you are producing by weighing your used tissues, and taking body fluid samples—all to see if you are objectively ill with a cold. Now, the

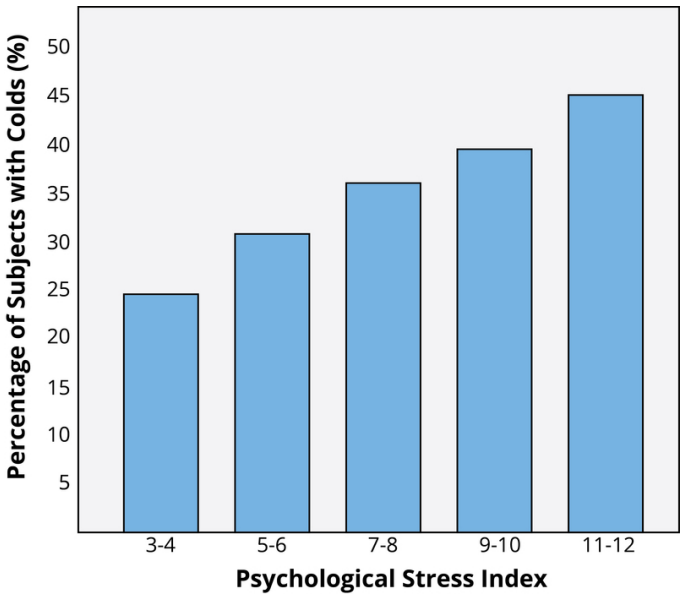


Figure 1: Adapted from Cohen et al. 1991

interesting thing is that not everyone who has drops of cold virus put in their nose develops the illness. Studies like this one find that people who are less stressed and those who are more positive at the beginning of the study are at a decreased risk of developing a cold (Cohen, Tyrrell, & Smith, 1991; Cohen, Alper, Doyle, Treanor, & Turner, 2006) (see Figure 1 for an example).

Importantly, it is not just major life **stressors** (e.g., a family death, a natural disaster) that increase the likelihood of getting sick. Even small **daily hassles** like getting stuck in traffic or fighting with your girlfriend can raise your blood pressure, alter your stress hormones, and even suppress your immune system function (DeLongis, Folkman, & Lazarus, 1988; Twisk, Snel, Kemper, & van Machelen, 1999).

It is clear that stress plays a major role in our mental and physical health, but what exactly is it? The term **stress** was originally derived from the field of mechanics where it is used to describe materials under pressure. The word was first used in a *psychological* manner by researcher Hans Selye. He was examining the effect of an ovarian hormone that he thought caused sickness in a sample of rats. Surprisingly, he noticed that almost any injected hormone produced this same sickness. He smartly realized that it was not the hormone under investigation that was causing these problems, but instead, the aversive experience of being handled and injected by researchers that led to high physiological arousal and, eventually, to health problems like ulcers. Selye (1946) coined the term stressor to label a stimulus that had this effect on the body and developed a model of the stress response called the **General Adaptation Syndrome**. Since then, psychologists have studied stress in a myriad of ways, including stress as negative events (e.g., natural disasters or major life changes like dropping out of school), as chronically difficult situations (e.g., taking care of a loved one with Alzheimer's), as short-term hassles, as a biological fight-or-flight response, and even as clinical illness like post-traumatic stress disorder (PTSD). It continues to be one of the most important and well-studied psychological correlates of illness, because excessive stress causes potentially damaging wear and tear on the body and can influence almost any imaginable disease process.

Protecting Our Health

An important question that health psychologists ask is: What keeps us protected from disease and alive longer? When considering this issue of **resilience** (Rutter, 1985), five factors are often studied in terms of their ability to protect (or sometimes harm) health. They are:

1. Coping

2. Control and Self-Efficacy
3. Social Relationships
4. Dispositions and Emotions
5. Stress Management

Coping Strategies

How individuals cope with the stressors they face can have a significant impact on health. Coping is often classified into two categories: problem-focused coping or emotion-focused coping (Carver, Scheier, & Weintraub, 1989). Problem-focused coping is thought of as actively addressing the event that is causing stress in an effort to solve the issue at hand. For example, say you have an important exam coming up next week. A problem-focused strategy might be to spend additional time over the weekend studying to make sure you understand all of the material. Emotion-focused coping, on the other hand, regulates the emotions that come with stress. In the above examination example, this might mean watching a funny movie to take your mind off the anxiety you are feeling. In the short term, emotion-focused coping might reduce feelings of stress, but problem-focused coping seems to have the greatest impact on mental wellness (Billings & Moos, 1981; Herman-Stabl, Stemmler, & Petersen, 1995). That being said, when events are uncontrollable (e.g., the death of a loved one), emotion-focused coping directed at managing your feelings, at first, might be the better strategy. Therefore, it is always important to consider the match of the stressor to the coping strategy when evaluating its plausible benefits.

Feeling a sense of control in one's life is important. Something as simple as having control over the care of a houseplant has been shown to improve health and longevity. [Image: JJ Harrison, https://goo.gl/82FsdV, CC BY-SA 2.5, https://goo.gl/SRAIwa]

Control and Self-Efficacy

Another factor tied to better health outcomes and an improved ability to cope with stress is having the belief that you have control over a situation. For example, in one study where participants were forced to listen to unpleasant (stressful) noise, those who were led to believe that they had control over the noise performed much better on proofreading tasks afterwards (Glass & Singer, 1972). In other words, even though participants *did not* have actual

control over the noise, the control *belief* aided them in completing the task. In similar studies, perceived control benefited immune system functioning (Sieber et al., 1992). Outside of the laboratory, studies have shown that older residents in assisted living facilities, which are notorious for low control, lived *longer* and showed *better* health outcomes when given control over something as simple as watering a plant or choosing when student volunteers came to visit (Rodin & Langer, 1977; Schulz & Hanusa, 1978). In addition, feeling in control of a threatening situation can actually change stress hormone levels (Dickerson & Kemeny, 2004). Believing that you have control over your own behaviors can also have a positive influence on important outcomes like smoking cessation, contraception use, and weight management (Wallston & Wallston, 1978). When individuals do not believe they have control, they do not try to change. **Self-efficacy** is closely related to control, in that people with high levels of this trait believe they can complete tasks and reach their goals. Just as feeling in control can reduce stress and improve health, higher self-efficacy can reduce stress and negative **health behaviors**, and is associated with better health (O'Leary, 1985).

Social Relationships

Research has shown that the impact of social isolation on our risk for disease and death is similar in magnitude to the risk associated with smoking regularly (Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988). In fact, the importance of social relationships for our health is so significant that some scientists believe our body has developed a physiological system that encourages us to seek out our relationships, especially in times of stress (Taylor et al., 2000). **Social integration** is the concept used to describe the number of social roles that you have (Cohen & Wills, 1985), as well as the lack of isolation. For example, you might be a daughter, a basketball team member, a Humane Society volunteer, a coworker, and a student. Maintaining these different roles can improve your health via encouragement from those around you to maintain a healthy lifestyle. Those in your social network might also provide you with **social support** (e.g., when you are under stress). This support might include emotional help (e.g., a hug when you need it), tangible help (e.g., lending you money), or advice. By helping to improve health behaviors and reduce stress, social relationships can have a powerful, protective impact on health, and in some cases, might even help people with serious illnesses stay alive longer (Spiegel, Kraemer, Bloom, & Gottheil, 1989).

Dispositions and Emotions: What's Risky and What's Protective?

Negative dispositions and personality traits have been strongly tied to an array of health risks. One of the earliest negative trait-to-health connections was discovered in the 1950s by two cardiologists. They made the interesting discovery that there were common behavioral and

psychological patterns among their heart patients that were not present in other patient samples. This pattern included being competitive, impatient, hostile, and time urgent. They labeled it Type A Behavior. Importantly, it was found to be associated with *double* the risk of heart disease as compared with Type B Behavior (Friedman & Rosenman, 1959). Since the 1950s, researchers have discovered that it is the hostility and competitiveness components of Type A that are especially harmful to heart health (Iribarren et al., 2000; Matthews, Glass, Rosenman, & Bortner, 1977; Miller, Smith, Turner, Guijarro, & Hallet, 1996). Hostile individuals are quick to get upset, and this angry arousal can damage the arteries of the heart. In addition, given their negative personality style, hostile people often lack a heath-protective supportive social network.

Positive traits and states, on the other hand, are often health protective. For example, characteristics like positive emotions (e.g., feeling happy or excited) have been tied to a wide range of benefits such as increased longevity, a reduced likelihood of developing some illnesses, and better outcomes once you are diagnosed with certain diseases (e.g., heart disease, HIV) (Pressman & Cohen, 2005). Across the world, even in the most poor and

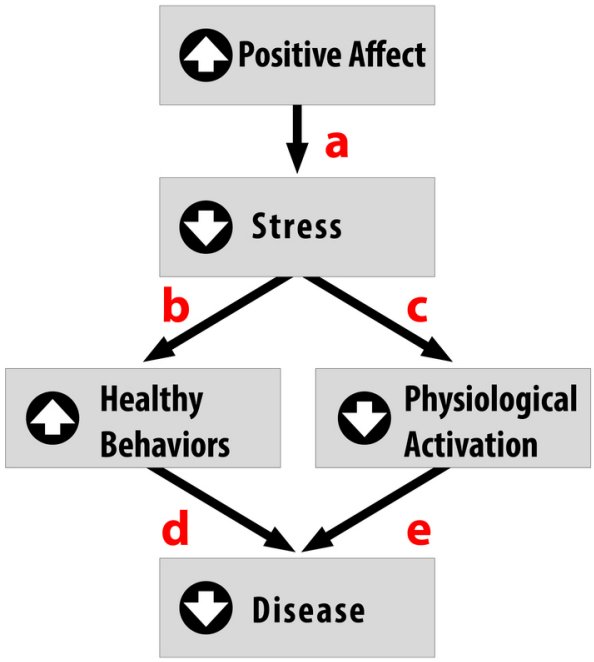


Figure 2. This figure illustrates one possible way that positive affect protects individuals against disease. Positive affect can reduce stress perceptions (a), thereby improving health behaviors (b) and lowering physiological stress responses (c) (e.g., decreased cardiovascular reactivity, lower stress hormones, non-suppressed immune activity). As a result, there is likely to be less incidence of disease (d, e). (Adapted from Pressman & Cohen, 2005)

underdeveloped nations, positive emotions are consistently tied to better health (Pressman, Gallagher, & Lopez, 2013). Positive emotions can also serve as the "antidote" to stress, protecting us against some of its damaging effects (Fredrickson, 2001; Pressman & Cohen, 2005; see Figure 2). Similarly, looking on the bright side can also improve health. Optimism has been shown to improve coping, reduce stress, and predict better disease outcomes like recovering from a heart attack more rapidly (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001; Nes & Segerstrom, 2006; Scheier & Carver, 1985; Segerstrom, Taylor, Kemeny, & Fahey, 1998).

Stress Management

About 20 percent of Americans report having stress, with 18–33 year-olds reporting the highest levels (American Psychological Association, 2012). Given that the sources of our stress are often difficult to change (e.g., personal finances, current job), a number of interventions have been designed to help reduce the aversive responses to duress. For example, relaxation activities and forms of meditation are techniques that allow individuals to reduce their stress via breathing exercises, muscle relaxation, and mental imagery. Physiological arousal from stress can also be reduced via **biofeedback**, a technique where the individual is shown bodily information that is not normally available to them (e.g., heart rate), and then taught strategies to alter this signal. This type of intervention has even shown promise in reducing heart and hypertension risk, as well as other serious conditions (e.g., Moravec, 2008; Patel, Marmot, & Terry, 1981). But reducing stress does not have to be complicated! For example, exercise is a great stress reduction activity (Salmon, 2001) that has a myriad of health benefits.

The Importance Of Good Health Practices

As a student, you probably strive to maintain good grades, to have an active social life, and to stay healthy (e.g., by getting enough sleep), but there is a popular joke about what it's like to be in college: you can only pick two of these things (see Figure 3 for an example). The busy life of a college student doesn't always allow you to maintain all three areas of your life, especially during test-taking periods. In one study, researchers found that students taking exams were more stressed and, thus, smoked more, drank more caffeine, had less physical activity, and had worse sleep habits (Oaten & Chang, 2005), all of which could have detrimental effects on their health. Positive health practices are *especially* important in times of stress when your immune system is compromised due to high stress and the elevated frequency of exposure to the illnesses of your fellow students in lecture halls, cafeterias, and dorms.

Psychologists study both **health behaviors** and health habits. The former are behaviors that can improve or harm your health. Some examples include regular exercise, flossing, and

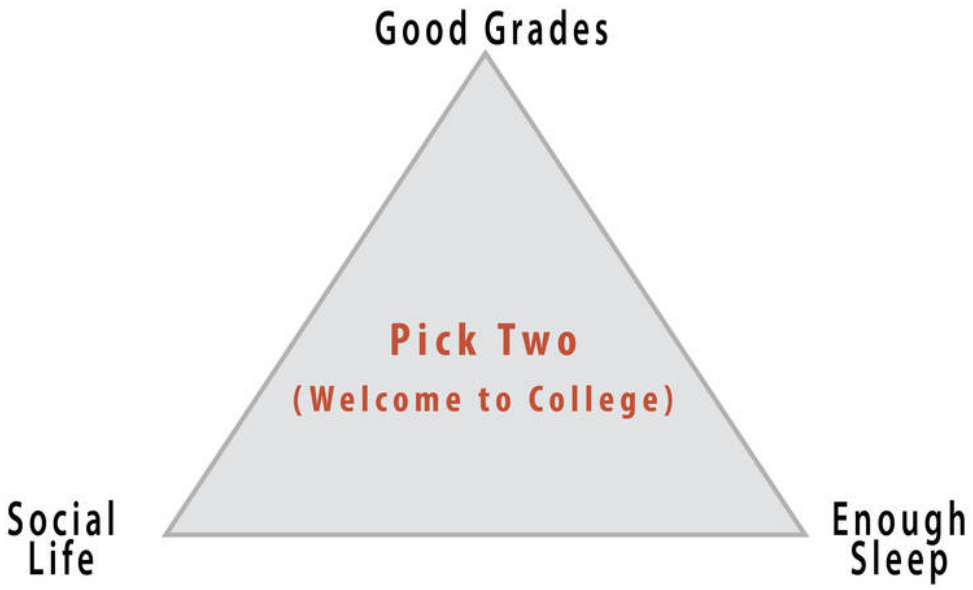


Figure 3: A popular joke about how difficult it is to stay balanced and healthy during college.

wearing sunscreen, versus negative behaviors like drunk driving, pulling all-nighters, or smoking. These behaviors become *habits* when they are firmly established and performed automatically. For example, do you have to think about putting your seatbelt on or do you do it automatically? Habits are often developed early in life thanks to parental encouragement or the influence of our peer group.

While these behaviors sound minor, studies have shown that those who engaged in more of these protective habits (e.g., getting 7–8 hours of sleep regularly, not smoking or drinking excessively, exercising) had fewer illnesses, felt better, and were less likely to die over a 9–12-year follow-up period (Belloc & Breslow 1972; Breslow & Enstrom 1980). For college students, health behaviors can even influence academic performance. For example, poor sleep quality and quantity are related to weaker learning capacity and academic performance (Curcio, Ferrara, & De Gennaro, 2006). Due to the effects that health behaviors can have, much effort is put forward by psychologists to understand *how* to change unhealthy behaviors, and to understand *why* individuals fail to act in healthy ways. Health promotion involves enabling individuals to improve health by focusing on behaviors that pose a risk for future illness, as well as spreading knowledge on existing risk factors. These might be genetic risks you are born with, or something you developed over time like obesity, which puts you at risk for Type 2 diabetes and heart disease, among other illnesses.

Psychology And Medicine

There are many psychological factors that influence medical treatment outcomes. For example, older individuals, (Meara, White, & Cutler, 2004), women (Briscoe, 1987), and those from higher socioeconomic backgrounds (Adamson, Ben-Shlomo, Chaturvedi, & Donovan, 2008) are all *more* likely to seek medical care. On the other hand, some individuals who need care might avoid it due to financial obstacles or preconceived notions about medical practitioners or the illness. Thanks to the growing amount of medical information online, many people now use the Internet for health information and 38% percent report that this influences their decision to see a doctor (Fox & Jones, 2009). Unfortunately, this is not always a good thing because individuals tend to do a poor job assessing the credibility of health information. For example, college-student participants reading online articles about HIV and syphilis rated a physician's article and a college student's article as *equally* credible if the participants said they were familiar with the health topic (Eastin, 2001). Credibility of health information often means how accurate or trustworthy the information is, and it can be influenced by irrelevant factors, such as the website's design, logos, or the organization's contact information (Freeman & Spyridakis, 2004). Similarly, many people post health questions on online, unmoderated forums where *anyone* can respond, which allows for the possibility of inaccurate information being provided for serious medical conditions by unqualified individuals.

While the Internet has increased the amount of medical information available to the public and created greater access, there are real concerns about how people are making decisions about their health based on that information. [Image: Mapbox, https://goo.gl/UNhmx5, CC BY 2.0, https://goo.gl/BRvSA7]

After individuals decide to seek care, there is also variability in the information they give their medical provider. Poor communication (e.g., due to embarrassment or feeling rushed) can influence the accuracy of the diagnosis and the effectiveness of the prescribed treatment. Similarly, there is variation following a visit to the doctor. While most individuals are tasked with a health recommendation (e.g., buying and using a medication appropriately, losing weight, going to another expert), not everyone *adheres* to medical recommendations (Dunbar-Jacob & Mortimer-Stephens, 2010). For example, many individuals take medications inappropriately (e.g., stopping early, not filling prescriptions) or fail to change their behaviors (e.g., quitting smoking). Unfortunately, getting patients to follow medical orders is not as easy as one would think. For example, in one study, over one third of diabetic patients failed to get proper medical care that would prevent or slow down diabetes-related blindness (Schoenfeld, Greene, Wu, & Leske, 2001)! Fortunately, as mobile technology improves, physicians now have the ability to monitor **adherence** and work to improve it (e.g., with pill bottles that monitor if they are opened at the right time). Even text messages are useful for improving treatment adherence and outcomes in depression, smoking cessation, and weight loss (Cole-Lewis, & Kershaw, 2010).

Being A Health Psychologist

Training as a clinical health psychologist provides a variety of possible career options. Clinical health psychologists often work on teams of physicians, social workers, allied health professionals, and religious leaders. These teams may be formed in locations like rehabilitation centers, hospitals, primary care offices, emergency care centers, or in chronic illness clinics. Work in each of these settings will pose unique challenges in patient care, but the primary responsibility will be the same. Clinical health psychologists will evaluate physical, personal, and environmental factors contributing to illness and preventing improved health. In doing so, they will then help create a treatment strategy that takes into account all dimensions of a person's life and health, which maximizes its potential for success. Those who specialize in health psychology can also conduct research to discover new health predictors and risk factors, or develop interventions to prevent and treat illness. Researchers studying health psychology work in numerous locations, such as universities, public health departments, hospitals, and private organizations. In the related field of **behavioral medicine**, careers focus on the application of this type of research. Occupations in this area might include jobs in occupational therapy, rehabilitation, or preventative medicine. Training as a health psychologist provides a wide skill set applicable in a number of different professional settings and career paths.

The Future Of Health Psychology

Much of the past medical research literature provides an incomplete picture of human health. "Health care" is often "illness care." That is, it focuses on the management of symptoms and illnesses as they arise. As a result, in many developed countries, we are faced with several health epidemics that are difficult and costly to treat. These include obesity, diabetes, and cardiovascular disease, to name a few. The National Institutes of Health have called for researchers to use the knowledge we have about risk factors to design effective interventions to reduce the prevalence of *preventable* illness. Additionally, there are a growing number of individuals across developed countries with *multiple* chronic illnesses and/or lasting disabilities, especially with older age. Addressing their needs and maintaining their quality of life will require skilled individuals who understand how to properly treat these populations. Health psychologists will be on the forefront of work in these areas.

With this focus on prevention, it is important that health psychologists move beyond studying risk (e.g., depression, stress, hostility, low socioeconomic status) in isolation, and move toward studying factors that confer resilience and protection from disease. There is, fortunately, a growing interest in studying the positive factors that protect our health (e.g., Diener & Chan, 2011; Pressman & Cohen, 2005; Richman, Kubzansky, Maselko, Kawachi, Choo, & Bauer, 2005) with evidence strongly indicating that people with higher positivity live longer, suffer fewer illnesses, and generally feel better. Seligman (2008) has even proposed a field of "Positive Health" to specifically study those who exhibit "above average" health—something we do not think about enough. By shifting some of the research focus to identifying and understanding these health-promoting factors, we may capitalize on this information to improve public health.

Innovative interventions to improve health are already in use and continue to be studied. With recent advances in technology, we are starting to see great strides made to improve health with the aid of computational tools. For example, there are hundreds of simple applications (apps) that use email and text messages to send reminders to take medication, as well as mobile apps that allow us to monitor our exercise levels and food intake (in the growing mobile-health, or m-health, field). These m-health applications can be used to raise health awareness, support treatment and compliance, and remotely collect data on a variety of outcomes. Also exciting are devices that allow us to monitor physiology in real time; for example, to better understand the stressful situations that raise blood pressure or heart rate. With advances like these, health psychologists will be able to serve the population better, learn more about health and health behavior, and develop excellent health-improving strategies that could be specifically targeted to certain populations or individuals. These leaps in equipment development, partnered with growing health psychology knowledge and exciting advances in neuroscience and genetic research, will lead health researchers and practitioners into an exciting new time where, hopefully, we will understand more and more

about how to keep people healthy.

Outside Resources

App: 30 iPhone apps to monitor your health
http://www.hongkiat.com/blog/iphone-health-app/

Quiz: Hostility
http://www.mhhe.com/socscience/hhp/fahey7e/wellness_worksheets/wellness_worksheet_090.html

Self-assessment: Perceived Stress Scale
http://www.ncsu.edu/assessment/resources/perceived_stress_scale.pdf

Video: Try out a guided meditation exercise to reduce your stress
https://www.youtube.com/watch?v=dEzbdLn2bJc

Web: American Psychosomatic Society
http://www.psychosomatic.org/home/index.cfm

Web: APA Division 38, Health Psychology
http://www.health-psych.org

Web: Society of Behavioral Medicine
http://www.sbm.org

Discussion Questions

1. What psychological factors contribute to health?
2. Which psychosocial constructs and behaviors might help protect us from the damaging effects of stress?
3. What kinds of interventions might help to improve resilience? Who will these interventions help the most?
4. How should doctors use research in health psychology when meeting with patients?
5. Why do clinical health psychologists play a critical role in improving public health?

Vocabulary

Adherence
In health, it is the ability of a patient to maintain a health behavior prescribed by a physician. This might include taking medication as prescribed, exercising more, or eating less high-fat food.

Behavioral medicine
A field similar to health psychology that integrates psychological factors (e.g., emotion, behavior, cognition, and social factors) in the treatment of disease. This applied field includes clinical areas of study, such as occupational therapy, hypnosis, rehabilitation or medicine, and preventative medicine.

Biofeedback
The process by which physiological signals, not normally available to human perception, are transformed into easy-to-understand graphs or numbers. Individuals can then use this information to try to change bodily functioning (e.g., lower blood pressure, reduce muscle tension).

Biomedical Model of Health
A reductionist model that posits that ill health is a result of a deviation from normal function, which is explained by the presence of pathogens, injury, or genetic abnormality.

Biopsychosocial Model of Health
An approach to studying health and human function that posits the importance of biological, psychological, and social (or environmental) processes.

Chronic disease
A health condition that persists over time, typically for periods longer than three months (e. g., HIV, asthma, diabetes).

Control
Feeling like you have the power to change your environment or behavior if you need or want to.

Daily hassles
Irritations in daily life that are not necessarily traumatic, but that cause difficulties and repeated stress.

Emotion-focused coping
Coping strategy aimed at reducing the negative emotions associated with a stressful event.

General Adaptation Syndrome
A three-phase model of stress, which includes a mobilization of physiological resources phase, a coping phase, and an exhaustion phase (i.e., when an organism fails to cope with the stress adequately and depletes its resources).

Health
According to the World Health Organization, it is a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity.

Health behavior
Any behavior that is related to health—either good or bad.

Hostility
An experience or trait with cognitive, behavioral, and emotional components. It often includes cynical thoughts, feelings of emotion, and aggressive behavior.

Mind–body connection
The idea that our emotions and thoughts can affect how our body functions.

Problem-focused coping
A set of coping strategies aimed at improving or changing stressful situations.

Psychoneuroimmunology
A field of study examining the relationship among psychology, brain function, and immune function.

Psychosomatic medicine
An interdisciplinary field of study that focuses on how biological, psychological, and social processes contribute to physiological changes in the body and health over time.

Resilience
The ability to "bounce back" from negative situations (e.g., illness, stress) to normal functioning or to simply not show poor outcomes in the face of adversity. In some cases, resilience may lead to better functioning following the negative experience (e.g., post-traumatic growth).

Self-efficacy

The belief that one can perform adequately in a specific situation.

Social integration
The size of your social network, or number of social roles (e.g., son, sister, student, employee, team member).

Social support
The perception or actuality that we have a social network that can help us in times of need and provide us with a variety of useful resources (e.g., advice, love, money).

Stress
A pattern of physical and psychological responses in an organism after it perceives a threatening event that disturbs its homeostasis and taxes its abilities to cope with the event.

Stressor
An event or stimulus that induces feelings of stress.

Type A Behavior
Type A behavior is characterized by impatience, competitiveness, neuroticism, hostility, and anger.

Type B Behavior
Type B behavior reflects the absence of Type A characteristics and is represented by less competitive, aggressive, and hostile behavior patterns.

References

Adamson, J., Ben-Shlomo, Y., Chaturvedi, N., & Donovan, J. (2008). Ethnicity, socio-economic position and gender—do they affect reported health—care seeking behaviour? *Social Science & Medicine, 57*, 895–904.

American Psychological Association (2012). Stress in American 2012 [Press release]. Retrieved from http://www.apa.org/news/press/releases/stress/2012/generations.aspx

Belloc, N. B., & Breslow, L. (1972). Relationship of physical health status and health practices. *Preventive Medicine, 1*, 409–421.

Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine, 4*, 139–157.

Breslow, L., & Enstrom, J. E. (1980). Persistence of health habits and their relationship to mortality. *Preventive Medicine, 9*, 469–483.

Briscoe, M. E. (1987). Why do people go to the doctor? Sex differences in the correlates of GP consultation. *Social Science & Medicine, 25*, 507–513.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267–283.

Cohen, S., & Herbert, T. B. (1996). Health psychology: Psychological factors and physical disease from the perspective of human psychoneuroimmunology. *Annual Review of Psychology, 47*, 113–142.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.

Cohen, S., Alper, C. M., Doyle, W. J., Treanor, J. J., & Turner, R. B. (2006). Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or influenza A virus. *Psychosomatic Medicine, 68*, 809–815.

Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of the American Medical Association, 298*, 1685–1687.

Cohen, S., Tyrrell, D. A., & Smith, A. P. (1991). Psychological stress and susceptibility to the common cold. *New England Journal of Medicine, 325*, 606–612.

Cole-Lewis, H., & Kershaw, T. (2010). Text messaging as a tool for behavior change in disease prevention and management. *Epidemiologic Reviews, 32*, 56–69.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10*, 323–337.

DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and

mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology, 54*, 486–495.

Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: a theoretical integration and synthesis of laboratory research. *Psychological Bulletin, 130*, 355–391.

Dunbar-Jacob, J., & Mortimer-Stephens, M. (2001). Treatment adherence in chronic disease. *Journal of Clinical Epidemiology, 54*(12), S57–S60

Eastin, M. S. (2001). Credibility assessments of online health information: The effects of source expertise and knowledge of content. *Journal of Computer Mediated Communication, 6*.

Fox, S. & Jones, S. (2009). The social life of health information. *Pew Internet and American Life Project, California HealthCare Foundation*. Retrieved from http://www.pewinternet.org/Reports/2009/8-The-Social-Life-of-Health-Information.aspx

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218–226.

Freeman, K. S., & Spyridakis, J. H. (2004). An examination of factors that affect the credibility of online health information. *Technical Communication, 51*, 239–263.

Friedman, M., & Rosenman, R. (1959). Association of specific overt behaviour pattern with blood and cardiovascular findings. *Journal of the American Medical Association, 169*, 1286–1296.

Glass, D. C., & Singer, J. E. (1972). Behavioral aftereffects of unpredictable and uncontrollable aversive events: Although subjects were able to adapt to loud noise and other stressors in laboratory experiments, they clearly demonstrated adverse aftereffects. *American Scientist, 60*, 457–465.

Herman-Stabl, M. A., Stemmler, M., & Petersen, A. C. (1995). Approach and avoidant coping: Implications for adolescent mental health. *Journal of Youth and Adolescence, 24*, 649–665.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine, 7*(7), e1000316.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*, 540–545.

Iribarren, C., Sidney, S., Bild, D. E., Liu, K., Markovitz, J. H., Roseman, J. M., & Matthews, K. (2000). Association of hostility with coronary artery calcification in young adults. *Journal of the American Medical Association, 283*, 2546–2551.

Kubzansky, L. D., Sparrow, D., Vokonas, P., & Kawachi, I. (2001). Is the glass half empty or half full? A prospective study of optimism and coronary heart disease in the normative aging study. *Psychosomatic Medicine, 63*, 910–916.

Matthews, K. A., Glass, D. C., Rosenman, R. H., & Bortner, R. W. (1977). Competitive drive, pattern A, and coronary heart disease: A further analysis of some data from the Western Collaborative Group Study. *Journal of Chronic Diseases, 30*, 489–498.

Meara, E., White, C., & Cutler, D. M. (2004). Trends in medical spending by age, 1963–2000. *Health Affairs, 23*, 176–183.

Miller, T. Q., Smith, T. W., Turner, C. W., Guijarro, M. L., & Hallet, A. J. (1996). Meta-analytic review of research on hostility and physical health. *Psychological Bulletin, 119*, 322–348.

Moravec, C. S. (2008). Biofeedback therapy in cardiovascular disease: rationale and research overview. *Cleveland Clinic Journal of Medicine, 75*, S35–S38.

Nes, L. S., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and Social Psychology Review, 10*, 235–251.

Oaten, M., & Cheng, K. (2005). Academic examination stress impairs self–control. *Journal of Social and Clinical Psychology, 24*, 254–279.

O'Leary, A. (1985). Self-efficacy and health. *Behaviour Research and Therapy, 23*, 437–451.

Patel, C., Marmot, M. G., & Terry, D. J. (1981). Controlled trial of biofeedback-aided behavioural methods in reducing mild hypertension. *British Medical Journal (Clinical research ed.), 282*, 2005–2008.

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin, 131*, 925–971.

Pressman, S. D., Gallagher, M. W., & Lopez, S. J. (2013). Is the emotion-health connection a "first-world problem"? *Psychological Science, 24*, 544–549.

Richman, L. S., Kubzansky, L., Maselko, J., Kawachi, I., Choo, P., & Bauer, M. (2005). Positive emotion and health: Going beyond the negative. *Health Psychology, 24*, 422–429.

Rodin, J., & Langer, E. J. (1977). Long-term effects of a control-relevant intervention with the institutionalized aged. *Journal of Personality and Social Psychology, 35*, 897–902.

Rutter, M. (1985). Resilience in the face of adversity. *British Journal of Psychiatry, 147*, 598–611.

Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clinical Psychology Review, 21*(1), 33–61.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219–247.

Schoenfeld, E. R., Greene, J. M., Wu, S. Y., & Leske, M. C. (2001). Patterns of adherence to diabetes vision care guidelines: Baseline findings from the Diabetic Retinopathy Awareness Program. *Ophthalmology, 108*, 563–571.

Schulz, R., & Hanusa, B.H. (1978). Long-term effects of control and predictability-enhancing interventions: Findings and ethical issues. *Journal of Personality and Social Psychology, 36*, 1194–1202.

Segerstrom, S. C., Taylor, S. E., Kemeny, M. E., & Fahey, J. L. (1998). Optimism is associated with mood, coping, and immune change in response to stress. *Journal of Personality and Social Psychology, 74*, 1646–1655.

Seligman, M. E. P. (2008). Positive health. *Applied Psychology, 57*, 3–18.

Selye, H. (1946). The general adaptation syndrome and the diseases of adaptation. *Journal of Clinical Endocrinology, 6*, 117–230.

Sieber, W. J., Rodin, J., Larson, L., Ortega, S., Cummings, N., Levy, S., ... Herberman, R. (1992). Modulation of human natural killer cell activity by exposure to uncontrollable stress. *Brain, Behavior, and Immunity, 6*, 141–156.

Spiegel, D., Kraemer, H., Bloom, J., & Gottheil, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *The Lancet, 334*, 888–891.

Taylor, S. E. (2012) *Health psychology* (8th ed.). New York, NY: McGraw-Hill.

Taylor, S. E., Klein, L. C., Lewis, B. P., Gruenewald, T. L., Gurung, R. A., & Updegraff, J. A. (2000). Biobehavioral responses to stress in females: Tend-and-befriend, not fight-or-flight. *Psychological Review, 107*, 411–429.

Twisk, J. W., Snel, J., Kemper, H. C., & van Mechelen, W. (1999). Changes in daily hassles and life events and the relationship with coronary heart disease risk factors: A 2-year longitudinal study in 27–29-year-old males and females. *Journal of Psychosomatic Research, 46*, 229–240.

Wallston, B. S., & Wallston, K. A. (1978). Locus of control and health: a review of the literature. *Health Education & Behavior, 6*, 107–117.

World Health Organization (2013). *Cardiovascular diseases*. Retrieved from http://www.who.int/mediacentre/factsheets/fs317/en/index.html

World Health Organization. (1946). *Preamble to the Constitution of the World Health Organization*. Retrieved from http://www.who.int/about/definition/en/print.html

38

Happiness: The Science of Subjective Well-Being

Edward Diener

Subjective well-being (SWB) is the scientific term for happiness and life satisfaction—thinking and feeling that your life is going well, not badly. Scientists rely primarily on self-report surveys to assess the happiness of individuals, but they have validated these scales with other types of measures. People's levels of subjective well-being are influenced by both internal factors, such as personality and outlook, and external factors, such as the society in which they live. Some of the major determinants of subjective well-being are a person's inborn temperament, the quality of their social relationships, the societies they live in, and their ability to meet their basic needs. To some degree people adapt to conditions so that over time our circumstances may not influence our happiness as much as one might predict they would. Importantly, researchers have also studied the outcomes of subjective well-being and have found that "happy" people are more likely to be healthier and live longer, to have better social relationships, and to be more productive at work. In other words, people high in subjective well-being seem to be healthier and function more effectively compared to people who are chronically stressed, depressed, or angry. Thus, happiness does not just feel good, but it is good for people and for those around them.

Learning Objectives

- Describe three major forms of happiness and a cause of each of them.
- Be able to list two internal causes of subjective well-being and two external causes of subjective well-being.
- Describe the types of societies that experience the most and least happiness, and why they do.
- Describe the typical course of adaptation to events in terms of the time course of SWB.

- Describe several of the beneficial outcomes of being a happy person.
- Describe how happiness is typically measured.

Introduction

When people describe what they most want out of life, happiness is almost always on the list, and very frequently it is at the top of the list. When people describe what they want in life for their children, they frequently mention health and wealth, occasionally they mention fame or success—but they almost always mention happiness. People will claim that whether their kids are wealthy and work in some prestigious occupation or not, "I just want my kids to be happy." Happiness appears to be one of the most important goals for people, if not the most important. But what is it, and how do people get it?

If you had only one gift to give your child, what would it be? Happiness? [Image: mynameisharsha, https://goo.gl/216PFr, CC BY-SA 3.0, https://goo.gl/eLCn2O]

In this module I describe "happiness" or subjective well-being (SWB) as a process—it results from certain internal and external causes, and in turn it influences the way people behave, as well as their physiological states. Thus, high SWB is not just a pleasant outcome but is an important factor in our future success. Because scientists have developed valid ways of measuring "happiness," they have come in the past decades to know much about its causes and consequences.

Types of Happiness

Philosophers debated the nature of happiness for thousands of years, but scientists have recently discovered that happiness means different things. Three major types of happiness are high life satisfaction, frequent positive feelings, and infrequent negative feelings (Diener,

1984). "Subjective well-being" is the label given by scientists to the various forms of happiness taken together. Although there are additional forms of SWB, the three in the table below have been studied extensively. The table also shows that the causes of the different types of happiness can be somewhat different.

Three Types of Happiness	Examples	Causes
Life Satisfaction	• I think my life is great • I am satisfied with my job	• A good income • Achieving one's goals • High self-esteem
Positive Feelings	• Enjoying life • Loving others	• Supportive friends • Interesting work • Extroverted personality
Low Negative Feelings	• Few chronic worries • Rarely sad or angry	• Low neuroticism • One's goals are in harmony • A positive outlook

Table 1: Three Types of Subjective Well-Being

You can see in the table that there are different causes of happiness, and that these causes are not identical for the various types of SWB. Therefore, there is no single key, no magic wand—high SWB is achieved by combining several different important elements (Diener & Biswas-Diener, 2008). Thus, people who promise to know *the* key to happiness are oversimplifying.

Some people experience all three elements of happiness—they are very satisfied, enjoy life, and have only a few worries or other unpleasant emotions. Other unfortunate people are missing all three. Most of us also know individuals who have one type of happiness but not another. For example, imagine an elderly person who is completely satisfied with her life—she has done most everything she ever wanted—but is not currently enjoying life that much because of the infirmities of age. There are others who show a different pattern, for example, who really enjoy life but also experience a lot of stress, anger, and worry. And there are those who are having fun, but who are dissatisfied and believe they are wasting their lives. Because there are several components to happiness, each with somewhat different causes, there is no magic single cure-all that creates all forms of SWB. This means that to be happy, individuals must acquire each of the different elements that cause it.

Causes of Subjective Well-Being

There are external influences on people's happiness—the circumstances in which they live. It is possible for some to be happy living in poverty with ill health, or with a child who has a serious disease, but this is difficult. In contrast, it is easier to be happy if one has supportive family and friends, ample resources to meet one's needs, and good health. But even here there are exceptions—people who are depressed and unhappy while living in excellent circumstances. Thus, people can be happy or unhappy because of their personalities and the way they think about the world or because of the external circumstances in which they live. People vary in their propensity to happiness—in their personalities and outlook—and this means that knowing their living conditions is not enough to predict happiness.

Internal Causes (Top-down influences)	**Description**
Inborn temperament	Studies of monozygotic (identical) twins raised apart indicate that our genes influence our happiness. Even when raised apart, identical twins tend to be similar in their levels of subjective well-being.
Personality and temperament	Personality is partly inborn and partly learned, and it influences our happiness. For example: Extroverts tend to have more positive feelings. Neurotics tend to have more negative feelings.
Outlook	People can develop habits of noticing the good things in life and interpreting ambiguous events in positive ways. Other people develop negative mental habits, leading to more unhappiness. One's culture also can influence whether we take an optimistic or pessimistic view of life.
Resilience	Happy individuals tend to bounce back more quickly after losses and negative events.
External Causes (Bottom-up influences)	**Description**
Sufficient material resources	People have enough money to meet their basic needs and fulfill their major goals.
Sufficient social resources	People differ in their need for social contact, but everyone needs some supportive and trusted others: family, a friend, or a partner, or sometimes all three. We need other people to lead a fulfilled life.
Desirable society	Our own efforts and circumstances influence our happiness, but so does the society in which we live. A society of hunger, war, conflict, and corruption is much less happy then one with material resources, high levels of trust and cooperation, and people who want to help each other.

Table 2: Internal and External Causes of Subjective Well-Being

In the table below are shown internal and external circumstances that influence happiness. There are individual differences in what makes people happy, but the causes in the table are important for most people (Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, 2013; Myers, 1992).

Societal Influences on Happiness

When people consider their own happiness, they tend to think of their relationships, successes and failures, and other personal factors. But a very important influence on how happy people are is the society in which they live. It is easy to forget how important societies and neighborhoods are to people's happiness or unhappiness. In Figure 1, I present life satisfaction around the world. You can see that some nations, those with the darkest shading on the map, are high in life satisfaction. Others, the lightest shaded areas, are very low. The grey areas in the map are places we could not collect happiness data—they were just too dangerous or inaccessible.

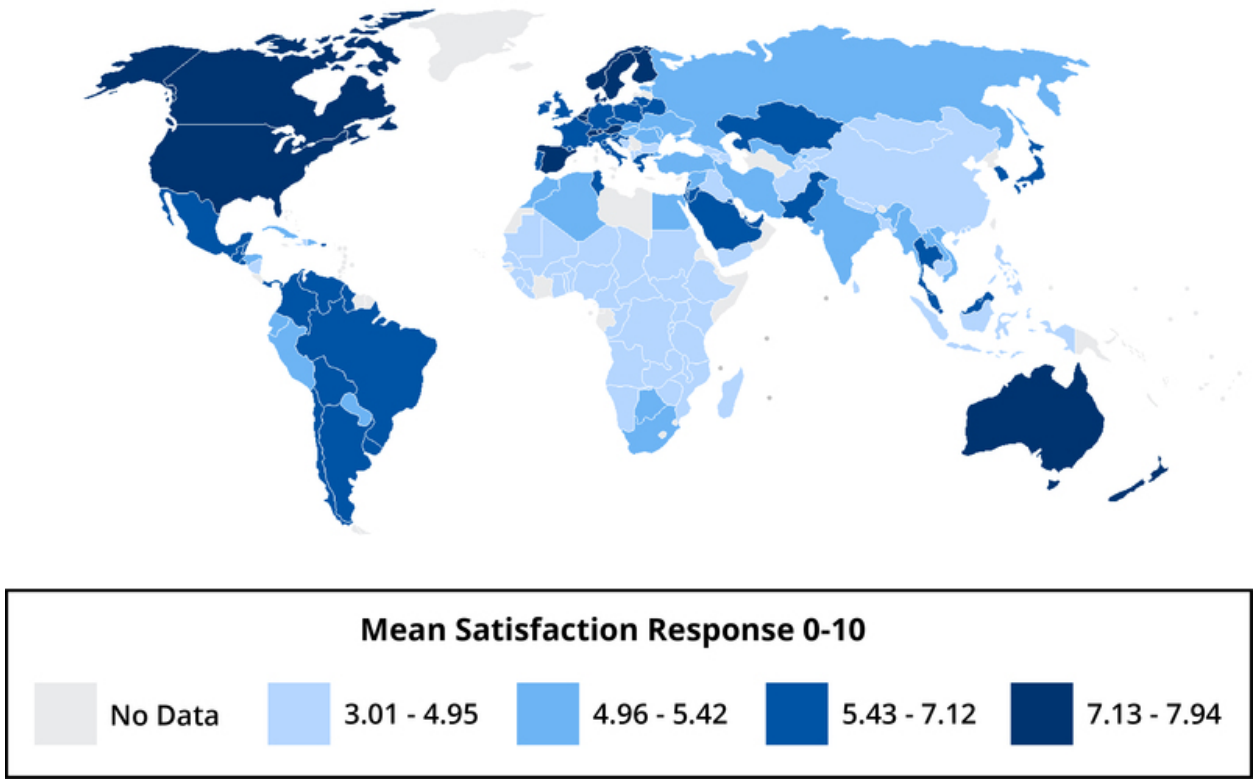


Figure 1

Can you guess what might make some societies happier than others? Much of North America

and Europe have relatively high life satisfaction, and much of Africa is low in life satisfaction. For life satisfaction living in an economically developed nation is helpful because when people must struggle to obtain food, shelter, and other basic necessities, they tend to be dissatisfied with lives. However, other factors, such as trusting and being able to count on others, are also crucial to the happiness within nations. Indeed, for enjoying life our relationships with others seem more important than living in a wealthy society. One factor that predicts unhappiness is conflict—individuals in nations with high internal conflict or conflict with neighboring nations tend to experience low SWB.

Money and Happiness

Will money make you happy? A certain level of income is needed to meet our needs, and very poor people are frequently dissatisfied with life (Diener & Seligman, 2004). However, having more and more money has diminishing returns—higher and higher incomes make less and less difference to happiness. Wealthy nations tend to have higher average life satisfaction than poor nations, but the United States has not experienced a rise in life satisfaction over the past decades, even as income has doubled. The goal is to find a level of income that you can live with and earn. Don't let your aspirations continue to rise so that you always feel poor, no matter how much money you have. Research shows that materialistic people often tend to be less happy, and putting your emphasis on relationships and other areas of life besides just money is a wise strategy. Money can help life satisfaction, but when too many other valuable things are sacrificed to earn a lot of money—such as relationships or taking a less enjoyable job—the pursuit of money can harm happiness.

There are stories of wealthy people who are unhappy and of janitors who are very happy. For instance, a number of extremely wealthy people in South Korea have committed suicide recently, apparently brought down by stress and other negative feelings. On the other hand, there is the hospital janitor who loved her life because she felt that her work in keeping the hospital clean was so important for the patients and nurses. Some millionaires are dissatisfied because they want to be billionaires. Conversely, some people with ordinary incomes are quite happy because they have learned to live within their means and enjoy the less expensive things in life.

It is important to always keep in mind that high materialism seems to lower life satisfaction —valuing money over other things such as relationships can make us dissatisfied. When people think money is more important than everything else, they seem to have a harder time being happy. And unless they make a great deal of money, they are not on average as happy as others. Perhaps in seeking money they sacrifice other important things too much, such as

relationships, spirituality, or following their interests. Or it may be that materialists just can never get enough money to fulfill their dreams—they always want more.

To sum up what makes for a happy life, let's take the example of Monoj, a rickshaw driver in Calcutta. He enjoys life, despite the hardships, and is reasonably satisfied with life. How could he be relatively happy despite his very low income, sometimes even insufficient to buy enough food for his family? The things that make Monoj happy are his family and friends, his religion, and his work, which he finds meaningful. His low income does lower his life satisfaction to some degree, but he finds his children to be very rewarding, and he gets along well with his neighbors. I also suspect that Monoj's positive temperament and his enjoyment of social relationships help to some degree to overcome his poverty and earn him a place among the happy. However, Monoj would also likely be even more satisfied with life if he had a higher income that allowed more food, better housing, and better medical care for his family.

Manoj, a happy rickshaw driver in Calcutta.

Besides the internal and external factors that influence happiness, there are psychological influences as well—such as our aspirations, social comparisons, and adaptation. People's aspirations are what they want in life, including income, occupation, marriage, and so forth. If people's aspirations are high, they will often strive harder, but there is also a risk of them falling short of their aspirations and being dissatisfied. The goal is to have challenging aspirations but also to be able to adapt to what actually happens in life.

One's outlook and resilience are also always very important to happiness. Every person will have disappointments in life, fail at times, and have problems. Thus, happiness comes not to people who never have problems—there are no such individuals—but to people who are able to bounce back from failures and adapt to disappointments. This is why happiness is never caused just by what happens to us but always includes our outlook on life.

Adaptation to Circumstances

The process of **adaptation** is important in understanding happiness. When good and bad events occur, people often react strongly at first, but then their reactions adapt over time and they return to their former levels of happiness. For instance, many people are euphoric when they first marry, but over time they grow accustomed to the marriage and are no longer ecstatic. The marriage becomes commonplace and they return to their former level of happiness. Few of us think this will happen to us, but the truth is that it usually does. Some people will be a bit happier even years after marriage, but nobody carries that initial "high" through the years.

People also adapt over time to bad events. However, people take a long time to adapt to certain negative events such as unemployment. People become unhappy when they lose their work, but over time they recover to some extent. But even after a number of years, unemployed individuals sometimes have lower life satisfaction, indicating that they have not completely habituated to the experience. However, there are strong individual differences in adaptation, too. Some people are resilient and bounce back quickly after a bad event, and others are fragile and do not ever fully adapt to the bad event. Do you adapt quickly to bad events and bounce back, or do you continue to dwell on a bad event and let it keep you down?

An example of adaptation to circumstances is shown in Figure 3, which shows the daily moods of "Harry," a college student who had Hodgkin's lymphoma (a form of cancer). As can be seen, over the 6-week period when I studied Harry's moods, they went up and down. A few times his moods dropped into the negative zone below the horizontal blue line. Most of the time Harry's moods were in the positive zone above the line. But about halfway through the study Harry was told that his cancer was in remission—effectively cured—and his moods on that day spiked way up. But notice that he quickly adapted—the effects of the good news wore off, and Harry adapted back toward where he was before. So even the very best news one can imagine—recovering from cancer—was not enough to give Harry a permanent "high." Notice too, however, that Harry's moods averaged a bit higher after cancer remission. Thus, the typical pattern is a strong response to the event, and then a dampening of this joy over time. However, even in the long run, the person might be a bit happier or unhappier than before.

Outcomes of High Subjective Well-Being

Is the state of happiness truly a good thing? Is happiness simply a feel-good state that leaves us unmotivated and ignorant of the world's problems? Should people strive to be happy, or are they better off to be grumpy but "realistic"? Some have argued that happiness is actually a bad thing, leaving us superficial and uncaring. Most of the evidence so far suggests that

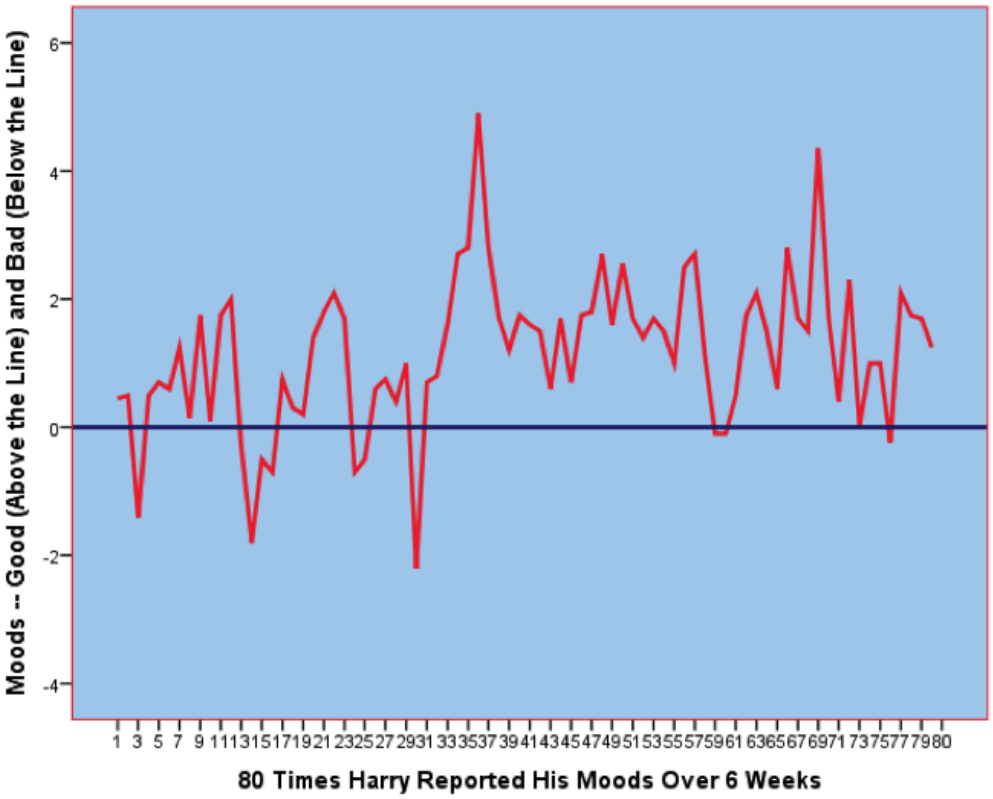


Figure 3. Harry's Daily Moods

Positive Outcomes	Description of Some of the Benefits
Health and Longevity	Happy and optimistic people have stronger immune systems and fewer cardiovascular diseases. Happy people are more likely to perform healthy behaviors, such as wearing seat belts and adhere to medical regimens. They also seem on average to live longer.
Social Relationships	Happy people are more popular, and their relationships are more stable and rewarding. For example, they get divorced less and are fired from work less. They support others more, and receive more support from others in return.
Productivity	Organizations in which people are positive and satisfied seem to be more successful. Work units with greater subjective well-being are more productive, and companies with happy workers tend to earn more money and develop higher stock prices.
Citizenship	Happy people are more likely to donate their time and money to charitable causes and to help others at work.

Table 3: Benefits of Happiness

happy people are healthier, more sociable, more productive, and better citizens (Diener & Tay, 2012; Lyubomirsky, King, & Diener, 2005). Research shows that the happiest individuals are usually very sociable. The table below summarizes some of the major findings.

Although it is beneficial generally to be happy, this does not mean that people should be constantly euphoric. In fact, it is appropriate and helpful sometimes to be sad or to worry. At times a bit of worry mixed with positive feelings makes people more creative. Most successful people in the workplace seem to be those who are mostly positive but sometimes a bit negative. Thus, people need not be a superstar in happiness to be a superstar in life. What is not helpful is to be chronically unhappy. The important question is whether people are satisfied with how happy they are. If you feel mostly positive and satisfied, and yet occasionally worry and feel stressed, this is probably fine as long as you feel comfortable with this level of happiness. If you are a person who is chronically unhappy much of the time, changes are needed, and perhaps professional intervention would help as well.

Measuring Happiness

SWB researchers have relied primarily on **self-report scales** to assess happiness—how people rate their own happiness levels on self-report surveys. People respond to numbered scales to indicate their levels of satisfaction, positive feelings, and lack of negative feelings. You can see where you stand on these scales by going to **https://eddiener.com/scales/9** or by filling out the Flourishing Scale below. These measures will give you an idea of what popular scales of happiness are like.

The self-report scales have proved to be relatively valid (Diener, Inglehart, & Tay, 2012), although people can lie, or fool themselves, or be influenced by their current moods or situational factors. Because the scales are imperfect, well-being scientists also sometimes use biological measures of happiness (e.g., the strength of a person's immune system, or measuring various brain areas that are associated with greater happiness). Scientists also use reports by family, coworkers, and friends—these people reporting how happy they believe the target person is. Other measures are used as well to help overcome some of the shortcomings of the self-report scales, but most of the field is based on people telling us how happy they are using numbered scales.

There are scales to measure life satisfaction (Pavot & Diener, 2008), positive and negative feelings, and whether a person is psychologically flourishing (Diener et al., 2009). Flourishing has to do with whether a person feels meaning in life, has close relationships, and feels a sense of mastery over important life activities. You can take the well-being scales created in

Below are eight statements with which you may agree or disagree. Using the 1–7 scale, indicate your agreement with each item by picking the appropriate response for each statement.

7 – Strongly agree
6 – Agree
5 – Slightly agree
4 – Neither agree nor disagree
3 – Slightly disagree
2 – Disagree
1 – Strongly disagree

__I lead a purposeful and meaningful life

__My social relationships are supportive and rewarding

__I am engaged and interested in my daily activities

__I actively contribute to the happiness and well-being of others

__I am competent and capable in the activities that are important to me

__I am a good person and live a good life

__I am optimistic about my future

__People respect me

Scoring:
Add the responses, varying from 1 to 7, for all eight items. The possible range of scores is from 8 (lowest possible) to 56 (highest PWB possible). A high score represents a person with many psychological resources and strengths.

The Flourishing Scale

the Diener laboratory, and let others take them too, because they are free and open for use.

Some Ways to Be Happier

Most people are fairly happy, but many of them also wish they could be a bit more satisfied and enjoy life more. Prescriptions about how to achieve more happiness are often oversimplified because happiness has different components and prescriptions need to be aimed at where each individual needs improvement—one size does not fit all. A person might be strong in one area and deficient in other areas. People with prolonged serious unhappiness

might need help from a professional. Thus, recommendations for how to achieve happiness are often appropriate for one person but not for others. With this in mind, I list in Table 4 below some general recommendations for you to be happier (see also Lyubomirsky, 2013):

Self-Questions for Becoming Happier
Are there controllable things in your life that could be changed to make your life more meaningful and happy? What are the avenues to change and why haven't you taken them?
Do you generally see the bright side of things - the part of the glass that is half full, or do you always see the dark side of things? Can you change this outlook on life by working to break the empty-glass view of life? Can you develop more positive mental habits, such as being grateful to others for all of the things they do for you?
Are there people around you who make you feel good about yourself and who make your life more enjoyable? How can you reduce the number of "downers" who might surround you?
In your relationships, seek to make others happy and help others, not just receive support from others. The happiest and healthiest people are often those who help others and the world. Beyond actually helping others, express gratefulness to them and be a person who gives lots of compliments.
Find work that you will love and be good at, while being realistic about your chances of finding certain jobs. Don't over-weigh the importance of money or status in selecting an occupation. Find a job that interests you and plays to your strengths. If you find a job you love, this can be a big boost to happiness.

Table 4: Self-Examination

Outside Resources

Web: Barbara Fredrickson's website on positive emotions
http://www.unc.edu/peplab/news.html

Web: Ed Diener's website
https://eddiener.com/

Web: International Positive Psychology Association
http://www.ippanetwork.org/

Web: Positive Acorn Positive Psychology website
http://positiveacorn.com/

Web: Sonja Lyubomirsky's website on happiness
http://sonjalyubomirsky.com/

Web: University of Pennsylvania Positive Psychology Center website
http://www.ppc.sas.upenn.edu/

Web: World Database on Happiness
http://www1.eur.nl/fsw/happiness/

Discussion Questions

1. Which do you think is more important, the "top-down" personality influences on happiness or the "bottom-up" situational circumstances that influence it? In other words, discuss whether internal sources such as personality and outlook or external factors such situations, circumstances, and events are more important to happiness. Can you make an argument that both are very important?
2. Do you know people who are happy in one way but not in others? People who are high in life satisfaction, for example, but low in enjoying life or high in negative feelings? What should they do to increase their happiness across all three types of subjective well-being?
3. Certain sources of happiness have been emphasized in this book, but there are others. Can you think of other important sources of happiness and unhappiness? Do you think religion, for example, is a positive source of happiness for most people? What about age

or ethnicity? What about health and physical handicaps? If you were a researcher, what question might you tackle on the influences on happiness?

4. Are you satisfied with your level of happiness? If not, are there things you might do to change it? Would you function better if you were happier?
5. How much happiness is helpful to make a society thrive? Do people need some worry and sadness in life to help us avoid bad things? When is satisfaction a good thing, and when is some dissatisfaction a good thing?
6. How do you think money can help happiness? Interfere with happiness? What level of income will you need to be satisfied?

Vocabulary

Adaptation
The fact that after people first react to good or bad events, sometimes in a strong way, their feelings and reactions tend to dampen down over time and they return toward their original level of subjective well-being.

"Bottom-up" or external causes of happiness
Situational factors outside the person that influence his or her subjective well-being, such as good and bad events and circumstances such as health and wealth.

Happiness
The popular word for subjective well-being. Scientists sometimes avoid using this term because it can refer to different things, such as feeling good, being satisfied, or even the causes of high subjective well-being.

Life satisfaction
A person reflects on their life and judges to what degree it is going well, by whatever standards that person thinks are most important for a good life.

Negative feelings
Undesirable and unpleasant feelings that people tend to avoid if they can. Moods and emotions such as depression, anger, and worry are examples.

Positive feelings
Desirable and pleasant feelings. Moods and emotions such as enjoyment and love are examples.

Subjective well-being
The name that scientists give to happiness—thinking and feeling that our lives are going very well.

Subjective well-being scales
Self-report surveys or questionnaires in which participants indicate their levels of subjective well-being, by responding to items with a number that indicates how well off they feel.

"Top-down" or internal causes of happiness
The person's outlook and habitual response tendencies that influence their happiness—for

example, their temperament or optimistic outlook on life.

References

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542–575.

Diener, E., & Biswas-Diener, R. (2008). *Happiness: Unlocking the mysteries of psychological wealth*. Malden, MA: Wiley/Blackwell.

Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest, 5*, 1–31.

Diener, E., & Tay, L. (2012). The remarkable benefits of happiness for successful and healthy living. Report of the Well-Being Working Group, Royal Government of Bhutan. Report to the United Nations General Assembly: *Well-Being and Happiness: A New Development Paradigm*.

Diener, E., Inglehart, R., & Tay, L. (2012). Theory and validity of life satisfaction scales. *Social Indicators Research*, in press.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*, 276–302.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research, 39*, 247–266.

Lyubomirsky, S. (2013). *The myths of happiness: What should make you happy, but doesn't, what shouldn't make you happy, but does*. New York, NY: Penguin.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855.

Myers, D. G. (1992). *The pursuit of happiness: Discovering pathways to fulfillment, well-being, and enduring personal joy*. New York, NY: Avon.

Pavot, W., & Diener, E. (2008). The Satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology, 3*, 137–152.

Index