Chapter 2

Methodology

How Social Psychologists Do Research

Chapter Outline and Learning Objectives

Social Psychology: An Empirical Science

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Formulating Hypotheses and Theories

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LO 2.2 **Compare the strengths and weaknesses of various research designs that social psychologists use.**

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LO 2.3 **Explain the impact cross-cultural studies and social neuroscience research have on the way in which scientists investigate social behavior.**

Culture and Social Psychology
Social Neuroscience

Ethical Issues in Social Psychology

LO 2.4 **Summarize how social psychologists ensure the safety and welfare of their research participants, while at the same time testing hypotheses about the causes of social behavior.**

WHAT DO YOU THINK?

Revel Interactive

Survey **What Do You Think?**

SURVEY RESULTS

You hear a news story describing the following research finding: the more fast food children eat, the lower their scores on reading, math, and science tests. Even though this study was with kids, does it make you want to cut down on the amount of fast food you eat?

- ○ Yes
- ○ No

In this information age, when pretty much anything can be found on the internet, pornography is more available than ever before. One survey found that 46% of men and 16% of women between the ages of 18 and 39 looked at pornography in the past week (Regnerus, Gordon, & Price, 2016). Another found that a quarter of all employees who have access to the internet visit porn sites during their workdays ("The Tangled Web of Porn," 2008). It is thus important to ask whether exposure to pornography has harmful effects. Is it possible, for example, that looking at graphic sex increases the likelihood that men will become sexually violent?

Over the past several decades there has been plenty of debate about the right answer to these questions. Legal scholar Catharine MacKinnon (1993) argued that "Pornography is the perfect preparation—motivator and instruction manual in one—for … sexual atrocities" (p. 28). In 1985, a group of experts, appointed by the attorney general of the United States, voiced a similar opinion, concluding that pornography is a cause of rape and other violent crimes. But in 1970, another commission reviewed much of the same evidence and concluded that pornography does *not* contribute significantly to sexual violence. Who are we to believe? Is there a scientific way to determine the answer? We believe there is, and in this chapter we will discuss the kinds of research methods social psychologists employ, using research on pornography as an example.

Social Psychology: An Empirical Science

LO 2.1 Describe how researchers develop hypotheses and theories.

A fundamental principle of social psychology is that many social problems, such as the causes of violence, can be studied scientifically (Reis & Gosling, 2010; Reis & Judd, 2000; Wilson, Aronson, & Carlsmith, 2010). Before we discuss how social psychological research is done, we begin with a warning: The results of some of the experiments you encounter will seem obvious because social psychology concerns topics with which we are all intimately familiar—social behavior and social influence (Richard, Bond, & Stokes-Zoota, 2001). This familiarity sets social psychology apart from other sciences. When you read about an experiment in particle physics, it is unlikely that the results will connect with your personal experiences. We don't know about you, but we have never thought, "Wow! That experiment on quarks was just like what happened to me while I was waiting for the bus yesterday," or "My grandmother always told me to watch out for positrons and antimatter." When reading about the results of a study on helping behavior or aggression, however, it is quite common to think, "Come on, I could have predicted that! That's the same thing that happened to me last Friday."

Watch SURVIVAL TIPS! ADMIT YOU DIDN'T KNOW IT ALL ALONG

Try It!

Social Psychology Quiz: What's Your Prediction?

Answer the following questions, each of which is based on social psychological research.

1. Suppose an authority figure asks college students to administer near-lethal electric shocks to another student who has not harmed them in any way. What percentage of these students will agree to do it?
2. If you give children a reward for doing something they already enjoy doing, they will subsequently like that activity (a) more, (b) the same, or (c) less.
3. When a business or governmental agency is faced with an important choice it is always better to have a group of people make the decision, because "two heads are better than one": (a) true (b) false.
4. Repeated exposure to a stimulus—such as a person, a song, or a painting—will make you like it (a) more, (b) the same, or (c) less.
5. You ask an acquaintance to do you a favor—for example, to lend you $10—and he or she agrees. As a result of doing you this favor, the person will probably like you (a) more, (b) the same, or (c) less.
6. Who do think would be *least* likely to help a stranger who drops a bunch of papers all over the ground? Someone who is in a (a) good mood (b) neutral mood, or (c) bad mood?
7. In the United States, female college students tend not to do as well on math tests as males do. Under which of the following circumstances will women do as well as men: (a) when they are told that there are no gender differences on the test, (b) when they are told that women tend to do better on a difficult math test (because under these circumstances they rise to the challenge), or (c) when they are told that men outperform women under almost all circumstances?
8. Which statement about the effects of advertising is most true? (a) Subliminal messages implanted in advertisements are more effective than normal, everyday advertising; (b) normal TV ads for painkillers or laundry detergents are more effective than subliminal messages implanted in ads; (c) both types of advertising are equally effective; or (d) neither type of advertising is effective.
9. What effect, if any, does playing violent video games have on how likely people are to act aggressively in everyday life? (a) playing the games increases the likelihood that they will act aggressively; (b) they become less aggressive because the games "get it out of their system"; (c) playing the games has no effect on how aggressive people are.
10. Students walking across campus are asked to fill out a questionnaire on which they rate the degree to which student opinion should be considered on a local campus issue. Which group do you think believed that students should be listened to the most? (a) Those given a light clipboard with the questionnaire attached; (b) those given a heavy clipboard with the questionnaire attached; (c) the weight of the clipboard made no difference in people's ratings.

1. In studies conducted by Stanley Milgram (1974), up to 65% of participants administered what they thought were near-lethal shocks to another subject. (In fact, no real shocks were administered; see Chapter 8.)
2. (c) Rewarding people for doing something they enjoy will typically make them like that activity less in the future (see Chapter 5).
3. (b) False; groups often make worse decisions than individuals (see Chapter 9).
4. (a) Under most circumstances, repeated exposure increases liking for a stimulus (see Chapter 10).
5. (a) More (see Chapter 6).
6. (b) People who are in good moods or bad moods are more likely to help others than people in neutral moods, though for different reasons (see Chapter 11).
7. (a) Research has found that when women think there are sex differences on a test, they do worse, because of the added threat of confirming a stereotype about their gender. When women were told that there were no gender differences in performance on the test, they did as well as men (see Chapter 13).
8. (b) There is no evidence that subliminal messages in advertising have any effect; considerable evidence shows that normal advertising is quite effective (see Chapter 7).
9. (a) (Playing violent video games increases the likelihood that people will act aggressively (see Chapter 12).
10. (b) People given the heavy clipboard thought that student opinion should be weighed the most (see Chapter 3).

The thing to remember is that, when we study human behavior, the results may appear to have been predictable—in retrospect. Indeed, there is a well-known human tendency called the **hindsight bias**, whereby after people know that something occurred, they exaggerate how much they could have predicted it before it occurred (Bernstein, Aßfalg, Kumar, & Ackerman, 2016; Davis & Fischhoff, 2014; Ghrear, Birch, & Bernstein, 2016; Knoll & Arkes, 2016). After we know the winner of a political election, for example, we begin to look for reasons why that candidate won. After the fact, the outcome seems more easily predictable, even if we were quite unsure who would win before the election. The same is true of findings in psychology experiments; it seems like we could have easily predicted the outcomes—after we know them. The trick is to predict what will happen in an experiment before you know how it turned out. To illustrate that not all obvious findings are easy to predict, take the Try It! quiz above.

Hindsight Bias
The tendency for people to exaggerate, after knowing that something occurred, how much they could have predicted it before it occurred

Formulating Hypotheses and Theories

How, then, do social psychologists come up with the ideas for their studies? Research begins with a hunch, or hypothesis, that the researcher wants to test. There is lore in science that holds that brilliant insights come all of a sudden, as when the Greek scholar Archimedes shouted, "Eureka! I have found it!" when the solution to a problem flashed into his mind. Although such insights do sometimes occur suddenly, science is a cumulative process, and people often generate hypotheses from previous theories and research.

INSPIRATION FROM PREVIOUS THEORIES AND RESEARCH Many studies stem from a researcher's dissatisfaction with existing theories and explanations. After reading other people's work, a researcher might believe that he or she has a better way of explaining people's behavior. In the 1950s, for example, Leon Festinger was dissatisfied with the ability of a major theory of the day, behaviorism, to explain why people change their attitudes. He formulated a new approach—cognitive dissonance theory—that made specific predictions about when and how people would change their attitudes. As we will see in Chapter 6, other researchers were dissatisfied with Festinger's explanation of the results he obtained, so they conducted further research to test other possible explanations. Social psychologists, like scientists in other disciplines, engage in a continual process of theory refinement: A theory is developed; specific hypotheses derived from that theory are tested; based on the results obtained, the theory is revised and new hypotheses are formulated.

HYPOTHESES BASED ON PERSONAL OBSERVATIONS Social psychology also deals with phenomena we encounter in everyday life. Researchers often observe something in their lives or the lives of others that they find curious and interesting, stimulating them to construct a theory about why this phenomenon occurred—and to design a study to see if they are right. In the early 1960s, for example, a tragic murder was committed in the Queens section of New York City that led to a major research area in social psychology. Kitty Genovese, a young woman returning to her apartment late one night in 1964, was brutally killed in an attack that lasted 45 minutes. The *New York Times* reported that 38 apartment residents either saw the attack from their windows or heard Genovese's screams, and that no one attempted to help her, not even by calling the police. Although we know now that the *Times* exaggerated the number of eyewitnesses who did nothing (Cook, 2014; Pelonero, 2014), the story vividly captured public fears and, for its time, "went viral." There is no doubt that bystanders often fail to help in emergencies (as we will see in Chapter 11), and the Genovese murder triggered a great deal of soul searching as to why. Some concluded that living in a metropolis dehumanizes us and leads inevitably to apathy, indifference to human suffering, and lack of caring.

In October of 2011, a 2-year-old girl was struck by two vans in a row. A dozen people walked or rode past her. Why didn't they stop to help?

Bibb Latané and John Darley, two social psychologists who taught at universities in New York, had another idea. Instead of focusing on "what was wrong with New Yorkers," Latané and Darley thought it would be more interesting and important to examine the social situation in which Genovese's neighbors found themselves. Maybe, they thought, the more people who witness an emergency, the less likely it is that any given individual will intervene. Genovese's neighbors might have assumed that someone else had called the police, a phenomenon Latané and Darley (1968) called the *diffusion of responsibility*. Perhaps the bystanders would have been more likely to help had each thought he or she alone was witnessing the murder. How can we tell whether this hypothesis is true?

Review Questions

1. Which of the following is a basic assumption that social psychologists make?
   a. Social problems have complex causes and we will never know why they occur.
   b. It is hard to study what effect looking at pornography has on people, because everyone is different.
   c. Many social problems can be studied scientifically.
   d. Many people fail to help others in emergencies because they don't care about other people.
2. Which of the following is true about social psychological findings?
   a. They sometimes seem obvious after we learn about them, because of a hindsight bias.
   b. Most people could easily predict them in advance of knowing how the studies turned out.
   c. Wise people such as our grandparents could easily predict them in advance of knowing how the studies turned out.
   d. Most people who live in the culture in which the studies were conducted could predict the findings in advance of knowing how the studies turned out.
3. How do social psychologists formulate hypotheses and theories?
   a. They are inspired by previous theories and research.
   b. They disagree with a previous researchers' interpretations of their study.
   c. They construct hypothesis and theories based on personal observations in everyday life.
   d. All of the above answers are correct.

In science, idle speculation will not do; researchers must collect data to test their hypotheses. Let's look at how different research designs are used to do just that.

Research Designs

LO 2.2 **Compare the strengths and weaknesses of various research designs that social psychologists use.**

Social psychology is a scientific discipline with a well-developed set of methods for answering questions about social behavior, such as the one about the effects of pornography with which we began this chapter, and the one about reactions to violence that we just discussed. There are three types of methods: the *observational method*, the *correlational method*, and the *experimental method* (see Table 2.1). Any of these methods could be used to explore a specific research question; each is a powerful tool in some ways and a weak tool in others. Part of the creativity in conducting social psychological research involves choosing the right method, maximizing its strengths, and minimizing its weaknesses.

Here we discuss these methods in detail and try to provide you with a firsthand look at both the joy and the difficulty of conducting social psychological studies. The joy comes in unraveling the clues about the causes of interesting and important social behaviors, just as a sleuth gradually unmasks the culprit in a murder mystery. Each of us finds it exhilarating that we have the tools to provide definitive answers to questions philosophers have debated for centuries. At the same time, as seasoned researchers, we have learned to temper this exhilaration with a heavy dose of humility, because there are formidable practical and ethical constraints involved in conducting social psychological research.

Table 2.1 A Summary of Research Methods

Method	Focus	Question Answered
Observational	Description	What is the nature of the phenomenon?
Correlational	Prediction	From knowing X, can we predict Y?
Experimental	Causality	Is variable X a cause of variable Y?

The Observational Method: Describing Social Behavior

There is a lot to be learned by being an astute observer of human behavior. If the goal is to describe what a particular group of people or type of behavior is like, the **observational method** is very helpful. This is the technique whereby a researcher observes people and records measurements or impressions of their behavior. The observational method may take many forms, depending on what the researchers are looking for, how involved or detached they are from the people they are observing, and how much they want to quantify what they observe.

Observational Method
The technique whereby a researcher observes people and systematically records measurements or impressions of their behavior

Ethnography
The method by which researchers attempt to understand a group or culture by observing it from the inside, without imposing any preconceived notions they might have

ETHNOGRAPHY One example of observational learning is **ethnography**, the method by which researchers attempt to understand a group or culture by observing it from the inside, without imposing any preconceived notions they might have. The goal is to understand the richness and complexity of the group by observing it in action. Ethnography is the chief method of cultural anthropology, the study of human cultures and societies. As social psychology broadens its focus by studying social behavior in different cultures, ethnography is increasingly being used to describe different cultures and generate hypotheses about psychological principles (Fine & Elsbach, 2000; Flick, 2014; Uzzel, 2000).

Consider this example from the early years of social psychological research. In the early 1950s, a small cult of people called the Seekers predicted that the world would come to an end with a giant flood on the morning of December 21, 1954. They were convinced that a spaceship from the planet Clarion would land in the backyard of their leader, Mrs. Keech, and whisk them away before the apocalypse. Assuming that the end of the world was not imminent, Leon Festinger and his colleagues thought it would be interesting to observe this group closely and chronicle how they reacted when their prophecy was disconfirmed (Festinger, Riecken, & Schachter, 1956). To monitor the hour-to-hour conversations of this group, the social psychologists found it necessary to become members and pretend that they too believed the world was about to end. On the fateful morning of December 21, 1954, with no flood waters lapping at the door and no sign of a spaceship, they observed a curious thing: Rather than admitting that she was wrong, Mrs. Keech "doubled down" on her beliefs, announcing that God had spared Planet Earth because of the Seekers' faith, and that it was now time for the group to go public and recruit more members. Based on his observations of Mrs. Keech's tenacious adherence to her beliefs, Festinger formulated one of the most famous theories in social psychology, cognitive dissonance, which we discuss in Chapter 6.

The key to ethnography is to avoid imposing one's preconceived notions on the group and to try to understand the point of view of the people being studied. Sometimes, however, researchers have a specific hypothesis that they want to test using the observational method. An investigator might be interested, for example, in how much aggression children exhibit during school recesses. In this case, the observer would be systematically looking for particular behaviors that are concretely defined before the observation begins. For example, aggression might be defined as hitting or shoving another child, taking a toy from another child without asking, and so on. The observer might stand at the edge of the playground and systematically record how often these behaviors occur. If the researcher were interested in exploring possible sex and age differences in social behavior, he or she would also note the child's gender and age. How do we know how accurate the observer is? In such studies, it is important to establish agreement between two or more people who independently observe and code a set of data. By showing that two or more judges independently come up with the same observations, researchers ensure that the observations are not the subjective, distorted impressions of one individual.

Archival Analysis
A form of the observational method in which the researcher examines the accumulated documents, or archives, of a culture (e.g., diaries, novels, magazines, and newspapers)

ARCHIVAL ANALYSIS The observational method is not limited to observations of real-life behavior. The researcher can also examine the accumulated documents, or archives, of a culture, a technique known as an **archival analysis** (Mannes, Soll, &

Larrick, 2014; Oishi, 2014). For example, diaries, novels, suicide notes, music lyrics, television shows, movies, magazine and news articles, advertising, social media, and the ways in which people use the internet all tell us a great deal about human behavior. One study, for example, analyzed millions of Twitter messages sent in 84 countries to examine daily rhythms in people's mood. Judging by the content of the messages they send, most people's positive moods appear to peak at two different times of the day: In the morning, soon after they get up, and late in the evening, before they go to bed (Golder & Macy, 2011). Researchers have also used archival data to answer questions about pornography usage. For example, do you think that people who live in some areas of the United States are especially likely to look at online pornography? Perhaps you guessed that it is those who live in more liberal "blue" states that are the biggest consumers, given that liberals tend to have more permissive attitudes toward social issues. To address this question, a researcher examined credit card subscriptions to pornography sites (Edelman, 2009). Although he was not given access to the names of people who subscribed, he did know their zip codes, which enabled him to estimate regional variations. As it turned out, residents of "blue" states and "red" were equally likely to subscribe to pornography sites (residents of Utah came in first).

LIMITS OF THE OBSERVATIONAL METHOD The study that analyzed Twitter messages revealed interesting daily patterns, but it did not say much about *why* moods peak in the morning and at night. Furthermore, certain kinds of behavior are difficult to observe because they occur only rarely or only in private. You can begin to see the limitations of the observational method. Had Latané and Darley chosen this method to study the effects of the number of bystanders on people's willingness to help a victim, we might still be waiting for an answer, given the infrequency of emergencies and the difficulty of predicting when they will occur. And, archival data about pornography, although informative about who is accessing it, tells us little about the effects on their attitudes and behavior of doing so. Social psychologists want to do more than just describe behavior; they want to predict and explain it. To do so, other methods are more appropriate.

The Correlational Method: Predicting Social Behavior

Correlational Method
The technique whereby two or more variables are systematically measured and the relationship between them (i.e., how much one can be predicted from the other) is assessed

Correlation Coefficient
A statistical technique that assesses how well you can predict one variable from another—for example, how well you can predict people's weight from their height

A goal of social science is to understand relationships between variables and to be able to predict when different kinds of social behavior will occur. What is the relationship between the amount of pornography people see and their likelihood of engaging in sexually violent acts? Is there a relationship between the amount of violence children see on television and their aggressiveness? To answer such questions, researchers frequently use another approach: the correlational method.

With the **correlational method**, two variables are systematically measured, and the relationship between them—how much you can predict one from the other—is assessed. People's behavior and attitudes can be measured in a variety of ways. Just as with the observational method, researchers sometimes make direct observations of people's behavior. For example, researchers might be interested in testing the relationship between children's aggressive behavior and how much violent television they watch. They too might observe children on the playground, but here the goal is to assess the relationship, or correlation, between the children's aggressiveness and other factors, such as TV viewing habits, which the researchers also measure.

Researchers look at such relationships by calculating the **correlation coefficient**, a statistic that assesses how well you can predict one variable from another—for example, how well you can predict people's weight from their height. A correlation coefficient can range from –1 to +1. A

Researchers use archival analyses to test psychological hypotheses. One study, for example, analyzed millions of Twitter messages to see how people's moods varied over the course of a day.

positive correlation means that increases in the value of one variable are associated with increases in the value of the other variable. The correlation between people's height and weight is about 0.7, for example, reflecting the fact that the taller people are, the more they tend to weigh. The relationship is strong but not perfect, which is why the correlation is less than 1. A negative correlation means that increases in the value of one variable are associated with decreases in the value of the other. If height and weight were negatively correlated in human beings, we would look very peculiar; short people, such as children, would look like penguins, whereas tall people, such as NBA basketball players, would be all skin and bones! It is also possible, of course, for two variables to be completely unrelated, so that a researcher cannot predict one variable from the other. In that case the correlation coefficient would be 0 (see Figure 2.1).

Surveys

Research in which a representative sample of people are asked (often anonymously) questions about their attitudes or behavior

SURVEYS The correlational method is often used to analyze the results of **surveys**, research in which a representative sample of people are asked questions about their attitudes or behavior. Surveys are a convenient way to measure people's attitudes; for example, people can be telephoned and asked which candidate they will support in an upcoming election or how they feel about a variety of social issues. Psychologists often use surveys to help understand social behavior and attitudes—for example, by seeing whether the amount of pornography men say they read is correlated with their attitudes toward women.

Surveys have a number of advantages, one of which is allowing researchers to judge the relationship between variables that are difficult to observe, such as how often people engage in safer sex. Another advantage is the ability to sample representative segments of the population. The best way to do this is to use a **random selection** of people from the population at large, which is a way of ensuring that a sample of people is representative of a population by giving everyone in the population an equal chance of being selected for the sample. As long as the sample is selected randomly, and is reasonably large, we can assume that the responses are a reasonable match to those of the population as a whole.

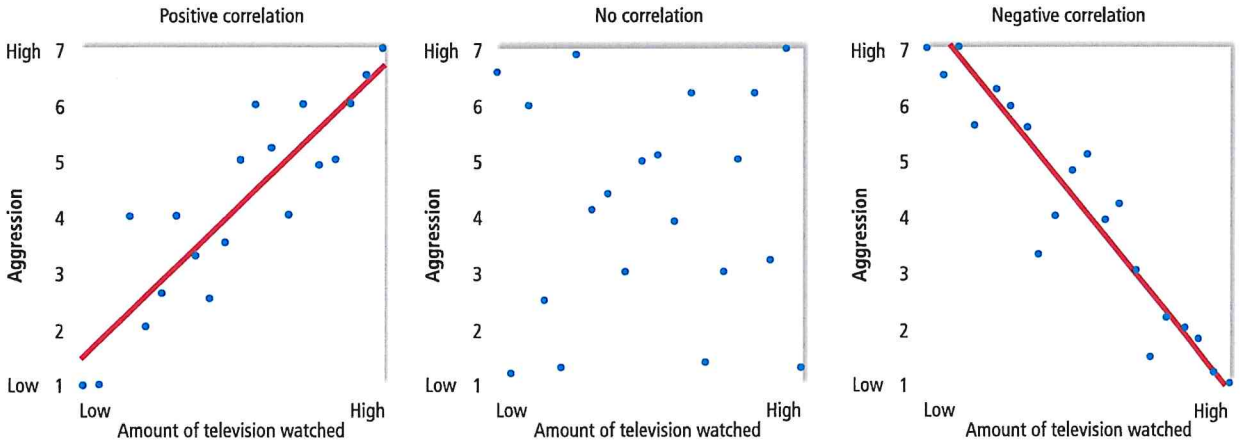
Random Selection

A way of ensuring that a sample of people is representative of a population by giving everyone in the population an equal chance of being selected for the sample

There are famous cases of surveys that yielded misleading results by failing to sample randomly. In the fall of 1936, for example, a weekly magazine called the *Literary Digest* conducted a large survey asking people which candidate they planned to vote for in the upcoming presidential election. The magazine obtained the names and addresses of its sample from telephone directories and automobile registration lists. The results of its survey of 2 million people indicated that the Republican candidate, Alf Landon,

Figure 2.1 Types of Correlations

The diagrams show three possible correlations in a hypothetical study of watching violence on television and aggressive behavior in children. The diagram at the left shows a strong positive correlation: The more television children watched, the more aggressive they were. The diagram in the middle shows no correlation: The amount of television children watched is not related to how aggressive they were. The diagram at the right shows a strong negative correlation: The more television children watched, the less aggressive they were.

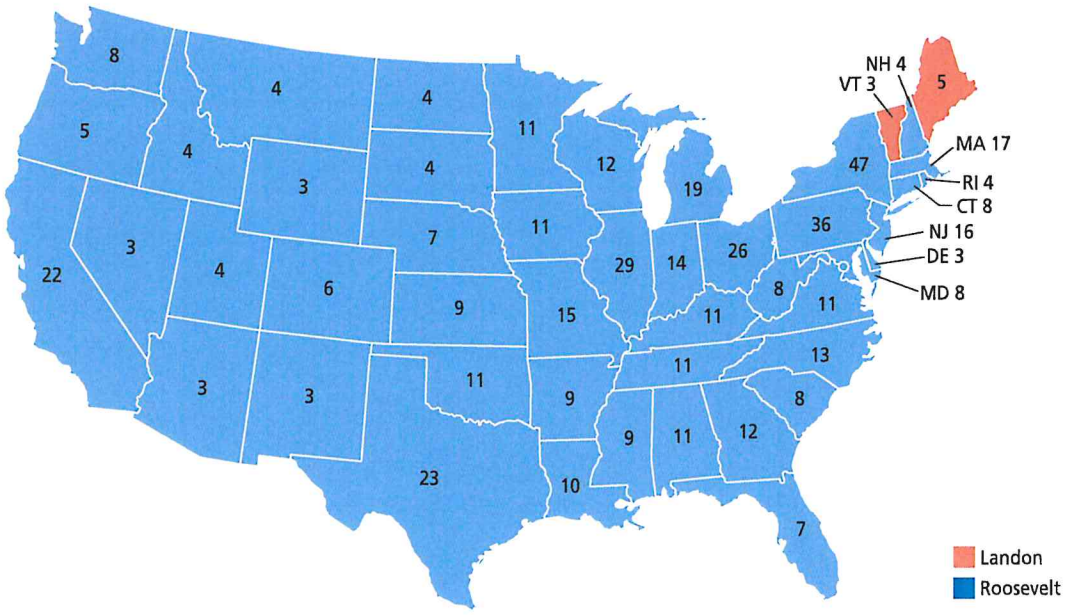


would win by a landslide. Of course, you know that there never was a President Landon; instead, Franklin Delano Roosevelt won every state in the Union but two. What went wrong with the *Literary Digest* poll? In the depths of the Great Depression, many people could not afford telephones or cars. Those who had them were doing well financially; most well-to-do voters were Republican and overwhelmingly favored Alf Landon. However, the majority of the voters were not well off—and overwhelmingly supported the Democratic candidate, Roosevelt. By using a list of names that excluded the less affluent members of the population, the *Literary Digest* surveyed a nonrepresentative sample. (the *Literary Digest* never recovered from this methodological disaster and went out of business shortly after publishing its poll.)

Modern political polls are not immune from such sampling errors. Many polling companies only contact people on their home phones (landlines), because of the difficulty of obtaining directories of cell phone numbers. They do so at their peril, because research shows that Americans who rely solely on cell phones are more likely to vote for Democratic candidates (Silver, 2012). Further, pollsters adjust their results by estimating how likely respondents are to vote and applying other statistical corrections. These adjustments can introduce further bias, which may be why several polls underestimated the percentage of votes Donald Trump would receive in key swing states in the 2016 presidential election (Newkirk, 2016).

Another potential problem with survey data is the accuracy of the responses. Straightforward questions, regarding who people intend to vote for or what they typically do, are relatively easy to answer. But asking survey participants to predict how they might behave in some hypothetical situation or to explain why they behaved as they did in the past is an invitation to inaccuracy (Schuman & Kalton, 1985; Schwarz, Groves, & Schuman, 1998). Often people simply don't know the answer—but they think they do. Richard Nisbett and Tim Wilson (1977) demonstrated this "telling more than you can know" phenomenon in a number of studies in which people often made inaccurate reports about why they responded the way they did. Their reports about the causes of their responses pertained more to their theories and beliefs about what should have influenced them than to what actually influenced them. (We discuss these studies at greater length in Chapter 5.)

In the fall of 1936, a magazine called the *Literary Digest* predicted that the Republican candidate for president would win by a landslide, based on a poll they conducted. Instead, Franklin Roosevelt won every state but two, as seen in the map below. What went wrong with the *Literary Digest* poll?



A study conducted in the early 1990s found a correlation between the type of birth control women used and their likelihood of getting a sexually transmitted infection (STI). Those whose partners used condoms were more likely to have an STI than were women who used other forms of birth control. Does this mean that the use of condoms caused the increase in STIs? Not necessarily—see the text for alternative explanations of this research finding.

LIMITS OF THE CORRELATIONAL METHOD: CORRELATION DOES NOT EQUAL CAUSATION The major shortcoming of the correlational method is that it tells us only that two variables are related, whereas the goal of the social psychologist is to identify the *causes* of social behavior. We want to be able to say that A causes B, not just that A is correlated with B.

If a researcher finds that there is a correlation between two variables, it means that there are three possible causal relationships between these variables. For example, researchers have found a correlation between the amount of violent television children watch and how aggressive they are (similar to the pattern shown in the graph on the left side in Figure 2.1, though not quite as strong; see Eron, 2001). One explanation of this correlation is that watching TV violence causes kids to become more violent themselves. It is equally probable, however, that the reverse is true: that kids who are violent to begin with are more likely to watch violent TV. Or there might be no causal relationship between these two variables; instead, both TV watching and violent behavior could be caused by a third variable, such as having neglectful parents who do not pay much attention to their kids. (Experimental evidence supports one of these causal relationships; we will discuss which one in Chapter 12.) When using the correlational method, it is wrong to jump to the conclusion that one variable is causing the other to occur. *Correlation does not prove causation.*

Unfortunately, forgetting this adage is one of the most common methodological errors in the social sciences. Consider a study of birth control methods and sexually transmitted infections (STIs) in women (Rosenberg, Davidson, Chen, Judson, & Douglas, 1992). The researchers examined the records of women who had visited a clinic, noting which method of birth control they used and whether they had an STI. Surprisingly, the researchers found that women who relied on condoms had significantly more STIs than women who used diaphragms or contraceptive sponges. This result was widely reported in the popular press, with the conclusion that the use of diaphragms and sponges caused a lower incidence of disease. Some news articles urged women whose partners used condoms to switch to other methods.

Can you see the problem with this conclusion? The fact that the incidence of disease was correlated with the type of contraception women used is open to a number of causal interpretations. Perhaps the women who used sponges and diaphragms had sex with fewer partners. (In fact, condom users were more likely to have had sex with multiple partners in the previous month.) Perhaps the partners of women who relied on condoms were more likely to have STIs than were the partners of women who used sponges and diaphragms. There is simply no way of knowing. Thus, the conclusion that the birth control methods protected against STIs cannot be drawn from this correlational study.

Watch SURVIVAL TIPS! CORRELATION DOES NOT EQUAL CAUSATION

As another example of the difficulty of inferring causality from correlational designs, let's return to the question of whether pornography causes aggressive sexual acts against women, such as rape. A recent summary of 22 studies, with more than 20,000 participants in seven countries, found a correlation of 0.28 between looking at pornography and the likelihood of committing acts of sexual aggression (Wright, Tokunaga, & Kraus, 2016). Remember what a correlation of 0.28 means? Because it's positive it means that the more pornography people consumed, the more likely they were to be sexually aggressive; though the relationship was not particularly strong.

Try It!

Correlation and Causation: Knowing the Difference

It can be difficult to remember that, when two variables are correlated, it doesn't necessarily mean that one caused the other; correlation does *not* allow us to make causal inferences. For each of the following examples, think about why the correlation was found. Even if it seems obvious which variable was causing the other, are there alternative explanations?

1. A politician extols the virtues of the Boy Scouts and Girl Scouts. In his salute to the scouts, the politician mentions that few teenagers convicted of street crimes have been members of the scouts. In other words, he is positing a negative correlation between activity in scouting and frequency of criminal behavior. Can you think of any alternative explanations?
2. A recent study found that college students who have "helicopter parents"—moms and dads who keep close track of their kids' academic life and intervene often—actually get lower grades than college students whose parents do not hover over them so closely. Does it follow that college students would do better in school if their parents backed off a little bit?
3. A study of soldiers stationed on army bases found that the number of tattoos a soldier had was correlated positively with becoming involved in a motorcycle accident. Why?
4. A study found that adolescents who are religious are less likely to commit crimes and more likely to wear seat belts than are adolescents who are not religious. Does religion make people more likely to obey the law?
5. A correlation exists between people's tendency to eat breakfast and how long they live, such that people who skip breakfast die younger. Does eating Wheaties lead to a long life?
6. A study reported that the more milk children drank, the more weight they gained. One researcher concluded that children who need to control their weight should cut down on their milk consumption. Is this a valid conclusion?
7. A recent survey found that people who watch public television have more sex than people who do not. "Who would have thought," the researchers reported, "that National Geographic Specials or Ken Burns' history of baseball could get people in the mood?" How would you explain this correlation?
8. A recent study in Britain found that kids who ate sweets daily at age 10 were much more likely to be arrested for a violent crime later in life than were kids who did not eat sweets daily at 10. Should we limit the number of candy bars that kids eat, so that they don't turn into violent criminals?
9. A recent study found that college students who use Facebook have lower GPAs than college students who do not. Does that mean that deleting your Facebook account will increase your GPA?
10. According to one study, the more sex that teenagers watch on television, the more likely they are to have sex themselves. Should parents limit the amount of sexual TV their teens watch?

1. The politician ignored possible third variables that could cause both Scout membership and crime, such as socioeconomic class. Traditionally, Scouting has been most popular in small towns and suburbs among middle-class youngsters; it has never been very attractive or even available to youths growing up in densely populated, urban, high-crime areas.

2. Not necessarily. It might be the other way around—namely, that moms and dads are more likely to become helicopter parents if their kids are having academic problems. Or there could be a third variable that causes parents to hover and their kids to have academic problems.

3. Did tattoos cause motorcycle accidents? Or, for that matter, did motorcycle accidents cause tattoos? The researchers suggested that a third (unmeasured) variable was in fact the cause of both: A tendency to take risks and to be involved in flamboyant personal displays led to tattooing one's body and to driving a motorcycle recklessly.

4. It is possible that religion makes people more likely to obey the law. It is equally possible, however, that some other variable increases the likelihood that people will be religious and follow the rules—such as having parents who are religious.

5. Not necessarily. People who do not eat breakfast might differ from people who do in any number of ways that influence longevity—for example, in how obese they are, how hard-driving and high-strung they are, or even how late they sleep in the morning.

6. Not necessarily, because milk drinking may have little to do with weight gain. Children who drink a lot of milk might be more likely to eat cookies or other high-calorie foods.

7. It is possible that watching public television makes people want to have more sex. It is equally possible, however, that some third variable, such as health or education, influences both television preferences and sexual behavior. It is even possible that having sex makes people want to watch more public television. Based on the correlation the researchers reported, there is no way of telling which of these explanations is true.

8. Not necessarily. There could be a third variable that is causing kids to eat a lot of candy and to become violent later in life.

9. Not necessarily. Perhaps students who study less are more drawn to Facebook. Or, there is some third variable that causes people to want to use Facebook and do worse academically

10. Not necessarily. There may be a third variable that makes kids more interested in watching sex and having sex.

Note: For more examples on correlation and causation, see http://jfmueller.faculty.noctt.edu/100/correlation_or_-causation.htm.

But does this prove that using pornography *caused* people to commit sexual violence? That's one of the possible explanations, but can you think of others? Perhaps the causal direction is the other way around—people who are prone to commit sexual violence are more interested in pornography; that is, it is their aggressiveness causing their attraction to pornography, and not the pornography causing their aggressiveness (Malamuth, Addison, & Koss, 2000). Alternatively, there could be some third variable, such as something in people's upbringing or subculture, that makes them more likely both to commit sexual violence and look at pornography. Other examples of the difficulty of inferring causality from correlational studies are shown in the following Try It!

The Experimental Method: Answering Causal Questions

Experimental Method
The method in which the researcher randomly assigns participants to different conditions and ensures that these conditions are identical except for the independent variable (the one thought to have a causal effect on people's responses)

The only way to determine causal relationships is with the **experimental method**. Here, the researcher systematically orchestrates the event so that people experience it in one way (e.g., they witness an emergency along with other bystanders) or another way (e.g., they witness the same emergency but are the sole bystander). The experimental method is the method of choice in most social psychological research, because it allows the experimenter to make causal inferences.

INDEPENDENT AND DEPENDENT VARIABLES To illustrate how this is done, let's return to our previous example of Bibb Latané and John Darley, the two social psychologists who came up with the diffusion of responsibility hypothesis, that the more people who witness an emergency, the less likely it is that any one of them will intervene. As with any experiment, they needed to vary the critical aspect of the situation that they thought would have a causal effect, in their case the number of people who witnessed an emergency. This is called the **independent variable**, which is the variable a researcher changes or varies to see if it has an effect on some other variable. The researcher then observes whether the independent variable (e.g., the number of bystanders) has the predicted effect on the outcome of interest, namely the **dependent variable**, which is the variable a researcher measures to see if it is influenced by the independent variable—in this case whether people help in an emergency (see Figure 2.2).

Independent Variable
The variable a researcher changes or varies to see if it has an effect on some other variable

Dependent Variable
The variable a researcher measures to see if it is influenced by the independent variable the researcher hypothesizes that the dependent variable will depend on the level of the independent variable

Sound simple? Actually, it isn't. Staging an experiment to test Latané and Darley's hypothesis about the effects of group size involves severe practical and ethical difficulties. What kind of emergency should be used? Ideally (from a scientific perspective), it should be as true to the Genovese case as possible. Accordingly, you would want to stage a murder that passersby could witness. In one condition, you could stage the murder so that only a few onlookers were present; in another condition, you could stage it so that a great many onlookers were present.

Obviously, no scientist in his or her right mind would stage a murder for unsuspecting bystanders. But how could the researchers arrange a realistic situation that is upsetting enough to be similar to the Genovese case without it being too upsetting? In addition, how could they ensure that each bystander experienced the same emergency except for the independent variable whose effect they wanted to test—namely, the number of bystanders?

Let's see how Latané and Darley (1968) dealt with these problems. Imagine that you are a participant in their experiment. You arrive at the scheduled time and find yourself in a long corridor with doors to several small rooms. An experimenter greets you and takes you into one of the rooms, mentioning that five other students, seated out of view in the other rooms, will be participating with you. The experimenter leaves after giving you a pair of headphones with an attached microphone. You put on the headphones, and soon you hear the experimenter explaining to everyone that he is interested in learning about the kinds of personal problems college students experience.

Figure 2.2 Researchers vary the independent variable (e.g., the number of bystanders people think are present) and observe what effect that has on the dependent variable (e.g., whether people help).

Independent Variable	Dependent Variable
The variable that is hypothesized to influence the dependent variable. Participants are treated identically except for this variable.	The response that is hypothesized to depend on the independent variable. All participants are measured on this variable.
Example: Latané and Darley (1968)	
The number of bystanders	**How many participants helped?**
 Participant + Victim	85%
 Participant + Victim + Two others	62%
 Participant + Victim + Four others	31%

To ensure that people will discuss their problems candidly, he explains that each participant will remain anonymous and each will stay in his or her separate room and communicate with the others only via the intercom system. The experimenter further says that the discussion will be recorded, but to encourage openness, he will not listen to it "live." Finally, the experimenter asks participants to take turns presenting their problems, each speaking for 2 minutes, after which each person will comment on what the others have said. To make sure this procedure is followed, he says, only one person's microphone will be turned on at a time.

The group discussion begins. You listen as the first participant admits that he has found it difficult to adjust to college. With some embarrassment, he mentions that he sometimes has seizures, especially when under stress. When his 2 minutes are up, you hear the other four participants discuss their problems; then it is your turn. When you have finished, the first person speaks again. To your astonishment, he soon begins to experience one of the seizures he mentioned earlier:

> I—er—um—I think I—I need—er—if—if could—er—er—somebody er—er—er—er—er—er—er—give me a little—er—give me a little help here because—er—I—er—I'm—er—er—h—h—having a—a—a real problem—er—right now and I—er—if somebody could help me out it would—it would—er—er s—s—sure be—sure be good ... because—er—there—er—er—a cause I—er—I—uh—I've got a—a one of the—er—sei—er—er—things coming on and—and—and I could really—er—use some help so if somebody would—er—give me a little h—help—uh—er—er—er—er c—could somebody—er—er—help—er—uh—uh—uh (choking sounds) ... I'm gonna die—er—er—I'm ... gonna die—er—help—er—er—seizure—er (chokes, then quiet). (Darley & Latané, 1968, p. 379)

What would you have done in this situation? If you were like most of the participants in the actual study, you would have remained in your room, listening to your fellow student having a seizure, without doing anything about it. Does this surprise you? Latané and Darley kept track of the number of people who left their cubicle to find the victim or the experimenter before the end of the victim's seizure. Only 31% of the participants

sought help in this way. Fully 69% of the students remained in their cubicles and did nothing—just as Kitty Genovese's neighbors failed to offer assistance in any way.

Does this finding prove that the failure to help was due to the number of people who witnessed the seizure? How do we know that it wasn't due to some other factor? We know because Latané and Darley included two other conditions in their experiment. In these conditions, the procedure was identical to the one we described, with one crucial difference: The size of the discussion group was smaller, meaning that fewer people witnessed the seizure. In one condition, the participants were told that there were three other people in the discussion group besides themselves (the victim plus two others), and in this case, helping behavior increased to 62%. In a third condition, participants were told that there was only one other person in their discussion group (the victim), and in that case, nearly everyone helped (85%; see Figure 2.2).

These results indicate that the number of bystanders strongly influences the rate of helping, but it does not mean that the size of the group is the only cause of people's decision to help. After all, when there were four bystanders, a third of the participants still helped; conversely, when participants thought they were the only witness, some of them failed to do so. Obviously, other factors influence helping behavior—the bystanders' personalities, their prior experience with emergencies, and so on. Nonetheless, Latané and Darley succeeded in identifying one important determinant of whether people help: the number of bystanders that people think are present.

INTERNAL VALIDITY IN EXPERIMENTS How can we be sure that the differences in help across conditions in the Latané and Darley seizure study were due to the different numbers of bystanders who witnessed the emergency? Could something else have produced this effect? This is the beauty of the experimental method: We can be sure of the causal connection between the number of bystanders and helping, because Latané and Darley made sure that everything about the situation was the same in the different conditions *except* for the independent variable—the number of bystanders. Keeping everything but the independent variable the same in an experiment is referred to as *internal validity*. Latané and Darley were careful to maintain high internal validity by making sure that everyone witnessed the same emergency. They prerecorded the supposed other participants and the victim and played their voices over the intercom system so that everyone heard exactly the same thing.

Random Assignment to Condition

A process ensuring that all participants have an equal chance of taking part in any condition of an experiment; through random assignment, researchers can be relatively certain that differences in the participants' personalities or backgrounds are distributed evenly across conditions

You may have noticed, however, that there was a key difference between the conditions of the Latané and Darley experiment other than the number of bystanders: Different people participated in the different conditions. Maybe the observed differences in helping were due to characteristics of the participants instead of the independent variable. The people in the sole-witness condition might have differed in any number of ways from their counterparts in the other conditions, making them more likely to help. Maybe they were more likely to know something about epilepsy or to have experience helping in emergencies. If either of these possibilities is true, it would be difficult to conclude that it was the number of bystanders, rather than something about the participants' backgrounds, that led to differences in helping.

Fortunately, there is a technique that allows experimenters to minimize differences among participants as the cause of the results: **random assignment to condition**. This is the process whereby all participants have an equal chance of taking part in any condition of an experiment; through random assignment, researchers can be relatively certain that differences in the participants'

Watch THE EXPERIMENTAL METHOD

personalities or backgrounds are distributed evenly across conditions. Because Latané and Darley's participants were randomly assigned to the conditions of their experiment, it is very unlikely that the ones who knew the most about epilepsy all ended up in one condition. Knowledge about epilepsy should be randomly (i.e., roughly evenly) dispersed across the three experimental conditions. This powerful technique is the most important part of the experimental method.

Even with random assignment, however, there is the (very small) possibility that different characteristics of people did not distribute themselves evenly across conditions. For example, if we randomly divide a group of 40 people into two groups, it is possible that those who know the most about epilepsy will by chance end up more in one group than in the other—just as it is possible to get more heads than tails when you flip a coin 40 times. This is a possibility we take seriously in experimental science. The analyses of our data come with a **probability level (*p*-value)**, which is a number, calculated with statistical techniques, that tells researchers how likely it is that the results of their experiment occurred by chance and not because of the independent variable. The convention in science, including social psychology, is to consider results *significant* (trustworthy) if the probability level is less than 5 in 100 that the results might be due to chance factors rather than the independent variables studied. For example, if we flipped a coin 40 times and got 40 heads, we would probably assume that this was very unlikely to have occurred by chance and that there was something wrong with the coin (we might check the other side to make sure it wasn't one of those trick coins with heads on both sides!). Similarly, if the results in two conditions of an experiment differ significantly from what we would expect by chance, we assume that the difference was caused by the independent variable (e.g., the number of bystanders present during the emergency). The *p*-value tells us how confident we can be that the difference was due to chance rather than the independent variable.

Probability Level (*p*-value)
A number calculated with statistical techniques that tells researchers how likely it is that the results of their experiment occurred by chance and not because of the independent variable or variables; the convention in science, including social psychology, is to consider results *significant* (trustworthy) if the probability level is less than 5 in 100 that the results might be due to chance factors and not the independent variables studied

To summarize, the key to a good experiment is to maintain high **internal validity**, which we can now define as making sure that the independent variable, and *only* the independent variable, influences the dependent variable. This is accomplished by controlling all extraneous variables and by randomly assigning people to different experimental conditions (Campbell & Stanley, 1967). When internal validity is high, the experimenter is in a position to judge whether the independent variable causes the dependent variable. This is the hallmark of the experimental method that sets it apart from the observational and correlational methods: Only the experimental method can answer causal questions, such as whether exposure to pornography causes men to commit violent acts.

Internal Validity
Making sure that nothing besides the independent variable can affect the dependent variable; this is accomplished by controlling all extraneous variables and by randomly assigning people to different experimental conditions

For example, researchers have tested whether pornography causes aggression by randomly assigning consenting participants to watch pornographic or nonpornographic films (the independent variable) and measuring the extent to which people acted aggressively toward women (the dependent variable). In a study by Donnerstein and Berkowitz (1981), males were angered by a female accomplice and then were randomly assigned to see one of three films: violent pornography (a rape scene), nonviolent pornography (sex without any violence), or a neutral film with no violence or sex (a talk show interview). The men were then given an opportunity to act aggressively toward the woman who had angered them, by choosing the level of electric shock she would receive in an ostensibly unrelated learning experiment (the accomplice did not really receive shocks, but participants believed that she would). The men who had seen the violent pornography administered significantly more intense shocks to the woman than did the men who had seen the nonviolent pornography or the neutral film, suggesting that it is not pornography per se that leads to aggressive behavior, but the violence depicted in some pornography (Mussweiler & Förster, 2000). We review this area of research in more detail in Chapter 12.

EXTERNAL VALIDITY IN EXPERIMENTS For all the advantages of the experimental method, there are some drawbacks. By virtue of gaining enough control over the situation so as to randomly assign people to conditions and rule out the effects of extraneous variables, the situation can become somewhat artificial and distant from

real life. For example, it might be argued that Latané and Darley strayed far from the original inspiration for their study, the Kitty Genovese murder. What does witnessing a seizure while participating in a laboratory experiment in a college building have to do with a brutal murder in a densely populated urban neighborhood? How often in everyday life do we have discussions with other people through an intercom system? Did the fact that the participants knew they were in a psychology experiment influence their behavior?

External Validity
The extent to which the results of a study can be generalized to other situations and to other people

These are important questions that concern **external validity**, which is the extent to which the results of a study can be generalized to other situations and other people. Note that two kinds of generalizability are at issue: the extent to which we can generalize from the situation constructed by an experimenter to real-life situations, referred to as generalizability across *situations*, and the extent to which we can generalize from the people who participated in the experiment to people in general, referred to as generalizability across *people*.

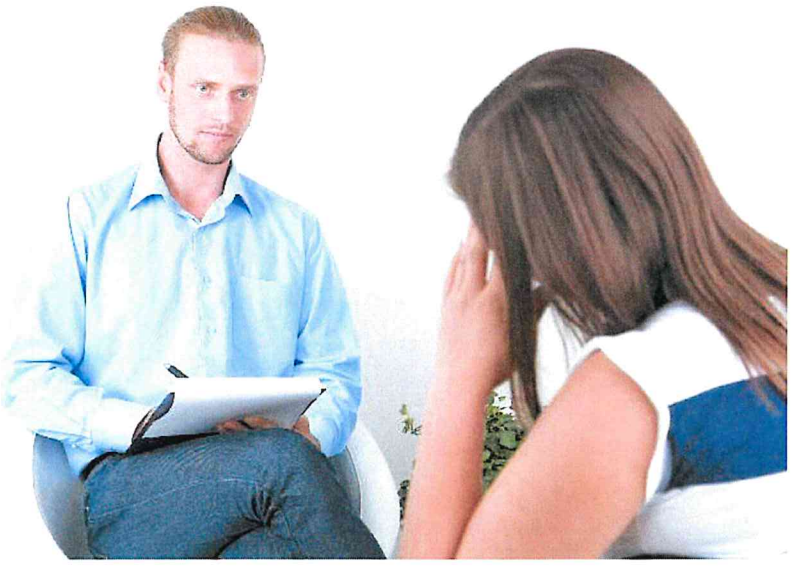
Psychological Realism
The extent to which the psychological processes triggered in an experiment are similar to psychological processes that occur in everyday life

When it comes to generalizability across situations, research in social psychology is sometimes criticized for being conducted in artificial settings that cannot be generalized to real life—for example, psychological experiments at a university. To address this problem, social psychologists attempt to increase the generalizability of their results by making their studies as realistic as possible. But this is hard to do in a laboratory setting in which people are placed in situations they would rarely, if ever, encounter in everyday life, such as occurred in Latané and Darley's group discussion of personal problems over an intercom system. Instead, psychologists attempt to maximize the study's **psychological realism**, which is the extent to which the psychological processes triggered in an experiment are similar to psychological processes that occur in everyday life (Aronson, Wilson, & Brewer, 1998). Even though Latané and Darley staged an emergency that in significant ways was unlike those encountered in everyday life, was it psychologically similar to real-life emergencies? Were the same psychological processes triggered? Did the participants have the same types of perceptions and thoughts, make the same types of decisions, and choose the same types of behaviors that they would in a real-life situation? If so, the study is high in psychological realism and we can generalize the results to everyday life.

Cover Story
A description of the purpose of a study, given to participants, that is different from its true purpose and is used to maintain psychological realism

Psychological realism is heightened if people feel involved in a real event. To accomplish this, experimenters often tell participants a **cover story**—a disguised version of the study's true purpose. Recall, for example, that Latané and Darley told people that they were studying the personal problems of college students and then staged an emergency. It would have been a lot easier to say to people, "Look, we are interested in how people react to emergencies, so at some point during this study we are going to stage an accident, and then we'll see how you respond." We think you'll agree that such a procedure would be very low in psychological realism. In real life, we never know when emergencies are going to occur, and we do not have time to plan our responses to them. If participants knew that an emergency was about to happen, the kinds of psychological processes triggered would have been quite different from those of a real emergency, reducing the psychological realism of the study.

A good deal of social psychological research takes place in laboratory settings. How do social psychologists generalize from the findings of these studies to life outside the laboratory?



Social psychologists are also concerned with generalizability across people. Latané and Darley's experiment, for example, documented an interesting, unexpected example of social influence whereby the mere knowledge that others were present reduced the likelihood that people helped. But what have we learned about people in general? The participants in their study were 52 male and female students at New York University who received course credit for participating in the experiment. Would the study have turned out the same way if a different population had been used? Would the number of bystanders have influenced helping behavior had the participants been middle-aged blue-collar workers instead of college students? Midwesterners instead of New Yorkers? Japanese instead of American?

The only way to be certain that the results of an experiment represent the behavior of a particular population is to ensure that the participants are randomly selected from that population. Ideally, samples in experiments should be randomly selected, just as they are in surveys. Increasingly, social psychologists are conducting research with diverse populations and cultures, some of it over the internet (e.g., Lane, Banaji, & Nosek, 2007). But, unfortunately, it is impractical and expensive to select random samples for most social psychology experiments. It is difficult enough to convince a random sample of Americans to agree to answer a few questions over the telephone as part of a political poll, and such polls can cost thousands of dollars to conduct. Imagine the difficulty Latané and Darley would have had convincing a random sample of Americans to board a plane to New York to take part in their study, not to mention the cost of such an endeavor. Even trying to gather a random sample of students at New York University would not have been easy; each person contacted would have had to agree to spend an hour in Latané and Darley's laboratory.

However, concerns about practicality and expense are not good excuses for doing poor science. Many researchers address this problem by studying basic psychological processes that make people susceptible to social influence, assuming that these processes are so fundamental that they are universally shared. In that case, participants for social psychology experiments don't really have to come from all over the country or world. Of course, some social psychological processes are likely to be quite dependent on cultural factors, and in those cases, we'd need diverse samples of people. The question then is, how can researchers tell whether the processes they are studying are universal?

FIELD EXPERIMENTS One of the best ways to increase external validity is by conducting **field experiments**. In a field experiment, researchers study behavior outside the laboratory, in its natural setting. As in a laboratory experiment, the researcher controls the occurrence of an independent variable (e.g., group size) to see what effect it has on a dependent variable (e.g., helping behavior) and randomly assigns people to the different conditions. Thus, a field experiment has the same design as a laboratory experiment, except that it is conducted in a real-life setting rather than in the relatively artificial setting of the laboratory. The participants in a field experiment are unaware that the events they experience are in fact an experiment. The external validity of such an experiment is high, because, after all, it is taking place in the real world, with real people who are more diverse than a typical college student sample.

Field Experiments
Experiments conducted in natural settings rather than in the laboratory

Many such field studies have been conducted in social psychology. For example, Latané and Darley (1970) tested their hypothesis about group size and bystander intervention in a convenience store outside New York City. Two "robbers" (with full knowledge and permission of the cashier and manager of the store) waited at the checkout counter until there were either one or two other customers approaching to get in line. They then asked the cashier to retrieve the most expensive beer the store carried. The cashier said he would have to check in the back to see how much of that brand was in stock. While the cashier was gone, the robbers picked up a case of beer in the front of the store, declared, "They'll never miss this," put the beer in their car, and drove off.

Some experiments are done in a psychology laboratory, whereas others are done in real-life settings. What are the advantages and disadvantages of each approach?

Because the robbers were rather burly fellows, no one attempted to intervene directly to stop the theft. The question was, when the cashier returned, how many people would help by telling him that a theft had just occurred? As it turned out, the number of bystanders had the same inhibiting effect on helping behavior as in the laboratory seizure study: Significantly fewer people reported the theft when there was another customer-witness in the store than when they were alone.

It might have occurred to you to ask why researchers conduct laboratory studies at all, given that external validity is so much better with field experiments. Indeed, it seems to us that the perfect experiment in social psychology would be one that was conducted in a field setting with a sample randomly selected from a population of interest and with extremely high internal validity (all extraneous variables controlled, people randomly assigned to the conditions). Sounds good, doesn't it? The only problem is that it is very difficult to satisfy all these conditions in one study, making such studies virtually impossible to conduct.

There is almost always a trade-off between internal and external validity—that is, between being able to randomly assign people to conditions and having enough control over the situation to ensure that no extraneous variables are influencing the results, and making sure that the results can be generalized to everyday life. We have the most control in a laboratory setting, but the laboratory may be unlike real life. Real life can best be captured by doing a field experiment, but it is very difficult to control all extraneous variables in such studies. For example, the astute reader will have noticed that Latané and Darley's (1970) beer theft study differed from laboratory experiments in an important way: People could not be randomly assigned to the alone or in-pairs conditions. Were this the only study Latané and Darley had performed, we could not be sure whether the kinds of people who prefer to shop alone, as compared to the kinds of people who prefer to shop with a friend, differ in ways that might influence helping behavior. By randomly assigning people to conditions in their laboratory studies, Latané and Darley were able to rule out such alternative explanations.

Basic Dilemma of the Social Psychologist
The trade-off between internal and external validity in conducting research; it is very difficult to do one experiment that is both high in internal validity and generalizable to other situations and people

The trade-off between internal and external validity has been referred to as the **basic dilemma of the social psychologist** (Aronson & Carlsmith, 1968). The way to resolve this dilemma is not to try to do it all in a single experiment. Most social psychologists opt first for internal validity, conducting laboratory experiments in which people are randomly assigned to different conditions and all extraneous variables are controlled; here there is little ambiguity about what is causing what. Other social psychologists prefer to maximize external validity by conducting field studies. And many social psychologists do both. Taken together, both types of studies meet the requirements of our perfect experiment.

Replications
Repeating a study, often with different subject populations or in different settings

Meta-Analysis
A statistical technique that averages the results of two or more studies to see if the effect of an independent variable is reliable

REPLICATIONS AND META-ANALYSIS **Replications** are the ultimate test of an experiment's external validity. Only by conducting studies in different settings, with different populations, can we determine how generalizable the results are. Often, though, when many studies on one problem are conducted, the results are somewhat variable. Several studies might find an effect of the number of bystanders on helping behavior, for example, while a few do not. How can we make sense of this? Does the number of bystanders make a difference or not? Fortunately, there is a statistical technique called **meta-analysis** that averages the results of two or more studies to see if the effect of an independent variable is reliable. Earlier we discussed *p*-values, which tell

#trending

Correlation Does Not Equal Causation

Do you use a laptop or tablet to take notes in any of your classes? If so, has your attention ever wandered away from the class and onto a website, such as Facebook or Instagram? "Well sure," you might say, "sometimes the lecture is pretty boring so I check in with my friends on social media, but hey, I was still listening to what my professor had to say." But can you really message your friends and listen to a lecture at the same time? Consider this recent study done in an introductory psychology class at Michigan State University: With the permission of the university and the students, researchers tracked the students' browsing activity during the 1-hour 50-minute class. On average, students spent 37 minutes on websites that were unrelated to the class (e.g., social media, e-mail, shopping websites). And, it turned out that this was related to how well they did in the class: The more time students spent on non-class related websites, the lower their score on the final exam, with a statistically significant correlation of –.25 (Ravizza, Uitvlugt, & Fenn, 2016).

"Whoa," you may be thinking, "Maybe I should put my laptop away and listen to my professor more carefully." And that is one possible implication of the results. But we hope that after reading this chapter a sign is flashing on and off in your head that says, "Not so fast! Correlation does not equal causation!" Indeed, there are a variety of interpretations of the results of the Ravizza et al. (2016) study. Yes, one possibility is that looking at the websites caused students to do worse in the class. But it is equally possible that doing poorly on tests caused students to give up and tune out during class, or that some third variable, such as a lack of interest in the subject, caused students to tune out during class and study less for the exams.

As we have seen, there is nothing like a good experiment to settle questions about causality. Fortunately there have been some on this very topic. In one, students were randomly assigned to multitask (e.g., surf the Web) during class or not, and those in the multitask condition did worse on a test of the material—showing definitively that multitasking during class lowered performance (Sana, Weston, & Cepeda, 2013). In another, students were randomly assigned to take notes on a laptop or by hand. Those who used a laptop tended to write more superficial notes and they did worse on a test (Mueller & Oppenheimer, 2014). So, thanks to these well-designed experimenters, the answer is clear: Consider putting your laptop away and taking notes the old fashioned way, with pen and paper.

us the probability that the findings of one study are due to chance or to the independent variable. A meta-analysis essentially does the same thing, except that it averages the results of many different studies. If, say, an independent variable is found to have an effect in only 1 of 20 studies, the meta-analysis will tell us that that one study was probably an exception and that, on average, the independent variable is not influencing the dependent variable. If an independent variable is having an effect in most of the studies, the meta-analysis is likely to tell us that, on average, it does influence the dependent variable.

Most of the findings you will read about in this book have been replicated in several different settings, with different populations; we know, then, that they are reliable phenomena, not limited to the laboratory or to college sophomores. For example, Anderson and Bushman (1997) compared laboratory studies on the causes of aggression with studies conducted in the real world. In both types of studies, violence in the media caused aggressive behavior. Similarly, Latané and Darley's original findings have been replicated in numerous studies. Increasing the number of bystanders inhibited helping behavior with many kinds of people, including children, college students, and future ministers (Darley & Batson, 1973; Latané & Nida, 1981; Plötner et al., 2015); in both small towns and large cities (Latané & Dabbs, 1975); in a variety of settings, such as psychology laboratories, city streets, and subway trains (Harrison & Wells, 1991; Latané & Darley, 1970; Piliavin & Piliavin, 1972); and with different kinds of emergencies, such as seizures, potential fires, fights, and accidents (Latané & Darley, 1968; Shotland & Straw, 1976; Staub, 1974), as well as with less-serious events, such as having a flat tire (Hurley & Allen, 1974). Many of these replications took place in real-life settings (e.g., on a subway train) where people could not possibly have known that an experiment was being conducted.

That said, sometimes replications fail to confirm the findings of a particular study. The question of how replicable findings are in social psychology and other sciences has become a topic of debate, with some arguing that too many studies in psychology have failed to replicate and that our methods need to be improved to make sure that research findings of studies are reliable and replicable (Open Science Collaboration, 2015). Others argue that while scientific methods can always be improved, and that there have been healthy steps in that direction, there is no evidence of a "replication crisis" (Gilbert, King, Pettigrew, & Wilson, 2016). Readers can be assured that most of the areas of research discussed in this book have been replicated. There are cases in which specific findings have been called into question, however, and when that is the case we will point that out.

BASIC VERSUS APPLIED RESEARCH You may have wondered how people decide which specific topic to study. Why would a social psychologist decide to study helping behavior, cognitive dissonance theory, or the effects of pornography on aggression? Is he or she simply curious? Or does the social psychologist have a specific purpose in mind, such as trying to reduce sexual violence?

Basic Research
Studies that are designed to find the best answer to the question of why people behave as they do and that are conducted purely for reasons of intellectual curiosity

Applied Research
Studies designed to solve a particular social problem

The goal in **basic research** is to find the best answer to the question of why people behave as they do, purely for reasons of intellectual curiosity. The researchers aren't trying to solve a specific social or psychological problem. In contrast, **applied research** is geared toward solving a particular social problem. Here, building a theory of behavior is usually secondary to solving the specific problem, such as alleviating racism, reducing sexual violence, or stemming the spread of AIDS.

In social psychology, the distinction between basic and applied research is fuzzy. Even though many researchers label themselves as either basic or applied scientists, the endeavors of one group are not independent of those of the other group. There are countless examples of advances in basic science that at the time had no known applied value but later proved to be the key to solving a significant applied problem. As we will see later in this book, for example, basic research with dogs, rats, and fish on the effects of feeling in control of one's environment has led to the development of techniques to improve the health of elderly nursing home residents (Langer & Rodin, 1976; Richter, 1957; Schulz, 1976).

Review Questions

1. A researcher is interested in whether moods vary by the day of the week. She codes the postings on thousands of Facebook pages to see whether people express more positive comments on some days than others. Which research method has she used?
   a. Ethnography
   b. Survey
   c. Experimental method
   d. Archival analysis
2. The observational method is best at answering which of these questions?
   a. How polite are people in public places?
   b. Are people from the southern United States more polite in public places than people from the northern United States?
   c. What makes people act politely or rudely in public places?
   d. Does music played in department stores influence how polite people are in those stores?
3. The correlational method is best at answering which of these questions?
   a. How polite are people in public places?
   b. Are people from the southern United States more polite in public places than people from the northern United States?
   c. What makes people act politely or rudely in public places?
   d. Does music played in department stores influence how polite people are in those stores?
4. The experimental method is best at answering which of these questions?
   a. How aggressively do people drive during rush hours in major U.S. cities?
   b. Are people who play violent video games more likely to drive aggressively?
   c. Are people who play violent video games more likely to be rude to someone who cuts in line in front of them?
   d. Does playing violent video games cause people to be more rude to someone who cuts in line in front of them?

5. Suppose a researcher found a strong positive correlation between the number of tweets people send each day and their reported happiness. Which of the following is the best conclusion he or she can draw from this finding?
   a. Sending tweets makes people happy.
   b. Feeling happy makes people want to tweet more.
   c. Happy people are more likely to send a lot of tweets than sad people.
   d. There is a third variable that makes people happy and send a lot of tweets.
6. A researcher wants to see whether people are more likely to donate money to a charity when they receive a small gift from that charity. She sends an appeal for money from the charity to 1,000 people. For half of the people (randomly chosen) the letter includes free address labels and for half it does not. The researcher then sees whether those who got the address labels donate more money. Which of the following is true about this study?
   a. It uses the correlational method.
   b. The independent variable is whether people got address labels and the dependent variable is how much money they donate.
   c. The independent variable is how much money people donate and the dependent variable is whether they got address labels.
   d. The study is low in internal validity because the people who got the address labels may differ in other ways from the people who did not.
7. Which of the following is the best way to increase the external validity of a study?
   a. Make sure it is low in psychological realism.
   b. Conduct the study in the laboratory instead of the field.
   c. Replicate the study with a different population of people in a different setting.
   d. Make sure you have at least two dependent variables.
8. Social psychologists often do experiments in the laboratory, instead of the field, to:
   a. increase internal validity.
   b. increase external validity.
   c. conduct a meta-analysis.
   d. decrease psychological realism.

Most social psychologists would agree that, to solve a specific social problem, we must understand the psychological processes responsible for it. Indeed, Kurt Lewin (1951), one of the founders of social psychology, coined a phrase that has become a motto for the field: "There is nothing so practical as a good theory" (p. 169). He meant that to solve such difficult social problems as urban violence or racial prejudice, one must first understand the underlying psychological dynamics of human nature and social interaction. Even when the goal is to discover the psychological processes underlying social behavior, the findings often have clear applied implications, as you'll see throughout this book. For example, basic research on how people understand and construe the world has been translated into successful attempts to address many problems, including closing the achievement gap in education, reducing prejudice, reducing teenage pregnancies, and lowering the rate of child abuse (Wilson, 2011; Walton, 2014).

New Frontiers in Social Psychological Research

LO 2.3 Explain the impact cross-cultural studies and social neuroscience research have on the way in which scientists investigate social behavior.

Social psychologists are always looking for new ways of investigating social behavior, and in recent years some exciting new methods and approaches have been developed. These methodological advances have been spurred on by new questions about the origins of social behavior, because new questions and new methods often develop hand in hand.

Culture and Social Psychology

Social psychology largely began as a Western science, conducted by Western social psychologists with Western participants. This raises the question of how universal the findings are. To study the effects of culture on social psychological process, social psychologists conduct **cross-cultural research** (Gelfand, Chiu, & Hong,

Cross-Cultural Research
Research conducted with members of different cultures, to see whether the psychological processes of interest are present in both cultures or whether they are specific to the culture in which people were raised

Some basic psychological processes are universal, whereas others are shaped by the culture in which we live. For example, are people's self-concepts shaped by cultural rules of how people must present themselves, such as the requirement by the Taliban regime in Afghanistan that women cover themselves from head to toe? Cross-cultural research is challenging but necessary for exploring how culture influences the basic ways in which people think about and interact with others. We will see many other examples of cross-cultural research later in this book.

2014; Heine, 2010; Kitayama & Cohen, 2007; Morling, 2016; Wang, 2016; Nisbett, 2003). Some findings in social psychology are culture-dependent, as we will see throughout this book. In Chapter 3, for example, we will see that Westerners and East Asians rely on fundamentally different kinds of thought to perceive and understand the social world. In Chapter 5, we'll discuss cultural differences in the very way people define themselves. Whether we emphasize personal independence or social interdependence reflects our cultural values (Henrich, Heine, & Norenzayan, 2010).

Conducting cross-cultural research is not simply a matter of traveling to another culture, translating materials into the local language, and replicating a study there (Heine et al., 2002; Davidov et al., 2014). Researchers have to guard against imposing their own viewpoints and definitions, learned from their culture, onto another culture with which they are unfamiliar. They must also be sure that their independent and dependent variables are understood in the same way in different cultures (Bond, 1988; Lonner & Berry, 1986).

Suppose, for example, that you wanted to replicate the Latané and Darley (1968) seizure experiment in another culture. Clearly, you could not conduct the identical experiment somewhere else. The tape-recorded discussion of college life used by Latané and Darley was specific to the lives of New York University students in the 1960s and could not be used meaningfully elsewhere. What about more subtle aspects of the study, such as the way people viewed the person who had the seizure? Cultures vary considerably in how they define whether or not another person belongs to their social group; this factor figures significantly in how they behave toward that person (Gudykunst, 1988; Triandis, 1989). If people in one culture view the victim as a member of their social group but people in another culture perceive the victim as a member of a rival social group, you might find very different results in the two cultures—not because the psychological processes of helping behavior are different, but because people interpreted the situation differently. It can be quite daunting to conduct a study that is interpreted and perceived similarly in dissimilar cultures. Cross-cultural researchers are sensitive to these issues, and as more and more cross-cultural research is conducted carefully, we will be able to determine which social psychological processes are universal and which are culture-bound (Heine, 2010). For example, there is substantial evidence that playing violent video games makes people act in more aggressive ways and makes them less likely to help others. But is this true just in Western countries? A review of the literature compared studies of video games in the United States and Japan. As it happened, the deleterious effects of violent video games were the same in both countries (Anderson et al., 2010).

Social psychologists are studying the brain and its relation to behavior. They use technologies such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI).

Social Neuroscience

As we have seen, social psychology is concerned with how people's thoughts, feelings, and behaviors are influenced by the real or imagined presence of other people. Most research studies in social psychology, then, study just that—thoughts, feelings, and behaviors. Human beings are biological organisms, however, and social psychologists have become increasingly interested in the connection between biological processes and social behavior. These interests include the study of hormones and behavior, the human immune system, and neurological processes in the human brain. To study the brain and its relation to behavior,

psychologists use sophisticated technologies, including electroencephalography (EEG), in which electrodes are placed on the scalp to measure electrical activity in the brain, and functional magnetic resonance imaging (fMRI), in which people are placed in scanners that measure changes in blood flow in their brains. Social psychologists take these measurements while participants think about and process social information, allowing them to correlate different kinds of brain activity with social information processing. This kind of research promises to open up a whole new area of inquiry into the relationship of the brain to behavior (Cacioppo & Cacioppo, 2013; Coan & Maresh, 2014; Connelly & Morris, 2016; Lieberman, 2013; Ochsner, 2007; Varnum, 2016).

Review Questions

1. Which of the following is true about cross-cultural research?
   a. Most social psychological findings have been found to be universal; that is, true in virtually all cultures that have been studied.
   b. The purpose of cross-cultural research is to see which social psychological findings are universal and which are culture-bound.
   c. To conduct a cross-cultural study a researcher travels to another country, translates the materials into the local language, and replicates the study there.
   d. It is relatively easy to conduct a study that is interpreted and perceived similarly in different cultures.
2. Which of the following is true about social neuroscience?
   a. This field is concerned exclusively with how different kinds of brain activity correlate with social information processing.
   b. This field is concerned primarily with how hormones influence social behavior.
   c. Social psychologists are increasingly interested in the connection between biological processes and social behavior.
   d. When it comes right down to it, the brain is not related to behavior, and there is not much to be learned by measuring its electrical activity or blood flow.

Ethical Issues in Social Psychology

LO 2.4 **Summarize how social psychologists ensure the safety and welfare of their research participants, while at the same time testing hypotheses about the causes of social behavior.**

As you read this chapter, did it bother you to learn that researchers sometimes mislead people about the true purpose of their study or that, in Latané and Darley's seizure study, people were put in a situation that might have been upsetting? In their quest to create realistic, engaging situations, social psychologists frequently face ethical dilemmas. For scientific reasons, we want our experiments to resemble the real world as much as possible and to be as sound and well controlled as we can make them. But we also want to avoid causing our participants stress, discomfort, or unpleasantness. These two goals sometimes conflict as the researcher goes about the business of creating and conducting experiments.

Above all, researchers are concerned about the health and welfare of the individuals participating in their experiments. Researchers are also in the process of discovering important information about human social behavior, such as bystander intervention, prejudice, conformity, aggression, and obedience to authority. Many of these discoveries are bound to benefit society. Indeed, given the fact that social psychologists have developed powerful tools to investigate such issues scientifically, many scholars feel it would be immoral not to conduct experiments to explore them. To gain insight into such

"DON'T TELL ME THIS NONSENSE DOESN'T VIOLATE THE CODE OF BIOETHICS."

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critical issues, however, researchers often must create events that are vivid and engaging for the participants. Some of these events might make the participants uncomfortable, such as witnessing someone having a seizure. We can't resolve the dilemma by making pious claims that participants never experience discomfort in an experiment or by insisting that all is fair in science and then forging blindly ahead. Clearly, some middle ground is called for.

Informed Consent
Agreement to participate in an experiment, granted in full awareness of the nature of the experiment, which has been explained in advance

The dilemma is less problematic if researchers can obtain **informed consent** from their participants prior to their participation. To obtain informed consent, the researcher explains the nature of the experiment to participants before it begins and asks for their permission to participate. If participants are made fully aware of the kinds of experiences they are about to undergo and state that they are willing to participate, the ethical dilemma is resolved. In many social psychology experiments, this sort of description is feasible—and where it is feasible, it is done. For example, one of the authors of this text was interested in how college students would react if they were left alone with their thoughts for 15 minutes, without access to their phones or any other external distractions. Might they get so bored that they would administer to themselves a mild electric shock to relieve their boredom? To find out we asked people whether they would be willing to receive mild electric shocks in the study, and all participants gave their informed consent to do so. (As it happened, two-thirds of men and a quarter of women chose to shock themselves at least once; Wilson et al., 2014).

But sometimes it is not possible to inform people exactly what will happen in advance. Suppose Latané and Darley had told their participants that a seizure was about to be staged, that it wouldn't be a real emergency, and that the point was to see if they offered help. Such a procedure would be bad science. In this kind of experiment, it's essential that the participant experience contrived events as if they were real; this is called a *deception experiment*. **Deception** in social psychological research involves misleading participants about the true purpose of a study or the events that transpire. Psychologists use deception only if it is the only way in which they can test a hypothesis about social behavior.

Deception
Misleading participants about the true purpose of a study or the events that will actually transpire

Debriefing
Explaining to participants, at the end of an experiment, the true purpose of the study and exactly what transpired

When deception is used in a study, the postexperimental interview, called the *debriefing session*, is crucial. **Debriefing** is the process of explaining to the participants, at the end of an experiment, the true purpose of the study and exactly what transpired. If any participants have experienced discomfort, the researchers attempt to undo and alleviate it. During debriefing too the participants learn about the goals and purpose of the research. The best researchers question their participants carefully and listen to what they say, regardless of whether or not deception was used in the experiment. (For a detailed description of how debriefing interviews should be conducted, see Aronson et al., 1990.)

In our experience, virtually all participants understand and appreciate the need for deception, as long as the time is taken in the postexperimental debriefing session to review the purpose of the research and to explain why alternative procedures could not be used. Several investigators have gone a step further and assessed the impact on people of participating in deception studies (e.g., Christensen, 1988; Epley & Huff, 1998; Finney, 1987; Gerdes, 1979; Sharpe, Adair, & Roese, 1992). These studies have consistently found that people do not object to the kinds of mild discomfort and deceptions typically used in social psychological research. In fact, some studies have found that most people who participated in deception experiments reported learning more and enjoying the experiments more than did those who participated in nondeception experiments (Smith & Richardson, 1983). For example, Latané and Darley (1970) reported that, during their debriefing, the participants said that the deception was necessary and that they were willing to participate in similar studies in the future—even though they had experienced some stress and conflict during the study.

To ensure that the dignity and safety of research participants are protected, the American Psychological Association (2010) has published a list of ethical principles

Figure 2.3 The American Psychological Association, a professional organization that represents psychology in the United States, has established ethical guidelines that psychological researchers are expected to follow. Some of them are listed here.
(Adapted from American Psychological Association Ethical Principles of Psychologists and Code of Conduct, 2017)

Selected Ethical Principles of Psychologists in the Conduct of Research

1. Psychologists seek to promote accuracy, honesty, and truthfulness in the science, teaching, and practice of psychology.
2. Psychologists respect the dignity and worth of all people, and the rights of individuals to privacy, confidentiality, and self-determination.
3. When psychologists conduct research in person or via electronic transmission or other forms of communication, they obtain the informed consent of the individual.
4. When obtaining informed consent psychologists inform participants about (1) the purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw from the research once participation has begun; (3) the foreseeable consequences of declining or withdrawing; (4) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort, or adverse effects; (5) any prospective research benefits; (6) limits of confidentiality; (7) incentives for participation; and (8) whom to contact for questions about the research and research participants rights.
5. Psychologists have a primary obligation and take reasonable precautions to protect confidential information obtained through or stored in any medium.
6. Psychologists do not conduct a study involving deception unless they have determined that the use of deceptive techniques is justified by the study's significant prospective scientific, educational, or applied value and that effective nondeceptive alternative procedures are not feasible.
7. Psychologists explain any deception that is an integral feature of the design and conduct of an experiment to participants as early as is feasible.
8. Psychologists provide a prompt opportunity for participants to obtain appropriate information about the nature, results, and conclusions of the research, and they take reasonable steps to correct any misconceptions that participants may have of which the psychologists are aware.

that govern all research in psychology (see Figure 2.3). In addition, any institution (such as a university) that seeks federal funding for psychological research is required to have an **institutional review board (IRB)** that reviews research before it is conducted. The board, which must include at least one scientist, one nonscientist, and one person who is not affiliated with the institution, reviews all research proposals and decides whether the procedures meet ethical guidelines. Any aspect of the experimental procedure that this committee judges to be overly stressful or upsetting must be changed or deleted before the study can be conducted. Note that some of the research described in later chapters was conducted before IRBs were required in the early 1970s. You will need to decide whether you would have approved these studies if you were on an IRB that judged them.

Institutional Review Board (IRB)
A group made up of at least one scientist, one nonscientist, and one member not affiliated with the institution that reviews all psychological research at that institution and decides whether it meets ethical guidelines; all research must be approved by the IRB before it is conducted

Now that you have a good grounding in how social psychologists conduct research we can begin our tour of the major findings in the field. We hope you find them as fascinating as we do.

Review Questions

1. Which of the following is true about the ethical conduct of psychological research?
   a. It is good scientific procedure to tell participants about the research hypotheses before they participate.
   b. If research participants are misled about a study they must be fully debriefed at the end of the study.
   c. Darley and Latané could have easily tested their hypotheses about helping behavior by telling participants in advance that they would hear someone pretending to have a seizure.
   d. It is never permissible to use deception.

2. Which of the following is true about Institutional Review Boards (IRBs)?
   a. Universities can decide whether to have an IRB to approve psychological research.
   b. The purpose of IRBs is to review research after it is conducted and review any complaints.
   c. IRBs review psychological studies before they are conducted to make sure they meet ethical guidelines.
   d. IRBs must be made up entirely of nonscientists.
3. Which of the following is one of the ethical principles of the American Psychological Association?
   a. Psychologists respect the dignity and worth of all people, and the rights of individuals to privacy, confidentiality, and self-determination.
   b. Psychologists may not use minors (those younger than age 18) as participants in research.
   c. If a study is conducted over the internet, psychologists need not obtain informed consent from participants.
   d. Psychologists are not responsible for protecting the confidentiality of information they obtain from participants.

Summary

LO 2.1 Describe how researchers develop hypotheses and theories.

- **Social Psychology: An Empirical Science** A fundamental principle of social psychology is that social influence can be studied scientifically.
  - **Formulating Hypotheses and Theories** Social psychological research begins with a hypothesis about the effects of social influence. Hypotheses often come from previous research findings; researchers conduct studies to test an alternative explanation of previous experiments. Many other hypotheses come from observations of everyday life, such as Latané and Darley's hunches about why people failed to help Kitty Genovese.

LO 2.2 Compare the strengths and weaknesses of various research designs that social psychologists use.

- **Research Designs** Social psychologists use three research designs: the observational method, the correlational method, and the experimental method.
  - **The Observational Method: Describing Social Behavior** The *observational method*, whereby researchers observe people and systematically record their behavior, is useful for describing the nature of a phenomenon and generating hypotheses. It includes *ethnography*, the method by which researchers attempt to understand a group or culture by observing it from the inside, without imposing any preconceived notions they might have. Another method is *archival analysis*, whereby researchers examine documents or archives, such as looking at photographs in magazines to see how men and women are portrayed.
  - **The Correlational Method: Predicting Social Behavior** The *correlational method*, whereby two or more variables are systematically measured and the relationship between them assessed, is very useful when the goal is to predict one variable from another. For example, researchers might be interested in whether there is a correlation between the amount of violent television children watch and how aggressive they are. The correlational method is often applied to the results of surveys in which a representative group of people are asked questions about their attitudes and behaviors. To make sure that the results are generalizable, researchers randomly select survey respondents from the population at large. A limit of the correlational method is that *correlation does not equal causation.*
  - **The Experimental Method: Answering Causal Questions** The only way to determine causality is to use the *experimental method*, in which the researcher randomly assigns participants to different conditions and ensures that these conditions are identical except for the independent variable. The *independent variable* is the one researchers vary to see if it has a causal effect (e.g., how much TV children watch); the *dependent variable* is what researchers measure to see if it is affected (e.g., how aggressive children are). Experiments should be high in *internal validity*, which means that people in all conditions are treated identically, except for the independent variable (e.g., how much TV children watch). *External validity*—the extent to which researchers can generalize their results to other situations and people—is accomplished by increasing the realism of the experiment, particularly its psychological realism (the extent to which the psychological processes triggered in the experiment are similar to those triggered in everyday life). It is also accomplished by *replicating* the study with different populations of participants. As in any other science, some social psychology studies are

basic research experiments (designed to answer basic questions about why people do what they do), whereas others are applied studies (designed to find ways to solve specific social problems).

LO 2.3 Explain the impact cross-cultural studies and social neuroscience research have on the way in which scientists investigate social behavior.

- **New Frontiers in Social Psychological Research** In recent years, social psychologists have developed new ways of investigating social behavior.
  - **Culture and Social Psychology** To study the ways in which culture shapes people's thoughts, feelings, and behavior, social psychologists conduct cross-cultural research. This is not simply a matter of replicating the same study in different cultures; researchers have to guard against imposing their own viewpoints and definitions, learned from their culture, onto another culture with which they are unfamiliar.
  - **Social Neuroscience** Social psychologists have become increasingly interested in the connection between biological processes and social behavior. These interests include the study of hormones and behavior, the human immune system, and neurological processes in the human brain.

LO 2.4 Summarize how social psychologists ensure the safety and welfare of their research participants, while at the same time testing hypotheses about the causes of social behavior.

- **Ethical Issues in Social Psychology** Social psychologists follow federal, state, and professional guidelines to ensure the welfare of their research participants. These include having an *institutional review board* approve their studies in advance, asking participants to sign *informed consent* forms, and *debriefing* participants afterward about the purpose of the study and what transpired, especially if there was any deception involved.

Revel Interactive

Shared Writing What Do You Think?

Now that you know correlation doesn't equal causation, you know that eating fast food doesn't necessarily cause poor test performance. What are some alternative explanations for the negative correlation between children's fast food consumption and low test scores?

Test Yourself

1. Megan reads a research study which shows that children who see a lot of violence on television are more likely to be aggressive on the playground. Megan thinks, "This is obvious; I could have predicted that!" Megan's reaction to the study is probably an example of:
   a. internal validity.
   b. the hindsight bias.
   c. external validity.
   d. psychological realism.

2. Suppose a researcher found a strong negative correlation between college students' grade point average (GPA) and the amount of alcohol they drink. Which of the following is the best conclusion from this study?
   a. Students with a high GPA study more and thus have less time to drink.
   b. Drinking a lot interferes with studying.
   c. If you know how much alcohol a student drinks, you can predict his or her GPA fairly well.
   d. People who are intelligent get higher grades and drink less.

3. A team of researchers wants to test the hypothesis that drinking wine makes people like jazz more. They randomly assign college students who are 21 or older to one room in which they will drink wine and listen to jazz or to another room in which they will drink water and listen to jazz. It happens that the "wine room" has a big window with nice scenery outside, whereas the "water room" is windowless, dark, and dingy. The most serious flaw in this experiment is that it

   a. is low in external validity.
   b. is low in internal validity.
   c. did not randomly select the participants from all college students in the country.
   d. is low in psychological realism.

4. Mary wants to find out whether eating sugary snacks before an exam leads to better performance on the exam. Which of the following strategies would answer her question most conclusively?

   a. Identify a large number of students who perform exceptionally low and exceptionally high in exams, ask them whether they eat sugary snacks before exams, and see whether high performers eat more sugary snacks before exams than do low performers.
   b. Wait for exam time in a big class, ask everyone whether they ate sugary snacks before the exam, and see whether those who ate sugary snacks before the exam do better compared to those who didn't.
   c. Wait for exam time in a big class, give a random half of the students M&Ms before the exam, and see whether the students who ate M&Ms perform better.
   d. Pick a big class, give all students sugary snacks before one exam and salty snacks before the next exam; then see whether students score lower on average in the second exam.

5. A researcher conducts a study with participants who are college students. The researcher then repeats the study using the same procedures but with members of the general population (i.e., adults) as participants. The results are similar for both samples. The research has established _____ through _____.

   a. external validity, replication
   b. internal validity, replication
   c. external validity, psychological realism
   d. internal validity, psychological realism

6. Professor X wants to make sure his study of gifted youngsters will get published, but he's worried that his findings could have been caused by something other than the independent variable, which was a new teaching method he introduced. He is concerned with the _____ his experiment.

   a. probability level
   b. external validity
   c. replication
   d. internal validity

7. Suppose a psychologist decides to join a local commune to understand and observe its members' social relationships. This is

   a. cross-cultural research.
   b. applied research.
   c. an experiment.
   d. ethnography.

8. The basic dilemma of the social psychologist is that

   a. it is hard to teach social psychology to students because most people believe strongly in personality.
   b. there is a trade-off between internal and external validity in most experiments.
   c. it is nearly impossible to use a random selection of the population in laboratory experiments.
   d. almost all social behavior is influenced by the culture in which people grew up.

9. Which of the following is true about new frontiers in social psychological research?

   a. Social psychologists are interested in the role of culture but not in evolutionary processes.
   b. Social psychologists are interested in evolutionary processes but not the role of culture.
   c. Social psychologists use functional magnetic resonance imaging (fMRI) to correlate different kinds of brain activity with social information processing.
   d. The purpose of cross-cultural research is to show that all social psychological findings are universal with no cultural variations.

10. All of the following except one are part of the guidelines for ethical research. Which is not?

    a. All research is reviewed by an IRB (institutional review board) that consists of at least one scientist, one nonscientist, and one person unaffiliated with the institution.
    b. A researcher receives informed consent from a participant unless deception is deemed necessary and the experiment meets ethical guidelines.
    c. When deception is used in a study, participants must be fully debriefed.
    d. There must be a cover story for every study, because all studies involve some type of deception.