

## CHAPTER 2

# Doing Social Psychology Research

### LEARNING OBJECTIVES: GUIDELINES FOR STUDY

You should be able to do each of the following by the conclusion of Chapter 2.

1. Describe the process of generating research ideas in social psychology, searching the relevant literature, and developing hypotheses. Understand the differences between applied and basic research. (pp. 27-28)
2. Distinguish between hypotheses and theories, and between conceptual variables and operational definitions. (pp. 28-31)
3. Explain self-report and observational research practices, including the advantages and disadvantages of each. (pp. 31-34)
4. Understand the usefulness of traditional research methodologies such as archival studies and surveys, as well as explain the potential contributions of new technologies to contemporary social psychology research. (pp. 34-36)
5. Contrast correlational research with descriptive research. Define the correlation coefficient, and explain what it means to say that two variables are negatively correlated, positively correlated, or uncorrelated. Summarize the advantages and one major disadvantage of correlational research designs. (pp. 36-38)
6. Explain the importance of control and random assignment in experimental research. Differentiate random sampling from random assignment, as well as an independent variable from a dependent variable. (pp. 38-42)
7. Explain the importance of the following terms with regard to experimental research design: statistical significance, internal validity, and external validity. (pp. 42-47)
8. Discuss the function of ethics in social psychological research, including the use of deception and confederates. Describe the roles of institutional review boards, informed consent, and debriefing in protecting the welfare of human participants. Summarize the competing points of view about the role of values in science. (pp. 47-49)

### CHAPTER OUTLINE

- I. Why Should You Learn about Research Methods?
- II. Developing Ideas: Beginning the Research Process
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  - B. Hypotheses and Theories
  - C. Basic and Applied Research
- III. Refining Ideas: Defining and Measuring Social Psychological Variables
  - A. From the Abstract to the Specific: Conceptual Variables and Operational Definitions:
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- A. Descriptive Research: Discovering Trends and Tendencies
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- B. Correlational Research: Looking for Associations
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  - 2. Advantages and disadvantages of correlational research
- C. Experiments: Looking for Cause and Effect
  - 1. Random sampling versus random assignment
  - 2. Laboratory and field experiments
  - 3. Experiment 1: Can video games make you more or less aggressive?
  - 4. Experiment 2: mood and culture
  - 5. Independent and dependent variables
  - 6. Subject variables
  - 7. Statistical significance and replications
  - 8. Internal validity: Did the independent variable cause the effect?
  - 9. External validity: Do the results generalize?
  - 10. Deception in experiments
- D. Meta-Analysis: Combining Results across Studies
- E. Culture and Research Methods
- V. Ethics and Values in Social Psychology
  - A. Institutional Review Boards and Informed Consent: Protecting Research Participants
  - B. Debriefing: Telling All
  - C. Values and Science: Points of View and New Controversies

## **DETAILED OVERVIEW**

### **WHY SHOULD YOU LEARN ABOUT RESEARCH METHODS?**

- Studying research methods in psychology improves people's reasoning about real-life events and information presented by the media and other sources.
- Understanding the scientific evidence on which social psychological theories and findings are based will help you better understand the research that is reported throughout this book, which in turn will help you learn the material more deeply.

## **DEVELOPING IDEAS: BEGINNING THE RESEARCH PROCESS**

### **Getting Ideas and Finding Out What Has Been Done**

- Ideas for research in social psychology come from everywhere— personal experiences and observations, events in the news, and other research.
- Before pursuing a research idea, it is important to see what research has already been done on that idea and related topics.
- Electronic databases provide access to a wealth of information, both in the psychology literature and in more general sources.

## Hypotheses and Theories

- Formulating a hypothesis is a critical step toward planning and conducting research.
- Theories in social psychology attempt to explain and predict social psychological phenomena. The best theories are precise, explain all the relevant information, and generate research that can support or disconfirm them. They should be revised and improved as a result of the research they inspire.

## Basic and Applied Research

- The goal of basic research is to increase understanding of human behavior.
- The goal of applied research is to increase understanding of real-world events and contribute to the solution of social problems.

## REFINING IDEAS: DEFINING AND MEASURING SOCIAL PSYCHOLOGICAL VARIABLES

### From the Abstract to the Specific: Conceptual Variables and Operational Definitions

- Researchers often must transform abstract, conceptual variables into specific operational definitions that indicate exactly how the variables are to be manipulated or measured.
- Construct validity is the extent to which the operational definitions successfully manipulate or measure the conceptual variables to which they correspond.

## Measuring Variables: Using Self-Reports, Observations, and Technology

- In self-reports, participants indicate their thoughts, feelings, desires, and actions.
- Self-reports can be distorted by efforts to make a good impression as well as by the effects of the wording and context of questions.
- In studies using the bogus pipeline technique, participants' self-reports tend to be more accurate and less socially desirable when they are led to believe that a machine can tell whether or not they are telling the truth.
- To increase the accuracy of self-reports, some approaches emphasize the need to collect self-reports as soon as possible after participants experience the relevant thoughts, feelings, or behaviors.
- Observations are another way for social psychologists to measure variables.
- Interrater reliability, or the level of agreement among multiple observers of the same behavior, is important when measuring variables using observation.
- New and improved technologies enable researchers to measure physiological responses, reaction times, eye movements, and activity in regions of the brain.

## TESTING IDEAS: RESEARCH DESIGNS

- Most social psychologists test their ideas by using objective, systematic, and quantifiable methods.

### Descriptive Research: Discovering Trends and Tendencies

- In descriptive research, social psychologists record how frequently or typically people think, feel, or behave in particular ways.
- One form of descriptive research is observational research, in which researchers observe individuals systematically, often in natural settings.
- In archival research, researchers examine existing records and documents such as newspaper articles, diaries, and published crime statistics.
- Surveys involve asking people questions about their attitudes, beliefs, and behaviors.
- Survey researchers identify the population to which they want the results of the survey to generalize, and they select a sample of people from that population to take the survey.
- To best ensure a sample that is representative of the broader population, researchers should randomly select people from the population to be in the survey.

### Correlational Research: Looking for Associations

- Correlational research examines the association between variables.
- A correlation coefficient is a measure of the strength and direction of the association between two variables.
- Positive correlations indicate that as scores on one variable increase, scores on the other variable increase, and that as scores on one variable decrease, scores on the other decrease.
- Negative correlations indicate that as scores on one variable increase, scores on the other decrease.
- Correlation does not indicate causation; the fact that two variables are correlated does not necessarily mean that one causes the other.
- Correlations can be used for prediction and for generating hypotheses.

### Experiments: Looking for Cause and Effect

- Experiments require (1) control by the experimenter over events in the study and (2) random assignment of participants to conditions.
- Random sampling concerns how people are selected to be in a study, whereas random assignment concerns how people who are in the study are assigned to the different conditions of the study.
- Experiments are often conducted in a laboratory so that the researchers can have control over the context and can measure variables precisely.
- Field experiments are conducted in real-world settings outside the laboratory.

- A recent experiment found that compared to playing a neutral video game, playing a violent video game made participants behave more aggressively but playing a helping-oriented video game made them behave less aggressively.
- Participants in another experiment were more likely to act in ways that deviated from cultural norms if they were put in a positive rather than a negative mood.
- Experiments examine the effects of one or more independent variables on one or more dependent variables.
- Subject variables are variables that characterize preexisting differences among the participants.
- Results that are statistically significant could have occurred by chance five or fewer times in 100 possible outcomes.
- Experimental findings have internal validity to the extent that changes in the dependent variable can be attributed to the independent variables.
- A confound is a serious problem to internal validity, as it means that some other factor varied along with the independent variable and therefore makes it impossible to know if the independent variable caused the effect on the dependent variable.
- Control groups strengthen internal validity; experimenter expectancy effects weaken it.
- Research results have external validity to the extent that they can be generalized to other people and other situations.
- Although using a representative sample would strengthen a study's external validity, most social psychology studies use convenience samples.
- The rapidly increasing use of the Internet to collect data allows for far more diverse sets of participants in social psychological research today.
- Mundane realism is the extent to which the research setting seems similar to real-world situations.
- Experimental realism is the extent to which the participants experience the experimental setting and procedures as real and involving.
- Deception is sometimes used to increase experimental realism.
- Confederates act as though they are participants in an experiment but actually work for the experimenter.

## **Meta-Analysis: Combining Results Across Studies**

- Meta-analysis uses statistical techniques to integrate the quantitative results of different studies.

## **Culture and Research Methods**

- There is growing interest in studying the role of culture in social psychology.
- As important and exciting as these cultural investigations are, they offer special challenges to researchers.

## **ETHICS AND VALUES IN SOCIAL PSYCHOLOGY**

- Ethical issues are particularly important in social psychology because of the use of deception in some research.

### **Institutional Review Boards and Informed Consent: Protecting Research Participants**

- Established by the federal government, IRBs are responsible for reviewing research proposals to ensure that the welfare of participants is adequately protected.
- The American Psychological Association's code of ethics requires psychologists to secure informed consent from research participants.

### **Debriefing: Telling All**

- During a debriefing at the end of a study, the researchers disclose the facts about the study and make sure that the participant does not experience any distress. This is especially important if deception was used.

### **Values and Science: Points of View and New Controversies**

- Moral values set standards for and impose limits on the conduct of research.
- Various views exist on the relation between values and science. Few believe that there can be a completely value-free science, but some advocate trying to minimize the influence of values on science, whereas others argue that values should be recognized and encouraged as an important factor in science.
- Recent controversies in social psychology have led to a variety of suggestions for how the field should better protect itself against intentional or unintentional bias or dishonesty, including more openness to scrutiny, use of different statistical analyses, and greater emphasis on replication.

## **KEY TERMS**

applied research (p. 29)

basic research (p. 29)

bogus pipeline technique (p. 31)

confederate (p. 45)

confound (p. 43)

construct validity (p. 31)

correlation coefficient (p. 36)

correlational research (p. 36)

debriefing (p. 48)

deception (p. 45)

dependent variables (p. 41)

experiment (p. 38)  
experimental realism (p. 45)  
experimenter expectancy  
effects (p. 43)  
external validity (p. 44)  
hypothesis (p. 28)  
independent variables (p. 41)  
informed consent (p. 48)  
internal validity (p. 43)  
interrater reliability (p. 32)  
meta-analysis (p. 45)  
mundane realism (p. 44)  
operational definition (p. 30)  
random assignment? (p. 38)  
random sampling (p. 35)  
subject variables (p. 42)  
theory (p. 28)

## LECTURE AND DISCUSSION IDEAS

### Idea 1. Common Sense and the Empirical Approach

This Lecture/Discussion Idea could also be used for Chapter 1.

An effective demonstration of how social psychology differs from simple observations of people and why the scientific approach is so valuable to the field is to demonstrate the shortcomings of common sense and intuition. Some of the ideas presented in Chapter 1 of this manual are relevant to this goal. One point emphasized in Chapter 2 of the textbook is that common sense and personal intuitions can be too contradictory or vague to be of much use in *predicting* many social psychological phenomena, although they are easy to apply in hindsight after one has observed or learned about the phenomena in question.

Discuss why introspection is an inherently flawed method of learning social psychological truths, and introduce the students to some of the ways that people's perceptions and attributions are biased (such as from Chapters 3, 4, and 5). Explain how people's perceptions of the same behavior or stimulus can vary dramatically from person to person — perhaps due to different expectations, moods, motives, cultural backgrounds, etc. Given these influences, inferences based on nonsystematic observations can be particularly misleading.

**Handout 2.1** contains pairs of commonsense principles, or aphorisms. Within each pair, either aphorism has a great deal of intuitive appeal. Indeed, if social psychological studies came to the conclusion consistent with *either* principle within a pair, most people would find the results to be unsurprising and might even disparage social psychology as nothing more than common sense. The punch line is, of course, that the two principles within each pair contradict each other. Which is true?

Only through careful, systematic research that is consistent with the principles of the scientific method can we begin to answer that question (or, more accurately, to address the question of under what conditions is one or the other more likely to be true).

**Handout 2.2** contains similar pairs of contradictory principles, but these are phrased more as research questions than aphorisms. Use these as a preview of things to come in the course, to get students enthusiastic about the material they will be encountering.

**NOTE:** If you conduct Classroom Activity 1 of this chapter, these activities should be conducted *before* you begin this discussion of common sense and the empirical approach.

## Idea 2. Correlations and Experiments

Discuss the advantages and disadvantages of correlational research and of experiments. Ask students to think of some variables that should be positively correlated with each other, negatively correlated with each other, or not correlated with each other. Emphasize why one should not infer causality on the basis of a correlation. Describe some correlations between pairs of variables, such as the amount of a child's exposure to violent television and the child's tendency to behave aggressively, and ask students to speculate about what other factors could explain these relationships (e.g., children who watch a lot of violent television may lack parental supervision, and this lack of supervision may be an important cause of the child's aggressive behavior). For some of these correlations, ask students to think of how experiments could be designed to begin to test some of the causal relationships about which the students speculated.

## Idea 3. Searching the Literature

Helping your students learn how to find journal articles and conduct library research can enable your class to have access to a wealth of information, make the students more self-sufficient, and allow you to give more ambitious assignments. Many students have not been exposed to research articles before and need to begin at the basics, so explain to the class what it means for research to get published and what the differences are between journals (in which scholars submit original material that gets judged by other scholars in the field), books, and popular press outlets that report research findings. Describe some of the different journals in the field, and what a journal article typically is like (the intended audiences; the various sections of a paper — abstract, introduction, method, results, discussion, references; the use of statistics; what it means to have “significant” results). In the introduction of the book of readings, *Readings in Social Psychology: The Art and Science of Research*, that accompanies the textbook, we offer some advice for students about how to read journal articles; you might consider assigning students to read that.

Once the students have some understanding of what is meant by “the literature,” next explain to them how to search this literature. If the students have access to electronic databases such as *PsycInfo*, either demonstrate to the class how to use these databases or inform them about how they can learn about these, such as through a local librarian. Also mention the advantages and disadvantages of Google searches and websites like Wikipedia.

## Idea 4. Evaluating Research

Have your students read one or a few original, empirical journal articles concerning some social psychological issue(s). You can choose one or more articles from *Readings in Social Psychology: The Art and Science of Research*, which is available with the textbook, or from recent issues of journals such as *Personality and Social Psychology Bulletin* or *Journal of Applied Social Psychology*. In class, ask the students to summarize the main points of the articles. Ask them to articulate the hypotheses that were tested, why and how the researchers tested these hypotheses, and what the results suggested about



these hypotheses. Discuss with the students the implications of the research. These discussions can give students experience in synthesizing and articulating the important issues from a research paper. At first, this will probably be much more difficult than students expected. If you encourage students to discern the important points and summarize these studies in their own words, they should begin to develop a much better understanding of the language and value of research.

Discuss methodological issues such as random assignment and experimental control, internal and external validity, experimenter expectancy effects, and mundane and experimental realism, and ask the students to critique the research reported in the article(s) with these concepts in mind. Discuss the advantages and disadvantages of different kinds of self-report and observational measures, and ask the students to comment on the kinds of measures used in this research.

When telling students how to read journal articles, you might want to refer to the introduction to *Readings in Social Psychology: The Art and Science of Research*, in which we explain to students how to read journal articles for the first time. This would also be a good time to tell students whether you expect them to read the articles in a different manner or at a different level than that suggested in this introduction.

For more advanced groups of students, consider giving them a peek into how social psychologists critique each other's research. This could help the students develop the kind of critical thinking that can be such a valuable tool for them to have. Although there are many forums for this kind of thing, two of the most appropriate are the journals *Psychological Inquiry* and *American Psychologist*. Each issue of *Psychological Inquiry* features one or more target articles, followed by a number of subsequent articles that comment on the target article(s). These commentaries sometimes lead to heated debate, and sometimes not, but they can serve as a great example for your students about how scholars read each other's work with a critical eye. *American Psychologist* sometimes includes debates and commentary on important, contemporary research topics as well. Neither journal is strictly a social psychological journal, so only some of the articles will be relevant to your course.

## Idea 5. Web-Based Research

How does Internet-based research differ from that of the traditional psychological laboratory? What kinds of questions are being addressed on the Internet and what methods are used to answer them? Are there any disadvantages to doing such studies online?

In an article reviewing all APA journal articles published between 2003 and 2004, the authors (Skitka & Sargis, 2006) found that three approaches to research were being used on the Internet.

*Translational*: when traditional research methods and questions are adapted to the Internet. For example, one such study adapted Milgram's "lost letter" technique. When the technique is implemented offline, a large number of unmailed letters are dispersed in various places in city streets. The letters are enclosed in envelopes that are addressed and stamped, but not yet posted. When a person comes across one of these letters, he has the option of mailing it, disregarding it, or actively destroying it. The focus of the technique is to note how many letters get mailed, a rate that varies according to the name of the organization printed on the envelope.

An online version of the technique was used by researchers who wanted to explore whether people would be more likely to respond to lost e-mail messages if the writer was a member of an ingroup or an outgroup and if the message expressed a primary or secondary emotion. (Primary emotions are those that are common to both humans and animals, such as fear, anger, or surprise, whereas secondary emotions are those that are uniquely human, such as disillusion, hope, and admiration.) Instead of letters, they "erroneously" sent 400 professors at a Belgian university an e-mail with the writer identified either as a researcher from the same university (ingroup) or a different university (outgroup). They also calculated a solidarity index based on whether the explanatory note accompanying the

forwarded e-mail contained more formal or informal pronouns. The only effect found was that forwarded messages expressed greater solidarity when the original writer was a member of the ingroup (same university) and when the e-mail expressed a secondary, rather than primary emotion.

In another translational study, researchers sought to locate 500 participants for a survey involving the use of anabolic steroids. Participants were recruited through postings in five anabolic steroid discussion boards. This study highlights how the Web facilitates access to specialized populations and how sensitive subjects can be approached with higher response rates because of the anonymity provided by the Internet.

The authors found that most Web-based studies were translational, asking the same type of questions and using the same methods as do offline studies. The Internet was used in these cases because it offered an easier way to recruit participants and collect data.

*Phenomenological*: when a study addresses an online behavior. Specifically, phenomenological studies focus on how thoughts, feelings, and behavior are affected by the Internet. The authors note that the online psychological environment differs in four ways from the offline psychological environment. First, in real-life encounters, we're used to inferring a great deal of information based on appearances. On the Internet, however, these physical cues are absent. Second, in real life, we interact only with those who are near, whereas on the Web physical distance is not a barrier. Third, in real-life encounters, we have less choice as to when or where to respond. And fourth, in Internet conversations, there is less of a chance to discern emotions, as there are no auditory cues (from tone of voice) or visual cues (from body language or facial expression).

One phenomenological study sought to assess whether reading blogs, or online journals, creates a sense of community. The researcher used the Julie/Julia blog that was posted by a young woman who documented her year-long progress at working through every recipe of *Julia Child's Mastering the Art of French Cooking*. It was found that active participation, via the posting of comments, did contribute to a sense of community.

In another study, researchers investigated the connection between hours spent online and psychological well-being. Results indicated an initial short-term deleterious effect where loneliness increased. After a while, however, higher levels of use were actually associated with greater social support and less incidence of depression than lower levels of use. The one negative effect found to persist with higher levels of Internet use was that early adolescents who used instant messaging were more likely to show social anxiety and loneliness in school.

Phenomenological research was also used for studies on the following topics: cyber-ostracism, effectiveness of online therapies, e-mail as a tool for improving smoking cessation, and quality of emotional support of online breast cancer support groups.

*Novel*: when the method used was created solely for Web-based research. For example, researchers staged an online auction on a German auction site for the purpose of examining ethnic discrimination among bidders. Accordingly, they offered comparable items for sale with the sellers' names varied by ethnicity. They found that sellers with Turkish names (a minority in Germany) took longer to receive winning bids than did those with German surnames.

Another novel study explored the accuracy of inferences made about the personalities of owners of personal websites. Website owners and two close associates (supplied by them) were asked to complete personality inventories about the website owner. These were then compared with personality assessments made by strangers who only looked at the websites. Results indicated that there was a high level of agreement across judges on four of the Big Five dimensions (all but agreeableness).

Ask students to think about what might be some potential weaknesses in Web-based studies like these. The authors state the following concerns: first, there's the fact that Web users, like college students,

may not be representative of the general population. Web users tend to be younger, wealthier, and better educated. They've also been shown to be more trusting and to have larger social networks.

Second, it's easier to turn down or ignore an e-mail request for a survey than an in-person or telephone appeal. Accordingly, the non-response rates are higher for Internet-based research, with only 10 percent of those approached by e-mail responding to survey questions. However, it remains unclear whether such a low response rate affects the validity of the data.

Third, there are certain technical constraints. For example, depending on how they access the Internet, which browser they use, and what computers they own, some people may not have the ability to load pages as quickly as others. Moreover, it's impossible to touch, taste, or smell over the Internet.

And fourth, there's the problem with lack of control. In a lab, the environment is controlled so that everyone is subject to manipulation under similar conditions, but in a Web study, the environment can vary. For example, some participants might be alone, whereas others might be in the company of many others.

Skitka, L.J. & Sargis, E.G. (2006). The Internet as psychological laboratory. *Annual Review of Psychology*, 57, 529-555.

## Idea 6. Converging Research Methods

Students are likely to overestimate the value that social psychologists place on individual studies. Explain the critical importance to the field of converging evidence to support a particular finding, hypothesis, or theory. It's especially impressive when evidence collected from a variety of research perspectives and paradigms all converge to support a particular point. Because laboratory experiments, field studies, correlational research, and archival research have their own advantages and disadvantages, evidence that is consistent across these different approaches is quite compelling.

An effect found in a laboratory experiment, for example, can be very important, but, depending on the issue being studied, one might wonder whether evidence that is consistent with this finding could be found also in more naturalistic, but less controlled, contexts. On the other hand, finding evidence in naturalistic contexts in which many extraneous variables cannot be controlled often leads to the question of whether the evidence could be found under more precise conditions, such as in a laboratory experiment.

Compare and contrast the advantages and disadvantages associated with laboratory experiments, with field experiments, and with correlational research. Ask students how researchers can maximize the advantages of these different types of research. Discuss how researchers sometimes go back and forth from the laboratory to the field to obtain converging evidence to support a particular theory or set of hypotheses, or to revise them to make them more generalizable. You might also introduce the concept of computer-simulated studies in this regard.

**A specific example.** As a specific point of discussion, you can focus on one particular issue and ask students to devise ways in which this issue can be researched from different approaches so that the disadvantages of each specific approach can be overcome by the advantages of the others. For example, you can discuss the issue of heat and aggression, which is discussed in Chapter 11. Ask the students for ideas about how to test the hypothesis that "people are more aggressive when the ambient temperature is hot." Have them make specific suggestions about correlations to examine, and then discuss the shortcomings of each suggestion and the need for converging evidence.

For instance, one correlation that might be (and has been) examined is the number of violent crimes reported in a particular city on each day of a particular year and the maximum temperature in that city for each of those days. Ask the students to discuss the kind of correlation that would be expected if the hypothesis is true, and ask them to offer alternative explanations for such a correlation. Suggest that

perhaps there were more violent crimes during the hottest days because these days were in the summer when there are more people outside and when most students are not in school. What other correlations could be examined that do not have these problems? One suggestion would be to look at the same period of time (e.g., summer), but to compare across different cities that have different temperatures (e.g., San Francisco vs. Dallas). This would avoid some of the problems of the previous correlational study, but it would be open to a new set of alternative explanations, and so on. After discussing different correlational studies, then discuss different laboratory experiments. In the lab, the measures of aggression tend to be much less naturalistic, but it would be possible to test for cause-and-effect relationships between heat and aggression.

The point is that if evidence found across a variety of empirical approaches is consistent with the hypothesis that “people are more aggressive when the ambient temperature is hot,” or, more strongly, that heat causes aggression, then we can have much more confidence in this hypothesis than if the evidence stemmed from only one type of research.

## Idea 7. Ethical Issues in Social Psychological Research

Discuss the issue of ethics in social psychological research. Begin broadly, with a general discussion of what it means for research to be ethical or unethical. Next, focus on some specific research practices, such as deception. Finally, focus on some specific studies, both real and hypothetical, and ask students to discuss their ethics. To make this even more dramatic, consider showing some of the video, *Obedience*, which depicts Stanley Milgram’s classic research on destructive obedience (see Chapter 7), and have students debate the ethics of this study. (We suggest that you show only enough of the video to give students a topic for debate; we recommend that you show the video in its entirety when discussing Chapter 7.) Explain to the students the valuable contribution that this research made to our understanding of humanity, and how most people never would have guessed that ordinary people are so vulnerable to conformity and obedience. But explain also how stressful the situation was for the research participants and how they did not consent to be in the kind of situation in which they found themselves. Ask the students whether the scientific merit, or the potential societal contribution, of research should be a factor in determining whether or not the research meets ethical standards.

Review the American Psychological Association’s *Ethical Principles of Psychologists and a Code of Conduct* (1992), which can be obtained free of charge (800-374-2721).

Consider using **Handout 2.3** to help facilitate discussion. This handout briefly describes a number of specific research procedures and asks students to evaluate whether or not they are ethical. There are likely to be strong differences of opinion about some of these procedures and a lot of consensus about others. Ask students to try to articulate a code or system of ethics on the basis of their responses.

## CLASSROOM ACTIVITIES

*Note: Several of the classroom activities we include here could also be used in conjunction with Chapter 1 as a way of introducing the class to the field and methods of social psychology. In addition, many of the ideas offered in Chapter 1 of this manual could work wonderfully in association with this chapter, so we recommend that you consider the ideas presented there as well.*

### Activity 1. Explaining Research Findings: “Hindsight Is 20-20”

This activity is designed to illustrate the value of conducting empirical research in order to understand social psychological issues rather than relying on intuitions, introspection, or unsystematic observations. This is an important point in Chapter 2, as well as in the entire field of social psychology. By illustrating this point, you can reduce the likelihood that students will dismiss the research findings they learn about during the course as trivially obvious. This activity can also illustrate important points

such as the hindsight bias (Ch. 3) and the confirmation bias (Ch. 4), and it can be used further to highlight one or more interesting research findings in order to pique students' interest in things to come in the course.

**Handouts 2.4 through 2.11** contain four matched pairs of summaries of “research findings” in social psychology. Within each pair (e.g., 2.4 and 2.5 is one pair; 2.6 and 2.7 is another), one of the summaries does accurately reflect the gist of the research in the field concerning a particular issue, and the other summary presents the *opposite* finding. More specifically:

- Handout **2.4** presents a summary that concludes that people tend to be attracted to others who are similar to them on a variety of dimensions. The research does indeed support this conclusion (see Chapter 9). Handout **2.5**, on the other hand, presents a fictitious summary of the opposite point: that people tend to be attracted to others who are very *dissimilar* to them.
- Handout **2.6** concludes that the key to increasing people's true, intrinsic interest in a task is to encourage them to do the task with incentives that they feel are rewarding and worthwhile. The actual research in social psychology is *inconsistent* with this point. Rather, the research is consistent with the conclusion of Handout **2.7**, which states that such incentives can undermine people's enjoyment of and internal interest in a task (see Chapters 3 and 13).
- Handout **2.8** concludes that people who are in a happy and cheerful mood are more likely to help a stranger who needs help than are people who are in a neutral mood. The actual research does support this conclusion (see Chapter 10). Handout **2.9**, on the other hand, presents fictitious research indicating that people in a happy mood are less likely to help.
- Finally, Handout **2.10** presents the wrong conclusion and Handout **2.11** presents the accurate conclusion about the social psychological research on ingroup favoritism in the minimal groups paradigm (see Chapter 5).

**Introducing the activity.** Tell the students that you are interested in seeing how well they can “think like a social psychologist.” Explain that there are various ways to explain or interpret any research finding but that many of these ways are not truly social psychological explanations. For example, they may emphasize clinical or personality factors rather than social ones. Explain that you will be presenting the students with some research findings (or, if you present only one, say that you will be presenting them with a research finding) and that you want them to explain the reasons underlying these findings.

For each pair of handouts, each student should receive only one of the pair; no student should receive both handouts of a particular pair. Students should *not* realize until the end of the activity that the research summaries may be bogus or that other students are reading the opposite summaries. Rather, they should be led to believe that these are real summaries of the relevant research. We have included four pairs of handouts for this activity; feel free to use as many or as few pairs as you feel is appropriate. Each student may receive more than one handout, but again, you should be sure that no student receives both handouts from any one pair, and that each student receives a mix of handouts such that at least one is accurate and one is bogus.

**Results and discussion.** You can either (a) collect the handouts, analyze the results, and discuss the results and the points made below in the next class, or (b) immediately begin a rough “analysis” of the results by discussing the activity with the students as soon as they've completed the handouts. If you take the former approach, calculate the average “surprise” ratings that the students gave for each handout, and see how the averages compare within each pair of handouts. Were the students very surprised by the bogus results? To the extent that they were not, you could explain how this demonstrates the hindsight bias. Also, select a few of the students' written explanations for either accurate or bogus research findings, and point out to the class how it is possible to come up with compelling explanations for either the real findings or their opposites. This would demonstrate


powerfully the hindsight bias and the necessity of conducting objective empirical research to test our hypotheses and theories.

If you take the second approach and want to analyze and discuss the results of this activity immediately (or if you first analyze the results on your own and then come to class with the results, you can begin your discussion of them in this way), begin by asking the students how surprising they thought the research findings were. For example, ask for a show of hands to indicate how many students thought that the research findings about interpersonal attraction were very surprising, and how many thought they were not surprising. Do not reveal that there were two different versions of these findings; to accomplish this, be sure to be vague in your descriptions of the handouts (as in saying only “interpersonal attraction” to describe the first pair of handouts). Then do the same for the other handout topics that you used (i.e., “motivation,” “mood and helping,” and “us vs. them”). Keep track of how many students did and did not feel that the results were surprising.

Next, ask only the students who had Handout 2.4 to indicate whether or not they were surprised by the results, followed by those students who had Handout 2.5, and so on. Don’t indicate to the students how these versions differed from each other. Record the numbers of students from each version who were and were not surprised. An ideal result would be if there is little difference between the versions. That is, if the conclusion that opposites attract (2.5) and the conclusion that people are attracted to similar others (2.4) are found to be unsurprising by the same number of students, you will have demonstrated the hindsight bias quite convincingly. Even if there is a difference in these ratings, however, it is likely that the absolute levels of reported surprise will be low for both versions within a pair, thereby also illustrating the hindsight effect quite well.

After asking the students how surprised they were, ask various students to explain the research findings. At this point, the students will begin to realize that you had given them opposite summaries. Have the students from the different conditions debate each other about which finding within a pair makes more sense, and why. This is likely to generate some good discussion, and to increase the students’ interest in learning what the research really has to say about these issues. Therefore, this activity can serve as a good way of introducing the course.

If it has not been made clear by now, be sure to explain to the class how the competing versions of the handouts differed from each other, and discuss the extent to which students were or were not surprised by the findings. If most students were not surprised by the findings, ask them to explain why not. Ask the class to explain why several students were able to come up with intuitively compelling explanations for bogus results; discuss the implications of this with the class. Explain how this should make it clear why empirical research that uses the principles of the scientific method (Ch. 2) is so necessary. Explain the hindsight bias (Ch. 3), which is the tendency, once an event has occurred, to overestimate the ability to have foreseen this outcome, and the confirmation bias (Ch. 4), which is the tendency to seek, interpret, and create information that verifies existing beliefs. Explain how these biases can make students of social psychology think that many of the research findings they will learn appear to be obvious in hindsight—this not only can make the course seem less interesting but also can lead to confusion when it comes time to be tested on the material in quizzes and exams. Tell the students that you hope as they read about various theories and research findings during the course they will always try to imagine alternative explanations and think about ways of testing these explanations, as well as to try to explain why the opposite results might have been found, and why they weren’t.

 **What if this bombs?** You are unlikely to bomb with this activity if you do not “hype” the activity too much or too specifically. Even if the students who read the bogus summaries are much more surprised by the findings than are the students who read the accurate summaries, you can make the points described above as long as *some* of the students are able to come up with explanations that would support opposite sets of results. Even in the unlikely event that no students could offer good explanations for the bogus results, *you* could offer some (e.g., it is

commonly believed that opposites attract [as is evident in most romantic comedies in television and in the movies]; both behaviorism and common sense emphasize how rewards make us like the things with which we associate those rewards; people in a happy mood might not want to risk ruining their good mood by getting involved in someone else's problems, or they may be too distracted or self-satisfied to do so — indeed, these are real limitations of the good mood effect on helping [see Table 10.4 in the textbook]; unless there is competition or conflict between groups, there is no rational justification for favoring certain people over others simply because of an obviously arbitrary criterion). Once these explanations are discussed, you should point out to the class that because it is easy to come up with intuitively appealing explanations for competing results, it should be clear that there is an important need to conduct good research instead of relying on intuition and common sense. Instructors who are very nervous about using an in-class activity because of the potential of a bomb may be advised to collect the students' handouts and analyze them outside of class, to give them more control over the discussion and select to read to the class only those completed handouts that best demonstrate the hindsight bias.

## Activity 2. Testing the Hypothesis that Class Participation Will Kill You

Bernardo Carducci (1990) developed a very creative, effective ice breaker that is designed both to encourage class participation (particularly in large classes—the kinds of classes in which students often are too intimidated to raise questions or points for discussion) and to introduce some basic points about research methods. We have reworked the details of the activity considerably in order to illustrate additional methodological points and to provide more material for discussion, but we have tried to retain the basic point and the lighthearted flavor of Carducci's activity.

Carducci writes, “On the basis of the irrational belief held by many students that speaking up in class will ‘kill’ them, this demonstration uses a very simple pretest-posttest design to test in a rational manner this irrational belief right before the students’ eyes.”

Our expansion of this activity allows for a more complete experimental design to “test” the same irrational belief.

**Random sampling and random assignment.** The first step is to randomly select a sample of the students from the class. This sample will be divided into two conditions. The size of the sample depends on the size of the class and how much class time you want to devote to this activity. Half of the sample will be asked to say a few (brief) things to the rest of the class, so budget your time accordingly. In our own classes, we typically select about 20 students, assigning 10 to each condition. (In small classes, all of the students could be included in the activity, in which case you would ignore random sampling and need only to randomly assign each student to one of the two conditions.)

How you do your random sampling is another issue. One way is to select students in advance of the class. If there is time, however, it is ideal to do the random sampling in front of the students so that they can see how it works. You can accomplish this by having students pick up a small piece of paper as they enter the class. Each piece will have one number on it, ranging from 1 to the maximum number of students you expect to be at class. (This is also an easy way to check to see how many students attended the class.) When you are ready to begin the activity, use a random number table or a computer program's random number generator to select the sample. Call out the numbers and ask the students whose numbers are called to stand. When the sample has been selected, point out why this constitutes a random sample of students from the overall population of students in the class.

Next, assign each student to either the *treatment* or *control* condition by flipping a coin (or, to encourage more class participation, ask the students who are seated closest to the students who are standing to flip a coin and assign that student to the condition). Have the selected students write down

whether they have been assigned to the treatment or control condition, and then have them return to their seats. Point out how this constitutes random assignment to conditions. This would be a good time to explain to the students the purposes of random sampling and random assignment, and how they differ from, for example, convenience sampling or self-selection to conditions.

**State the hypotheses.** Explain the importance of class participation and discuss how everyone benefits if students remain involved and inquisitive throughout the course. Explain also that you understand that some students may be afraid to speak out in class. State that while you can sympathize with their concerns, you will demonstrate scientifically for them that they should not be afraid. Then, write on the board, or use **Handout 2.12** to make a transparency to show to the students, “HYPOTHESIS 1: Class participation will kill you.” Below this, write (or show via overhead) “HYPOTHESIS 2: Class participation will *not* kill you.” Announce to the class that you will be testing these rival hypotheses, and that you are so confident in Hypothesis 2 that you are willing to bet their (the students’) lives on it. (To add some more humor to this, you may want to announce something like, “Of course, I could be wrong, so those of you in the treatment condition may want to hug your neighbors goodbye, providing it’s okay with them.”)

**Hand out the pre-treatment questionnaire.** Distribute copies of the top half of **Handout 2.13** to the students in both conditions. This handout simply asks the students to record their name and condition, and to indicate if they are alive or dead.

**The treatment: class participation.** Ask the students in the class who are not in either condition to help you come up with three or four questions that the students in the treatment condition should answer in front of the class. Explain that these questions should be innocuous—questions that they themselves would be willing to answer. You may suggest questions concerning their name, hometown, intended major, why they’re taking this course, and their favorite soup. Explain that the act of answering these questions will signify “class participation” for purposes of testing the rival hypotheses. (If you want to go into more depth about issues of methodology, this would be a good time to discuss the issue of why and how researchers operationally define, or create an empirical realization of, their independent variables.) Once you and the class have come up with the set of questions, have each student in the treatment condition stand up and answer these questions in front of the class. You may consider asking each of these students a lighthearted follow-up question or two, to begin to establish the norm of give-and-take (i.e., a conversation) between you and the students.

Students in the control condition should not be asked to say anything in front of the class.

**Hand out the post-treatment questionnaire.** Distribute copies of the bottom half of **Handout 2.13** to the students in both conditions. These questions are identical to those asked on the pre-treatment questionnaire.

**Discussion of dependent measures.** Explain to the students that the dependent variable in this study is whether or not the participants were killed during the experiment. Explain the purpose of the pre- and post-treatment questionnaires. Tell the students that these are self-report measures. Explain that self-reports are very frequently used in social psychology, but that there are other ways of measuring dependent variables. You may refer to Chapter 2 of the textbook for a discussion of these issues. Ask the students to help you come up with an *observational* measure to determine if the participants were killed during the experiment. (Again, if you want to go into more depth about issues of methodology, this would be a good time to discuss the issue of why and how researchers operationally define, or create an empirical realization of, their dependent variables.) When you have selected a technique, conduct your observation of the participants to determine that each is, indeed, alive. You might want to bring a mirror to class, to hold under a participant’s nose to see if they fog it up. Consider bringing other amusing props for this task.




**Report the results.** Collect the questionnaires and report to the class each of the following: (a) the number of students in each condition, (b) the number of students in each condition who reported themselves as alive in the pre-treatment questionnaire, (c) the number of students in each condition who reported themselves as alive in the post-treatment questionnaire, and (d) the number of students in each condition who were observed to be alive based on the observational measure.

**General discussion.** The results should indicate that the second hypothesis—that class participation will *not* kill you—was supported by the data. The observational measure should reveal that none of the students were killed in either condition. Because some students may try to be funny, some may indicate in their questionnaires that they are not alive. If this is the case, explain to the rest of the class how this illustrates an important problem with self-report measures and why using multiple methods, such as observational measures along with self-reports, can be so valuable. Explain also that researchers may use self-report questionnaires differently than the research participants anticipate. Researchers may use questions that are written in such a way that they can infer if participants are lying or giving misleading information, or the critical questions are embedded within a larger set of questions that are irrelevant to the focus of the research, so that the participants will be less on their guard when responding to the critical questions. Illustrate this more sophisticated approach to using self-reports by announcing that you will ignore *what* the students wrote on their questionnaires and instead focus on whether or not they wrote *anything*—using the criterion that if they wrote anything, they must have been alive. (If, on the other hand, none of the students reports that he or she is not alive, ask the class to imagine that someone did report himself or herself as dead, and discuss these same issues with them.)

Ask the students to explain why a control (non-treatment) condition was included in the study. Ask the students to explain the advantage of conducting an experiment to test the rival hypotheses rather than simply observing whether the students who volunteer to participate during the first few classes are killed during class (i.e., discuss the issue of self-selection to conditions as a threat to internal validity, keeping in mind that the students who choose to participate may be importantly different [e.g., less nervous?] than the students who choose not to participate). If you haven't already done this, discuss the purpose of random assignment.

Ask the students to speculate about what alternative explanations they could offer, and how they could test them, if somebody in the study had, indeed, died. This should lead to a discussion of the importance of random assignment, control conditions, and statistical analyses.

Finally, point out that all of the students who were not part of the experiment but who participated in class by suggesting various ideas also did not die from their participation, adding converging evidence supporting the hypothesis that class participation will *not* kill you.

 **What if this bombs?** This activity is fairly bombproof. Even in the unlikely event that the students do not find the activity to be fun and amusing, thereby negating the value of the activity as an ice breaker, the activity does raise several important methodological issues that are covered in Chapter 2 and that will remain relevant throughout the course. The only way, then, that the activity could really bomb is if someone does, in fact, die. Of course, a death in class would put a damper on any activity, and, from a purely methodological standpoint, a number of important issues about the laws of probability and inferential statistics could be raised to illustrate that the death does not confirm the first hypothesis.

More seriously, if you are at all concerned with using words like “kill” and “dead” as part of this activity, you could substitute other hypotheses, such as that class participation will (or will not) cause students to be laughed out of the classroom, spontaneously combust, or experience some other unpleasant outcome.

Carducci, B. J. (1990). Will class participation “kill” you? Refuting a common irrational belief by teaching research methods. In V. P. Makosky, C. C. Sileo, L. G. Whittemore, C. P. Landry, & M. L. Skutley (Eds.), *Activities Handbook for the Teaching of Psychology* (Vol. 3, pp. 203-205). Washington, DC: American Psychological Association.

### Activity 3. The Importance of Random Assignment

This activity is designed to illustrate how random assignment serves the valuable function of being “the great equalizer” that allows one to infer cause-and-effect relationships between independent and dependent variables in an experiment. As Chapter 2 explains, random assignment is one of the two defining features of an experiment (the other feature being experimental control). This activity is designed to be an easy way to demonstrate the importance of random assignment, as well as its effectiveness. Though especially well suited for large classes, it can work with any size class.

This activity can be done in many different ways. The key features of the activity are as follows.

First, describe an experiment (either a real or a hypothetical one) that has two different conditions. Summarize the results (again, either real or hypothetical results) of the experiment, ensuring that they are simple to understand, and that there is a significant difference between the two conditions on the dependent variable of interest. You could use the “experiment” described in the previous Classroom Activity as an example.

Then, ask the students if they can infer from these results that the manipulation of the independent variable (i.e., the difference in treatment between the two conditions) *caused* the difference found on the dependent variable. Ask the students what other factors could explain the difference.

Inevitably, some students will raise alternative explanations concerning individual differences between the participants in the two conditions that could account for the results. What these students fail to understand is that random assignment should have made it very unlikely that such differences could have existed between the conditions. That is, random assignment should have ensured that, on average, there were no pre-existing differences between the participants as a function of condition. After raising this issue with the students, tell them that you understand that it can be a difficult concept to grasp immediately, and that to help them see the function of random assignment, you will conduct a demonstration.

Then, randomly assign the class (or a sample from the class) to two different conditions, such as by a flip of the coin.

Finally, compare the students in one condition with those in the other condition on a number of dimensions, such as sex, age, political affiliation or orientation, height, attitude about some campus issue, number of math classes taken, whether they would prefer soup or salad if they were offered it right then, etc.

That is the basic outline of the activity. What experiment(s) you choose to describe in order to introduce the concept of random assignment, how many students you assign to each condition, and how and on what variables you measure the students in the two conditions are up to you. In the paragraphs below, we offer three specific suggestions.

**Version 1.** One version of this activity is based on an activity proposed by David Watson (1990). This activity requires no calculations (i.e., you do not need to calculate and compare the average questionnaire responses between the two conditions), and it can provide a visual demonstration of the effectiveness of random assignment. To begin this activity, tell the students that you think that you have devised a new way of coaching basketball that will enable you to train a team to be winners. (To add some humor here, you can briefly explain your new method, although this is not at all necessary. You can choose something absurd, like having the players each construct a shrine worshipping you, or

playing Britney Spears music constantly.) Say to the students that, being trained in social psychology, you recognize the need to demonstrate empirically that your method of coaching really is superior. Explain that the best way to test your idea is to run an experiment in which one team will be trained by your new method and another team will be trained by the traditional methods. Each team will then play in a tournament, and, if your method really is superior, the team coached by it should do better in the tournament.

Ask the students if there is anything wrong with this experiment. Some students will probably say that the teams might be different to begin with, *before* the different training methods are used. If, for example, the team coached by your new method is a better team to begin with, then it would not be clear if its success is due to your methods or to the fact that it is the better team. (In the unlikely event that no student raises this point, you should raise it as a potential problem.) Ask the students if they can think of any specific, easy-to-measure individual differences that might exist between the players on the two teams that would likely have an important effect on their basketball success. Some student should (or, if not, you should) suggest that height makes a big difference and that the teams might differ on this dimension. How can you make it unlikely that the teams would differ on height? Explain that random assignment should solve this problem. Tell the students that you will form two basketball teams from the students who are in class and randomly assign them to one of the two teams.

Watson suggests that instructors use only one sex in order to reduce some of the variation in height. You might consider using only women first, and then using only men in a replication of the demonstration.

Select about two dozen students to be in the experiment. Randomly assign them to either Team A or Team B by flipping a coin. Ask the students to stand on different sides of the room as they are assigned to their teams. When the students have all been assigned, have the students on Team A come to the front of the class and line them up from tallest to shortest. Then, have the students on Team B line up behind them (or, we suggest, have them line up facing Team A in close proximity, to make it seem more like two teams about to face each other in battle), also from tallest to shortest. If the random assignment is successful, all of the students in the class should see that the two teams do not differ much in height.

**Version 2.** A second version of this activity is to randomly assign all of the students in the class to either of two conditions, call these conditions Team A and Team B, and distribute copies of **Handout 2.14** to the students. This handout asks the students to indicate the team to which they have been assigned and to answer a series of questions about themselves. Collect the completed handouts, separate them by condition, and compare the responses as a function of condition. Report to the class at least some, and ideally all, of these comparisons. The two groups should have similar averages on all of these dimensions.

**Version 3.** You could also do a combination of these two versions of the activity. That is, set the demonstration up as an experiment to test your new method of coaching basketball, and do the activity as described above, including lining up the two teams and comparing their heights. But then ask the students in the class why you couldn't simply divide the group into two teams by matching them for height. That is, rather than randomly assigning them to the conditions, why not assign the two tallest students to opposite teams, the next two tallest to opposite teams, and so on? You should explain that the problem with doing this is that there are numerous other dimensions on which these two teams might differ, and just because you rule out height does not mean that the other differences no longer exist. Explain that the value of random assignment is that it should equalize all of these other dimensions, as well as all the dimensions that you cannot even think of but that do exist.

To see if random assignment did indeed equalize the two teams on a variety of dimensions, distribute copies of **Handout 2.14** to them, and compare the averages as a function of team. If random assignment worked, the two teams should have similar averages.

● **What if this bombs?** The laws of probability suggest that it is very unlikely for random assignment to fail to sufficiently equalize the two conditions if your sample (class) size is sufficiently large. Be sure to explain to the students that the two conditions do not have to have the exact same averages on height, etc., that some variation is inevitable. The students should be made to recognize that the variation within a condition is (or should be) greater than the variation between the two conditions. If, however, the difference between the two conditions seems more than trivially small, you should treat this not as a failure but as an opportunity to say a bit more about methodological issues. To do this, simply explain that with the relatively small numbers of students involved in this demonstration, some variation is not terribly surprising. Explain that with large samples, the averages are much more likely to be equal and reliable (of course, if the sample you used was very large, then skip this point and go to the next one). In addition, and perhaps more important, explain that the field of social psychology rarely puts much stock in the results of any one experiment. Tell the students that social psychology research proceeds cautiously, that typically it is only after several studies have shown similar findings that social psychologists are satisfied that a particular cause-and-effect relationship has been demonstrated adequately.

At this point, you could try the demonstration again, counting on the laws of probability to hold true for you this second time, and/or you could go into a bit more detail about probability and the benefits of replication. That is, you can explain the notion of statistical significance (which is explained in Chapter 2), and how the standard that the field has set for accepting a finding as statistically significant is if the statistics indicate that the odds are less than 1 in 20 that the results occurred by chance alone. Point out that if the results of one study are statistically significant, and if these results are replicated and statistically significant in a second study, our confidence in the finding increases dramatically.

Watson, D. L. (1990). A neat little demonstration of the benefits of random assignment of subjects in an experiment. In V. P. Makosky, C. C. Sileo, L. G. Whittemore, C. P. Landry, & M. L. Skutley (Eds.), *Activities Handbook for the Teaching of Psychology* (Vol. 3, pp. 3-4). Washington, DC: American Psychological Association.

## Activity 4. Designing a Questionnaire

This activity is designed to give students experience in writing questions for research participants to answer—and in critiquing those questions. This can be a fun exercise for the students, but it should also demonstrate very effectively that it can be quite a challenge to create a set of questions in a way that elicits unbiased, unambiguous, and meaningful data. There is no better way to show students the many obstacles and pitfalls that people face when designing questionnaires and surveys, and it should give the class a better sense of why they should think about the methodology of a non-scientific poll or survey before taking the results at face value. The activity is also good at getting students to appreciate the challenge of operationally defining the variables that they wish to investigate. In addition to these perks, this activity can also be used as a springboard into discussing measurement devices such as Likert scales that play a central role in the assessment of attitudes.

**Choose a topic.** Either present students with a topic or set of topics that will be the focus of their questionnaires, or ask the students to make their own suggestions. The topic should be something that clearly is relevant to social psychology, is of interest to most students, is not unethical to pursue, and can elicit quantifiable data. The advantages of having the students make suggestions for the topic are that the students would be more involved and committed to the activity, they would choose something of interest to them, and they would be forced to think of how their abstract ideas can be turned into a concrete set of questions. The disadvantages of this are that it takes up more class time (which may not be a disadvantage if you have time to spare) and that some of the students' ideas will be inappropriate or otherwise difficult to pursue.

**Give the assignment.** This activity can be done either in class or as a take-home assignment. If it is done in class, you should have students work on it in small groups; if the activity is done outside of class, students can do this either individually or in small groups. Have the students develop a brief questionnaire designed to investigate the topic that was selected for this activity. Tell the students that they should construct the questionnaire as if they really were going to distribute it to people outside of the class. (Indeed, to make this an even more ambitious activity, you could have the students actually conduct a survey, collect the data, and interpret the findings together in class. This would, of course, require much more time and work, and you might need to get your survey approved by an ethics board, but the payoff could be high because students find such an activity to be very engaging and memorable.)

Emphasize to the students that the questionnaire should include instructions that are clear and not likely to bias the results. Explain that subtle changes in the wording and the order of the questions can make a big difference in the responses that participants give. Instruct the students to write questions in such a way that the potential responses to these questions can be quantified easily. In addition to writing the questions, the students should be required to describe how they would collect their data. That is, tell the students to indicate who their participants would be and, specifically, how they would recruit them (you might want to tell the students to imagine that they have no money, or have only some specific amount of money, to pay people to participate in the survey).

If the students work on this activity in class, give them a few minutes to get started with the assignment and then go around the room and observe the various small-group discussions. Probe each group with questions such as, “How are you going to measure that?” or, “Is there a way to have the respondents answer this question along some scale rather than in an open-ended format?” Key concepts to discuss with the students as they are working on the activity are the wording of questions, the order of questions, the response options given to respondents, the difficulty of analyzing open-ended responses, and how they would interpret various responses to the questions. Compliment the students for any good questions they’ve created, and try to spread enthusiasm for the task.

**Evaluate the questionnaires.** Collect the various questionnaires. We recommend that you do not evaluate the questionnaires immediately in class but rather take the time outside of class to evaluate them more carefully, after which you can report on them at the next class. Examine each questionnaire and identify mistakes or other problems that you can discuss in class to illustrate some important points. For example, students often word questions in such a way that their meanings are ambiguous, and thus the responses to these questions may be impossible to interpret. Students often have one particular meaning in mind, and they fail to recognize that other meanings are plausible. Another common problem is that instructions or response scales tend to be confusing. A third common problem concerns the framing of a question; for example, a question can be introduced in such a way that there seems to be a clearly preferred response, or the questions are ordered in ways that may seem to alter their meaning. See Chapter 2 of the textbook for a discussion of some of these and related problems. Also, identify particularly good questions. Bring to class examples of the problems you noted, as well as examples of good questions, and discuss these with the class. Be careful not to embarrass students by seeming to ridicule them or by taking more bad examples from any one student or group of students than from others.

Also, evaluate and critique the sampling procedures suggested by the students. Are they likely to be biased? For example, will some of these procedures lead to a disproportionate number of respondents who are of relatively high socioeconomic status, or who are particularly interested or experienced in the topic, or unusually friendly? Even a practice such as picking phone numbers at random from the phone book can lead to a number of biases (it will exclude people who don’t have phone service or whose numbers are unlisted; depending on the time of day in which the calls are made, some types of people may be more or less likely to be home than others; the first person who answers the phone in a house may tend to be one kind of person, such as a teenager, more than another, such as a busy young parent).

Discuss a procedure that is commonly used in television, radio, newspapers, and now even the Internet: inviting people to call or mail in their responses to some question that is presented in the program, newspaper, or website. The kinds of people who are likely to respond in such cases—especially when responding costs them money, as when they must indicate their response by calling a number that is not toll-free—are probably different from the rest of the population in a variety of important ways.


Explain to the students that the mistakes they made in their questionnaires are very typical of people who have not been trained in this field. Point out that these are the kinds of problems that can be found in the majority of surveys that are conducted in the real world — because most of these studies are not done in scientific ways. It would be ideal to bring to class some examples from these real-world surveys, such as those described in advertisements, on tabloid news shows that feature call-in polls, etc. The point is not that surveys are meaningless or too difficult to conduct well. Rather, the point is that being trained to design such research is necessary, and that because we are all exposed to a great deal of information based on survey questionnaire results, we should think critically about alternative explanations for these results and, when possible, examine the methods used to collect the data.

It is quite likely that several of the questions that students wrote turned out to be much more ambiguous than the students had realized. Use these examples to illustrate an important social psychological point about how different perceivers may interpret the same stimulus very differently from each other, and that any one perceiver may interpret the same stimulus differently at different points in time because of differences in expectations, contexts, moods, and so on. This will be an important point throughout the course. Explain that because of the great potential for ambiguity and misunderstanding, researchers are advised to test their surveys and questionnaires with people who are similar to those who will be asked to participate in the actual surveys or studies. The data from such “pilot tests” serve as trial runs that allow the researchers to see how their questions and other materials are interpreted. Researchers often interview the pilot test participants about their perceptions, and these interviews can be very constructive for the researchers.

Explain also that writing these kinds of questions is not limited to designing surveys. Most experiments also include sets of questions asked of participants. More generally, the challenge of going from abstract, broadly defined ideas that researchers would like to study to creating a specific set of clear, unambiguous, unbiased, easily quantifiable measures is a critical step in all social psychological research. And it is a step, or, more accurately, a long series of steps, that can be challenging, frustrating, and likely to require compromises. On the other hand, this process can be interesting and rewarding *because* of this challenge—that is, it requires creativity and thoughtfulness. It requires the ability to put oneself into the minds of potential respondents and to be able to anticipate the meaningfulness of the variety of responses that the questions are likely to elicit.

**A specific example.** One of the present authors conducted this exercise with his students a few years ago, and **Handout 2.15** presents examples of questions that some of these students submitted, along with some of the critiques of the wording of these questions that were discussed in the next class. You can use this handout as an example to help guide you, or you can distribute copies of the handout to students so that they can see some problematic questions.

The topic of this survey was selected by the students. They wanted to focus on “dating on campus,” and they were particularly interested in learning how prevalent dating was on campus (and to compare the prevalence across different categories of students, such as athletes and non-athletes, first-year students and seniors, etc.), what attributes were most important in choosing whom to date, and what students did on dates. (Of course, due to issues of sensitivity, instructors must be careful to make sure that students do not offend each other or that the task does not become too puerile.) The questions on Handout 2.15 are real questions submitted by students for this activity.

 **What if this bombs?** This activity is fairly bombproof. It is almost certain that there will be questionnaires submitted that can be used as examples of methodological problems that would be

worthy of discussion. Particularly if you give yourself time to read through the questionnaires and summarize good, but sensitive, critiques that you can explain in the next class, you should be able to make several important points. Even if all the students submit excellent questionnaires, you should be able to make this activity a success by explaining to the students what they did right. Students do not mind hearing compliments from their instructor, and you can still point out how the majority of surveys and questionnaires that are used in the real world are very unsound. The only real chance for this activity to bomb at all is if the students perceive you to be ridiculing their efforts when you offer your critiques. You can avoid this by being sensitive to this issue, pointing out how pervasive such errors are in the real world, and discussing how this can serve as a valuable learning experience for them.

### Activity 5. Demonstrating the Social Desirability Bias in Surveys

The social desirability bias refers to the tendency to overreport socially desirable behaviors and underreport socially undesirable behaviors in surveys. This bias remains a source of error in much survey research. Randall A. Gordon (1987) presents a technique for demonstrating the bias in the classroom. In his demonstration, students were given two forms of a survey about their dental habits. The questions on the two forms were identical, but the instructions accompanying the surveys differed. The standard instructions merely asked students to respond to the questions without signing their name on the form. The more elaborate instructions stressed the anonymity of the data, referred to the task as contributing valuable information, and urged the participants to provide accurate answers. Consequently, subjects who received the elaborate instructions reported substantially lower rates of dental checkups and other dental healthcare behavior than those who received the standard instructions (who demonstrated the bias by overreporting this socially desired behavior).

This activity uses the same method to demonstrate the bias in connection with the use of cell phones while driving. Because using a cell phone while driving is considered to be a socially undesirable behavior, it is expected that students receiving the standard instructions will underreport the behavior (thus demonstrating the bias), whereas students who receive the elaborated instructions will tend to be more accurate.

The two versions of the survey are **Handout 2.16** (which has the standard instructions) and **Handout 2.17** (which has the elaborate instructions). The standard instructions of Handout 2.16 are expected to show the bias of underreporting the behavior. The more elaborate instructions of Handout 2.17 are expected to elicit truthful responses. Moreover, to add to their impact, the elaborated instructions start out with the statement that “Cell phones have recently been singled out as the most common cause of car crashes” (Insurance Information Institute, November, 2006).

Tell the students that you would like them to participate in a short survey on cell phone usage. Without letting on that there are two forms, distribute one form to half the students and the other form to the other half. Allow them 5 minutes to complete the forms and collect both, keeping the two forms separate.

To tabulate the results, draw two columns on the chalkboard, with one labeled “Standard Instructions” (Handout 2.16) and the other labeled “Elaborate Instructions” (Handout 2.17). Explain to the class that the survey questions were framed so that (a) answers are more socially desirable — lowest usage of cell phones while driving—and (c) answers are least socially desirable — highest usage of cell phones while driving. Tally the number of (a), (b), and (c) answers to each question separately for each form. Now assign a value of 1 to each (a) answer, a value of 2 to each (b) answer, and a value of 3 to each (c) answer, and add up the totals. You should have two separate totals, one for Handout 2.16 and one for Handout 2.17.

The social desirability bias will be demonstrated if the answers for those responding to Handout 2.17 show a higher use of cell phones while driving (a higher total elicited by more elaborate instructions) than the answers of those responding to Handout 2.16 (who are expected to underreport this socially undesirable behavior, which should result in a lower total).

Begin a discussion of the results by disclosing the two different types of instructions that accompanied the forms. Ask your students to analyze which elements of the elaborated instructions elicited higher rates of disclosure. What do they think motivated those who reported higher as opposed to lower rates of usage?

● **What if this bombs?** The more elaborate instructions should elicit more accurate responses and therefore expose a social desirability bias in those who received the standard instructions. If that does not happen, present the results of Gordon's article and ask the class to propose possible reasons for failure to demonstrate the bias in this case. One reason might be that your students are not using their cell phones while driving. However, that would make them the exception: according to the 2005 National Occupant Protection Use Survey (NOPUS), at any given daylight moment, there are 974,000 drivers in the US who are holding a phone up to their ear. That's 6 percent of all drivers, but 10 percent of drivers between the ages of 16–24.

Gordon, R.A. (1987). Social desirability bias: A demonstration and technique for its reduction. *Teaching of Psychology*, 14, 1, pp. 40-42.

Facts about cell phones and vehicular accidents can be accessed at the website of the Insurance Information Institute: <http://www.iii.org/media/hottopics/insurance/cellphones/>.

The 2005 National Occupant Protection Use Survey (NOPUS), which is conducted by the National Center for Statistics and Analysis: [www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809967.pdf](http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809967.pdf).

## Activity 6. Operationalizing Variables

One of the most challenging, and fun, aspects of designing research is trying to take abstract, conceptual variables and make them concrete and specific so that they can be manipulated or measured. This process of creating operational definitions of the variables in the study is a critically important step in any research project. There typically are many different ways of operationalizing (coming up with operational definitions for) variables in social psychology research. See the discussion of this in Chapter 2 of the textbook.

You can have students do this activity either individually or in groups (the latter typically is more fun for the students, but the slower students might sit back and let the faster ones in the group dominate). Either make a transparency of **Handout 2.18** or distribute copies of it to the class. The handout includes several conceptual variables that need to be operationally defined for a study. For example, the handout describes how one team of researchers is interested in correlating how much people like their romantic partners with how much they love them. At a conceptual level, we know what it means to “like” someone and what it means to “love” them. But how, exactly, does one measure this? There are many, many different, valid (and invalid) ways to do this—which one(s) should you choose?

Have the students come up with operational definitions for the variables and report them to the class. Compare the different ideas that the various students proposed for the same conceptual variables. Then discuss the construct validity — the extent to which the measures really do measure the variables they were designed to measure and the manipulations really do manipulate the variables they were designed to manipulate — of the various operational definitions. Discuss how one might test the construct validity of these operational definitions.

Point out the advantages of using multiple methods and gathering converging evidence to be more confident in the construct validity. This is an important methodological point. Students often



demonstrate little patience when it comes to research — they want the study they design or read about to answer the research questions definitively. It rarely happens that way. Multiple studies with different methodologies are typically necessary before we can draw confident conclusions from the results. Even then, it is likely that future research will refine and modify these conclusions.

💣 **What if this bombs?** This activity cannot bomb. Different students (or different groups of students) will come up with different ways of operationalizing these variables, so that guarantees some interesting things to talk about. Discuss the advantages and disadvantages of the various ideas, how you could try to test their validity, how you could actually conduct these studies pragmatically (would it require too many participants or too high a budget?), what their predictions of the results would be, and so on.

## Activity 7. Designing an Experiment

Working together to design an experiment can be a very enjoyable and educational experience for students. It can provide them with a much greater appreciation for the art and science of taking abstract ideas and turning them into a concrete experiment. It can also help them understand important issues such as independent and dependent variables, internal and external validity, experimental and mundane realism, the use of deception, and concerns about ethics and values.

There are many different ways of conducting an activity such as this. You can give the students a specific or general topic and have them design an experiment to address the issue, or you can have the class decide together about an issue to examine. You can have all of the students work on the same topic together or in small groups. We recommend that there should be some collaborative component. Students tend to get more out of the activity if they are working in small groups, rather than either individually or in very large groups in which only a few students get to participate actively.

You can get ideas for the topic to be studied from a number of sources, such as by skimming the textbook, opening up a journal such as *Personality and Social Psychology Bulletin* and trying to conduct a study related to one in the journal, or testing one of the ideas in **Handout 2.18**. One example, based on one of the ideas in Handout 2.18, is described in detail below.

**A specific example.** One example of a general topic that can be assigned to students is the issue of the effects of media depictions of violence on people's attitudes or behaviors. You can ask students about the controversy concerning violence on television, in movies, or in music lyrics or videos. You can steer the discussion so that it begins to focus on, for example, the effects of sexist or violent lyrics in contemporary popular music on people's attitudes or behaviors. If there seems to be general interest in this issue, ask the students to suggest specific hypotheses that could be tested in an experiment. When some hypotheses have been suggested, such as "Exposure to sexist lyrics will (will not) increase people's hostility toward members of the opposite sex," divide the class into small groups and have them design an experiment to test this hypothesis (or a pair of competing hypotheses).

Instruct the students to write a specific, detailed summary of their experiment. Tell them to identify the independent and dependent variables. We advise that you limit the experiments to one or two independent variables and one or two dependent variables. Instruct the students to be very specific about how the independent variable(s) will be manipulated and how the dependent variable(s) will be measured. As the students work on their designs, go around the room to the various groups and listen to their discussion. Be both encouraging and critical. If you see that they have not included an appropriate control or comparison group, be sure to explain to them how the internal validity of the study would be questionable without it.


**Evaluate the designs.** When the students have completed the assignment, evaluate the experiments on a number of dimensions. Consider using the questions on **Handout 2.19** as a guide for these evaluations, or distribute copies of the handout to the students for their own evaluations. Consider

having the students see copies of each other's experimental design summaries, or have members of each group present an oral description of their designs to the rest of the class. The students could then evaluate each other's ideas. Students can use Handout 2.19 as a guide with which to evaluate their classmates' designs.

Be sure to emphasize how challenging it is to create a well-designed experiment, that it takes training and experience. Discuss with the students how working on and thinking about experimental designs can prove to be very valuable in helping them develop critical thinking skills that will serve them well for the rest of the course. By thinking in depth about how an experiment can be designed to test a particular hypothesis, how variables can be defined, manipulated, and measured, and how alternative explanations might be ruled out by particular combinations of variables, students should develop skills that will allow them to better understand and evaluate the research about which they will be reading during the course, and, more generally, they should become more sophisticated consumers of information about research findings to which they will be exposed in the media and in their jobs in the future.

Note also that this activity should illustrate that no one particular experiment can address adequately the general issues that inspired the research in the first place. The different groups of students will come up with a variety of experimental designs; point out that many of these ideas could contribute something different to the attempt to better understand the social psychological phenomenon in question. Discuss how this is the way the field progresses—the evidence from a variety of different studies and paradigms can converge to give us a more complete and reliable understanding.

**Hypothetical results.** To make this an even more ambitious activity, you might consider giving each group of students hypothetical results and have them interpret the results in terms of main effects, interactions, and overall implications. Create patterns of results that are interesting and that are consistent with some social psychological principle(s). If possible, create results that suggest at least one main effect and at least one interaction. This can be a very valuable exercise to students, helping them develop a skill that would serve them well as they read about and try to understand the numerous research findings with which they will be confronted in, and beyond, this course.

 **What if this bombs?** This activity is bombproof. No matter how good or bad the ideas submitted by the students are, the process of trying to design an experiment and receiving feedback about their own and other students' attempts will be very educational, and it should give the class a better appreciation and understanding of the methodological paradigm that dominates social psychology (i.e., the experiment). As with the previous activity, the only potential for a problem is if the instructor gives feedback to the students in such a way that they feel that they are being ridiculed or that their efforts were futile. Be sensitive to this issue, and try to encourage the students to use the same kinds of critical analysis when they learn about experiments during the course.

## Activity 8. Conducting an Experiment

Like Activity 7 (Designing an Experiment), this activity can be fun and educational for students. Even more than designing an experiment, actually *conducting* an experiment can be a compelling and memorable exercise for students.

The same kinds of skills can be developed and points made in this activity as in the previous activity. Indeed, Activities 7 and 8 can be combined so that students conduct the studies after they design them. Of course, students will be able to create more ambitious and complex designs if they don't actually have to conduct the experiment. The designs of any experiments that they will actually conduct must be fairly simple. The experiments should be quick to run and should not require a great deal of resources (such as money or confederates). Moreover, for ethical reasons, it probably would not be a good idea to

have these students conduct experiments that involve much deception or that concern sensitive, personal issues.

One possibility is to have students design an ambitious study as part of Activity 6, but then they could apply the knowledge they gained from that experience to this activity, in which they help design a more limited experiment that they actually have the time and ability to conduct.

We recommend that you have all of the students in class work on the same experiment, rather than dividing the students into small groups and having them conduct separate experiments, so that they will be better able to collect enough data. Another advantage of this approach is that you can spend more time in class discussing this one experiment and its implications.

**Evaluating the experiment before it is conducted.** You can use **Handout 2.19** with this activity as well as with Activity 7. The design of the experiment should be discussed and critiqued at length before the experiment is conducted. This will give you and the students a chance to make any changes to the design before it is too late. Since the ethics of the experiment should also be discussed before the experiment is conducted, you will probably need to submit a description of the experiment to an ethics board for approval before it is conducted.

The students should be given very clear, explicit instructions about the procedure and debriefing. They should practice conducting the study with their fellow students or with friends of theirs who will not be in the actual experiment. If there is time, it would be ideal if the class has a chance to meet and re-evaluate the procedures after everyone has had a chance to run a few practice sessions. If the experiment is a simple field study in which there is very little for the students to actually do (as in the “Smiling” study described below), then there would be much less need for such rehearsals.

**Evaluating the experiment after it is conducted.** From the beginning of this project, you should emphasize that the success or failure of this activity does not rest on what kinds of results the study produces. Explain that it often takes researchers months and even years to design, fine-tune, pre-test, revise, and conduct experiments, and so the students should not be disappointed if a hastily conceived and conducted experiment does not yield interesting data. The point of the activity is to get some experience designing and conducting the experiment. Although it would be great to get results that are consistent with predictions or that clearly are interesting, it can also be a fun and meaningful experience if the results are “mush.” Explain that experiments that do not yield good results *can* be very informative. It can be very helpful to speculate about why they got results that they did—new ideas about the design or the hypotheses can emerge from such speculations. Depending on the results, ask the students for suggestions about how subsequent experiments could be designed to rule out potential alternative explanations, address additional issues raised by the study, improve the chances of yielding data consistent with the hypothesis, and/or provide a better test of a revised hypothesis.

**A specific example.** Jon Grahe, Kipling Williams, and Verlin Hinsz (2000) describe a field experiment on smiling that is simple and interesting enough to work well for this activity. Conducting this experiment will allow students to gain a better understanding of such methodological issues as random assignment, equalizing the strength of manipulations, and experimenter bias.

The basic hypothesis of the experiment is that people are more likely to reciprocate smiles than frowns. The experiment is a replication of a study by Hinsz and Tomhave (1991). In that study, students went to public places and presented a smile, a frown, or a neutral face to strangers. They found that more than half the people (52.6 percent) returned the smile but very few (4.6 percent) frowned back.

You could start by familiarizing students with the Hinsz and Tomhave (1991) study. Explain that the experiment will be done in pairs with one student displaying the facial expression and the other recording the result.

Random assignment is achieved by having students write “smile” on six slips of paper and “frown” on another six. Then, the displayers will draw a slip at a time, at random, to determine which facial expression to present.

In order to equalize the manipulation strength, students need to practice creating consistent facial expressions. The authors present the following as their operational definition of a smile: “The eyes wide open, the forehead is not creased, and the corners of the mouth pulled back and turned up.” While smiling, students were asked to imagine that they were with a good friend that they enjoyed being with very much. For a consistent frown, the authors used the following operational definition: “Eyes are focused, the forehead is creased, and the corners of the mouth are pulled back and turned down.” While frowning, students were asked to imagine being with a close friend and that something very bad happened to that friend.

The authors had students practice their facial expressions in pairs until they were fairly certain that their strength matched, so that the frowns were as likely to be labeled as such as were the smiles.

To reduce experimenter bias, the students practiced working with another pair (who acted as passersby) to achieve standardization in their coding of the reciprocal expression. While the student acting as experimenter presented a facial expression (randomly drawn and not shared with anyone else), the student acting as recorder walked 1.5 meters behind. When the experimenter made eye contact, he/she signaled the recorder with a behind-the-back gesture that the passersby should be counted as a participant. In this way, students learned that it was important to keep the recorder from knowing which stimulus (smile or frown) was being presented, so as to avoid an interpretation bias as to which expression was being returned.

After students have practiced their expressions and are confident as to their ability to accurately code the response, have them pick a public location with high pedestrian traffic, such as a mall, a park, or the college campus. Instruct them to go out in pairs with one acting as the displayer and the other as a recorder and to pick a dozen subjects who are by themselves.

If you are also interested in having students explore the effect of the sex variable, tell students to make note of the sex of the displayer and to choose six males and six females as participants, with three of each receiving frowns and three of each receiving smiles.

When the data have been collected, analyze the main effect by calculating the number and the percentage of strangers in each condition who smiled in response to a smile and the number and percentage of those who frowned in response to a frown.

To look at the effect of the sex variable, do these calculations separately for male subjects in each condition (smile versus frown), in response to male or female displayers and for female subjects in each condition (smile versus frown) in response to male or female displayers. Present a table of percentages to the students, and look for differences between conditions, between male and female strangers, and between male and female experimenters, as well as for interactions among these variables (e.g., are male strangers more likely to respond with a smile than female strangers to a female experimenter who is smiling?) The Hinsz and Tomhave study did demonstrate such sex effects.

Ask your students to offer interpretations of the results. Explain the difference between main effects and interactions, which is discussed briefly in Chapter 2. Ask the students to suggest some theoretical reasons to account for any differences that you found between or among conditions. Ask for alternative explanations and for suggestions for follow-up studies that might answer some of the questions raised by the study. Ask the students to discuss anything that they learned about experimentation by having participated in the running of the study.



**What if this bombs?** Even though the authors report that this effect was reliably replicated many times, there is always the chance that your students will fail to find differences between

conditions. This is no reason for the activity itself to bomb, however. You should make it very clear to the students *before* they conduct the experiment that there is a possibility that the study will not work—that is, there might be no consistent differences between conditions, or the results might be the opposite of what was predicted. Emphasize that such failures are an important part of the process by which researchers develop, revise, and strengthen their theories and hypotheses. Emphasize also that researchers typically take much more time to design their experiments and to create and test their materials, and so the researchers' chances for success are greater.

The key is that, both before and after the students conduct the experiment, you explain to them that the purpose of the activity is to give them direct experience with the challenge of conducting an experiment. Inform them that what you want them to get out of the activity is a better understanding not necessarily of the phenomenon being studied but of the process of conducting an experiment, including how to take abstract ideas and turn them into specific independent variables that can be manipulated and controlled and dependent variables that can be measured, how to try to rule out alternative explanations, how to assess the internal and external validity of an experiment, etc.

One problem with null results in an activity like this is that students are deprived of the chance to practice interpreting, or making sense out of, a pattern of potentially interesting results. Therefore, if the results of their experiment are not interesting, present the students with a set of fake results that you create. (Present these results after you discuss the real results, and tell the students that the second set of results is hypothetical.) Create results that are interesting and consistent with some social psychological principle or finding. If there were two or more independent variables, it might be ideal to create results that suggest an interaction between independent variables. By giving students these results, you can help them begin to develop the skill of summarizing and understanding a set of research results, which should prove valuable during the rest of the course as they read about numerous research findings.

Grahe, J.E., Williams, K.D., & Verlin, B. (2000). Teaching experimental methods while bringing smiles to your students. *Teaching of Psychology*, 27, 2, 108-111.

Hinsz, V.B. & Tomhave, J.A. (1991). Smile and (half) the world smiles with you, frown and you frown alone. *Personality and Social Psychology Bulletin*, 17, 586-592.

## Activity 9. Using Jelly Beans to Teach Methodology Concepts

Hank Rothgerber and Eric Day Anthony (1999) created this simple activity that will allow you to demonstrate several methodological concepts, such as random assignment, interpreting main effects and interactions, and generating alternative explanations.

Before the lesson, you will need to obtain one jelly bean for each student, in two flavors, one a typical sweet, fruity one (the authors recommend cherry) and the other a more unusual one (the authors recommend buttered popcorn or cappuccino). Place each of the jelly beans in its own envelope. In half the envelopes containing cherry jelly beans and in half the envelopes containing the buttered popcorn jelly beans, insert a piece of paper that identifies the flavor. In the rest of the envelopes, place a piece of paper with an identifying mark (for example, C for cherry and B for buttered popcorn) so that you'll know who received which unidentified flavor. Place all the envelopes in a box.

In class, explain that you are conducting a taste test. Randomly assign the students to one of the four conditions: (e.g., cherry identified, cherry unidentified, buttered popcorn identified, and buttered popcorn unidentified) by calling each one up in turn to choose an envelope. Ask the students to refrain from opening, talking about, or smelling their envelopes. When everyone has an envelope, instruct them to open the envelopes and silently read the information contained inside, if any. Next, tell them to eat the jelly bean.

Now ask the students to indicate on the sheet that came in the envelope how much the taste of the jelly bean met their expectations, on a scale of 1 to 5, with 1 being “very little” and 5 being “very much.” Collect the papers and compute the mean for each condition.

Before presenting the results, explain that perception is influenced not only by physical sensation but also by prior knowledge or expectations. In this case, the expectation for a jelly bean is that it would taste sweet and fruity. Therefore, those who had the cherry-flavored jelly bean were likely to have thought that it met their expectations more than those who tasted a salty (i.e., buttered popcorn) or bitter jelly bean (i.e., cappuccino).

Explain that some students were told the flavor beforehand. Accordingly, those students should have had different expectations and less reliance on the general idea of what a jelly bean should taste like than students who did not know the flavor they were about to taste. That difference should have been especially noticeable for those who tasted the buttered popcorn (or any other unusual flavor).

Explain that the design of the experiment is a 2 x 2 between-subjects design. Draw the following table on the board:

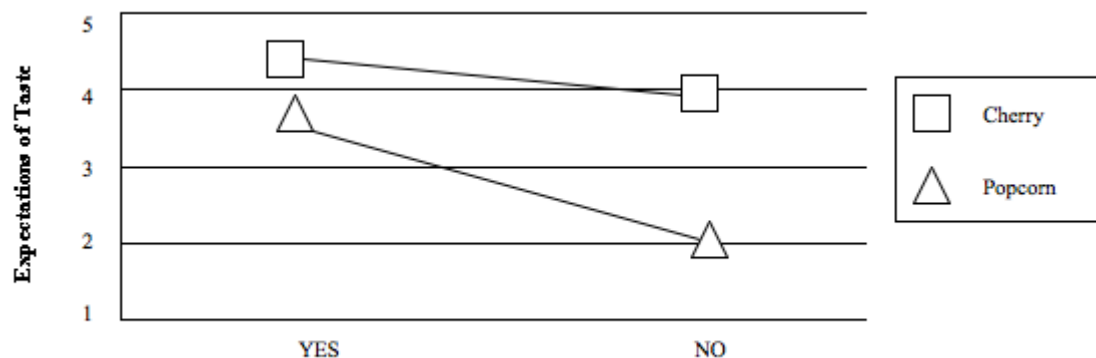
	Prior information	No prior information
Cherry		
Popcorn		

Ask students if they know how they were placed in each condition. Have someone explain why the method of random assignment is so important—for example, what if all the female students were given one flavor and all the males another? What if those who were familiar with unusual jelly bean flavors were given buttered popcorn and all the others were given cherry? How would those situations impact the results? Next, ask students how they think the prior information might have influenced the results. Have them phrase their predictions in terms of main effects and interactions. They should realize that there are two main effects (cherry flavor will meet expectations more than buttered popcorn, and taste expectations will be met to a greater extent for those given prior information), and one interaction (prior information will lead to a greater degree of meeting expectations when the flavor is unusual, but not when the flavor is typical).

Place the computed means for the class in a table, as in the following hypothetical example:

	Prior information	No prior information	Main effect--flavor
Cherry	4.20	4.00	4.10
Popcorn	3.80	2.00	2.90
Main effect--information	4.00	3.00	

You might also graph the results as follows:



After plugging in the figures in the table and graphing the results, ask students to explain what the results mean. Were the initial hypotheses supported?

Then present the results along these lines: as you can see in the table and graph, the main effect of flavor is indicated, in that, overall, the cherry flavor led to higher expectations than the buttered popcorn flavor. Likewise, the main effect of prior information is indicated, in that, overall, when prior information was included, expectations were more closely matched than when there was no prior information. The interaction between flavor and prior information, as depicted in the graph, is indicated in that providing information as to the flavor of the jelly bean beforehand led to a higher degree of meeting expectations for the buttered popcorn flavor (from  $M=2.00$  to  $M=3.80$ ) than for the cherry flavor (from  $M=4.00$  to  $M=4.20$ ). In general, the effect of providing information on taste expectations is influenced by the flavor of the jelly bean. When the flavor is typical, prior information has little effect; however, when the flavor is unusual, prior information leads to a much higher degree of matching expectations.

Finally, ask students to generate possible alternative explanations for the results. For example, an alternative explanation might be that receiving any kind of prior information makes a person more likely to say that a product has met his or her expectations in order to show that the information was of use.

**What if this bombs?** This activity is relatively bombproof. Even in the unlikely event that your results do not support the hypotheses, students will still gain a better understanding of the methodological concepts involved. The authors do bring up one possible hitch: some jelly beans are made with gelatin, which comes from animals, and may therefore be unacceptable to strict vegetarians and students who follow a Kosher diet.

Rothgerber, H. & Day, E.A. (1999). Using jelly beans to teach some concepts in research methodology. In L.T. Benjamin, B.F. Nodine, R.M. Ernst, & C.B. Broeker (Eds.), *Activities Handbook for the Teaching of Psychology* (Vol. 4, pp. 69-73). Washington, DC: A.P.A.

## Activity 10. Evaluating Research Claims Made in the Media

This activity is designed to encourage students to think more critically and less mindlessly when they are exposed to advertisements or other attempts at persuasion; accordingly, this activity can be a preview of Chapter 7 (or it can be used in conjunction with Chapter 7).


We are all exposed to numerous advertisements that feature impressive claims about the effectiveness or superiority of a particular product. In addition, politicians, salespeople, spokespersons, and many others often make strong claims about some point without having the data (or at least any unbiased

data) to back up these claims. Bring to class some examples of these kinds of claims, and have students do likewise.

One common problem with research reported in advertising or the media is that it is not clear if there was an appropriate control or comparison group used in the study. For example, you might find a report about an effective weight-loss product that claims that people who use this product lose  $X$  number of pounds on average. Does the report mention anything about a control group? That is, was there a group of participants who went through similar experiences and were told the same things as the participants in the treatment group, but who received a placebo treatment rather than the real thing? If not, it's possible that the weight loss experienced by the participants in the treatment condition might have been due to any of a number of factors not directly related to the treatment, such as their positive expectations, the amount of money or effort they committed to the treatment, etc.

It's a good idea to collect such advertisements or reports in the media whenever you see them and store them for future use in this class. Bring one or a few examples to class, and distribute copies to all the students. If possible, have them form small groups and discuss the material. Is the validity of the claim questionable? How should the claim be tested further? What are its implications? You should include at least one ad or report that is *not* flawed, and inform the students that this is the case (but don't identify which ones are okay and which ones aren't) so that the students cannot (or should not) assume that everything they see is discernibly problematic. You want them to be skeptical consumers of information, but you don't want them simply to dismiss everything they encounter as flawed.

Encourage (or require) the students to collect examples of ads or reports that are flawed or suspect methodologically and bring them to you. Having them look for such examples will probably have more long-term impact on the way the students process such information from the media than simply having them evaluate the materials you bring to class.

 **What if this bombs?** If the students themselves don't bring in good material, you can avoid a bomb here by bringing in good material yourself. It is relatively easy to find such material. The evaluation of the material is a bombproof exercise: if the students don't see the methodological problems in the ads or reports, then this provides you with the chance to teach the students how to look for them. If they do see the problems, then you can point out how they can use this type of thinking to be much more sophisticated consumers of information than are most people. Although the discussion of all this in class may or may not be exciting, it will be educational.

## Activity 11. Conducting an Empirical Study to Test Some Claim from an Advertisement


This activity takes the previous one to the next step, and it can be a fun and memorable way for students to become familiar with methodological issues and gain first-hand experience conducting research. Rather than just discuss the validity of some claim from an advertisement or some report in the media, you can actually test it empirically.

Choose one advertisement (or similar claim from some other source) whose claim can be tested empirically in a simple study. For example, can you replicate the finding that  $X$  percent of people in a blind taste test prefer Brand A over Brand B? Have the students conduct such a test, being sure to counterbalance the labels and positions of the two products.

The value of this activity stems not from whether the results support the advertisement claim but rather from getting the students to think critically about the claim, thereby helping them learn about methodological issues such as manipulating and measuring variables, using appropriate control groups, etc. This should help the students get a better sense of the importance of well-designed studies. Thus, we recommend that you let the students try to come up with the design and materials, under your



guidance, rather than that you give the students a design and have them simply conduct the study. The trial-and-error process that they experience as they try to find a testable hypothesis and try to determine how many conditions they need in the study can be very educational for them.

 **What if this bombs?** There is little chance of this activity bombing. Be sure to have a study in mind when you introduce this activity; that way, if the students can't come up with one on their own, you can give them your idea. The students should be interested in the results, whether or not they are consistent with the claim made in the advertisement, so there is no potential for the activity to bomb based on the results found.

## Activity 12. Evaluating the Internal Validity and Conclusions of Research

Being able to assess the internal validity of an experiment and to think of alternative explanations for some research finding is a very valuable skill to have. The media are replete with examples of misinterpretations of research findings. The results of many flawed studies have been believed and have received a great deal of press attention, and even attention in professional journals, without any awareness that the studies are flawed and the results are not necessarily to be trusted (and should thus be viewed with a high degree of skepticism). This activity is designed to encourage students to think critically about research findings.

Give students examples of research in which the methodology is flawed or the conclusions are unjustified. These can be hypothetical studies that you construct and/or examples found in the popular press or other sources. Have the students evaluate these research designs or conclusions in small groups or individually. If you give the students several examples, it would be a good idea to include one or more examples of research whose methodology does not appear to be flawed and whose conclusions seem justified, so that students learn that being overly critical and resistant can be a problem just as mindlessness can be.

**Handouts 2.20-2.24** provide five examples that can be used in this activity. Each page contains a separate example, so you can choose to use either some or all of these. Distribute copies to the students and instruct them to evaluate each study carefully. Instruct the students to explain their answers, and tell them that if they believe that there are alternative explanations for the results, they should explain how subsequent studies could rule out these alternative explanations.

Discuss the methodological issues raised in Chapter 2, such as experimental control, random assignment, construct validity, internal validity, external validity, experimental realism, mundane realism, etc.

**Example #1.** The first example (2.20) is called “Taste Test.” The principal flaw in this study is that there was no counterbalancing of the labels and positioning of the two drinks. That is, people may have preferred Diet Duff’s versus Diet Smash because the former was on the right and/or because it was labeled “M.” Thus, the internal validity of the study must be called into question. The study could be improved by having each drink placed on the left side half of the time and on the right side half of the time, and each drink labeled “Q” half the time and “M” half the time (indeed, it really is not necessary to label the cups with any letter—the participants could simply indicate that they prefer the cup on the left or right). Another potential problem is experimenter bias. If people from Diet Duff’s (or people hired by them) ran the test, their hopes about the outcome of the test might have influenced the participants in subtle but significant ways. The best way to minimize this potential problem is to have the person who interacts with the participants not know which drink was in which cup until *after* the participant makes his or her selection. One final point is that the difference between 105 people selecting Diet Duff’s and 84 people selecting Diet Smash (ignoring the 11 participants who could not indicate a preference) is not statistically significant. Therefore, the preference for Diet Duff’s may have

been due to chance. (Although most students would not be expected to know this, this last point is important to discuss because the students will be exposed to claims such as those of Diet Duff's, and they should develop a healthy skepticism about the reliability of results such as these.)

**Example #2.** The second example (2.21) is called "Political Attitudes." The internal validity of this study is called into question because there was no random assignment to condition. It is not clear if the political attitudes of the liberals and conservatives became less extreme because of the role-playing or if some other factor caused the moderation. For example, some news event that occurred between the first and second parts of the study may have caused most people, not just the people in the study, to adopt more moderate attitudes. Another possibility is that these results could be explained by the statistical concept known as regression to the mean. The easiest way to explain this concept is with an example. Imagine having students roll two dice. You select the student who rolled the highest number — 12 — and the one who rolled the lowest number — 2. Have these students roll again. The odds are very high that the person who rolled a 12 will now roll something lower this time, and the odds are equally high that the person who rolled a 2 will roll something higher this time. Because you should expect that any particular roll will be around the expected average, or mean, anyone who rolled above the mean one toss would have a better-than-even chance of getting a lower score the next time, and anyone who rolls below the mean would have a better-than-even chance of getting a lower score the next time. Next, apply this logic to the political attitudes study: to the extent that people's reported attitudes may have been, in part, randomly determined, those who reported particularly extreme attitudes at Time 1 would be expected to give more moderate responses at Time 2 that were closer to the overall average, whether or not they participated in any role-playing or other treatment. Thus, the design of this study does not allow one to rule out the possibility that their political attitudes fluctuated randomly.

This study would be improved if the extreme conservatives and extreme liberals were randomly assigned to one of two or more conditions. In one condition, the participants would do the role-playing. A different set of participants, however, would not be given any treatment. In yet another condition, participants might be given some other treatment that has nothing to do with role-playing. If after the four weeks the participants who did the role-playing show less extreme attitudes than do the participants in the other conditions, this would suggest that role-playing had the intended effect (although there would be no direct evidence to support the conclusion that role playing made the participants "more understanding of the other side").


**Example #3.** The third example (2.22) is called "Cheating and Mirrors." Like the previous example, the internal validity of this study is called into question because of a lack of random assignment. In this study, participants were not randomly assigned to cheat or to not cheat; rather, they "self-selected," or were put into the different conditions on the basis of their own behavior. Thus, it is very possible (and likely) that the kinds of children who would cheat at this game tend to be different from the kinds of children who would not cheat at it. Because of this, the difference in the levels of optimism displayed in the essays of the children who cheated versus those who did not cheat may have nothing to do with guilt but may instead reflect the differences between the kinds of children who cheat and those who don't. For example, the children who cheated at this game may have needed the money more than did the other children, and this greater need for money may have been the cause of their relative pessimism. Moreover, if the children who did not cheat were placed in front of a mirror after an incident in which they *did* cheat, the presence of the mirror might have a significant effect on them. In the absence of random assignment, then, it is impossible to know how to account for the results of the study.

**Example #4.** The fourth example (2.23), entitled "Fear and Affiliation," is based on Stanley Schachter's (1959) experiment. Although students may recognize alternative explanations about the process by which the fear in this study led to the desire to affiliate, or may question its external validity (e.g., would the same results be found in a situation in which fear was manipulated differently?; would male participants show the same effects as female participants?), there are no serious threats to internal validity. The participants were assigned randomly to conditions, and the experimenter had control over

the procedures. The one potential problem that would be serious, however, concerns experimenter bias. That is, the experimenter's behavior toward the participants may be subtly different as a function of condition (such as when the participants are given the choice about where to sit and wait for the study to begin). This is a very real possibility. The way to avoid this is to have the experimenter give the participants written instructions that include the choice of where to sit or to have the experimenter explain that he or she has to set things up and then have a second experimenter, who is not aware of the conditions to which each participant was assigned, escort the participants away from the first experimenter and deliver the information about the different waiting rooms.

**Example #5.** The fifth example (2.24) is entitled “Staring.” It is based on a study by Ellsworth, Carlsmith, & Henson (1972), but we have ruined the internal validity of their study by creating a very serious confound. In our version of this study, the experimenter does not randomly assign the “participants” (i.e., the drivers) to conditions. Rather, the assignment is very non-random: the first 250 cars (and drivers) are put in the control condition, and the next 250 are put in the staring condition. There could be many reasons why the latter 250 cars sped away more quickly than the first 250, such as the time of day, different weather conditions, different traffic conditions, etc. Another potential problem is that the experimenter may bias the results through subtle changes in how the dependent variable is measured. That is, the recording of how many seconds it takes for each of 500 cars to cross an intersection is subject to error, and this error may, in part, be influenced systematically by whether or not the experimenter had just been staring at the car. For example, the experimenter may be quicker to start the stopwatch when the light turns green if she had been staring at the car than if she had not.

After they've evaluated the study, ask the students to assess its internal validity if the experimenter chose randomly whether or not to stare at the drivers (and if the dependent variable was recorded by someone else who was not aware of the condition). In this improved study, there might be a number of competing explanations as to *why* the staring caused the drivers to go faster relative to the non-staring condition, and whether the effect would generalize, but there should be no question that the manipulation of staring was indeed the cause of the difference found.

 **What if this bombs?** This activity is bombproof. The task of evaluating research and looking for alternative explanations is very educational; if you are enthusiastic about the task and explain its relevance for the course and beyond, the students should find it enjoyable and interesting. If students find the examples to be very easy, then you can compliment them on their skills and be sure to point out how valuable these skills will be. Be sure to challenge the class to think of ways to rule out the alternative explanations that they identified. If the students find the examples very difficult, explain that you expected them to have difficulty with the examples because these are the kinds of research findings that mislead most people. Show the students why the studies are flawed, and work together on designing studies that would have the potential to rule out the alternative explanations.

Ellsworth, P. C., Carlsmith, J. M., & Henson, A. (1972). The stare as a stimulus to flight in human subjects: A series of field experiments. *Journal of Personality and Social Psychology*, 21, 302-311.

Schachter, S. (1959). *The psychology of affiliation: Experimental studies of the sources of gregariousness*. Stanford, CA: Stanford University Press.

## Activity 13. Putting It All Together: Evaluating a Research Article


This activity is designed to address many of the issues raised in Chapter 2 all in one activity. The idea of this activity is simple: the students read a journal article reporting an experiment, and they discuss the article in terms of a number of issues from the chapter. The simplicity of the idea, however, should not mask the fact that this can be a difficult exercise: depending on the article(s) chosen, students may have a difficult time reading and understanding the material. Journal articles are written in a style with

which most students are unfamiliar, and their intended audience often is other researchers rather than undergraduate students.

You can either assign the research article(s) or have the students choose them. The advantage of the former approach is that you can choose wisely—articles that are easy to understand, well written, relevant to issues you plan to focus on in the course—and you won't have to read as many articles yourself. The advantages of having students choose their own are that it gives them the chance to gain more experience searching the literature and that they get to choose an article that is of interest to them.


One good, easy place to find articles that could work well here is in the book of readings associated with the textbook—*Readings in Social Psychology: The Art and Science of Research*. Be sure to encourage students to read the introduction of this book before they read the articles because it provides some helpful hints for reading articles. Among the journals that might feature articles at the appropriate level are *Personality and Social Psychology Bulletin*, *Journal of Applied Social Psychology*, and *Basic and Applied Social Psychology*.

Distribute copies of **Handout 2.25** to the students for them to use in their evaluation of the article they read. If the article reports more than one experiment, you can tell the students to discuss only one of the experiments.

 **What if this bombs?** As with most of the other activities in this chapter, there really is no chance for this to bomb. Some students may find this activity very difficult, but you can use that difficulty to motivate them to learn the material in Chapter 2. Be sure to explain to the students how difficult it often is to understand research articles, and impress upon them the fact that the target audience for these articles typically consists of trained professionals.

## Activity 14. Survey Research with Popular Media

Do an Internet search for popular magazines that conduct opinion polls or attitude surveys—you know, the ones at the checkout at the grocery store. The surveys in the magazines frequently focus on sexual or health issues. Find several surveys in popular magazines and lead a discussion of the surveys in terms of social psychology research. Ask the students to add or change the surveys to make them more valid. Ask the students if the questions in the surveys are either a valid or invalid measure of the behavior they attempt to measure? Are the results useful to the students?

 **What if this bombs?** As with most of the other activities in this chapter, there really is no chance for this to bomb. The only problem might be in the selection of the articles, depending on your school norms, because the racier/sexier the better.

## MULTIMEDIA RESOURCES

### Video

**Against All Odds: Inside Statistics.** Uses creative examples and illustrations to explain important methodological and statistical issues, such as confounds, random assignment, experimenter expectancy effects, probability, hypothesis testing, etc. This series is divided into 26 programs. (1989, 30 min. program.) Available from Annenberg/CPB Collection (800-532-7637).

**Inferential Statistics: Hypothesis Testing: Rats, Robots, and Roller Skates.** Illustrates basic principles of research with humorous sketches. Covers such topics as hypothesis testing, random assignment, control groups, and statistical inference. (1976, 28 min.) Available from John Wiley & Sons, Inc., 605 Third Ave., New York, NY 10016.

**The Power of the Situation.** Uses some classic social psychological studies to introduce the field, including studies by Lewin, Asch, and Milgram. These studies illustrate the central concept of social psychology: situational factors can exert powerful influence over human behavior. By focusing on specific experiments, this video can be used as a way to discuss research methods, while at the same time, previewing some of the classic findings in the field. This is part of the *Discovering Psychology* series (updated edition). (2001, 30 min.) Available from Annenberg/CPB Collection (800-532-7637).

This **YouTube** video called “Bogus Pipeline” can be seen at <http://www.youtube.com/watch?v=GI6tu3Q9Jmo> Police and the bogus pipeline.

This **YouTube** video called “Independent and Dependent Variables” can be seen at <http://www.youtube.com/watch?v=DK9-B3beRc8>.

This **YouTube** video called “Know the Difference (Between Hypothesis and Theory)” can be seen at <http://www.youtube.com/watch?v=jdWMcMW54fA>.

This **YouTube** video called “Research Methodology - Critical Social Psychology” can be seen at <http://www.youtube.com/watch?v=wSiqCtCmz8E>.

This **YouTube** video called “Social Psychology” includes footage from the *Big Bang Theory* sitcom and can be seen at <http://www.youtube.com/watch?v=zCJzcS1BugQ>.

**Why Use Statistics?** A four-part series that highlights the relevance of statistics and teaches students some basic statistical concepts and methods. The videos illustrate relevant situations across a broad range of subject areas. (20-25 min. per part) Available from Films for the Humanities and Sciences (800-257-5126).

## Internet

**Bogus Pipeline.** Truth and Consequences: Using the Bogus Pipeline to Examine Sex Differences in Self-Reported Sexuality. View the site at <https://www.amherst.edu/media/view/239672/original/Alexander%252B%252526%252BFisher%252B%2525282003%252529.pdf>.

**Internal Validity.** Internal validity is the approximate truth about inferences regarding cause-effect or causal relationships. View the site at <http://www.socialresearchmethods.net/kb/intval.php>.

**Meta-Analysis of Research Studies.** In 1976, Gene Glass proposed a method to integrate and summarize the findings from a body of research. He called the method meta-analysis, the statistical analysis of a collection of individual studies. View the site at <http://echo.edres.org:8080/meta/>.

**Social Psychology Network.** Scott Plous maintains this extremely impressive site. It is the largest social psychology database on the Internet (<http://www.socialpsychology.org/>), with more than 3,500 links to psychology-related resources, including professional organizations, conferences, discussion groups, Ph.D. programs, research groups, online social psychology studies, and so on. There is also a list of the homepages and e-mail addresses of more than 400 social psychologists. This network of sites can be a great place for students to browse for research ideas and discussions of methodological and ethical issues.

**Random Selection & Assignment.** Random selection is how you draw the sample of people for your study from a population. Random assignment is how you assign the sample that you draw to different groups or treatments in your study. View the site at <http://www.socialresearchmethods.net/kb/random.htm>.

**Research Areas in Social Psychology.** This site looks at some of the major topics that social psychologists investigate in their research. Many of these topics are related to social influence, social

perception, and social interaction. View this site at <http://psychology.about.com/od/socialpsychology/p/socialresearch.htm>.

**Research Methods in Social Psychology.** Psychologists use a number of different scientific methods to conduct research on social psychology topics. These methods allow researchers to test hypotheses and theories and look for relationships between different variables. View the site at <http://psychology.about.com/od/socialpsychology/a/socialresearch.htm>.

## CD-ROMs and Computer Programs

**Laboratory in Social Psychology.** This computer program demonstrates classic laboratory experiments in social psychology. (DOS.) Available from the Academic Computing Center, University of Wisconsin, 1210 W. Dayton Street, Madison, WI 53706.

## Books

Aronson, E., Ellsworth, P. C., Carlsmith, J. M., & Gonzales, M. H. (1990). *Methods of Research in Social Psychology*. New York: McGraw-Hill. This book can be a valuable resource for providing instructors with background and ideas in preparation for covering Chapter 2 of the textbook.

Gilbert, D. T., Fiske, S. T., & Lindzey, G. (Eds.) (1998). *The handbook of social psychology* (4th ed.). New York: McGraw-Hill. As noted in Chapter 1 of this *Instructor's Resource Manual*, this book is a comprehensive volume of chapters written by eminent social psychologists about a wide range of topics, including the history of the field, research methods, and most of the major research areas in the field. There are four chapters relevant to research methods: Experimentation in Social Psychology (which we recommend most highly for connecting to Chapter 2 of the textbook); Survey Methods; Measurement; and Data Analysis in Social Psychology.

## **HANDOUT 2.1 COMMON SENSE AND THE EMPIRICAL APPROACH**

Absence makes the heart grow fonder

vs.

Out of sight, out of mind

Many hands make light the work

vs.

Too many cooks spoil the broth

A bird in the hand is worth two in the bush

vs.

Patience is a virtue

He who hesitates is lost

vs.

Look before you leap

**HANDOUT 2.2 COMMON SENSE AND THE EMPIRICAL APPROACH**

Seeing violence on TV provides a release and thus reduces real violence

vs.

Seeing violence on TV leads to more real violence

People learn to like things for which they are rewarded

vs.

Being rewarded for something reduces intrinsic enjoyment

When trying to persuade someone to your point of view, you would be more effective to acknowledge the competing point of view

vs.

When trying to persuade someone to your point of view, you would be more effective not to acknowledge the competing point of view

It is better to go first in a debate than last

vs.

It is better to go last in a debate than first



## HANDOUT 2.3 ETHICAL ISSUES

*Imagine that various researchers are planning to conduct research in which they follow the procedures listed below. For each proposed procedure, indicate whether you would approve or reject the study on the basis of ethical issues. If you would approve, write “OK” in the space before the procedure; if you would disapprove, write “NO” in the space.*

- \_\_\_\_\_ 1. Conduct a survey that asks parents their opinion of sex education in schools.
- \_\_\_\_\_ 2. Use students’ test scores and grade-point averages to predict success in future scholastic endeavors.
- \_\_\_\_\_ 3. Randomly assign some but not all minority students to an experimental program that is designed to help improve graduation rates.
- \_\_\_\_\_ 4. Instruct participants to say insulting things to another participant as this other participant tries to complete a task.
- \_\_\_\_\_ 5. Select a group of adults who answer an advertisement about an experiment concerning a weight-loss program, and randomly assign half of them to a “mental exercise” condition that the researchers predict will lead to weight loss and assign the other half to a control condition that the researchers predict will lead to no weight change.
- \_\_\_\_\_ 6. Present male and female college students with pornographic materials, and measure their physiological arousal in response to these materials.
- \_\_\_\_\_ 7. Conduct a survey in which college students are asked if they have ever contemplated suicide.
- \_\_\_\_\_ 8. Recruit adults to participate in a two-week study of prison life, and inform them that some participants will be prisoners in a makeshift prison for two weeks in the psychology department building and that other participants will be the prison guards; then randomly assign a sample of the adults who volunteered for the study to either the “prisoner” condition or the “guard” condition, put the “prisoners” in their cells and let the “guards” begin to guard them, and record what happens.
- \_\_\_\_\_ 9. With the parents’ permission but without the children’s awareness, videotape nursery school children playing games of “pretend.”
- \_\_\_\_\_ 10. Have participants hear what sounds like someone falling and yelling in pain in another room while they are filling out a questionnaire.
- \_\_\_\_\_ 11. Conduct an experiment in which some participants “overhear” another participant, who is actually a confederate, say something negative about them.
- \_\_\_\_\_ 12. Conduct a survey that asks about sexual fantasies and practices.
- \_\_\_\_\_ 13. Ask newlywed couples to discuss how conflicts begin and get resolved in their relationship.



## HANDOUT 2.5 EXPLAINING RESEARCH FINDINGS

### Interpersonal Attraction

Using laboratory experiments, field studies, and correlational research, social psychologists have found that people are more attracted to others who are different from them than to others who are similar. Indeed, people seem to be particularly attracted to others whose geographic background, socioeconomic status, political orientation, attitudes, and even physical attractiveness are rather *opposite* their own. People who like to be controlling, for example, are attracted to those who are submissive, and vice versa. Social psychologists call this phenomenon “complementarity” — meaning that people are attracted to others whose traits complement their own, so that together they form a well-balanced pair. Moreover, people’s attraction to dissimilar others is not simply an American phenomenon — the importance of complementarity to attraction has been found in a number of cross-cultural studies as well.

What *social psychological* reasons do you think could help explain this finding? In the space below, list the reasons you can think of.

How *surprising* do you personally think this finding is? (Please circle one.)

1	2	3	4	5	6	7
not at all surprising					very surprising	



## Motivation

What *social psychological* reasons do you think could help explain this finding? In the space below, list the reasons you can think of.

1 2 3 4 5 6 7  
not at all surprising very surprising



## HANDOUT 2.9 EXPLAINING RESEARCH FINDINGS

### Mood and Helping

If you ever find yourself suddenly needing assistance, would you be better off if someone who is in a happy, cheerful mood comes along or if someone who is in a more neutral mood comes along? Social psychological research has found that people who are in good moods are significantly less likely to help a stranger than are people in neutral moods. Researchers in some very creative studies have put people in a good mood through a variety of procedures, such as by rigging a situation in which they find money, or by supplying them with candy, and then putting them in a situation in which they encounter a stranger who needs help. Across a variety of manipulations and settings, the research reliably finds that people who are in a happy and cheerful mood are more likely to ignore the stranger and refrain from helping than are people who are in a neutral mood.

What *social psychological* reasons do you think could help explain this finding? In the space below, list the reasons you can think of.

How *surprising* do you personally think this finding is? (Please circle one.)

1	2	3	4	5	6	7
not at all surprising					very surprising	





## HANDOUT 2.11 EXPLAINING RESEARCH FINDINGS

### “Us vs. Them”

Do people have a very strong “us vs. them” mentality that can be aroused at the drop of a hat? That is the question asked by a number of social psychologists in North America and Western Europe. They designed and conducted experiments in which participants were divided into two groups in any of several ways, and then gave the participants in these groups the chance to show either fairness or favoritism toward one or the other group. These studies have found that an “us vs. them” mentality can be activated quite easily. When participants are divided into two groups by a seemingly arbitrary criterion, such as the flip of a coin, and when the two groups are not in direct competition with each other, the participants *do* show a favoritism for their own group. These studies have found that favoritism for one’s own group is likely to be found between groups as soon as there is a division formed between one’s own group and another group—even when there is no history of conflict between the two groups, nor any competition between the two groups for valuable resources, such as money, power, or status.

What *social psychological* reasons do you think could help explain this finding? In the space below, list the reasons you can think of.

How *surprising* do you personally think this finding is? (Please circle one.)

1	2	3	4	5	6	7
not at all surprising					very surprising	

## HANDOUT 2.12 RIVAL HYPOTHESES

HYPOTHESIS 1: Class participation will kill you.

HYPOTHESIS 2: Class participation will **not** kill you.

## HANDOUT 2.13 QUESTIONNAIRES

### Pre-Treatment Questionnaire

Your name: \_\_\_\_\_

*Please respond to each of the following questions by circling the appropriate answer:*

To which condition were you assigned?	Control	Treatment
Are you currently alive or dead?	Alive	Dead

\*\*\*\*\*

### Post-Treatment Questionnaire

Your name: \_\_\_\_\_

*Please respond to each of the following questions by circling the appropriate answer:*

To which condition were you assigned?	Control	Treatment
Are you currently alive or dead?	Alive	Dead



## HANDOUT 2.15 DESIGNING A QUESTIONNAIRE: SOME WORDING PROBLEMS

*Below are some examples of the problems that a group of students ran into when they were trying to come up with the wording of questions for a questionnaire. The students wanted to focus on “dating on campus,” and they were particularly interested in learning how prevalent dating was on campus (and in comparing the prevalence across different categories of students, such as athletes and non-athletes, first-year students and seniors, etc.), which attributes were most important in choosing whom to date, and what students did on dates.*

Several students wanted to ask questions about the respondents’ sexual activities on a first date. Although they all had virtually the same thing in mind, these students used a variety of different terms: “sexual relations,” “sexual relationship,” “sexual encounter,” “sexually active,” “sex,” and “hooking up.”

For example, one student asked, “On how many first dates have you had sexual relations?” Another student asked, “How important is it to have a sexual encounter on a first date?” Another student asked, “How often have you hooked up with someone after a party?” Different respondents may or may not have different things in mind when answering any one of these questions, and the same respondent may or may not have different things in mind when answering more than one of these questions.

\*\*\*\*\*

Below are some specific questions in quotation marks, followed by some critiques. As you read the questions, and before you read the critiques, try to think for yourself what might be ambiguous about their wording. Also, note that these critiques are not exhaustive; you should be able to think of other critiques for several of these questions.

“On average, how many times a month do you engage in sexual relations?”

- Sexual relations can be an ambiguous term.
- Does this mean how many specific experiences, or with how many different people? That is, if a respondent has had sexual relations multiple times with the same partner, does this count as one time, or does each time count? Also, does more than one such activity on a given day count as one or more than one?

“Please rate the importance of the following characteristics in choosing a partner for a romantic relationship (1=lowest, 5=highest).”

- Importance to whom? That is, should the respondent answer this in terms of how much he or she values these characteristics, how important he or she thinks that most people find these characteristics to be, how much impact these characteristics have on choices even if people don’t consciously realize it at the time, etc.?

“How important is it for you to have a mate who is athletic?”

- What exactly is meant by “mate”?
- Does this mean generally athletic, or athletic during “mating”?

“Are you in a monogamous sexual relationship?”

- Would a “no” response to this mean that the respondent is not in a sexual relationship, or that he or she is in a sexual relationship that is not monogamous?

“How many relationships have you had in the last year?”

- What is meant by “relationships”?

“How many dates have you had in the last year?”

- Does date refer to the person or the activity?

“Do you use alcohol to justify your actions on a date?”

- The socially desirable way to answer this question seems obvious.
- What is meant by “justify”?
- Justify to whom?
- If the respondent had done this once, should he or she say “yes,” or does this question ask (particularly because it is written in the present tense) whether the respondent does this consistently, or currently?

“How important is each of the following to you in choosing a partner to date?” [Following this question is a list of specific features, such as “eyes,” “hair,” “legs,” etc.]

- Although most respondents would know what is meant by this question, one could interpret it to mean something like, “How important is it that a partner actually *has* eyes, or hair, or legs, etc.?” as opposed to, “How important is the perceived attractiveness of these features in choosing a partner?”

## HANDOUT 2.16 CELL PHONE USAGE SURVEY

Please answer the following survey questions regarding your cell phone usage by circling the appropriate response choice. Please do not write your name on this sheet. Thank you for your participation.

Your age \_\_\_\_\_ Your sex \_\_\_\_\_

1. When you receive a telephone call while driving, do you
  - a. always pull over and stop before taking the call?
  - b. sometimes take the call while driving and at other times pull over and stop?
  - c. always take the call while continuing to drive?
2. How often do you find yourself initiating a cell phone call while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
3. How often do you receive text messages while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
4. How often do you send text messages while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
5. Do you think there should be tougher cell phone laws or tougher enforcement of existing cell phone laws?
  - a. Definitely yes
  - b. Not sure
  - c. Definitely not

## HANDOUT 2.17 CELL PHONE USAGE SURVEY

There are now over 224 million cell phone users in the US, and recently cell phones were singled out as the most common cause of car crashes. Psychologists have been working in conjunction with the government and insurance companies to record the demographics of drivers who use cell phones and to investigate the degree of hazard that such devices present on the roads. You can contribute to this effort by answering the following survey questions regarding your own cell phone usage as honestly and accurately as possible. Please do not write your name on this sheet, as we are not interested in individual responses, only in the behavior of people in general. Thank you for your participation.

Your age \_\_\_\_\_ Your sex \_\_\_\_\_

1. When you receive a telephone call while driving, do you
  - a. always take the call while continuing to drive?
  - b. sometimes take the call while driving and at other times pull over and stop?
  - c. always pull over and stop before taking the call?
2. How often do you find yourself initiating a cell phone call while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
3. How often do you receive text messages while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
4. How often do you send text messages while driving?
  - a. Rarely
  - b. Occasionally
  - c. Very often
5. Do you think there should be tougher cell phone laws or tougher enforcement of existing cell phone laws?
  - a. Definitely yes
  - b. Not sure
  - c. Definitely not



## HANDOUT 2.18 OPERATIONALIZING VARIABLES

**Research Idea #1:** A social psychologist was interested in whether people are more likely to exhibit conformity when they are in situations that make them feel nervous and unsure of themselves.

**Research Idea #2:** People who are involved in an intimate relationship may experience distinct, although related, feelings of liking for each other and love for each other. It is possible to like someone and not love them, of course, but it is also possible to love someone and not like them all that much (think of a couple that fights a great deal but can't think of life without the other person, or siblings who don't get along but feel a sense of familial love). A group of researchers wanted to examine the degree to which one's liking for his or her partner was correlated with his or her love for that partner, and whether this correlation would be higher or lower for women's feelings about their partner than for men's.

**Research Idea #3:** Are people more or less creative in their work if they are pressured to be creative?

**Research Idea #4:** A researcher speculated that people may be more prejudiced in their judgments of individuals of a different race if they (that is, the people making the judgments) are in a bad mood than if they are in a good mood.

**Research Idea #5:** A social psychologist hypothesized that exposing children to violent television shows would make them behave more aggressively.

## HANDOUT 2.19 DESIGNING AN EXPERIMENT

*On a separate piece of paper, complete the following assignment.*

1. How many independent variables are there in your study?
2. For each independent variable, do each of the following: (a) describe it, including how many different levels of the variable there will be (e.g., you may have an independent variable concerning exposure to different television programs, and you may have three different versions of this variable: dramas with violence, dramas without violence, and comedies; this would count as one independent variable, with three levels), (b) describe how you intend to manipulate the variable, and (c) explain why this independent variable is included in the design, and why each level of this variable is included.
3. Describe your dependent variable(s), including how each will be measured.
4. How many different conditions will there be in this experiment?
5. How will you assign participants to the different conditions?
6. What hypothesis or hypotheses will you be testing with this experiment? Describe the kinds of results that would support the hypothesis (or that would support one but not the other hypothesis).
7. What alternative explanations might there be for the results you described in the previous question? How can these be tested in subsequent experiments?
8. Evaluate the internal and external validity of the experiment and the construct validity of the variables.
9. Evaluate the experimental realism and mundane realism of the experiment.
10. Evaluate the ethics of conducting this experiment. Are there any reasons to be concerned about the welfare of the participants?

## HANDOUT 2.20 EVALUATING RESEARCH

*For each of the studies described below, what conclusions can be reached? Are the researchers' conclusions valid? Why or why not? What alternative explanations, if any, can there be for the research findings? Is the study high or low in internal validity? If you think there are problems with the study or the conclusions reached, how can the study be improved so that there are no flaws or so that alternative explanations can be ruled out? (Note: Some of these studies may not have any serious methodological flaws or alternative explanations.)*

In addition to addressing these issues, evaluate each study in terms of its experimental realism, mundane realism, and ethics.

### Taste Test

The owners of a soft-drink company believed that its product, Diet Duff's, was better than its more popular competitor, Diet Smash. They decided to run a "blind taste test" in which individuals would taste some of each product without knowing which cup contained which drink. Two hundred randomly selected men and women from three different communities participated in the test. Each participant was seated at a table. A cup on the person's left was labeled "Q" and contained six ounces of Diet Smash. A cup on the person's right was labeled "M" and contained six ounces of Diet Duff's. The participants, of course, were not told which drink was in which cup. Half of the time, the participants were told to try the cup on the left first, and half of the time they were told to try the cup on the right first. The drinks in both cups were equally fresh and cold.

The results supported Diet Duff's hopes: Diet Duff's was preferred by 105 people, Diet Smash was preferred by 84 people, and 11 people could not indicate a preference between the two drinks. Diet Duff's began an advertisement campaign stating that in a blind taste test, more people preferred Diet Duff's than Diet Smash.

## HANDOUT 2.21 EVALUATING RESEARCH

*For each of the studies described below, what conclusions can be reached? Are the researchers' conclusions valid? Why or why not? What alternative explanations, if any, can there be for the research findings? Is the study high or low in internal validity? If you think there are problems with the study or the conclusions reached, how can the study be improved so that there are no flaws or so that alternative explanations can be ruled out? (Note: Some of these studies may not have any serious methodological flaws or alternative explanations.)*

In addition to addressing these issues, evaluate each study in terms of its experimental realism, mundane realism, and ethics.

### Political Attitudes

Some researchers were concerned with what they believed to be an increasing polarization in the political attitudes of Americans. They wondered if people who are extreme conservatives and people who are extreme liberals might become less extreme if they could spend some time imagining themselves taking the opposite position. They speculated that such role-playing might enable people to understand arguments they had previously refused to consider and to empathize with the fears and hopes of people they had previously rejected as ignorant or selfish.

To test this idea the researchers asked 500 adults to complete a questionnaire that measured their political attitudes. From this group, they then selected 60 people who scored very high on conservatism and 60 people who scored very high on liberalism to participate in the role-playing tasks. One of these tasks consisted of asking the conservatives to write a good, logical, and impassioned essay arguing in favor of some liberal policies, and asking the liberals to do the same for some conservative policies. Four weeks later, these 120 participants were given the same questionnaire that they had been given initially. The researchers found that, on average, the conservatives had become more liberal and the liberals had become more conservative. The researchers concluded that role-playing causes extreme conservatives and liberals to become more moderate in their positions and more understanding of the other side.

## HANDOUT 2.22 EVALUATING RESEARCH

*For each of the studies described below, what conclusions can be reached? Are the researchers' conclusions valid? Why or why not? What alternative explanations, if any, can there be for the research findings? Is the study high or low in internal validity? If you think there are problems with the study or the conclusions reached, how can the study be improved so that there are no flaws or so that alternative explanations can be ruled out? (Note: Some of these studies may not have any serious methodological flaws or alternative explanations.)*

In addition to addressing these issues, evaluate each study in terms of its experimental realism, mundane realism, and ethics.

### Cheating and Mirrors

Some researchers interested in studying the effects of self-awareness on guilt and optimism were aware of previous studies that had found that placing participants in front of a mirror made the participants more self-focused—that is, more likely to think about, or be affected by, their own personal attitudes, norms, and standards. Thus, they decided to examine the effects of placing a mirror in front of participants who have just done or not done something that was morally wrong. Specifically, they wanted to see whether the presence of the mirror would make participants who have just done something wrong feel guiltier about what they have done, and whether this guilt would affect their thoughts about their future.

To investigate this notion, the researchers took a random sample of children from a junior high school and placed each alone in a room with no mirror. The child was given a game to play in the room. All children were told that if they won the game, they would receive some money. The researchers rigged this game so that the children had an easy opportunity to cheat. Using hidden cameras, they were able to record which children cheated. In this study, about 50 percent of the children cheated. After the game was over, the researchers put the children into another room. For half of the children, a large mirror was in the room with them; for the other half, no such mirror was present. The researchers asked the children to write an essay about their futures. The dependent variable was how optimistic their essays were.

The researchers found that the children who had cheated wrote essays that were less optimistic about their future than were the essays written by the other children. They also found, however, that the presence or absence of a mirror had no effect on these essays. The researchers concluded that cheating does make children feel guiltier, and therefore less optimistic about their future, but that self-awareness does not make this effect any stronger.

## HANDOUT 2.23 EVALUATING RESEARCH

*For each of the studies described below, what conclusions can be reached? Are the researchers' conclusions valid? Why or why not? What alternative explanations, if any, can there be for the research findings? Is the study high or low in internal validity? If you think there are problems with the study or the conclusions reached, how can the study be improved so that there are no flaws or so that alternative explanations can be ruled out? (Note: Some of these studies may not have any serious methodological flaws or alternative explanations.)*

In addition to addressing these issues, evaluate each study in terms of its experimental realism, mundane realism, and ethics.

### Fear and Affiliation

A researcher conducted a study designed to investigate whether people who are experiencing fear prefer to be alone or with other people. The participants (who were all women) were randomly assigned to one of two conditions. In the “fear” condition, the participants arrived at a lab and were greeted by a serious-looking experimenter who was dressed in a white lab coat, had a stethoscope visible in his pocket, and was standing in front of an array of elaborate-looking electrical equipment. He introduced himself as Dr. Gregor Zilstein. He said slowly:

*What we will ask each of you to do is very simple. We would like to give each of you a series of electrical shocks. Now, I feel I must be completely honest with you and tell you exactly what you are in for. These shocks will hurt, they will be painful. As you can guess, it is necessary that our shocks be intense. What we will do is put an electrode on your hand, hook you into an apparatus such as this, give you a series of shocks, and take various measures.... Again, I do want to be honest with you and tell you that these shocks will be quite painful but, of course, they will do no permanent damage.*

In the “no fear” condition, the participants arrived at the lab and were greeted by Dr. Zilstein, but the electrical equipment was not displayed and Dr. Zilstein exhibited a much more pleasant, comforting demeanor. He said:

*What we will ask each of you to do is very simple. We would like to give each of you a series of very mild electrical shocks. I assure you that what you will feel will not in any way be painful. It will resemble more a tickle than anything unpleasant. We will put an electrode on your hand, give you a series of very mild shocks and measure such things as your pulse rate, which I am sure you are all familiar with from visits to your family doctor.*

In both conditions Dr. Zilstein added:

*Before we begin with the shocking proper, there will be about a 10-minute delay while we get this room in order. We have several pieces of equipment to bring in and get set up.... Here is what we will ask you to do for this 10-minute period of waiting. We have on this floor a number of additional rooms so that each of you, if you would like, can wait alone in your own room. These rooms are comfortable and spacious; they all have armchairs, and there are books and magazines in each room. It did occur to us, however, that some of you might want to wait for these 10 minutes together with some of the other girls here. If you would prefer this, of course, just let us know. We'll take one of the empty classrooms on the floor, and you can wait together with some of the other girls there.*

The participants then stated whether they preferred waiting alone or waiting with others or had no preference. The researcher found that participants who were in the “fear” condition were much more likely to prefer to wait with other people than to wait alone, whereas the participants in the “no fear” condition showed no clear preference. The researcher concluded that fear led to the desire to affiliate.

## HANDOUT 2.24 EVALUATING RESEARCH

*For each of the studies described below, what conclusions can be reached? Are the researchers' conclusions valid? Why or why not? What alternative explanations, if any, can there be for the research findings? Is the study high or low in internal validity? If you think there are problems with the study or the conclusions reached, how can the study be improved so that there are no flaws or so that alternative explanations can be ruled out? (Note: Some of these studies may not have any serious methodological flaws or alternative explanations.)*

In addition to addressing these issues, evaluate each study in terms of its experimental realism, mundane realism, and ethics.

### Staring

A researcher was interested in the effects of staring. She hypothesized that people become uncomfortable when someone stares at them, and that they will try to escape the situation as quickly as possible. To test this idea she bought a stopwatch and stood at a randomly selected street corner in Santa Barbara, California. She wanted to see if cars that are stopped at a red light would speed away faster when the light turned green if the driver had been stared at while waiting for the light than if he or she had not been stared at. To get a reliable baseline for average speed of crossing an intersection, she recorded the average number of seconds it took 250 cars (each of which was the first car at the red light) to cross the intersection after the light turned green. For the next 250 cars (again, each of which was first at the light), she stared directly at the driver, without wavering. She discovered that drivers who had been stared at crossed the intersection significantly faster than did drivers who had not been stared at. She concluded that staring causes people to drive away faster than they would normally.

## HANDOUT 2.25 EVALUATING A RESEARCH ARTICLE

*On a separate piece of paper, complete the following assignment.*

1. Look toward the back of the article and find the References section. See how other journal articles are cited. Using the same format, write down the citation for the article you read, indicating the author(s), year of publication, title of the article, name of journal, volume number of journal, and page numbers of the article.
2. For each independent variable, do each of the following: (a) describe it, including how many different levels of the variable there were (e.g., there may be an independent variable concerning exposure to different television programs, and there may be three different versions of this variable: dramas with violence, dramas without violence, and comedies; this would count as one independent variable, with three levels), (b) describe how the variable was manipulated—that is, what was the operational definition of the variable, and (c) discuss what you think of its construct validity.
3. Describe the dependent variable(s), including how each was measured and what you think of its construct validity.
4. How did the authors get participants for this study? Was there random sampling in this study? Was there random assignment in this study?
5. What hypothesis or hypotheses were the authors testing with this experiment? Describe the results of the experiment (in your own words, not the jargon used in the article) and whether or not they supported the hypotheses.
6. What alternative explanations might there be for the results you described in the previous question? How can these be tested in subsequent experiments?
7. Evaluate the internal validity and external validity of the experiment.
8. Evaluate the experimental realism and mundane realism of the experiment.
9. Evaluate the ethics of conducting this experiment. Should there have been any reasons to be concerned about the welfare of the participants?
10. Did you find this article to be interesting? What did *you* learn from it?