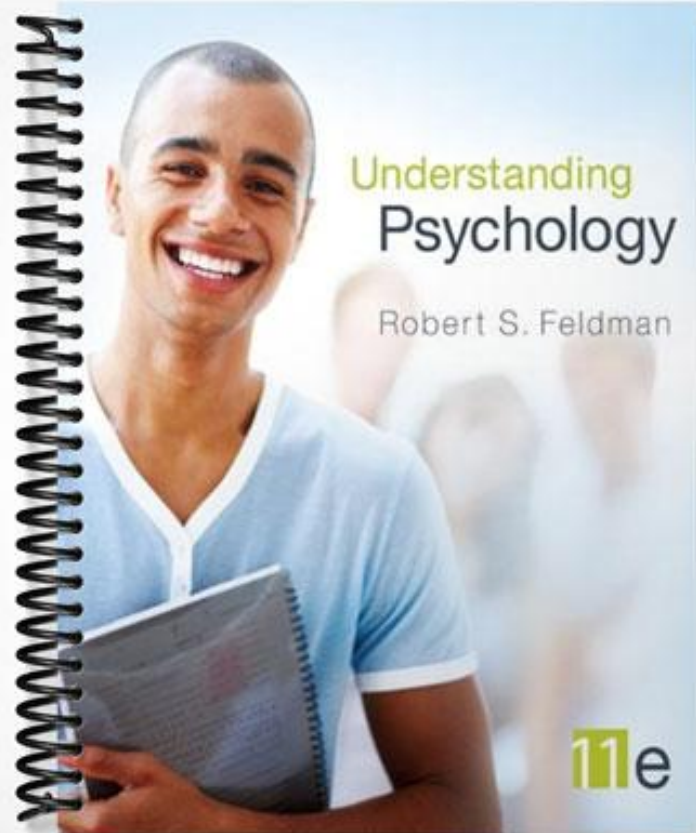


**SOLUTIONS MANUAL**



# Chapter 2

## Psychological Research



### LECTURE OPENER SUGGESTIONS

#### OPENING QUOTES:

Science must begin with myths, and with the criticism of myths.” Sir Karl Popper, 1902–1994

“I have not failed. I have just found 10,000 things that do not work.” Thomas Edison, 1847–1931

#### OPENING ARTWORKS:

Rene Magritte (1898–1967), *The False Mirror*, 1935

Georges Seurat (1851–1891), *Sunday Afternoon on the Island of la Grande Jette*, 1886

### OPENING THEMES

The scientific method is central to understanding the field today. Although it may seem as though these topics are not really about “psychology,” without a scientific approach, psychology would be no different than the pseudo-sciences that are propagated in the media.

### OUTLINE

PROLOGUE: NO HELP FOR THE HELPLESS?

### MODULE 4: THE SCIENTIFIC METHOD

THEORIES: SPECIFYING BROAD EXPLANATIONS

HYPOTHESES: CRAFTING TESTABLE PREDICTIONS

The **scientific method** is the approach used by psychologists to systematically acquire knowledge and understanding about behavior and other phenomena of interest. It consists of four main steps: (1) identifying questions of interest, (2) formulating an explanation, (3) carrying out research designed to support or refute the explanation, and (4) communicating the findings.

## THEORIES: SPECIFYING BROAD EXPLANATIONS

In using the scientific method, psychologists start by identifying questions of interest. Once a question has been identified, the next step in the scientific method is to develop a theory to explain the observed phenomenon. **Theories** are broad explanations and predictions concerning phenomena of interest. Psychologists Bibb Latané and John Darley, responding to the failure of bystanders to intervene when Kitty Genovese was murdered in New York, developed what they called a theory of diffusion of responsibility.

## HYPOTHESES: CRAFTING TESTABLE PREDICTIONS

Although the diffusion of responsibility theory seems to make sense, it represented only the beginning phase of Latané and Darley's investigative process. Their next step was to devise a way to test their theory. To do this, they needed to create a hypothesis. A **hypothesis** is a prediction stated in a way that allows it to be tested. Hypotheses stem from theories; they help test the underlying soundness of theories.

A hypothesis must be restated in a way that will allow it to be tested, which involves creating an operational definition. An **operational definition** is the translation of a hypothesis into specific, testable procedures that can be measured and observed.

## LEARNING OBJECTIVES

- 4-1 What is the scientific method?
- 4-2 What role do theories and hypotheses play in psychological research?

## STUDENT ASSIGNMENTS

### PSYCHINTERACTIVE: ESP

[http://highered.mcgraw-hill.com/sites/0073382736/student\\_view0/perspectives\\_in\\_psychology/esp.html](http://highered.mcgraw-hill.com/sites/0073382736/student_view0/perspectives_in_psychology/esp.html)

A great activity for showing what science is “not.” This exercise does not really illustrate the scientific method, but it might provide an interesting diversion for students interested in the topic. There is a high probability that they also will learn that they do NOT have ESP (extrasensory perception)!

### LIBRARY RESEARCH ON ESP

Send your students to your library's online database in psychology. If your library does not have this facility, have students complete this assignment via a search engine such as Google. Give them this assignment: For a topic that interests you, find an article that you feel does a good job of addressing the topic. Find one that does a poor job of addressing the topic. What makes the difference between a good (i.e., scientific) and a poor (i.e., nonscientific) study on this topic?

## SCIENTIFIC METHOD

Ask students the following questions about the scientific method in psychology:

Why is it necessary for psychological researchers to use the scientific method?

Think about a psychological issue of interest to you. How would you approach it from a scientific perspective?

Is it more or less difficult for psychologists to study phenomena of interest than is true for scientists in other disciplines?

## OPERATIONALIZATION: DIFFUSION OF RESPONSIBILITY

The textbook describes the research conducted by Latane and Darley on diffusion of responsibility. In this experiment it was hypothesized that the more the number of people in the room, the less likely an individual bystander would help. The hypothesis was operationalized by varying the number of people in the room when a confederate appeared to be having an epileptic seizure. Describe two other methods that could be used to operationalize this hypothesis.

## LECTURE IDEAS

### OVERHEAD: STEPS IN THE SCIENTIFIC METHOD

The scientific method consists of four main steps: (1) identifying questions of interest, (2) formulating an explanation, (3) carrying out research designed to support or refute the explanation, and (4) communicating the findings.

### FACTS VS. OPINIONS IN PSYCHOLOGY

Ask students this series of questions (from the Online Learning Center):

College students should get at least 7 hours of sleep every night. (O)

The average college student sleeps less than 7 hours of sleep a night (F)

Nikes offer better styling and comfort than any other brand of shoe. (O)

Two out of five sports figures preferred Nikes over Converse shoes. (F)

The U.S. government spends too much money on guns and missiles and not enough money on education. (O)

Government figures show spending is much higher for guns and missiles than for education. (F)

In general, U.S. high school students receive less classroom instruction in foreign languages than their counterparts in Europe and Asia. (F)

No student in the United States should graduate without having studied a language other than English for at least 4 years. (O)

Michael Jordan is the most outstanding, most exciting, and certainly most successful basketball player who ever stepped onto a basketball court. (O)

### “PSYCHIC EXPERIMENTS”

To show the importance of the scientific method, particularly ruling out alternative, competing hypotheses, here are three demonstrations that are very simple to do. It just takes a bit of show “person”ship.

#### **Experiment 1:**

This idea is loosely based on the “magic” tricks of Daryl Bem, Cornell psychologist.

The idea is to lure students into thinking that you can read their minds by guessing which object in the classroom they will have chosen. You will use a trick called “Black Magic.” After amazing them with your psychic powers, you then ask students to suggest alternative hypotheses to the possibility that you actually read their minds. The setup for this demonstration is reference to the Ganzfeld procedure in which a “receiver” attempts to read the mind of a “sender.” The procedure involves the receiver trying to guess which of four objects he or she had chosen. The chance rate is 25% correct, but Bem’s meta-analysis demonstrated a hit rate of 33%–35%. Say that Bem was therefore able to prove the existence of psychic phenomena (also called the “Psi” effect). If the class cooperates by concentrating their thoughts on an object in the room, you may be able to demonstrate the effect today.

#### *Follow these steps:*

Before the class, arrange to have a volunteer to assist you. This volunteer will appear to have been randomly chosen, but actually you will have preselected this person. You can honestly ask this person in front of the class whether you arranged ahead of time regarding which object was selected, and the honest answer will be no, because you will not have arranged ahead of time which object was actually selected. You will arrange ahead of time which object the assistant will point to before whatever object the class selects. This will be a black object. Any object that the volunteer points to after the black one will be the object chosen by the class. As you can see, nothing is really left to chance at all, nor have you been dishonest.

Tell the class that you will step out of the room and they will have up until the time you count to 30 to choose the object. The assistant will be in the room during this time.

Return to the room and now tell the class that in order to replicate the Ganzfeld procedure, you will need to have the volunteer point to several objects in the room. You will use your psychic powers (along

with the class's cooperation) to determine which object they have chosen. During this time, the volunteer will point to three or four objects, then to an object that is black. The object after the black one should be what the class selected.

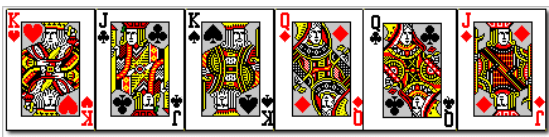
Feel free to ham this up. For each object, carefully inspect it, put your hands on it, look as though you are concentrating, and then announce in a loud voice, "No, this is definitely not the object." For one or two of the objects, you can start to say "yes," but then shake your head and say no. Chide the class and tell them to concentrate harder because you are getting confusing signals. For the object after the black one, first start to say no, then say very loudly, "YES! THIS IS THE OBJECT." Look at the class and take a well-deserved bow.

Now ask the class if they now believe in ESP. With luck, no one will have seen this trick performed before. Encourage them to think of alternative hypotheses and if necessary, lead them to think of the trick as involving not the object itself but the object AFTER the black object.

### Experiment 2:

Another or a second presentation along similar lines involves a very simple card trick. This can be performed using an overhead or with a set of cards (although this will take some sleight of hand). The overhead trick is definitely easier. Reproduce these images:

Slide 1:



Slide 2:



As you can see, Slide 2 and Slide 1 have completely different sets of cards. You will ask for a volunteer and say that the volunteer is to think of one of the cards from Slide 1. You will have magically guessed which card that is, as will be shown when you reveal Slide 2. If you can do this with actual cards, you would have the advantage of being able to pretend to deal out the cards minus the one that the volunteer chose. The problem is that you would then have to switch hands behind your back. With the overheads, tell the class that you have figured out ahead of time which card your volunteer will select.

After the volunteer thinks of the card, show Slide 2. Unless the volunteer guesses the deception right away (try not to pick a math major!), then you can ask the class to suggest hypotheses regarding how you “knew” which card would be selected.

Feel free to adapt either of these tricks to your own personal style or to choose an alternate trick that you are comfortable with. The main point is that you encourage the students to think of competing hypotheses. This demonstration also helps to teach students the importance of careful observation. Both tricks can be solved if students pay attention to exactly what you do and say.

### **Experiment 3:**

This comes from your very own textbook author, Robert Feldman and is even simpler than the previous ones and just as effective.

Prepare three piles of cards:

Pile 1: has three cards

Pile 2: has four 3's (from all four suits)

Pile 3: the third pile

Put them together at the top of a deck to create the illusion that you are going to be randomly taking them off the top but they will have been prearranged.

Now ask for a volunteer and state that you will predict which pile the volunteer will pick because your psychic powers are so strong. In fact, you will write down your prediction ahead of time! Without allowing the volunteer to see what you are doing, write down the number 3 on a large sheet of paper, fold it up, and then turn to the task at hand. Instruct the volunteer to think of a number and really concentrate. Close your eyes and pretend to be “sensing” what the volunteer is thinking. Then instruct the volunteer to point at the pile she or he has chosen. After pointing to any of the piles, say, “Yes, that is what I predicted! I have written down the number 3!!” Of course you will be right because in Pile #1, there are 3 cards, Pile #2 has all 3's, and the third pile is “Pile #3.” After the applause dies down, ask the audience if you have proven you are truly psychic. Of course they won't think you are, but now you can ask them to generate hypotheses about the secret of the trick. Through this process, you will be demonstrating the value of considering alternative hypotheses and being ready to critique a result even if it seems to be dramatically proving a point.

### **Note regarding Latane and Darley's study:**

An article published in 2007 in the *American Psychologist* challenged some of the conclusions reached about the Kitty Genovese case:

Manning, R., Levine, M. & Collins, A. (2007). The Kitty Genovese murder and the social psychology of helping: The parable of the 38 witnesses. *American Psychologist*, 62, 555-562.

## ONLINE LEARNING CENTER: AROUND THE GLOBE

**Teacher Ratings of Problem Behavior in Thai and U.S. Schools**

Psychologists often ask the people who know a child best to report on that child's behavior: parents and teachers. When researchers tried to study primary-school pupils in Thailand and the United States, though, they found out more about the teachers' values than the students' behavior (Weisz et al., 1995). In several studies, researchers found that Thai teachers reported that their students had a very high number of conduct problems, such as fidgeting and not paying attention, far more than teachers in the United States usually report. Yet Weisz and his colleagues observed that, to their eyes, the Thai children seemed more attentive and more "orderly" than U.S. children. Weisz et al. trained observers in both Thailand and the United States to use a checklist for problem behavior, and sent them to classes. The Thai teachers reported twice as many problem behaviors as the Americans; the observers saw the opposite pattern, spotting twice as many problems in the U.S. classes as the Thai classes! Undoubtedly, the teachers know their students far better than any trained observer sitting in on just a few classes. However, the Thai and U.S. teachers' different standards for conduct make it impossible for a researcher to use teacher reports as the only measure of student behavior.

## MEDIA PRESENTATION IDEAS:

## CURRENT RESEARCH EXAMPLES

Interesting research examples can be taped from news documentary programs and cable networks such as the History Channel (somewhat a misnomer as it now incorporates many scientific programs) and shown for educational purposes on a one-time basis without violating copyright laws. The purpose of showing one of these examples in connection with this module (compared to the others on research) would be to highlight the importance of using the scientific method to arrive at conclusions about human behavior. One excellent example comes from the Discovery Channel program "Myth Busters" in which the team debunks the notion of mind control (<http://shopping.discovery.com/product-60391.html>). There is also a History Channel documentary called "Mind Control" that is very well done (<http://shop.history.com/detail.php?a=73738>).

## MCGRAW-HILL MEDIA RESOURCES

Several classic research studies in psychology are in these resources that can be used as examples of applying the scientific method (these can also be used for any of the sections within Modules 4–6). Choose one to show at the beginning of lecture and then refer to it in lecture to exemplify each of the components of the scientific method and research discussed in the remainder of the lecture.

## OPERATIONALIZATION

The most interesting (and difficult) concept to present from this module is that of operationalization. The approach to use here is, again, to present an example of research either from the Media Resources



disk or from a research documentary. The best example would be a study using an innovative method or one that relies on sophisticated technology (e.g. eye tracker, fMRI). The example also should be one that is of inherent interest to students, and it should pertain to a contemporary issue. You can also ask students to work through an example. Start with a concept that might be of interest to students (such as studying deception) and work them through the steps to conduct research on the topic.

## MODULE 5: CONDUCTING PSYCHOLOGICAL RESEARCH

ARCHIVAL RESEARCH

NATURALISTIC OBSERVATION

SURVEY RESEARCH

APPLYING PSYCHOLOGY IN THE 21ST CENTURY: SECRET BIAS: USING THE IMPLICIT ASSOCIATION TEST TO MEASURE HIDDEN PREJUDICE

THE CASE STUDY

CORRELATIONAL RESEARCH

EXPERIMENTAL RESEARCH

Research—systematic inquiry aimed at the discovery of new knowledge—is a central ingredient of the scientific method in psychology. It provides the key to understanding the degree to which hypotheses (and the theories behind them) are accurate.

Descriptive research is designed to systematically investigate a person, group, or patterns of behavior. These methods include archival research, naturalistic observation, survey research, and case studies.

### ARCHIVAL RESEARCH

In **archival research**, existing data, such as census documents, college records, and newspaper clippings, are examined to test a hypothesis. Archival research is a relatively inexpensive means of testing a hypothesis because someone else has already collected the basic data. Of course, the use of existing data has several drawbacks. The data may not be in a form that allows the researcher to test a hypothesis fully. The information could be incomplete, or it could have been collected haphazardly.

### NATURALISTIC OBSERVATION

In naturalistic observation, the investigator observes some naturally occurring behavior and does not make a change in the situation. Although the advantage of naturalistic observation is obvious—we get a sample of what people do in their “natural habitat”—there is also an important drawback: the inability to control any of the factors of interest.

### SURVEY RESEARCH

In survey research, a sample of people chosen to represent a larger group of interest (a population) is asked a series of questions about their behavior, thoughts, or attitudes. Survey methods have become so sophisticated that even with a very small sample researchers are able to infer with great accuracy how a larger group would respond.

### THE CASE STUDY

In contrast to a survey, in which many people are studied, a **case study** is an in-depth, intensive investigation of a single individual or a small group. Case studies often include psychological testing; a procedure in which a carefully designed set of questions is used to gain some insight into the personality of the individual or group.

### CORRELATIONAL RESEARCH

**Variables** are behaviors, events, or other characteristics that can change, or vary, in some way. In **correlational research**, two sets of variables are examined to determine whether they are associated, or “correlated.” The strength and direction of the relationship between the two variables are represented by a mathematical statistic known as a correlation which can range from +1.0 to -1.0. A positive correlation indicates that as the value of one variable increases, we can predict that the value of the other variable will also increase. A negative correlation tells us that as the value of one variable increases, the value of the other decreases. The inability of correlational research to demonstrate cause and-effect relationships is a crucial drawback to its use.

### EXPERIMENTAL RESEARCH

In a formal **experiment**, the researcher investigates the relationship between two (or more) variables by deliberately changing one variable in a controlled situation and observing the effects of that change on other aspects of the situation. The change that the researcher deliberately makes in an experiment is called the **experimental manipulation**. Experimental manipulations are used to detect relationships between different variables. Latané and Darley, in testing their theory of the diffusion of responsibility in bystander behavior, developed this hypothesis: The higher the number of people who witness an emergency situation is, the less likely it is that any of them will help the victim. They then designed an experiment to test this hypothesis. Their first step was to formulate an operational definition of the hypothesis by conceptualizing it in a way that could be tested.

#### Experimental Groups and Control Groups

Experimental research requires that the responses of at least two groups be compared. One group will receive some special **treatment**—the manipulation implemented by the experimenter—and another group will receive either no treatment or a different treatment. Any group that receives a treatment is called an **experimental group**; a group that receives no treatment is called a **control group**. Returning to Latané and Darley’s experiment, we see that the researchers needed to translate their hypothesis into something testable. To do this, they decided to create a false emergency situation that would appear to

require the aid of a bystander. As their experimental manipulation, they decided to vary the number of bystanders present.

### Independent and Dependent Variables

Latané and Darley's experimental design now included an operational definition of what is called the **independent variable**. The independent variable is the condition that is manipulated by an experimenter. Crucial to every experiment is the **dependent variable**, the variable that is measured and is expected to change as a result of changes caused by the experimenter's manipulation of the independent variable. The dependent variable is dependent on the actions of the participants or subjects—the people taking part in the experiment.

### Random Assignment of Participants

To make the experiment a valid test of the hypothesis, Latané and Darley needed to add a final step to the design: properly assigning participants to a particular experimental group.

How can we ensure that participants in each experimental group will be equally intelligent, extroverted, cooperative, and so forth, when the list of characteristics—any one of which could be important—is potentially endless? The solution is a simple but elegant procedure called random assignment to condition: Participants are assigned to different experimental groups, or “conditions,” on the basis of chance and chance alone.

### Were Latané and Darley right?

To test their hypothesis that increasing the number of bystanders in an emergency situation would lower the degree of helping behavior, Latané and Darley placed the participants in a room and told them that the purpose of the experiment was to talk about personal problems associated with college. Participants were randomly assigned to these groups upon their arrival at the laboratory. Each group included a trained confederate, or employee, of the experimenters. In each two-person group, then, there was only one real “bystander.” As the participants in each group were holding their discussion, they suddenly heard through the intercom one of the other participants—the confederate—having what sounded like an epileptic seizure and then calling for help. The participants' behavior was now what counted. The dependent variable was the time that elapsed from the start of the “seizure” to the time a participant began trying to help the “victim.”

Because these results are straightforward, it seems clear that the experiment confirmed the original hypothesis. However, Latané and Darley could not be sure that the results were truly meaningful until they determined whether the results represented a significant outcome.

### Moving Beyond the Study

The Latané and Darley study contains all the elements of an experiment: an independent variable, a dependent variable, random assignment to conditions, and multiple experimental groups. Psychologists—like other scientists—require that findings be **replicated**, or repeated, sometimes using

other procedures, in other settings, with other groups of participants, before full confidence can be placed in the results of any single experiment. A procedure called meta-analysis permits psychologists to combine the results of many separate studies into one overall conclusion.

### LEARNING OBJECTIVES

- 5-1 What research methods do psychologists use?
- 5-2 How do psychologists establish cause-and-effect relationships in research studies?

### STUDENT ASSIGNMENTS

#### PSYCHINTERACTIVE: NAME THAT VARIABLE

[http://highered.mcgraw-hill.com/sites/0073382736/student\\_view0/research\\_methods/name\\_that\\_variable.html](http://highered.mcgraw-hill.com/sites/0073382736/student_view0/research_methods/name_that_variable.html)

This activity provides a brief but helpful way for students to test their knowledge of independent and dependent variables.

#### PSYCHINTERACTIVE: WHAT DO YOU REALLY MEAN BY THAT?

[http://highered.mcgraw-hill.com/sites/0073382736/student\\_view0/research\\_methods/what\\_do\\_you\\_really\\_mean\\_by\\_that.html](http://highered.mcgraw-hill.com/sites/0073382736/student_view0/research_methods/what_do_you_really_mean_by_that.html)

Students learn about operational definitions through a fast-moving reaction time experiment.

#### PSYCHINTERACTIVE: SAMPLES AND POPULATIONS

[http://highered.mcgraw-hill.com/sites/0073382736/student\\_view0/research\\_methods/samples\\_and\\_populations.html](http://highered.mcgraw-hill.com/sites/0073382736/student_view0/research_methods/samples_and_populations.html)

This activity teaches students about sampling size through a simulated survey demonstrating the relationship between sample and population.

#### PSYCHINTERACTIVE: INDEPENDENT AND DEPENDENT VARIABLES

[http://highered.mcgraw-hill.com/sites/0073382736/student\\_view0/research\\_methods/independent\\_and\\_dependent\\_variables.html](http://highered.mcgraw-hill.com/sites/0073382736/student_view0/research_methods/independent_and_dependent_variables.html)

Independent and dependent variables are taught through a race in which students play coach and give different advice to a set of four athletes.

### PSYCINFO

For a brief assignment, have students use PsycInfo (or Google Scholar) to find a current example of each type of research method (e.g., archival, case study). Briefly describe the method used in each study that students identify.

### METHODS OF RESEARCH

Have students complete Handout 2–1.

### CORRELATIONAL RESEARCH

Have students complete Handout 2–2.

### EXPERIMENTAL DESIGN

Have students complete Handout 2–3.

## LECTURE IDEAS

### ARCHIVAL RESEARCH:

#### **Provide students with these examples of archival research:**

Searching high school records of people who later became criminals to see if there were early signs of misbehavior.

Looking up marriage licenses to find out the average age difference between spouses.

Finding out whether there are racial biases in jury decisions by examining court records.

Studying speeches made in Congress by men and women to see if there are differences in their use of particular words or phrases.

Examining census records to determine whether there are relationships between education and death rates.

Examining the use of online help manuals by people who buy printers to see if those with more knowledge of computers are less likely to use manuals.

Using cellphone signals to identify the behavioral patterns of people as they carry out their everyday activities.

### NATURALISTIC RESEARCH:

**Provide students with these examples of naturalistic research:**

Watching the patients in a psychiatric ward during meals to see if they speak to each other.

Having people of different races drop their books while walking on a campus sidewalk and counting the number of people who stop to help to see if people are more likely to help those of the same race as themselves.

Determining whether people are more or less likely to ride an elevator than to walk in the morning versus the afternoon.

Watching people in a computer lab and counting the number of times that they interrupt their studies to answer e-mails.

Counting the length of time it takes people in a grocery store to decide on a cereal brand.

Watching men and women in conversation to examine their nonverbal behavior.

Counting the number of times that students versus nonstudents make calls on their cell phones during basketball games.

Watching children in a playgroup and recording the number of times they smile at other children.

Recording the number of times that a teacher in a classroom calls on boys and girls to see if boys are more likely to be called on to answer questions.

Observing whether people are more likely to cross against the light in a suburban street or a street in the center of a city.

Counting the number of times clients with various disorders cancel their psychotherapy appointments.

### SURVEY RESEARCH:

**Provide students with these examples of survey research:**

Asking a random sample of people to complete an online questionnaire about political attitudes.

Asking people to list their favorite foods to determine if there are geographic differences in food preferences.

Interviewing people to ask them about their health practices.

Asking people to rate their preferences for different yogurt flavors.

Asking people to rate their attitudes toward new television technologies.

Giving people a chance to rate their preferences for catalog shopping by phone or online.

Having people describe whether or not they have experienced particular psychological symptoms throughout their lifetimes.

Asking about people's experiences in elementary school with male versus female teachers.

Asking a sample of 50 people to participate in an opinion poll.

Finding out from airline passengers whether they would prefer to buy their meals on the airplane or in the airport terminal.

#### VARIABLES TO STUDY IN CORRELATIONAL RESEARCH:

##### **Provide students with these examples of variables to study in correlational studies:**

Depression and chocolate consumption.

Self-esteem and height.

Exercise and cancer risk.

Depression and length of Internet use.

Time spent playing video games and grades.

Attractiveness and popularity.

Height and intelligence.

Noise level of music and heart rate.

Body image and weight.

Achievement test scores and scholarship funding.

Stress hormones and perceived stress level.

Number of action movies seen in past 12 months and sensation-seeking as a personality variable.

Intelligence and enjoyment of pop music.

Marijuana smoking and high school grades.

Time spent reading novels and depression scores.

Alcohol consumption and problem-solving ability.

Sex role attitudes and political conservatism.

Weight gain and risk of poor self-rated health.

Anxiety and lack of concern over test performance.

Behavior problems and popularity in schoolchildren.

#### CASE STUDY

**Provide students with these examples of case studies:**

Giving a troubled adolescent a set of lengthy questionnaires and interviews.

Examining a group of substance-addicted adults with tests of biological functioning.

Asking a mother to talk in-depth about her experiences of raising a child with autism.

Asking a human resources manager to describe how she makes decisions about recommending applicants for employment.

Studying intensively the work habits of a small group of successful CEOs.

Intensive neurological and neuropsychological testing of a group of children with a rare brain disorder.

Documenting progress in psychotherapy with a victim of Hurricane Katrina.

#### EXPERIMENTAL RESEARCH

**Provide students with these examples of experimental research:**

Determining whether negatively worded advertisements cause people to buy more or less of a product.

Examining people to determine whether memory is better for words or pictures.

Having people take a memory test in a laboratory to determine which conditions are best for promoting short-term memory.

Providing therapy to people with severe anxiety disorders and comparing them to a control group that did not receive therapy.

Determining whether people are more likely to lie when they are put in a condition of thinking they need to impress the experimenter compared to a condition in which they do not think they need to impress the experimenter.

Comparing people's anxiety levels when told to imagine a stressful job interview compared to when told to imagine listening to relaxing music.

#### OTHER EXAMPLES



In addition to this list, you can collect examples of types of research that might have popular appeal from newspapers, *Scientific American*, Web sites, and magazines.

### SUMMARY OF DESCRIPTIVE RESEARCH METHODS

Use this chart to summarize research methods used in descriptive research:

Research Method	Advantages	Disadvantages
Archival	Inexpensive	Data can be in poor form Incomplete information Haphazardly collected Records often don't exist
Naturalistic	Natural habitat	Inability to control factors Need perfect conditions Subjects may alter actions
Surveys	Straightforward Accuracy with small samples	Memory lapses in respondents Responses tailored to what researcher wants to hear Sample may not be representative of population
Case Study	In-depth and focused	Generalizations must be made cautiously

### BASICS OF EXPERIMENTAL DESIGN

Download this image from the Online Learning Center:

[Chapter02\\_0502L.jpg \(101.0K\)](#) The image is listed under Chapter 2, the 3<sup>rd</sup> image labeled feL82795\_0502.

Use this figure to walk students through the steps involved in an experiment. The figure can be adapted if you prefer to use a different example.

### MEDIA PRESENTATION IDEAS

#### RESEARCH DOCUMENTARIES

As was true for the above sections, there are many possible documentaries on research that could be shown in this lecture.

### MODULE 6: CRITICAL RESEARCH ISSUES

#### THE ETHICS OF RESEARCH

#### EXPLORING DIVERSITY: CHOOSING PARTICIPANTS WHO REPRESENT THE SCOPE OF HUMAN BEHAVIOR

NEUROSCIENCE IN YOUR LIFE: THE IMPORTANCE OF USING REPRESENTATIVE PARTICIPANTS

SHOULD ANIMALS BE USED IN RESEARCH?

THREATS TO EXPERIMENTAL VALIDITY: AVOIDING EXPERIMENTAL BIAS

BECOMING AN INFORMED CONSUMER OF PSYCHOLOGY: THINKING CRITICALLY ABOUT RESEARCH

## THE ETHICS OF RESEARCH

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Most psychologists argue that deception is sometimes necessary to prevent participants from being influenced by what they think a study's true purpose is. As research has the potential to violate the rights of participants, psychologists are expected to adhere to a strict set of ethical guidelines aimed at protecting participants. Those guidelines involve the following safeguards:

- Protection of participants from physical and mental harm.
- The right of participants to privacy regarding their behavior.
- The assurance that participation in research is completely voluntary.
- The necessity of informing participants about the nature of procedures before their participation in the experiment.
- All experiments must be reviewed by an independent panel before being conducted.

One of psychologists' key ethical principles is informed consent. Before participating in an experiment, the participants must sign a document affirming that they have been told the basic outlines of the study and are aware of what their participation will involve, what risks the experiment may hold, and the fact that their participation is purely voluntary and they may terminate it at any time.

### Exploring Diversity

When Latané and Darley, both college professors, decided who would participate in their experiment, they turned to the people at hand: college students. Using college students as participants has both advantages and drawbacks. The big benefit is that because most research occurs in university settings, college students are readily available. The problem is that college students may not represent the general population adequately. In fact, undergraduate research participants are typically a special group of people: relative to the general population, college students tend to be from Western, educated, industrialized, rich, and democratic cultures.

Because psychology is a science whose goal is to explain all human behavior generally, its studies must use participants who are fully representative of the general population in terms of gender, age, race, ethnicity, socioeconomic status, and educational level.

### SHOULD ANIMALS BE USED IN RESEARCH?

Researchers who use nonhuman animals in experiments have their own set of exacting guidelines to ensure that the animals do not suffer. Specifically, researchers must make every effort to minimize discomfort, illness, and pain. Procedures that subject animals to distress are permitted only when an alternative procedure is unavailable and when the research is justified by its prospective value. Psychological research that employs nonhumans is designed to answer questions different from those posed in research with humans.

### THREATS TO EXPERIMENTAL VALIDITY: AVOIDING EXPERIMENTAL BIAS

Even the best-laid experimental plans are susceptible to **experimental bias**—factors that distort the way the independent variable affects the dependent variable in an experiment. One of the most common forms of experimental bias is experimenter expectations: An experimenter unintentionally transmits cues to participants about the way they are expected to behave in a given experimental condition. A related problem is participant expectations about appropriate behavior.

To solve this problem, psychologists typically use a procedure in which all the participants receive a treatment, but those in the control group receive only a **placebo**— a false treatment, such as a pill, “drug,” or other substance that has no significant chemical properties or active ingredient.

To overcome the possibility that experimenter expectations will affect the participant, the researcher can use the double-blind procedure.

### Becoming an Informed Consumer of Psychology

As the field of psychology is based on an accumulated body of research, we must scrutinize thoroughly the methods, results, and claims of researchers. Several basic questions can help us sort through what is valid and what is not. Among the most important questions to ask are these:

- What was the purpose of the research?
- How well was the study conducted?
- Are the results presented fairly?

### LEARNING OBJECTIVES

6–1 What major issues confront psychologists conducting research?

## STUDENT ASSIGNMENTS

### PSYCH 2.0 ACTIVITY 2.6 ETHICAL DILEMMAS

The student learns the basic ethical standards of the APA, and then plays the role of a member of an ethical review committee for five proposed experiments, deciding whether each is ethical or nonethical according to the APA.

## ETHICAL PRINCIPLES

Go to the APA Web site and look up the Ethical Principles of Psychologists and Code of Conduct

<http://www.apa.org/ethics/code2002.html>

**Choose three of the principles and answer the following questions:**

Why do you think this principle is important?

What difficulties might psychologists encounter when applying this principle?

Describe a real-life situation in which this principle might be used.

## EXPERIMENTAL BIAS

**Have students volunteer to be participants in a psychological experiment.**

After they have completed their participation, ask them to answer these questions:

Did you know what the hypothesis was in this study?

If so, how do you think your performance was affected by this knowledge? If not, how might your performance have been affected by this knowledge?

What could the experimenter have done in this study to reduce experimental bias?

## EVALUATING RESEARCH

**Go to the APA Web site and on the home page find a recent study that interests you** (alternatively, students can be sent to the PsychInfo Web site and instructed to find a specific study that you identify).

**Evaluate the study's findings as described in the Informed Consumer box:**

What was the purpose of the research?

How well was the study conducted?

Are the results presented fairly?

## LECTURE IDEAS

### ETHICAL CONCERNS

Enhance this part of the lecture by presenting a brief history and synopsis of the Ethical Principles of Psychologists and Code of Conduct (<http://www.apa.org/ethics/code2002.html>).

Be sure to differentiate clearly between the need to protect participants from undue risk, the need to inform participants in advance regarding what will take place when they complete the research, and the need to maintain the scientific integrity of the research. For example, if Latane and Darley had informed participants of exactly what would transpire in the study on diffusion of responsibility, their results would not necessarily have provided them with valid results because participants would have known that they were expected to help (this issue relates also to participant expectations). Another topic of interest to students is that of withholding psychological services in the interests of maintaining the integrity of the experimental design.

### EXPERIMENTAL BIAS

Cite specific problems associated with experimental bias in psychological research, distinguishing between bias due to experimenter expectations and bias due to participant expectations. Placebos can be used to minimize the effects of participant expectation, particularly when used in a double-blind procedure. However, placebos can sometimes lead to improvement due to the “placebo effect” (see <http://www.nytimes.com/2010/05/04/opinion/04judson.html>) for an excellent discussion of this issue). Raise the issue of why deception is needed and how best to handle the balance between informed consent and the need to minimize bias.

### EVALUATING HOW WELL RESEARCH SUPPORTS PARTICULAR FINDINGS

Summarize a recent research study in your area of specialty. Using the criteria in the text in the Informed Consumer box, evaluate this study—that is, what was the purpose of the research, how well was the study conducted, and are the results presented fairly?

### MEDIA PRESENTATION IDEAS

#### POPULAR MOVIE: RESEARCH METHODS

In addition to showing a serious documentary or an example from the Media Resources, several movies portray ethical issues in psychological research. One classic example is the ESP scene from the movie *Ghostbusters*. In this scene, Bill Murray rigs an ESP experiment to impress an undergraduate. This scene displays experimenter bias as well as unethical behavior by the researcher, which, although humorously portrayed, is engaging in behavior that might be interpreted as sexual harassment.

#### SCIENTIFIC AMERICAN FRONTIERS: THE WONDER PILL

This Scientific American Frontiers episode features the ways in which placebo effects can bias research on treatment effectiveness:

<http://www.pbs.org/saf/1307/video/watchonline.htm>