Chapter 1

Introducing Psychology

Tom Raymond/Tony Stone Images/New York, Inc.

CHAPTER OUTLINE

Every chapter begins with an outline of major topics and subtopics that will be discussed. The major topics are boldfaced. Under each are approximately three to five subtopics. This pattern of headings is repeated within the chapter itself. The chapter outline and the corresponding headings give you a mental scaffold upon which to build and arrange the new information you are learning.

Outline

Learning Objectives

- What is psychology and what are its goals?
- What are the different fields of psychology?
- What is the advantage of conducting an experiment to study a research question, and how do researchers conduct experiments?
- What are the nonexperimental research techniques, and what are their merits and limitations?
- How are research and clinical psychologists encouraged to uphold ethical behavior and procedures?
- What are the major perspectives that guide the study of psychology?

LEARNING OBJECTIVES

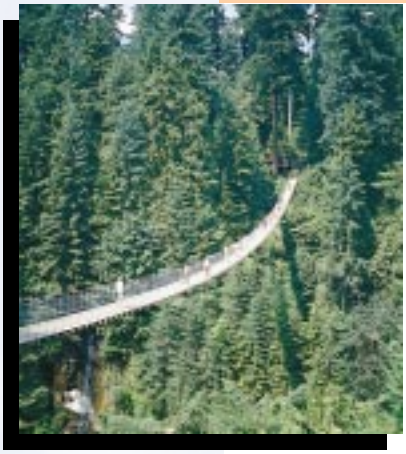
Following the outline is a list of four to six questions that represent general questions you should be asking yourself as you read the chapter. For reinforcement, they are repeated in the margins at the place where they are discussed. These questions are an important part of the SQ4R method described in the Preface and the Student Study Guide that accompanies this text.

The Capilano Canyon Suspension Bridge in North Vancouver, British Columbia, is a popular tourist site. It is a wooden bridge, 5 feet wide and 450 feet long. It hangs from cables spanning the Capilano Canyon, 230 feet above the Capilano River. When you walk across the bridge, it sways back and forth in the wind, and by the middle, the river looks a lot farther than 230 feet below. The Capilano Canyon Bridge is not for the faint of heart, but it may be a place to *lose* your heart.

In 1974, Donald Dutton and Arthur Aron conducted an experiment on the Capilano River Bridge. Two research assistants, one male and one female, took turns approaching lone male tourists at the entrance to the bridge. They asked the men to walk to the middle of the bridge and write an imaginative story in response to a drawing. Afterwards, the researcher gave each participant a telephone number to call if he wanted to find out the results of the research project.

Dutton and Aron then repeated their experiment on another bridge near the suspension bridge. This one was also wooden, but it was quite sturdy and was only 10 feet above the river. This time the tourists would write their stories in the middle of a bridge that posed no threat and therefore aroused no fear. Of course, the researchers expected different kinds of stories, but what do you think they were actually studying?

Dutton and Aron were testing a theory about the misattribution of emotional feelings. In very simple terms, the theory states that if someone is emotionally aroused by something, the arousal might be misattributed, or transferred, to something else that is also emotionally arousing. In this case, they wanted to see if participants on the suspension bridge would transfer the emotions caused by fear of crossing the bridge to the attractive female researcher. If so, the researcher should appear more sexually attractive than to the participants crossing the lower, sturdier bridge. As it turned out, this is exactly what Dutton and Aron found.



David Ball/The Stock Market

Of the 85 male passersby approached by the female researcher, 50 percent called later to ask about the results of the experiment (30 percent called the male researcher). Of those who crossed the low bridge, less than 15 percent called the female researcher (about the same called the male researcher). Interestingly, too, the men approached by the female researcher on the suspension bridge wrote stories with significantly more sexual content than their counterparts on the sturdy bridge.

Had you been a participant in this experiment, would you have called the female experimenter to get the results? If you were on the suspension bridge, would you have perceived her as more attractive than if you had been on the low bridge? You might, if you misattributed your fear-based emotions to sexual attraction. Maybe you'll meet, or already have, the love of your life when you are highly aroused by some external stimulus—a rock concert, a football game, or walking across a suspension bridge.

This misattribution experiment is only one of thousands that have been conducted to study the science of psychology. It is also only one example of psychological phenomena that you have probably experienced. This textbook is an introduction to the scientific study of psychology. As you read, you will discover that psychological research has applications to yourself, to people you know, and to people you have read about.

OPENING VIGNETTE

Every chapter begins with a short opening story which sets the stage for the chapter. These vignettes introduce the student to interesting real-world examples and applications of the theories covered. Placing these theories into a framework with which students can identify makes the study of the subject matter so much more real.

INTRODUCTORY PARAGRAPH

Following the vignette is a paragraph of commentary that presents the major topics to be discussed in the chapter, reinforcing and setting the stage for the material to follow.

When asked what they expect from a course in psychology, students often say that they expect to find out "how the mind works," "what makes people break down and go crazy," "how to raise children," "the meaning of dreams and personality tests," and so on. We will discuss these topics. We will also answer such questions as: How does the brain work? Why do we see the world in color? How do people learn? How do we remember things? What motivates some people to starve themselves to the point of death while others eat themselves into obesity? Should anger be controlled, or should it be expressed? How does stress affect our physical and psychological functioning? Why do we like some people and not others? What makes some people so influential and powerful, while others are mindless followers and socially ineffective?

In this first chapter, we will define psychology and explain its goals, provide an overview of the fields in which psychologists are involved, introduce the types of psychological research, speak to the ethics expected of psychologists, and outline the schools of psychology that have led to its present perspectives.

UNDERSTANDING PSYCHOLOGY

What is psychology and what are its goals? What are the different fields of psychology?

We cannot always rely on common sense to make accurate predictions. For instance, look at Figure 1.1, the Müller-Lyer illusion, the most well-known of the geometrical illusions. If you are like most college students, you will perceive the left vertical line as slightly longer than the right (Gordon, 1997; Schiffman, 1996; Wang, Irwin, and Hautus, 1998). (Actually, both are the same length.) Most people, after seeing the Müller-Lyer illusion, assume that everyone's visual system is hardwired to misperceive the length of the two lines. But this common-sense judgment is in error. Many people, especially people from strictly rural societies, see both lines as the same length (Rivers, 1905; Segal, Campbell, and Herskovits, 1963, 1966; Stewart, 1973). Because we cannot assume that just because *we* behave in a particular way, all people will behave that way, behavior must be studied objectively and scientifically.

Psychology
The scientific study of behavior and mental processes.

This book is about **psychology,** the scientific study of behavior and mental processes. Psychologists use strict scientific methods in their study of psychology. They follow standardized scientific procedures to collect information and to analyze and interpret the information. In this way, psychologists can be reasonably certain that the results of their studies are not contaminated by their own personal attitudes or by factors unrelated to the behavior being studied.

Behavior
Anything a person or animal does, feels, or thinks.

In everyday language **behavior** may refer primarily to the way people act, but in psychology it is used to describe anything a person or animal does, feels, or thinks. A simple act such as greeting a friend involves all these behaviors. Reaching out to hug your friend or shake her hand is an example of "doing." Before you initiate this overt behavior, however, you would have thought of your friend's name and felt emotions associated with your friendship.

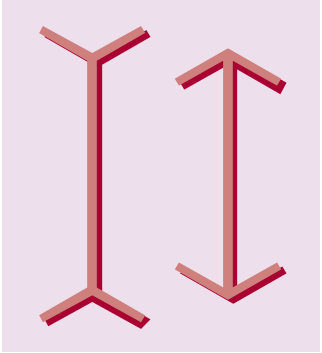


Figure 1.1 ***The Müller-Lyer illusion.*** Are the vertical lines the same length or is one longer?

ILLUSTRATIONS

Don't skip over the photos, figures, and tables. They visually reinforce important concepts and often contain material that may appear on exams.

Some behaviors are **overt**—easily seen or identified. Others are **covert**—covered or hidden, and not directly observable. Overt behaviors associated with the emotional arousal described at the beginning of this chapter might be blushing, dilated pupils, faster breathing, and sweating. Covert behaviors are harder to detect, but psychologists have come up with some creative techniques to measure them. For instance, had Dutton and Aron wanted to measure covert changes in people's emotional states, they could have used specialized instruments to measure changes in heart rate, blood pressure, muscle tension, and the brain's electrical activity. They could also have administered several psychological tests.

Overt
Observable, not concealed.
Covert
Hidden or difficult to observe.

RUNNING GLOSSARY

Key terms and concepts are bold-faced in the text the first time they appear. They are also printed again in the margin and defined in a "running glossary." The running glossary provides a helpful way of reviewing key ideas before tests. If you want to check the meaning of a term from another chapter, use the end-of-book glossary.

The Goals of Psychology: To Describe, Explain, Predict, and Change Behavior

The first step in understanding the complex world of psychology is to look at its four basic goals: to describe, explain, predict, and change behavior. In some studies, psychologists attempt merely to *describe* particular behaviors by making careful scientific observations. In other studies, psychologists also try to *explain* behaviors by conducting experiments to determine their causes. Psychologists often use research information to *predict* when a particular behavior will occur in the future. They can also apply research findings to *change* inappropriate behavior or circumstances.

Imagine for a minute that you are about to walk out onto the Capilano Canyon Suspension Bridge. Try to describe your feelings and your actions. Would your heart start pounding? Would you try to hold on to someone? Would you start thinking of all the ways the bridge could fail and you could fall to your death? Would you walk slowly and carefully, or would you run? Actually, would you even walk out onto the bridge in the first place?

These are *descriptions* of overt and covert behaviors that can be compiled into an overall description of your state of arousal on the bridge. If we were to observe and describe behaviors of scores of people, most likely we could state definitively that walking out onto the Capilano Canyon Suspension Bridge results in emotional arousal for most people. But could we explain the actual causes of this arousal from mere observations? No. In order to *explain* what causes the arousal and to determine if that arousal can lead to romantic attraction, we would have to conduct scientific research in the form of experiments.

In addition to describing and explaining behavior, psychologists also strive to predict and change behavior. For example, research on illusions such as the Müller-Lyer allows us to *predict* that someone who comes from a rural culture will see less of an illusion than someone from an urban society. It might even be possible to *change* a person's perception of the length of lines in a geometrical illusion by moving him from a rural society to an urban society. (You will read more about geometric illusions in Chapter 3, "Sensation and Perception.")

Basic Research

Often researchers study some aspect of behavior with no thought of how their results can be applied to the real world. Known as **basic research,** this type of research is usually conducted in universities or in research laboratories to test new theories and models of behavior. Conducted in all major subfields of psychology, it may or may not have any immediate real-world applications; it is conducted for the sheer joy of learning about behavior. In the long run, however, findings from basic research have been used to implement significant changes in the way we live, from developing more user-friendly computer software for office workers to devising more effective teaching methods for first-grade students.

Basic Research
Research conducted to study theoretical questions without trying to solve a specific problem.

Recent basic research on memory (Courtney, Petit, Maisong, Ungerleider, and Haxby, 1998) has employed new brain scanning techniques to determine which areas of the brain are used for working memory. (*Working memory* is the thinking process

that maintains an active representation of information so that we can use the information to solve problems. For instance, working memory is where you store a telephone number you plan to dial within a few seconds.) In another example of basic research, researchers have been conducting a long-term study (the last 25 years) of the cognitive abilities of mathematically precocious children (Benbow, 1984; Benbow, 1986; Benbow and Lubinski, 1994; Benbow and Lubinski, in press). A great deal of basic research goes on in perception, how we perceive the external world using our senses of touch, taste, smell, sight, and hearing (Schiffman, 1996). In basic research, then, we use the goals of psychology to study behavior for its own sake—simply for knowledge. When we want to use the goals of psychology to solve existing real-world problems, we conduct applied research.

Applied Research

Applied Research
Research that uses the principles and discoveries of psychology for practical purposes, to solve real-world problems.

Applied research is conducted to answer specific real-world questions about behavior. Although applied research is conducted in nearly all psychological disciplines, certain ones are known as applied research areas. These are industrial/organizational psychology, environmental psychology, sports psychology, consumer psychology, health psychology, and clinical and counseling psychology.

Industrial/organizational psychology applies the principles of psychology to the workplace (Aamodt, 1991, p. 4). It includes personnel psychology—personnel selection and evaluation; organizational psychology—the study of leadership, job satisfaction, employee motivation, and group processes within the organization; and training and development.

Environmental psychology is the study of behavioral reactions to changes in the environment. For example, environmental psychologists have found that people recover from stress faster when they are exposed to natural rather than urban environments (Kaplan, 1995; Ulrich et al., 1991).

Sports psychology studies ways that psychological principles can be applied to enhance athletic performance; techniques include mental imagery and mental practice (Jones and Stuth, 1997; Murphy, 1990; Suinn, 1997).

Consumer psychologists apply psychological principles to consumer behavior. They study decision-making processes of consumers and patterns of consumption (Cohen and Chakravarti, 1990; Graeff, 1997; Mooradian, and Olver, 1997).

We devote an entire chapter to health psychology (Chapter 12), where we discuss how following recommended health practices, such as exercising and not smoking, contributes to good health. We also cover clinical and counseling psychology and the various types of therapy in a separate chapter (Chapter 15).

As you can guess from the diverse nature of applied areas, psychologists who conduct applied research work in many different settings. They might work for government agencies, large corporations, hospitals, or in academia.

Areas of Psychology: A Field of Diversity

Psychologists perform a wide variety of roles in a wide variety of areas. They serve as mental health providers, researchers, consultants, and university and college professors. Often wearing more than one hat, a psychologist might teach, conduct research, and be an industrial consultant at the same time, or have a private practice of clients in therapy while conducting ongoing research. Because of its diversity, psychology is currently one of the hottest career choices (Burnette, 1994).

The U.S. Department of Labor expects that employment opportunities for psychologists will grow much faster than the average for all occupations at least through the year 2005. The expanded outlook for psychologists is partly due to retiring psychologists but also to a growing public demand for human services. Most psychologists specialize in one particular area. Some of these, but by no means all, are listed below.

Clinical and counseling psychologists assess and treat people with many different kinds of mental health problems. Students often wonder about the difference between a psychiatrist and a clinical psychologist. Psychiatrists are medical doctors;

Clinical and counseling psychologists help people with emotional problems.

Tony Latham/Tony Stone Images/New York, Inc.

they have gone to medical school and have received their M.D. degrees with a specialization in psychiatry. Thus, they are licensed to prescribe medications and drugs. In contrast, clinical and counseling psychologists have gone to graduate school and received Ph.D. degrees after intense study of human behavior and methods of therapy.

Educational psychologists study the processes of education—how people learn and which teaching techniques work best.

School psychologists work with educators to promote the intellectual, social, and emotional development of children in the school environment.

Industrial/organizational psychologists help companies run more smoothly and productively.

Developmental psychologists study physical, social, cognitive, and personality development from conception to death.

Social psychologists are interested in the behavior of people in group situations.

Comparative psychologists study animal behavior to gain insights into how both humans and other animals behave.

Educational psychologists study how people learn in order to improve the quality of education. Here, by using a one-way mirror, an educational psychologist observes children in class without being observed herself.

Jeff Greenberg/Photo Researchers

Clinical and counseling psychologists help people with emotional problems.

Neuropsychologists study the relationship of the brain and the rest of the nervous system to behavior.

Health psychologists are concerned with how psychology can contribute to maintaining good health.

Cognitive psychologists study the mental processes involved in gathering and organizing information and processing and storing it. In other words, they study sensation, perception, learning, thinking processes, language, and memory.

To get an idea of the relative number of psychologists working in different fields of psychology, see Figure 1.2. This figure shows the percentages of doctorate degrees conferred for most of the specialties we've described. Keep in mind that this is just a small sampling of the numerous areas within psychology. In fact, psychology is such a diverse field that the American Psychological Association (APA), the largest professional psychological organization, has 50 separate divisions. These are listed in Table 1.1. (There are no Divisions 4 or 11.)

WEBSITE ICONS

Topics which have important website resources are marked with a special web icon as seen here. The student resource website at http://www.wiley.com/college/wave/huffman–vernoy5e includes online tutorial quizzes, practice tests, active learning exercises, internet links to psychology related topics, additional 'check and review' questions, and many other valuable features which will be updated regularly. Visit this site often.

Psychology in Your Life: Separating Fact from Fiction

Psychology is a compelling field of study because it deals with topics that you can apply to your everyday life. For example, by reading about how people learn and remember, you might develop better study habits and create a better learning environment for yourself. By reading about interpersonal relationships, you might learn effective ways to maintain long-term friendships. By reading about motivation, you might be able to modify undesirable behaviors, such as overeating or smoking.

The study of psychology will also help you distinguish between scientifically verified explanations of behavior and explanations based on mere subjective observation. Many "scientific" claims publicized in the popular press, for example, are in fact bogus—they do not follow from scientifically collected data.

Similarly, there is no scientific basis for the many popular pseudopsychologies, or "false psychologies," that attempt to explain behavior or personality differences using nonscientific methods. Pseudopsychologies include palmistry (reading people's character or the future from the lines on the palms of their hands), psychometry (de-

Pseudopsychologies
"False psychologies," popular systems that pretend to discover psychological information through nonscientific or deliberately fraudulent methods.

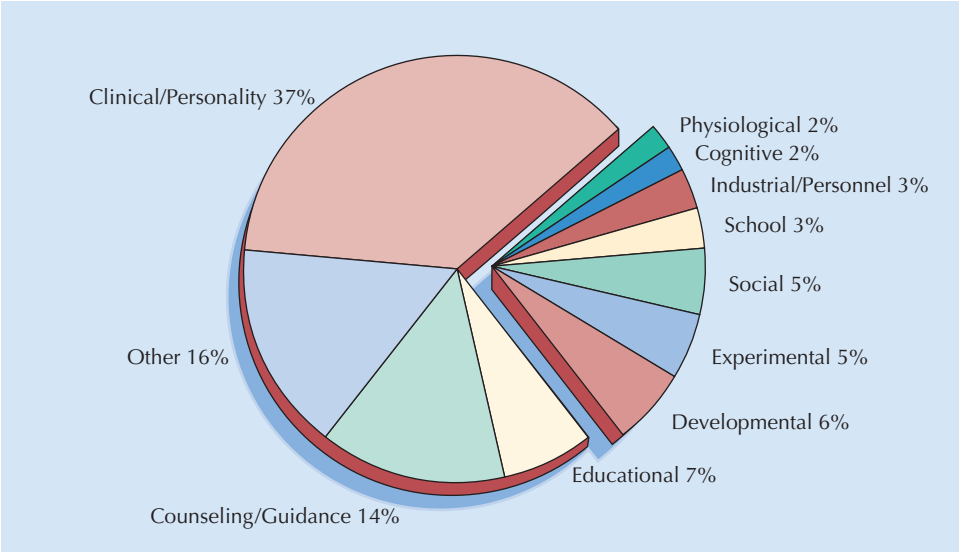


Figure 1.2 ***Percentage of psychology degrees awarded by subfield.*** Only a small number of the specialties in psychology are shown here. The American Psychological Association has 50 separate divisions.

Table 1.1 THE DIVISIONS OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

1. General Psychology
2. Society for theTeaching of Psychology
3. Experimental Psychology
4. There is no Division 4
5. Evaluation, Measurement, and Statistics
6. Behavioral Neuroscience and Comparative Psychology
7. Developmental Psychology
8. The Society of Personality and Social Psychology
9. Society for the Psycholological Study of Social Issues
10. Psychology and the Arts
11. There is no Division 11
12. Society of Clinical Psychology
13. Consulting Psychology
14. Society for Industrial and Organizational Psychology
15. Educational Psychology
16. School Psychology
17. Counseling Psychology
18. Psychologists in Public Service
19. Military Psychology
20. Adult Development and Aging
21. Applied Experimental and Engineering Psychology
22. Rehabilitation Psychology
23. Society for Consumer Psychology
24. Theoretical and Philosophical Psychology
25. Experimental Analysis of Behavior
26. History of Psychology
27. Society for Community Research and Action: Division of Community Psychology
28. Psychopharmacology and Substance Abuse
29. Psychotherapy
30. Psychological Hypnosis
31. State Psychological Association Affairs
32. Humanistic Psychology
33. Mental Retardation and Developmental Disabilities
34. Population and Environmental Psychology
35. Psychology of Women
36. Psychology of Religion
37. Child, Youth, and Family Services
38. Health Psychology
39. Psychoanalysis
40. Clinical Neuropsychology
41. The American Psychology-Law Society
42. Psychologists in Independent Practice
43. Family Psychology
44. Society for the Psychological Study of Lesbian, Gay, and Bisexual Issues
45. Society for the Psychological Study of Ethnic and Minority Issues
46. Media Psychology
47. Exercise and Sport Psychology
48. The Society for the Study of Peace, Conflict, and Violence: Peace Psychology Division
49. Group Psychology and Group Psychotherapy
50. Addictions
51. Society for the Psychological Study of Men and Masculinity
52. International Psychology

termining "facts" about an object by handling it), psychokinesis (moving objects by purely mental means), and astrology (charting how the stars and planets influence people's personalities and affairs). Although these pseudopsychologies are entertaining (horoscopes are fun to read and great conversation starters), there is no documented proof that they legitimately explain complex human behavior.

In fact, horoscopes may at times be harmful. When Ronald Reagan was president of the United States, his wife Nancy would not allow him to make certain public ap-

Chris Marona/Photo Researchers

Beware of the pseudopsychologist. Only scientific psychological research enables us to understand and predict behavior. Pseudopsychologists such as astrologers and psychics make many claims, but their unscientific methods do not qualify them to understand or accurately predict human behavior.

pearances based solely on information from her astrologer. Many astrologers and other pseudopsychologists have been proven to be frauds by a magician named James Randi. In his book *Flim-Flam!* (1982), he describes how time and time again, under carefully controlled, standardized conditions, he has exposed their phony claims.

Psychology Today magazine poked fun at pseudopsychologies in September 1983 when it held an "Invent-a-Scam" contest. Readers were asked to invent a pseudopsychology. Some of the winners included Interior Seating Therapy, which treats psychological disorders associated with furniture, such as "anorexia newsofa"; Autozodiac, which asks clients to send in the make, model, year, and serial number of their car in return for an astrological chart containing such information as descriptions of the car's individual temperament and days on which it is safe to take trips; and Fetal Terpsicology, which teaches babies to tap dance before birth. Although these "scams" were created to have fun, they illustrate the absurdity of pseudosciences and make us aware of the difference between false psychology and objective, scientific studies of behavior.

CHECK AND REVIEW

Each major section of a chapter concludes with an interim summary and four to six self-test questions which allow you to stop and check your understanding of the important concepts just discussed. These review questions give you feedback on whether you have fully mastered the major concepts in that section. Use these questions to review for exams, too. Answers for all questions are in Appendix B in the back of the text.

CHECK AND REVIEW

Understanding Psychology

Psychology is the scientific study of behavior. Psychologists use scientific research methods to investigate overt, or observable, behaviors and covert, or hidden, behaviors such as thoughts and feelings.

The goals of psychology are to describe, explain, predict, and change behavior.

Psychologists conduct research and can specialize in several areas, including clinical, counseling, educational, developmental, social, industrial and organizational psychology, and neuropsychology.

Basic research studies theoretical issues; applied research seeks to solve specific problems.

QUESTIONS

1. What is the definition of *psychology?*
2. What is the difference between overt and covert behaviors?
3. The goals of psychology are to (a) explore the conscious and unconscious functions of the human mind; (b) understand, compare and analyze human behavior; (c) improve psychological well-being in all individuals from conception to death; (d) describe, explain, predict, and change behavior.
4. How are basic and applied research different?
5. The main criticism of _____is that they attempt to explain behavior using nonscientific methods and cannot be proven true when objective, standardized methods are used.

Answers to Questions can be found in Appendix B.

PSYCHOLOGICAL RESEARCH

What is the advantage of conducting an experiment to study a research question, and how do researchers conduct experiments?

Because psychology is the *scientific* study of behavior, psychologists, like scientists in biology, chemistry, or any other scientific field, conduct investigations to methodically collect their **data.** They then piece it together bit by bit until they come to an objective conclusion. So that others—laypeople as well as scientists—can understand, interpret, and repeat their research, psychologists must follow standardized scientific procedures, in conducting their investigations. These procedures are col-

lectively known as **research methodology.** A distinct methodology is used in each of the two basic approaches to research in psychology: experimental and nonexperimental research. In this section, we will discuss the distinguishing features and methodology used in each approach.

Data
Facts, statistics, pieces of information.

Research Methodology
Standardized scientific procedures for conducting investigations.

Experimental Research: The Study of Cause and Effect

Every research study begins with an idea or question that inspires inquiry. A research question might be as simple as, What is the best way to study for a test? Then you might conduct an **experiment** to discover the answer. Only through an experiment can researchers isolate a single factor and examine the effect of that factor alone on a particular behavior (Cozby, 1996).

Experiment
A carefully controlled scientific procedure conducted to determine whether certain variables manipulated by the experimenter have an effect on other variables.

For example, when you are studying for an upcoming test, you probably try a lot of methods—studying in a quiet room, rereading highlighted sections, repeating definitions of key terms over and over to yourself, and so on—to help you remember the material. It is impossible to determine which study methods are truly effective because you probably use several before any one test. The only way you could discover which one is most effective would be to isolate each method in an experiment. Numerous experiments have been conducted concerning memory and study techniques.

If you're interested in how to develop better study habits, refer to the "Tools for Student Success" at the end of this chapter.

An experiment has several critical components. In this section, we will discuss the major ones: the theory, the hypothesis, independent variables, dependent variables, and experimental controls. A more in-depth discussion of experiments and analyzing experimental results can be found in Appendix A at the end of the book.

The Theory

Most, but not necessarily all, experimental research is generated by a theory. A scientific **theory** is an interrelated set of concepts that explains a body of data and can be used to predict results of future experiments. Theories are not guesses or hunches or beliefs. Psychological theories are explanations of behavior that are developed after extensive research and scientific observation and, as cultural researchers insist, after carefully conducted research with diverse cultures. In the Capilano Bridge experiment, Dutton and Aron were testing the theory of misattribution of emotional feelings.

Theory
An interrelated set of concepts that is developed in an attempt to explain a body of data and generate testable hypotheses.

The Hypothesis

A **hypothesis** is a possible explanation for a behavior being studied that is expressed as a prediction or a statement of cause and effect. People generate informal hypotheses all the time. For example, we sometimes hear such statements as "Children today are illiterate because they watch too much TV" or "Cloudy days make people feel depressed." These are informal explanations for behaviors that are based only on personal observation or experience.

Hypothesis
A possible explanation for a behavior being studied that can be answered or affirmed by an experiment or a series of observations.

A scientific hypothesis is based on facts and theories that have been gathered and investigated by previous researchers, as well as on personal experience and observations. It is posed in a way that indicates how the results can be measured. For example, in the Capilano Bridge experiment, the hypothesis could have been stated this way: "Participants on the suspension bridge approached by the female researcher will call for research results more often than participants in the other three conditions." A hypothesis may or may not be correct; it is merely a possible explanation for a behavior that is subject to verification through scientific study.

In the early 1960s, Stanley Milgram (1963, 1965, 1974) set out to investigate the psychological factors affecting a person's obedience to authority. After conducting extensive background research, Milgram formulated his research question and a hypothesis proposing why people obey authority figures. He also came up with an experimental plan. He would tell participants that he was studying the effects of punishment on learning and memory. Working in pairs, one participant would be the

NARRATIVE QUESTIONS
These embedded, narrative questions model for you the process of active learning and the questioning goal for the SQ4R method. This helps focus your reading and increases comprehension.

learner and the other the teacher. When the learner gave a wrong answer, the teacher was to deliver an electrical shock. With each mistake, the teacher was to increase the voltage. If the teacher balked at administering pain, the experimenter would reassure him that punishment was required. In this way, Milgram could study whether participants would obey authority figures (the experimenters) merely because of their respected position. (In actuality, Milgram hired someone to act the part of the learner and to pretend he was being shocked. Although the participants believed they were administering painful shocks, no one was physically hurt.)

What was Milgram's hypothesis? Milgram had one basic hypothesis: People will administer a shock, even a high level of shock, to a stranger merely because they are directed to do so by an authority figure. Milgram also developed and tested variations of this hypothesis, such as:

Group effects Participants will administer a higher level of shock when they are members of a group as opposed to when they are acting as individuals.

Participants' perceived personal responsibility When participants feel less responsible, they will administer greater levels of shock.

Results of experiments conducted to test these hypotheses revealed that the first hypothesis—people do obey authority—was supported throughout the many variations of Milgram's basic experiment. Brief summaries of these variations as well as their results are given in Figure 1.3. As you may be able to tell from the figure, Milgram found that modeling, or imitation, of defiance and increased sense of responsibility are the two most important factors in obedience. You might keep these findings in mind when you are questioning whether your "one voice of dissent" can make a difference in the world.

The shock generator used by Stanley Milgram in his "obedience" experiment.

Independent and Dependent Variables

Variables
Factors that can be varied and can assume more than one value.

Independent Variable
A variable that is controlled by the experimenter and is applied to the participant to determine its effect.

After generating a hypothesis, an experimenter decides on an appropriate research design to test that hypothesis. A basic part of the design is deciding which factors the experimenter will directly manipulate and which factors will be examined for possible changes. These factors are known as **variables** and are just that—factors that can vary, that can assume more than one value. Variables might be weight, time, distance between people, scores on a test, number of responses, and so on. The two major types of variables used in an experiment are independent and dependent variables.

An **independent variable** is a factor that is selected and manipulated by the experimenter and is totally independent of anything the subject does. In Milgram's study, he initially obtained a basic measurement of obedience to authority by recording responses of participants who had been directed by the experimenter to shock a

"I know how to get out, but I wouldn't give them the satisfaction."

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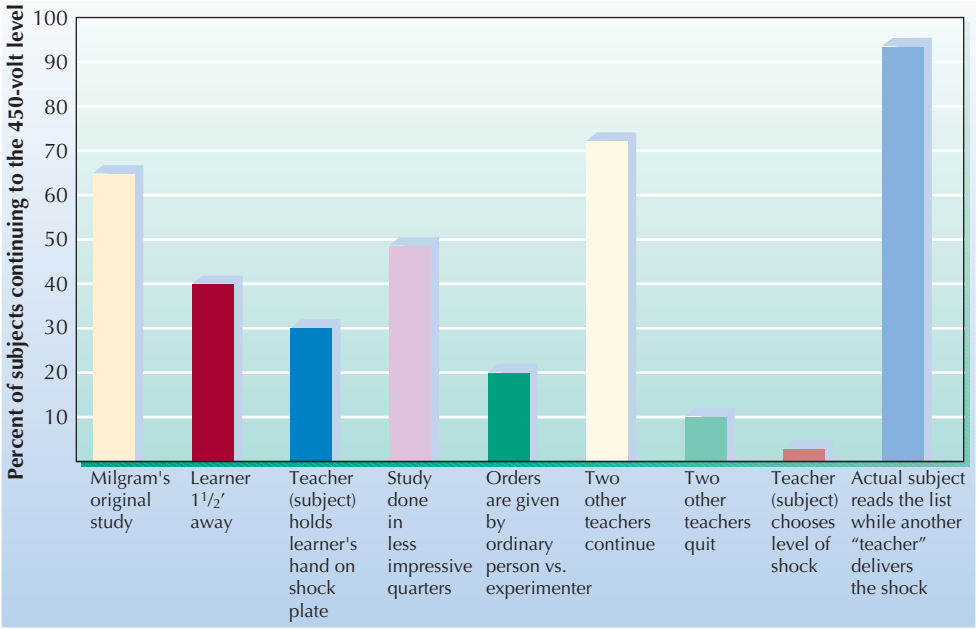


Figure 1.3 ***Degrees of obedience to different experimental conditions that Milgram posed.*** To test his hypothesis, Milgram set up different test conditions.

learner in a separate room. He then manipulated various factors, such as the proximity of the learner to the participant, whether or not the experimenter was present, and the gender of the participant, among others, to determine their effect on obedience. These manipulated factors were Milgram's independent variables.

In contrast to the independent variable, which is selected and manipulated by the experimenter, the **dependent variable** is a measurable behavior exhibited by the participant. It is a result of, or is dependent on, the independent variable. In Milgram's experiments, the dependent variable was always the same—the highest level of shock administered by the participant.

Dependent Variable
A measurable behavior that is exhibited by a participant and is affected by the independent variable.

Experimental Controls

Experimental design requires at least two groups of participants so that the performance of one group can be compared with the other's. Ideally, the only way these groups differ is in the amounts or levels of the independent variable. For example, Helene Intraub (1979) conducted an experiment to determine whether rehearsal (repeating something over and over) improves memory for faces. Her independent variable was the amount of rehearsal time between presentation of the faces. Results of the experiment indicated that participants in the groups allotted greater amounts of rehearsal time recognized more faces than those given lesser amounts. Because the only difference between the groups was rehearsal time, it can be concluded that increased rehearsal time causes better recognition of faces.

Often, one group of participants will be assigned to a zero, or **control condition,** meaning they are not exposed to any amount of the independent variable. If, in her memory experiment, Intraub had wanted to have a control group, she might have asked participants to perform a totally unrelated task between presentations of the faces, such as counting backward from 998 by sevens as fast as possible. Thus, they would have had no opportunity to rehearse the faces. Having a control group allows the experimenter to make broader generalizations about the results of the experiment than could be made otherwise, but there are always at least two groups in an experiment for comparison purposes.

Control Condition
The part of an experiment in which participants are treated identically to participants in the experimental condition, except that the independent variable is not applied to them.

Often, in drug-related research, participants in the control condition are given a pill or an injection that appears identical to the one given to participants in the

Experimental Condition
The part of an experiment in which the independent variable is applied to the participants.

Placebo
A substance that normally produces no physiological effect that is used as a control technique, usually in drug research.

Placebo Effect
A change in participants' behavior brought about because they believe they have received a drug that produces that change when in reality they have received a placebo, an inert substance.

experimental condition. The pills or injections in the control condition, however, contain only inert substances such as sugar or distilled water. These fake pills and injections are called **placebos.** Researchers use placebos because they have found that the mere act of taking a pill or receiving an injection can change the behavior of a participant. Thus, to ensure that a particular effect is indeed due to the drug being tested and not to the **placebo effect,** control participants must be treated exactly as the experimental participants, even if this means going through the motions of giving them drugs or medications.

Assigning Participants to Groups

In creating groups, the experimenter may randomly assign participants and hope that people with similar characteristics do not all wind up in the same group. However, if there are factors that may have a bearing on the results, such as educational level in a memory experiment, the experimenter may decide to match participants as closely as possible. This can be done with a pretest, a survey, or some other means.

Milgram was particularly careful to match members of his groups according to age level (*i.e.*, each group was composed of the same percentage of participants in their twenties, thirties, and forties) and occupational background (each group had the same percentage of skilled and unskilled workers, sales- and businesspeople, and professional workers). Researchers who are comparing behaviors of people from different cultures must also pay careful attention to such factors when they are assigning people to groups.

All participants must understand what is expected of them, so the wording of the instructions is also extremely important. The stimuli must also be equally familiar to all participants. (Stimuli are the objects presented for the participant's response.) Serpell (1976) described the importance of controlling for factors that could affect the results of a study. Adults from a tribe living in a remote area of Ethiopia were presented with pictures and photographs printed on paper. In the initial study, they smelled, tasted, and rustled the papers and showed no response to the pictures. In a follow-up study using drawings on cloth, which was more familiar to them, they were not distracted by an unfamiliar stimulus and responded appropriately to the pictures.

In every experiment, the researcher takes care to assure that all extraneous variables (those that are not being directly manipulated or measured) are held constant. That is, factors that should have no bearing on the experimental results, such as the on-again, off-again noise of an air conditioner, need to be kept constant (the same) for all participants so that they do not affect participants' responses.

Milgram's obedience experiment was particularly well controlled. The instructions were the same for all conditions, and the learner gave identical responses for the level of shock being administered. At 285 volts, he merely let out an agonized scream; at 300 volts, he let out an agonized scream and said, "I absolutely refuse to answer any more. Get me out of here. You can't hold me here. Get me out. Get me out of here." At 315 volts, he let out an intensely agonized scream, then said, "I told you I refuse to answer. I'm no longer part of this experiment."

Some variables, of course, are irrelevant to the research and can be ignored; there was no need for Milgram to control for participants' eye color or handedness, for example. If the appropriate variables have been controlled, any change found in the dependent variable should be attributable only to the independent variable. The researcher should be reasonably able to assume that the independent variable is the cause of the change in behavior.

Bias in Research

Besides extraneous variables, there are other details that must be controlled. Experimenters, like all people, have their own personal beliefs and expectancies. As they collect data, they may inadvertently give subtle cues or treat subjects differently in accordance with their expectations. For example, an experimenter may unintentionally breathe a sigh of relief when a subject gives a response supporting the hypothe-

sis. This tendency of experimenters to influence the results in the expected direction is called **experimenter bias.**

Experimenter Bias
The tendency of experimenters to influence the results of a study in the expected direction.

Experimenters can prevent experimenter bias in several ways. One technique is to run a **double-blind** experiment, in which both the experimenter and the participants are unaware of which participants are part of the control group and which are part of the experimental group. That is, other members of the investigating team assure that both the experimenter administering the drug and all participants are, in a sense, blindfolded as to who is receiving the placebo and who is receiving the drug itself.

Double-Blind Experiment
An experiment in which neither the experimenter nor the participants know which treatment is being given to the participant or to which group the participant has been assigned.

Other techniques to prevent experimenter bias include using recording methods that are as objective as possible and enlisting neutral people other than the experimenter to interact with the participants and collect the data. Milgram employed both of these techniques: He used an automatic recording device to record participants' responses, and he hired a high school teacher to play the role of experimenter.

Another bias that cultural researchers need to control is **ethnocentrism,** assuming that just because a certain behavior is typical in their own culture, it is typical in all cultures. One way to avoid ethnocentrism is to have two researchers, one from one culture and one from another, conduct the same research study two times, once with their own culture and once with the other culture. By comparing the four studies, differences due to ethnocentrism can be isolated from actual differences in behavior between the two cultures (Berry et al., 1992).

Ethnocentrism
The belief that behavior in your culture is typical of all cultures.

Another type of bias is called sample bias. A **sample** is a group of experimental participants selected to represent a larger group, or **population. Sample bias** is the tendency for the sample to be not truly representative, or typical, of the population being studied. For example, considerable research has been done on heart disease. The research, however, has been conducted almost exclusively with males. Doctors apply findings from this research to the treatment of all their patients, both male and female, with no regard to the male sample bias in the original research. Because the purpose of conducting experiments is to apply, or generalize, the results to a wide population, it is extremely important that the sample represent the general population.

Sample
A selected group of participants that is representative of a larger population.

Population
The total of all possible cases from which a sample is selected.

Sample Bias
The tendency for the sample of participants in a research study to be atypical of a larger population.

Ideally, research psychologists choose their participants randomly from the population being studied. Proper random selection will likely produce a representative, unbiased sample. Random assignment of these participants to the different experimental conditions will further control for any possible biases. It is also important that the sample is big enough: the larger the sample, the more likely it will represent a cross section of the entire population. Researchers generalizing results to the entire human population must take care to consider differences among the various world cultures and include subjects that are representative of many cultures.

Isn't a lot of research conducted with college students or with animals? How can you generalize these results to people in the real world?

This can present a problem. Milgram realized that his most available source of experiment participants, Yale undergraduates, represented only a small percentage of the general population. They were highly intelligent, in their late teens or early twenties, and many had had some recent experience with psychological studies. Therefore Milgram recruited from the community surrounding Yale; he found participants ages 20 to 50 from a wide variety of occupational backgrounds and paid them to participate.

Not all researchers have funds to pay their participants, however. This is why a large percentage of psychological research is conducted with animals and college students. Most often, these participants are sufficiently similar to the general population in the behaviors under investigation that the study results can be generalized to the general population. For example, David Hubel (1984), who has conducted extensive research on brain physiology, has stated: "The principles of [nerve] function are remarkably similar in animals as far apart as the snail and man. . . . Even the major structures of the brain are so similar in, say, the cat and man that for most problems it seems to make little difference which brain one studies" (p. 4).

RESEARCH HIGHLIGHT

Love on a Suspension Bridge

More than a quarter of a century has passed since Donald Dutton and Arthur Aron (1974) asked tourists to walk out to the middle of the suspension bridge and write a story. But the effect of arousal on interpersonal attraction remains a hot topic in psychology. Dutton and Aron believed that the *misattribution theory* explained their results. That is, the male tourists' physiological arousal associated with being on a dangerously high, swaying bridge was misattributed to an attractive research assistant. As often happens in research, not everyone agreed with Dutton and Aron's interpretation of their experimental results.

Three years after the original research, Robert Kenrick and Donald Cialdini (1977) suggested that *negative reinforcement theory* was a better explanation for what happened on the Capilano Canyon Suspension Bridge. They argued that the presence of another person on the bridge, the research assistant, diminished the fear associated with walking on the bridge and the tourists therefore held her in high esteem. (This process is called negative reinforcement and is discussed in Chapter 5.)

More than a decade later, Allen, Kenrick, Linder, and McCall (1989) proposed what they felt was a less complicated explanation. They suggested that the increased arousal was not misattributed to the attractive research assistant. Rather, the increased arousal by being on the swaying bridge merely increased the tourists' attraction to any good-looking person of the opposite sex. They called this the *response-facilitation theory*.

In 1998 Craig Foster, Betty Witcher, W. Keith Campbell, and Jeffrey Green conducted another experiment to explain the effects of arousal on interpersonal attraction. First, though, they surveyed the psychological literature (they looked for all the studies that had previously been conducted on the topic) to determine which variables should be controlled, which should be manipulated (independent variables), and which should be measured (dependent variables).

They found, as you might expect, that the most common independent variables were the amount of arousal and the target of the attraction (same sex, opposite sex). They also determined that a major variable that needed to be controlled or manipulated was the ambiguity of the arousal. In some experiments, the source of the arousal was very clear (a proposed electrical shock), whereas in others, it was more ambiguous (walking out onto a suspension bridge).

After reviewing the literature, Foster's group proposed what they called the *judgment and adjustment model* of arousal and attraction. This model proposes two stages to the arousal–attraction connection. During the first stage, the participant automatically attributes the arousal to the attractive person, no matter what the source of the arousal. During the second stage, the participant has a chance to reevaluate the initial judgment and may correct the mistaken attribution of the arousal.This correction would be based on the participant's knowledge of the source of the arousal and how arousal affects attraction. Foster and his colleagues designed an experiment to test this theory.

The experiment was relatively simple. Each participant was asked to exercise for two minutes to increase their heart rate and blood pressure, thus inducing arousal. Next, they were asked to look at photographs of two women of average attractiveness and rate them, either while performing a distraction task or while doing nothing else. The distraction task was intended to keep the participant from noticing that the original source of the arousal was the exercise, even though he may have attributed it to the women. The results indicated that indeed the women in the distraction condition were rated as more attractive than the women in the other condition, therefore supporting the judgment and adjustment model.

Thus, something as simple as a man meeting an attractive woman on a suspension bridge can lead to over a quarter century of psychological research. Each chapter in this book features a Research Highlight, a hot research topic presented in some detail and related to that chapter.

RESEARCH HIGHLIGHTS

This new feature offers brief discussion of important research in psychology. Recent, relevant, high interest topics are explored and summarized so students understand and appreciate the latest developments in the field.

CHECK AND REVIEW

Experimental Research

Research methodology includes experimental techniques designed to investigate cause-and-effect relationships and nonexperimental techniques that describe behavior.

An experiment begins with a hypothesis or possible explanation for behavior. Independent variables are the factors the experimenter manipulates, and dependent variables are measurable behaviors of the participants. Experimental control includes assigning participants to groups and holding extraneous variables constant.

QUESTIONS

1. Why is an experiment the only way we can determine the cause of a behavior?
2. A _____ is a tentative explanation for behavior.
3. When Milgram varied the distance between the "learner" and the participant in one of his experiments, the distance was the _____ variable, and the highest level of shock administered by the participant was the _____ variable.
4. Participants in a _____ condition are exposed to a zero level of the independent variable.
5. Why do many researchers use computers to record participants' responses and hire uninformed people to run their experiments?

Answers to Questions can be found in Appendix B.

Nonexperimental Research: Studying the Correlates of Behavior

What are the nonexperimental research techniques, and what are their merits and limitations?

Sometimes it is not feasible for ethical or practical reasons to study behavior experimentally, so researchers have developed a number of nonexperimental techniques. These techniques include naturalistic observation, surveys, and individual case studies. Although none of these methods can be used to determine the causes of behavior, they can be quite valuable in determining relationships between variables and providing information vital to making predictions of future behavior.

Naturalistic Observation

Naturalistic Observation
The systematic recording of behavior in the participant's natural state or habitat.

When using **naturalistic observation,** researchers systematically record the behavior of participants in their natural state or habitat. This habitat may be the jungle in a study of chimpanzees, a classroom in a study of third graders (Josephson, 1987), or the streets of Recife, Brazil, in a study of child street vendors (Saxe, 1991). Researchers Cheney and Foss (1984) used naturalistic observation in a study of social problems that mentally impaired workers encounter. They observed mentally retarded people in their work setting and recorded 355 distinct social problems. Most involved interpersonal problems with supervisors or coworkers and disruptive or distractive behavior patterns on the part of the mentally retarded workers. Analyzing the nature of such problems can provide valuable information for assessing and training mentally retarded people.

Ideally, a researcher using naturalistic observation tries to be discrete. If participants realize they are being observed, their behavior becomes unnatural. For example, have you ever been driving down the street, singing along with the radio, only to stop in the middle of a phrase as you realized that the person in the next car is watching you? The same type of thing normally happens when participants in scientific studies realize they are being observed.

Baron Hugo Van Lawick/ National Geographic Society

Jane Goodall has used naturalistic observation to amass a great deal of information about the behavior of chimpanzees in the wild.

Surveys

Nonexperimental research techniques for sampling behaviors and attitudes of a population.

The chief advantage of using naturalistic observation is that researchers obtain data about a truly natural behavior rather than a behavior that is in reaction to a contrived experimental situation. If the Cheney–Foss study had taken place in a lab instead of the actual workplace, the workers would probably have acted quite differently. On the other hand, naturalistic observation can be difficult and time-consuming, controls are lacking, it is difficult to generalize the results of the research, and scientific objectivity may be lost if the experimenters interact with their participants.

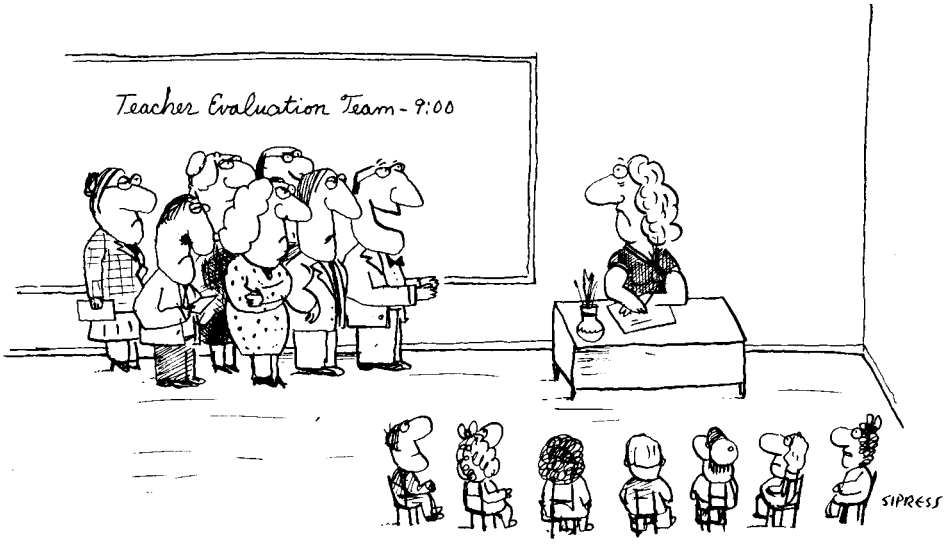
Surveys

Surveys, tests, questionnaires, and interviews (we will refer to them all as "surveys") are similar techniques for sampling a wide variety of behaviors and attitudes. They range from personality inventories that probe the makeup of individuals to public opinion surveys like the well-known Gallup and Harris polls.

The survey technique was used in a study conducted by Scott Plous, who wanted to develop a portrait of animal rights activists in the United States. At a large animal rights rally in Washington, D.C., in June 1990, he surveyed 574 people. After asking them whether they considered themselves animal rights activists (402 did) or nonactivists (172), he asked them what they felt the agenda of the animal rights movement should be. Table 1.2 (Plous, 1991) shows a portion of the survey results. As you can see, just over half the activists felt that the single highest priority of the animal rights movement should be animals used in research, while only one-quarter of the nonactivists agreed.

Surveys enable researchers to describe the characteristics of a relatively small sample, say, a few hundred people, and then generalize that information to a larger population. For example, by surveying only 402 animal rights activists, Plous might generalize his results to the entire animal rights movement. For surveys to be effective research tools, the wording of questions must be as unambiguous and unbiased as possible. Researchers must also be careful that the sample is representative of the population. To get a random representative sample of activists, Plous deployed his research team to several different street corners, and they randomly approached people on the way to the rally.

Survey techniques cannot, of course, be used to explain causes of behavior, but they can be used to predict behavior. Plous could not pinpoint the causes of the activists' beliefs, but the results of his survey can be used to predict the attitudes and goals of animal rights activists in the United States.



Drawing by David Sipress

Table 1.2 WHAT SHOULD THE ANIMAL RIGHTS MOVEMENT FOCUS ON MOST?

The Treatment of:	Activists[a]	Nonactivists
Animals used in research	54	26
Animals used for food	24	8
Animals used for clothing or fashion	12	22
Animals in the wild	5	30
Animals used in sports or entertainment	4	14
Animals used in education	1	0

[a]Figures indicate the percentage of respondents giving each answer.

TRY THIS YOURSELF ACTIVITIES

In each chapter you will find several opportunities to apply what you are learning. These "Try This Yourself" sections are clearly identified with a special heading shown above. These activities are brief and fun to do. Research shows that actively involving yourself in learning increases comprehension and retention.

Try This Yourself

Why don't you conduct your own survey? Station yourself at a conspicuous spot on campus, in your dorm, or some other place. Ask random passersby whether they consider themselves animal rights activists or nonactivists. Then ask them the question posed in Table 1.2 and indicate their response next to the appropriate item. How do your survey results compare with Plous's?

Case Studies

Suppose a researcher wants to investigate "photophobia," fear of light. Most people are not afraid of light, so it would be almost impossible to gather enough participants to conduct an experiment or use surveys or naturalistic observation. To investigate such rare disorders, researchers usually find a single person who has the problem and study him or her intensively. Such an in-depth study of a single research participant is called a **case study.**

Case Study
An in-depth study of a single research subject.

In a case study, many aspects of a person's life are examined in depth in order to describe the person's behavior and evaluate any treatments in use. For example, in 1995, Oliver Sacks reported the case of Mr. I., a successful artist who lost the ability to see color after a head injury in a minor traffic accident. Sacks documented the problems Mr. I. encountered and the ways that Mr. I. solved these problems. For one thing, Mr. I. found color television very confusing. The images were hard to interpret, and the effect in general was unpleasant. Mr. I.'s simple solution was to watch black and white TV. Trauma-induced color vision loss is relatively rare, but Oliver Sacks' study of Mr. I. will be invaluable in helping others with the same problem.

Correlation versus Experimental Methods: Which Is Appropriate?

Having studied both experimental and nonexperimental research techniques, let's look at the advantages and disadvantages of each. Carefully controlled experiments are very powerful tools for discovering the causes of behavior. In his research on Mr. I., however, Oliver Sacks used the case study because it was the only appropriate technique. In many instances, the only appropriate research technique is nonexperimental, especially when studying human behavior. In fact, it would be impossible to study some variables in any other way. For example, it would be unethical to administer a drug to one group of pregnant women and none to another group to see whether the drug causes birth defects. The only way to study such topics as brain

damage, suicide, mental illness, alcoholism, divorce, and drug abuse is to observe them as they occur naturally (Cozby, 1996).

Correlation
The relationship between variables.

Although nonexperimental techniques do not allow researchers to determine the causes of behavior, they do indicate a **correlation,** or relationship, between variables being studied. When any two variables are correlated, a change in one variable is accompanied by a concurrent change in the other. Correlation is not a matter of either/or. It is a matter of degree. The greater a correlation, the closer the relationship between the two variables.

Types of Correlation

Two variables may be correlated in any one of three ways:

- If both variables vary in the same direction—both go up or both go down—the relationship is described as positive. For instance, salary and years of education are positively correlated because the people making the highest salaries tend to be the ones who have gone to school the longest.
- Conversely, if two variables vary in the opposite direction—as one goes up, the other goes down—the relationship is negative. For example, grade point average and the number of hours of television watched per day are negatively correlated because people who watch a lot of television tend to get lower grades.
- Finally, variables that are not at all related have a zero correlation. The relationship between personality and the movement of distant stars illustrates a zero correlation. Contrary to strong beliefs in astrology held by a surprising number of people, there is absolutely zero correlation between the position of stars at the time you are born and your personality.

Correlational Studies

Correlational methods have produced important research. Some of the most well-known is on the relationship between heredity and schizophrenia (Alenan, 1997; Lennox, & Jones, 1997; Murphy, & Gill, 1996). (Schizophrenia is a type of mental disorder characterized by disorganized thinking and disturbed emotions). Studies have been done comparing the development of schizophrenia in identical twins and fraternal twins. Identical twins inherit identical genes from the parents, whereas fraternal twins are no more alike than brothers and sisters born at different times. If one identical twin develops schizophrenia, the other twin has a 41–63 percent chance of also becoming schizophrenic; but when one fraternal twin develops schizophrenia, the other twin has only a 12–21 percent chance (Bernheim and Lewine, 1979; Gottesman and Shields, 1982).

Courtesy Monte Buchsbaum, Mount Sinai Medical Center

Correlation studies show that schizophrenia tends to run in families. Each of the Genain Quadruplets was diagnosed with schizophrenia.

Do studies of twins prove that schizophrenia is inherited? Absolutely not. Investigators may identify possible reasons for correlations between variables, but nonexperimental techniques provide no means for proving them. In the case of schizophrenia, correlational studies indicate a strong genetic disposition toward its development. But environmental stresses, particularly family dysfunction, also play a significant role (see Hans and Marcus, 1987; McGue, 1992; Ratner, 1982; Torrey, 1992). Only through experimental research can we determine what causes schizophrenia.

A study conducted in Taiwan demonstrates how absurd it is to assume that when two factors are correlated, one must cause the other. Li (1975) wanted to determine which factors correlated with the use of birth control. Of the variables tested, it was found that the variable most strongly related to the use of contraceptives was the number of electric appliances (toasters, can openers, popcorn poppers, and so on) in the home. Does this mean, then, that Planned Parenthood should pass out toasters to reduce teenage pregnancy? Of course not. Just because electrical appliances and the use of birth control methods are correlated, it does not follow that electrical appliances cause people to use birth control. We cannot state this strongly enough: *Correlation does not imply causation.*

This is not to say that nonexperimental studies are useless. The descriptions and correlations obtained from nonexperimental studies can lead to predictions of behav-

CRITICAL THINKING/ ACTIVE LEARNING EXERCISES

Each chapter contains a special active learning exercise which provides important insight into the chapter material while also improving your basic critical thinking skills.

Becoming a Better Consumer of Scientific Research

CRITICAL THINKING
Active Learning

The news media, advertisers, politicians, teachers, close friends, and other individuals frequently use research findings in their attempts to change your attitudes and behavior. How can you tell whether their information is accurate and worthwhile?

The following exercise will improve your ability to critically evaluate sources of information. It is based on the concepts you learned in the previous discussion of psychological research techniques. Read each "research" report and decide what the primary problem or research limitation is. In the space provided, make one of the following marks:

CC = The report is misleading because correlation data are used to suggest causation.

CG = The report is inconclusive since there was no control group.

EB = The results of the research were unfairly influenced by experimenter bias.

SB = The results of the research are questionable because of sample bias.

_____1. A clinical psychologist strongly believes that touching is an important adjunct to successful therapy. For two months he touches half his patients (Group A) and refrains from touching the other half (Group B). He reports a noticeable improvement in Group A.

_____2. A newspaper reports that violent crime corresponds to phases of the moon. The reporter concludes that the gravitational pull of the moon controls human behavior.

_____3. A researcher interested in women's attitudes toward premarital sex sends out a lengthy survey to subscribers of *Playboy* and *Cosmopolitan* magazines.

_____4. An experimenter is interested in studying the effects of alcohol on driving ability. Prior to testing on an experimental driving course, Group A consumes 2 ounces of alcohol, Group B consumes 4 ounces of alcohol, and Group C consumes 6 ounces of alcohol. The researcher reports that alcohol consumption adversely affects driving ability.

_____5. After reading a scientific journal that reports higher divorce rates among couples who live together before marriage, a college student decides to move out of the apartment she shares with her boyfriend.

_____6. A theater owner reports increased beverage sales following the brief flashing of a subliminal message to "Drink Coca-Cola" during the film showing.

Answers: 1. EB; 2. CC; 3. SB; 4. CG; 5. CC; 6. CG

ior, and these predictions can be of considerable value. For example, the Taiwan study may lead researchers to seek a variable that relates to both the number of appliances and contraceptive use, such as socioeconomic level. If a strong correlation exists between these three variables, we might be able to predict that the higher the socioeconomic level, the greater the contraceptive use. Knowing this, family planning agencies can target people of different socioeconomic levels when designing and distributing birth control information.

Evaluating Research: Are the Findings Significant?

How do researchers know whether the information they have collected really measures the behavior they are studying? Researchers use certain criteria to ensure that research results will be accurate, legitimate measures of the hypothesis. These criteria vary according to the type of study being conducted, but they include controlling for experimenter or researcher bias, controlling extraneous influences, ensuring that the sample size is substantial, and ensuring that the sample is representative

CHECK AND REVIEW

Nonexperimental Research

Research methodology includes experimental techniques designed to investigate cause-and-effect relationships and nonexperimental techniques that provide descriptions of behavior.

Nonexperimental research techniques are used to obtain descriptions of behavior. Naturalistic observation is used to study behavior in its natural habitat. Surveys use interviews or questionnaires to obtain information about a sample of participants. Individual case studies are in-depth studies of a single participant.

Experiments enable us to determine causes for behaviors, whereas correlational relationships only enable us to predict behaviors.

Psychologists use statistics to judge whether research findings are significant or due to chance.

QUESTIONS

1. If two things are highly correlated, does that mean that one thing causes the other?
2. _____ consist of data that are gathered during an experiment as well as the analysis of the data using mathematical formulas and procedures.
3. Why would a researcher want to replicate a research study?
4. Maria is thinking of running for student body president, but she wonders whether her campaign should emphasize campus security, improved parking facilities, or increased health services. Which scientific method of research would you recommend she use to determine the focus of her campaign? (a) case study; (b) naturalistic observation; (c) an experiment; (d) a survey
5. Which of the following statements summarizes the important difference between nonexperimental and experimental research? (a) In nonexperimental research, behavior is observed as it occurs; in experimental research, the conditions under which behavior occurs are controlled. (b) Experimental research allows scientists to make predictions; nonexperimental research does not. (c) Experimental research is more scientific as compared to nonexperimental research. (d) Nonexperimental research takes less time to perform compared to experimental research.

Answers to Questions can be found in Appendix B.

of the population to which the results will apply. However, even when researchers follow proper procedures, research results must be analyzed statistically. **Statistics** consist not only of the data (the numbers) that are recorded when some behavior is measured, but also analyses of these data according to specific rules and mathematical formulas. Statistical analysis is used to determine whether any relationships or differences among the variables are significant. A **statistically significant** relationship or difference is one that the experimenter has good reason to believe is true or real and not due merely to chance or coincidence. Statistics and the concept of significance are examined in detail in Appendix A at the end of the book.

Statistics
Data collected in a research study and the mathematical procedures used to analyze the data.

Statistically Significant
A relationship believed not to be caused by chance.

Another way to determine whether research results are legitimate is to **replicate** the research project by conducting the same study again following the same procedure. Milgram's obedience study has been replicated countless times, with similar results, both by Milgram himself and other researchers (Kilham and Mann, 1974; Shanab and Yahya, 1977). As more and more replications confirm the results of the original research, it becomes more evident that the research findings are valid and can legitimately be applied to real-world situations.

Replicate
To conduct a research study again, following the same procedure.

Replication is also conducted for other reasons. When examining research reports, psychologists might question some aspect of the research. For example, they may dispute results that are not consistent with other research findings or with theoretical expectations. Or they may detect an error in methodology, in procedure, or in some other aspect of the study. As a result, they decide to replicate the study. The findings of such replications may either support or refute the original research. If replications do not support the research, the problem requires further study.

ETHICS IN PSYCHOLOGY

The American Psychological Association (APA) recognizes the importance of maintaining high ethical standards in research, therapy, and all other areas of professional psychology. The preamble to their publication *Ethical Principles of Psychologists* (1990) admonishes psychologists to maintain their competence, to retain objectivity in applying their skills, and to preserve the dignity and best interests of their clients, colleagues, students, research participants, and society.

How are research and clinical psychologists encouraged to uphold ethical behavior and procedures?

Research Ethics: Respecting the Rights of Research Participants

Think back to Milgram's obedience experiment for a moment. In that study participants were led to believe that they were administering shocks to an unfortunate "learner." The learner was actually a confederate, or accomplice, of the experimenter, who only pretended to be in pain. The role was played by a 47-year-old accountant who delivered a believable performance as the desperate, protesting learner. Can you imagine how Milgram's participants must have felt when they discovered they had been tricked and that the turmoil they had gone through had been purposely created?

Because of this deception, Milgram's experiment has been criticized on ethical grounds. Critics point out that participants may have suffered from feelings of guilt and remorse after the experiment, as well as intense inner conflict and stress during the experiment (Baumrind, 1985). Milgram (1974) argued that he took great care to assure both the short- and long-term psychological well-being of his participants. In post experimental sessions, Milgram informed participants about the true nature of the experiment, discussed the research with them, and took pains to reassure them that whatever behavior they exhibited—obedient or defiant—was normal and in keeping with that of other participants. He also sent a five-page summary of the research results to each participant.

Studies such as Milgram's raise a number of questions about ethics in psychological research. These questions are addressed in a special publication of the APA, *Ethical Principles of Psychologists* (1990).

One of the chief principles set forth is that an investigator should obtain the participant's "informed consent" before initiating an experiment. The researcher should fully inform the participant as to the nature of the study and come to an agreement with the participant on the responsibilities of both the experimenter and participant. Milgram, of course, did not obtain such "informed consent." He deceived participants by telling them that they were involved in a study of learning and memory.

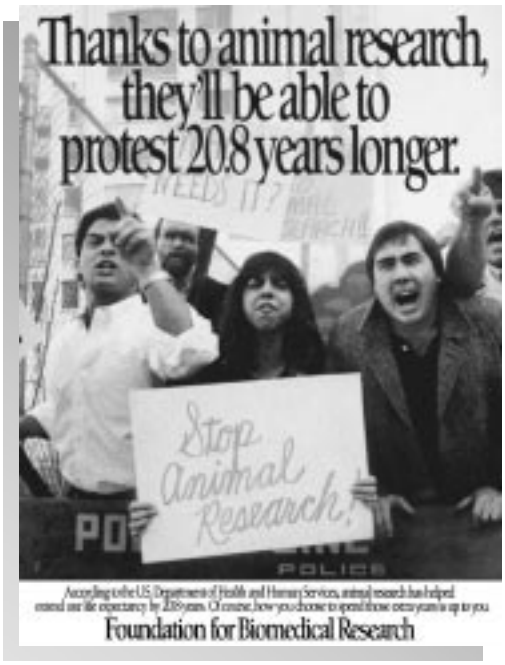
But if Milgram had told his participants he was studying obedience, wouldn't they have behaved differently? Yes, that's probably true. That's the reason why deception research is conducted. If participants knew the true purpose behind some studies, they would almost certainly not respond normally. Therefore, APA acknowledges the need for some deception research. However, researchers conducting this research are expected to follow strict guidelines, which include **debriefing** participants at the end of the experiment. Debriefing should explain the reasons for conducting the research and clear up any misconceptions or concerns on the part of the participant. Milgram did indeed debrief his participants and send them research results.

Debriefing
Explaining the research process to participants.

Animals in Research: Is It Ethical?

Although Milgram's learners were not really shocked, there has been some research in which electric shock or some other type of unpleasant or aversive treatment has been administered to animals. In recent years, this type of research has been brought to the public's attention by animal rights groups opposed to animal research and to improper care of laboratory animals (American Psychological Association, 1997; Plous, 1996a, 1996b; Roush, 1996). Such research is extremely rare, however, and psychologists argue that it is conducted only when there is no alternative way to study the behavior in question or when applications of the research justify the nature of the experiment. Only about 7–8 percent of all psychological research is done on animals, and 90 percent of the animal research is done with rats and mice (American Psychological Association, 1984). In most institutions where animal research is conducted, animal care committees are established to ensure proper treatment of research animals, to review projects, and to set guidelines in accordance with the APA standards for the care and treatment of research animals.

Rafael Macia/Photo Researchers



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Considerable media attention has been paid to animal rights groups who continue to protest the use of animals in psychological and medical research.

Most studies involving animals consist of naturalistic observation or learning experiments using reward rather than punishment (Gallup and Suarez 1985; Mesirow, 1984). Animals are used instead of humans because "time requirements [as in studies of aging], risk, or other conditions make it impossible to use humans" (APA, 1984). Animal research has benefited humans in many ways (Johnson, 1991; Loftus, 1999). Research on learning in rats and pigeons has led to the development of programmed learning materials. Research in teaching sign language to chimps and gorillas has led to a better understanding of human language. Research involving the effects of drugs on unborn animals has demonstrated the risks of maternal alcohol and other drug use for human babies.

Animal research has also benefited animals. For example, natural environments have replaced cages for many animals in zoos, successful breeding techniques have been developed for endangered species, and more effective training techniques have been developed for pets and wild animals in captivity. However, despite the benefits of animal research, the use of animals in psychological research will continue to be an ethical problem for psychologists in the future (see Gallup and Suarez, 1985; Herzog, 1988; Miller, 1991; Ulrich, 1991).

Clinical Practice Ethics: Respecting the Rights of Clients

Psychotherapy
Applying psychological principles and techniques to the treatment of mental disorders or to the problems of everyday adjustment.

Successful **psychotherapy** requires that clients reveal their innermost thoughts and feelings during the course of treatment. Thus, clients need to develop a sense of trust in their therapists. This places a burden of responsibility on therapists. They must maintain the highest ethical standards in upholding this trust.

Therapists are expected to conduct themselves in a moral and professional manner. They should remain objective while becoming sufficiently involved with the clients' problems to know how to best help them. They should encourage their clients to become involved not only in deciding the best type of treatment but also in the treatment process itself. A therapist is expected to make adequate measures of clients' progress and to report that progress to them.

All personal information and therapy records must be kept confidential, with records being available only to authorized persons of whom the client is aware. Such confidentiality can become an ethical issue when a client reveals something that might affect or possibly injure another person. For example, if you were a therapist, what would you do if a client revealed plans to commit murder? Would you alert the police or uphold your client's trust? It is a difficult decision. But therapists must protect not only their clients' interests but the interests of others as well, so they should be expected to report what they know. Similarly, therapists are required by law to report any disclosures of child abuse.

Is it ethical for psychologists to hand out advice to callers on radio and TV talk shows, as on the sitcom* Frasier *or the Dr. Laura radio program? Ethical concerns also come into play when psychologists dispense diagnoses and advice over the radio or on TV. Many psychologists disapprove of talk-show psychology because it is impossible to accurately assess people's problems in such a short period of time. Moreover, listeners may apply advice to themselves, which could lead to problems since no two people or situations are alike (DeAngelis, 1997; Heaton and Wilson, 1995). At the same time, talk-show psychologists and others argue that on-air interviews are supportive and rather general in nature. If problems are serious, they often suggest that callers seek counseling with a qualified therapist. They also maintain that radio psychologists benefit thousands of listeners by acquainting them with psychologists and with psychological principles and techniques that they might apply to their own personal problems (Schwebel, 1982).

Nonetheless, it is impossible for a listener to evaluate the credentials of a talk show "psychologist." One of the most popular is not a psychologist at all. Dr. Laura Schlessinger, who has one of the top rated radio programs in the country, dispenses

Timothy Rue/Corbis-Bettmann

Photofest

Radio "psychologists" such as Dr. Laura or the television character Frasier face many ethical concerns when giving advice over the air.

advice on relationships, how to raise children, and how to deal with emotional problems, but her doctorate is not in psychology or even in medicine. It is in physiology—the study of the human body. She is not a licensed psychologist, and her opinions are not based on psychological training. They are merely her opinions. If you or a friend is in need of psychological counseling, seek out a licensed clinical psychologist, not a radio talk-show host.

CHECK AND REVIEW

Ethics in Psychology

Psychologists are expected to maintain high ethical standards in their relations with human and animal research participants and in therapeutic relationships with clients. The APA has published specific guidelines detailing these ethical standards.

QUESTIONS

1. If a friend of yours agreed to be an accomplice in your experiment and pretended to be another subject, your friend would be known as a _____.
2. Animals are used in psychological research only when _____.
3. Which of the following is *not* an ethical concern of psychologists? (a) safety and health of research animals; (b) protecting client confidentiality; (c) deception in research; (d) subject bias

Answers to Questions can be found in Appendix B.

SCHOOLS OF PSYCHOLOGY

What are the major perspectives that guide the study of psychology?

During the early 1800s, research into biology, physiology, chemistry, and physics got underway, and such research led to an interest in the behavior of both animals and humans. However, it was not until the first psychological laboratory was founded in 1879 that psychology as a science officially began. As interest in the new field grew, psychologists took various approaches to their research. Eventually, the distinct approaches and beliefs regarding the study of behavior came to be grouped into schools of psychology (see Table 1.3).

Table 1.3 MAJOR SCHOOLS OF PSYCHOLOGY

School	Prominent Figures	Major Emphases	Techniques of Studying
Structuralism	Wilhelm Wundt Edward Titchener	The importance of thought processes and the structure of the mind The identification of the elements of thought	Trained introspection
Functionalism	William James John Dewey	The importance of applying psychological findings to practical situations The function of mental processes in adapting to the environment	Introspection Experimental method Comparative method (comparing psychological functioning of people and animals)
Psychoanalytic Theory	Sigmund Freud Carl Jung	The influence of the unconscious on behavior The importance of early life experiences on personality development	Individual case studies of patients
Gestalt Psychology	Max Wertheimer Wolfgang Köhler Kurt Koffka	The importance of organization and context in the perception of meaningful wholes	Perception experiments
Behaviorism	Edward Thorndike John Watson B. F. Skinner	The importance of objective, observable behavior in the study of psychology The importance of careful research methods The conviction that behaviors are mere responses to external stimuli.	Experiments, primarily on learning and often done with animals
Humanistic Psychology	Carl Rogers Abraham Maslow	The importance of people's feelings The view of human nature as naturally positive and growth-seeking Faith in people's abilities to solve their own problems	Interview techniques
Cognitive Psychology	Jean Piaget Albert Ellis Albert Bandura Robert Sternberg Howard Gardener	Focus on thinking and reasoning processes Focus on the mental processing of information	Memory experiments Information processing approach
Psychobiology	Johannes Müller Karl Lashley David Hubel Torsten Wiesel	Behavior as a result of complex chemical and biological processes within the brain	Brain scans Electrical brain stimulation and recording Chemical analysis of brain tissue
Evolutionary Psychology	Charles Darwin Konrad Lorenz E.O. Wilson	Behavior, including intelligence and personality, is influenced by innate factors.	Naturalistic observation
Cultural Psychology	John Berry	Behavior is influenced by its cultural context.	Experimental method comparing the responses of different people from different cultures

Structuralism and Functionalism: The Earliest Schools

Structuralism

Wilhelm Wundt is generally acknowledged as the founder of experimental psychology. Wundt offered the first formal psychology course (in physiological psychology) and wrote what is often considered the most important book in the history of psychology, *Principles of Physiological Psychology*. It was Wundt, too, who established the first psychological laboratory at the University of Leipzig, Germany in 1879 (Schultz, 1969).

In this laboratory, Wundt and his followers undertook the study of psychology, which to them consisted of the study of experience. Thus, they tried to break down conscious experiences into basic elements. Their chief method was termed **introspection,** which consisted of monitoring and reporting on the contents of consciousness. If you were one of Wundt's participants trained in introspection, you might be presented with the sound of a clicking metronome. You would focus solely on the clicks and report only your immediate reactions to them—your basic sensations and feelings.

Introspection
A technique for reporting the contents of consciousness.

Although Wundt never referred to his school of thought as "structuralism," Edward Titchener, one of his followers, brought Wundt's ideas to America. Titchener established a psychological laboratory and coined the term **structuralism** to embody Wundt's ideas. Like Wundt, structuralists believed that, just as the elements hydrogen and oxygen combine to form the compound water, the "elements" of conscious experience combine to form the "compounds" of the mind. They sought to identify the elements of thought through introspection and then determine how these elements combined to form the whole of experience. Thus, their study focused on the investigation of thought processes and the structure of the mind.

Structuralism
An early psychological school that focused on the sensations and feelings of perceptual experience.

Structuralists inaugurated psychology as a science and established the importance of studying mental processes. However, psychologists, especially in America, became impatient with structuralism. They felt it was limited to only one area of behavior and had few practical applications. American psychologists interested in applying psychological findings to practical situations began a new school of psychology known as functionalism.

Functionalism

By the end of the nineteenth century, Darwin's theory of evolution was beginning to have a significant impact on psychology. Of particular interest was his idea of the "survival of the fittest," which stressed the function of superior biological structures in adapting organisms to their environment. It was this idea that led several American psychologists to investigate the function of mental processes in helping the individual adapt to the environment—thus the name **functionalism.** Darwin's theory of evolution also suggested the possibility that mental processes of animals and people might be part of a continuum. Therefore, functionalists studied the mental processes of both animals and humans to test their theories. Many then applied their research findings to practical situations.

Functionalism
The psychological school that investigates the function of mental processes in adapting the individual to the environment.

William James was the leading force in functionalism. In keeping with structuralism, James viewed psychology as the study of consciousness, but he did not believe consciousness could be separated into distinct elements. He felt that mental activities form a unit of experience—that they are continually changing while remaining interrelated. In other words, one thought flows into another in a continuous "stream of consciousness."

Functionalism had a great impact on the development of psychology. Though it is no longer considered a formal "school," the functionalist tradition remains a major orientation of most modern psychologists. Functionalists expanded the scope of psychology to include research on emotions and observable behaviors. They began the psychological testing movement, changed the course of modern education, and took psychology into industry.

The Psychoanalytic and Gestalt Schools: European Contributions

During the late 1800s and early 1900s, while functionalism was prominent in America, two new schools of psychological thought were forming in Europe: the psychoanalytic and the Gestalt schools. Psychoanalytic theory was developed by Sigmund Freud as a result of experiences with his medical patients and was not directly related to earlier approaches. Gestalt psychology, however, developed as a direct reaction to structuralism.

Psychoanalytic Theory

Sigmund Freud was an Austrian physician who was fascinated by the way the mind influences behavior. During the course of his normal medical practice, he periodically encountered patients who presented symptoms with no physiological basis. For example, one patient lost feeling not in the arm or wrist but only in the right hand, a condition known as "glove anesthesia." This condition is physiologically impossible.

After encountering several cases with no physiological basis, Freud thought the causes must be psychological. Further studies of these patients convinced Freud that unexplained physiological problems are caused by psychological conflicts between what people believe to be acceptable behavior and their unacceptable motives. These motives are primarily sexual or aggressive in nature. Freud believed these motives were the driving forces behind behavior and were hidden in the **unconscious,** the part of the mind of which we are not aware.

Unconscious
The part of the mind whose contents people actively resist bringing into awareness.

Freud developed **psychoanalytic theory** to explain unconscious conflicts and to provide a basis for a system of therapy known as *psychoanalysis.* Psychoanalysts (followers of Freud who perform psychoanalysis) use techniques such as dream analysis and free association (where patients talk freely about whatever comes to mind) in order to uncover unconscious conflicts, motives, and feelings. Recognizing these unconscious forces can help patients resolve their conflicts and live well-integrated, competent lives.

Psychoanalytic Theory
Freud's theory of personality that emphasizes the influence of the unconscious mind.

Isn't there a lot of criticism of Freud? Freud's theory has been very controversial over the years. One of the major criticisms is of his research methodology. Freud relied almost exclusively on case studies, without comparing any of his data to "normal" people as a control. Therefore, critics contend, Freud's theory applies only to abnormal behavior—if it is applicable at all.

Despite the controversy, Freud's theory has had a profound impact on psychotherapy and psychiatry; Freud must be credited with expanding the role of psychology throughout the world. His work revealed the potential benefits of studying the processes of the mind, especially the unconscious. It also led people to realize that the first few years of life are important for later personality development, and that psychological methods can be used to change behavior.

Gestalt Psychology

Gestalt psychology was founded by a group of German psychologists headed by Max Wertheimer. These psychologists were interested in conducting research on *perception*, the interpretation of information from the senses. While Wundt and the structuralists were also interested in perception, the underlying philosophy of the Gestaltists was quite different.

Gestalt Psychology
A school of psychology that focuses on perception and believes the whole experience is qualitatively different from the sum of the distinct elements of that experience.

Gestaltists rejected the notion that experiences can be broken down into elements. Rather, they insisted that experience can only be studied as a whole. That is, the whole experience is qualitatively different from the sum of the distinct elements of that experience (**gestalt** means roughly "organized whole" or "pattern" in German).

Gestalt
An organized whole or pattern of perception.

To illustrate their theory, Gestalt psychologists used their research on perception. For example, Gestaltists would say we perceive movement when lights are lit at

alternate times because the whole is greater than the sum of the parts. We are all familiar with signs on bars and cafes that draw our attention using an arrow made of lights that are lit in succession, so that the arrow seems to move and point the way to the door. What our eyes actually see is a series of light bulbs lighting up at different times, but what our brain perceives is a moving lighted arrow. Thus, the whole experience exceeds the simple sum of its parts.

Gestalt psychologists felt that psychology should study not only specific behaviors but also how those pieces fit together to create meaningful wholes or organizations of experience. They also emphasized the context or background of an experience in creating the meaning of an event. The Gestalt influence can be seen in the modern **eclectic approach** in psychology that considers the whole person and uses any appropriate technique in both research and therapy.

Eclectic Approach
An approach to psychology that considers the whole person and uses only techniques appropriate for the specific circumstance.

Behaviorism: The Study of Observable Behaviors

Behaviorists feel that a truly scientific research method must be limited to the study of objective, observable behaviors. In fact, they believe that all behavior can be viewed as a response to a **stimulus** (an object or event, either internal or external, that stimulates or causes an organism to respond). For example, a dog salivating to a bell demonstrates a stimulus–response behavior: The bell is the stimulus and the salivation is the response.

Behaviorism
The school of psychology that focuses on objective or observable behaviors.

Stimulus
An object or event that causes an organism to respond.

Because animals are ideal subjects for studying objective, overt behaviors, most behaviorist research has been done with animals or with techniques developed through animal research. Using dogs, rats, pigeons, and other animals, behaviorists such as John Watson in the early 1900s and, more recently, B.F. Skinner have focused primarily on learning or how behaviors are acquired. They formulated a number of basic principles about learning that are explained in Chapter 5.

It sounds like behaviorists are interested only in animals. Aren't any of them interested in humans? Yes, behaviorists are interested in people. One of the most well-known behaviorists, B.F. Skinner, was convinced that we could use behaviorist approaches to "shape" human behavior and thereby change the present negative course (as he perceived it) of humankind. He spent considerable time writing and lecturing to convince others of this (Skinner, 1971, 1985). Skinner was also interested in human learning and did research on programmed learning and the use of learning machines (computers), which he promoted for classroom use. Other behaviorists developed a therapy technique known as *behavior modification* to successfully treat people with such behavior problems as phobias (irrational fears) and alcoholism.

Humanistic Psychology: Emphasizing the Uniqueness of the Individual

Humanistic Psychology
A school of psychology that emphasizes the importance of the inner, subjective self and stresses the positive side of human nature.

The proponents of **humanistic psychology** believe that the behaviorist approach overlooks the uniqueness and value of human experience. One of the best-known humanists, Carl Rogers (1964), put it this way:

> In this world of inner meanings, humanistic psychology can investigate all the issues which are meaningless for the behaviorist—purposes, goals, values, choice, perceptions of self, perceptions of others, the personal constructs with which we build our world, the responsibilities we accept or reject, the whole phenomenal world of the individual with its connective tissue of meaning. Not one aspect of this world is open to the strict behaviorist. Yet that these elements have significance for man's behavior seems certainly true. (p. 119)

From Rogers' statement, it is evident that humanistic psychology emphasizes the importance of the inner, subjective self, of consciousness and feelings. Humanists stress that human nature is naturally positive, creative, and growth-seeking unless thwarted

by experience. In humanistic therapy, people are viewed in a positive light, as "clients" rather than "patients," and are encouraged to express their feelings and find their own solutions to problems while engaged in a supportive relationship with their therapist.

In contrast to the behaviorist view that considers behavior a response to stimuli, humanists emphasize free will: People make their own choices and decide how to behave. As a result, each person is a unique individual. All people, according to humanist Abraham Maslow, have both the need and the ability to fulfill their unique and optimum potential.

Cognitive Psychology: The Return to Thought Processes

Cognitive psychology focuses on the mental processing of information. It is concerned with the acquisition, storage, retrieval, and use of knowledge, whether that knowledge is how to change a flat tire or how to split an atom. Cognitive psychologists study how we gather, encode, and store information from our environment using such mental processes as perception, memory, imagery, concept formation, problem solving, reasoning, decision making, and language. If you were listening to a friend describe her whitewater rafting trip, a cognitive psychologist would be interested in how you decipher the meaning of her words, how you form mental images of the turbulent water, how you incorporate your impressions of her experience into your previous concepts of rafting, and so on.

Cognitive Psychology
A school of psychology that focuses on reasoning and the mental processing of information.

Many cognitive psychologists take what is called an **information processing approach** in their studies. According to this approach, we gather information from the environment and then process it in a series of stages. A certain type of processing is performed at one level before the information is passed on to another level for a different kind of processing. The information processing approach is based on the idea that humans are like computers: Both take in information, process it, and produce a response. In fact, cognitive psychologists often express models of human thought processes with techniques used in the computer sciences, such as flowcharts (diagrams with arrows leading from one box to successive others) and mathematical formulas. For an example of a flowchart, see Figure 6.1, which illustrates the sequence of stages in the acquisition of memory.

Information Processing Approach
An approach to studying mental processes that views people and computers in similar terms, as processors of information that has been gathered from the environment, then encoded for memory storage and retrieval.

Psychobiology: The Brain and Behavior

During the last few decades, scientists have made significant advances in our understanding of the structure and function of the brain and nervous system. This new knowledge has given rise to an increasingly important school of psychology known as neuropsychology, or **psychobiology.** Psychobiologists explain behavior as a result of complex chemical and biological events within the brain. Recent research has explored the role of biological factors in sensation, perception, learning, memory, language, sexual behavior, and schizophrenia.

Psychobiology
The study of the biology of behavior.

The roots of psychobiology lie in experimental physiology and the work of Johannes Muller. Muller's *doctrine of specific nerve energies* stated that all nerves carry the same basic message, an electrical impulse. Other significant nineteenth-century physiologists and anatomists who made contributions to this area include Paul Broca, a French surgeon who studied patients with brain injuries; Luigi Galvani, the first to use electrical stimulation to study the workings of the brain; Hermann von Helmholtz, the first to attempt to measure the speed of the nerve impulse; and Charles Darwin, whose theory of evolution inspired research into comparative physiology.

Unlike their predecessors, today's psychobiologists use sophisticated technological equipment to study the functioning of individual nerve cells, the roles of various parts of the brain, and the effects of drugs on brain functions. For example, in his study of Mr. I., Oliver Sacks (1995, pp. 30–31) describes the different types of brain scans that doctors used to try to locate the damaged area of Mr. I.'s brain. Chapter 2

is devoted to modern research into the biological basis of behavior. As you will discover, the biological bases of behavior is a theme that is woven into the discussion of many types of behavior throughout this text.

The Evolutionary Perspective: Natural Selection and Human Behavior

Evolutionary Perspective
The idea that certain behavioral characteristics have evolved through the process of natural selection.

The **evolutionary perspective** derives from the theory of evolution by natural selection. Its proponents argue that although there is a definite interaction between environmental and inherited influences on behavior, certain behavioral characteristics have evolved over many generations through the process of natural selection. That is, people exhibiting behaviors that contribute to survival pass them on to their children, who in turn pass on those same traits.

Consider the fear of heights. It is certainly learned, to some degree. What parent hasn't yelled, "Stay away from the edge," when a child leans over a high railing? But is fear of heights *mostly* learned or *mostly* innate (attributable to heredity)? Evolutionary psychologists argue that to a large degree, fear of heights is in our genes. If you cross the Capilano Canyon Suspension Bridge with an infant and midway hold her over the side, would she be afraid? The answer seems to be yes if she is old enough to see to the bottom. Apparently, this fear is inbred in humans because those who have exhibited a fear of dangerous heights are more likely to have survived. (See Chapter 3 for research with fear of heights and the visual cliff.)

Ethology
The study of animal behavior from an evolutionary perspective.

Ethology, sociobiology, and evolutionary psychology are subdisciplines of the evolutionary perspective. **Ethology** is the study of animal behavior from an evolutionary perspective. Credited as the founder of ethology, Konrad Lorenz (1937, 1981) studied the influence of biology on the behavior of young birds. In his most well-known research, Lorenz showed how goslings are instinctively programmed to follow the first large moving object they see after hatching. In the wild, this large object will inevitably be a parent, and following the parent will certainly increase the newborns' chances of survival.

Sociobiology
The study of the evolutionary and biological bases of social behavior.

Sociobiology, founded by E. O. Wilson (1975), and the related field of evolutionary psychology explore the evolutionary and biological bases of social behavior. Sociobiologists propose that just as we pass on to offspring certain physical characteristics, such as low blood pressure, that contribute to optimal physical survival, so do we pass on certain emotional and cognitive traits, such as assertiveness or high intelligence, that lead to social success. Social success in turn contributes to survival and reproductive success. Sociobiology is controversial because in the past it was used to claim the superiority of one sex and race. But today proponents say that sociobiology rejects any concept of superiority and, in fact, emphasizes the common evolutionary history of all people.

Many psychologists agree to some extent with the evolutionary perspective in that evolutionary processes influence much of what we learn, feel, and think. They feel that evolutionary, or innate, biological influences interact with the environment to create unique individuals.

Cultural Psychology: The Influence of Culture and Ethnic Practice on Behavior

Cultural Psychology
The study of the influence of culture and ethnic practice on people's behavior.

An area of psychology that is becoming increasingly important as our lives become more globally interconnected is **cultural psychology.** One of the leaders in the field is John Berry. Cultural psychologists study the influence of culture and ethnic practice on people's behavior. They try to determine which behaviors are universal to all human beings and which are specific to individual cultures. Ultimately, their goal is to help people with diverse outlooks and habits live together peacefully and effectively in a world that is fast becoming a global community. (See Cooper and Denner (1998) for a review of the theories linking culture and psychology.)

Before we go any further, let's be clear about the term *culture*. Berry et al. (1992) succinctly state that **culture** is the shared way of life of a group of people. This way of life includes ideals, values, and assumptions about life that guide behaviors (Brislin, 1993) and make it possible for people to survive in their environment (Segall et al., 1992). Each culture develops its own standards for dress, housing, and transportation, as well as its own language, religions and worshipping practices, traditions, and social customs.

Culture
Values and assumptions about life and patterns of behavior that develop as a response to social and environmental factors and are passed on from generation to generation.

Unless someone points it out, few of us realize the significant influence our culture has on our daily lives. As Segall et al. (1990) note, when you go to school, you probably walk into a classroom at the same time on the same days, sit in a chair, and either listen to a trained teacher or participate in an activity directed by that teacher. This you do because it is the schooling system of your culture. In another culture, in a remote region of East Africa, your schooling would be quite different. You and your friends might gather informally around a respected elder, some of you sitting and others standing, all of you listening to the elder tell stories of the history of the tribe.

Psychology Today: An Eclectic View

Rather than speak of "schools of psychology," most psychologists today talk about different "perspectives" of psychology. By this, they mean approaches that influence the topics psychologists study, how they conduct their research, and what information they consider important. Psychologists may take a psychoanalytic, behavioristic, or humanistic perspective, or perhaps, a cognitive, biological, evolutionary, or cultural perspective. As you study this text and read generally about psychology, you will find numerous references to these perspectives.

In discussing the perspectives in psychology, we have necessarily examined them separately and made distinctions between their philosophies and practices. Most psychologists recognize the value of each orientation, but at the same time concede that no one view has all the answers. The complex behaviors we humans exhibit require complex explanations. Thus, most psychologists today take an eclectic approach, using principles and techniques from different perspectives as they suit the situation at hand.

Is any one perspective more "right" than the others? Most students begin by agreeing with one perspective, then another, and another, as they learn more about each one. Usually, most come to realize the value of different orientations for particular situations as they apply psychological concepts to their everyday lives. For example, they can see the value of behaviorism in training their dog not to jump up on people or in helping themselves stop smoking, and the value of humanism in developing a sense of responsibility for their own lives.

Also keep in mind that human behavior is influenced by the socio-cultural context in which it occurs. Factors as obvious as schooling or as seemingly meaningless as the shape of the houses in which people live can affect behavior. When parents were asked what they considered most important for their children to learn in preschool, the number one response of Japanese parents was sympathy, empathy, and concern for others; the number one response of American parents was self-reliance and self-confidence (Tobin, Wu, and Davidson, 1989). As for the shape of our houses, people who live in houses with straight lines (as in urban settings) respond differently to certain optical illusions than people who live in round houses (as in some rural African villages), thus affecting each group's perception of the world. By being aware of cultural influences on behavior, the psychologist in all of us can better describe, explain, predict, and change behavior.

A Final Note

One final note as you begin your study of psychology: You will learn a great deal about psychological functioning, but take care that you don't overestimate your ex-

GENDER AND CULTURAL DIVERSITY

These sections embedded in the narrative of each chapter are identified with a separate heading and a special icon, as seen here. To succeed in today's world, it is important to be aware of other cultures and important gender issues.

Gender and Cultural Diversity

Universal and Culturally Specific Behaviors

Cultural psychologists conduct research in all areas of psychology, primarily to determine which behaviors are universal to the entire human race and which are specific to individual cultures. Until relatively recently, most psychological research was conducted in Europe and North America. It is from this research that theories of human behavior have been formulated. What cultural researchers are finding is that when they repeat "classical" psychological research with people from other cultures, they do not always obtain the same research results.

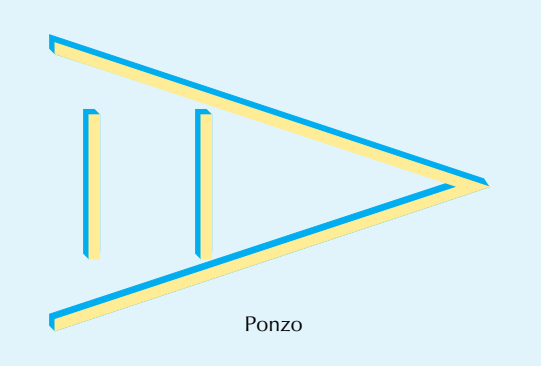


Figure 1.4 ***The Ponzo illusion***
The vertical line at the right is more likely to be seen farther away and therefore longer than the vertical line at the left by people from Western cultures. How we see illusions—and much else in the world—is culturally specific.

Researchers in visual perception had assumed that all people saw visual illusions the same way. But research across cultures revealed that how we see illusions—and much more throughout the world—is culturally specific. Earlier we discussed the Müller-Lyer illusion (Figure 1.1). The Ponzo illusion (Figure 1.4) is another example of how people from different cultures perceive illusions differently. Westerners typically see the vertical line at the right as farther away and therefore longer. Research in rural African villages, however, found that people from these cultures are less susceptible to these illusions than people from urban cultures (Segall et al., 1990). Studies like this indicate that behaviors thought to be universal may actually be culturally specific to the urban cultures where they were originally studied.

It is interesting to note that when research is conducted to determine cultural diversity, it can discover universal behaviors. For instance, research into alternate states of consciousness uncovered a universal tendency in all cultures for some people to engage in behaviors that bring about alternate states of consciousness. The means, however, may differ. In some cultures, for example, people smoke marijuana or drink alcohol and in others people chew coca leaves.

As you read this and other psychology books, keep in mind that most of the reported findings come from research conducted with subjects living in North American or European cultures and may not always apply to people from other cultures. In this book, however, we also describe important research in cultural diversity and universals of behavior. Although we integrate this research throughout the text, each chapter also includes a section that begins like this one, with the title Gender and Cultural Diversity and a special icon in the margin that looks like this:

These sections highlight particularly interesting socio-cultural topics. Some are about a subfield of socio-cultural psychology—the culture of men and women—hence the title Gender and Cultural Diversity.

pertise. Once friends and acquaintances know that you're taking a course in psychology, they may ask you to interpret their dreams, help them to discipline their children, or offer your opinion on whether they should break up their relationships. It is a good idea, therefore, to remember that the ideas, philosophies, and even experimental findings of the science of psychology are continually being revised. As David L. Cole, a recipient of the APA Distinguished Teaching in Psychology Award, stated, "Undergraduate psychology can, and I believe should, seek to liberate the student from ignorance, but also the arrogance of believing we know more about ourselves and others than we really do" (1982). At the same time, psychological findings and ideas developed through careful research and study can make important contributions to our lives. As Albert Einstein once said, "One thing I have learned in a long life: that all our science, measured against reality, is primitive and childlike—and yet, it is the most precious thing we have."

CHECK AND REVIEW

Schools of Psychology

Structuralists sought to identify elements of consciousness and how these elements form the structure of the mind. Functionalists studied how mental processes help the individual adapt to the environment.

Freud developed psychoanalytic theory to explain psychological problems that were presumed to be caused by unconscious conflicts. The Gestalt school studied organizing principles of perceptual processes.

Behaviorism emphasizes observable behaviors and the ways they are learned. Humanistic psychology focuses on inner meanings and assumes our nature is positive and growth-seeking. Cognitive psychology examines reasoning and mental processes.

Psychobiology attempts to explain behavior as complex chemical and biological events in the brain. The evolutionary perspective argues that certain behavioral characteristics have evolved through the process of natural selection. Cultural psychology studies the influence of culture and ethnic practices on people's behavior.

QUESTIONS

1. _____ investigated the function of mental processes in adapting to the environment and many applied their findings to real-world situations.
2. Why is Freud's theory so controversial?
3. What is the evolutionary perspective?
4. _____ focuses on how we process information, by gathering, encoding, storing, and retrieving it.
5. _____ attempts to explain behavior as complex chemical and biological events within the brain.
6. Which of the following terms do *not* belong together? (a) structuralism; observable behavior; (b) Gestalt; whole; (c) psychoanalysis; unconscious conflict; (d) humanistic psychology; uniqueness.

Answers to Questions can be found in Appendix B.

Tools for Student Success

TOOLS FOR STUDENT SUCCESS

This special feature in chapter 1 includes tips for overall college success, as well as success in this course. In addition, the 'tool' icon identifies additional sections in chapters 5, 6, 7, 11, 12, and 15 which address other strategies for dealing with test anxiety, improving memory, performance and overall achievement.

Congratulations! The fact that you are reading this section is an important first step to succeeding in college. We recognize that "student success skills" have a bad reputation and that many people reject such help because they think it's only for "nerds" or "problem students." But would these same individuals assume they could become top-notch musicians or athletes without mastering the "tools" of those trades? All students (even those who seem to get A's without much effort) can improve their "student tools."

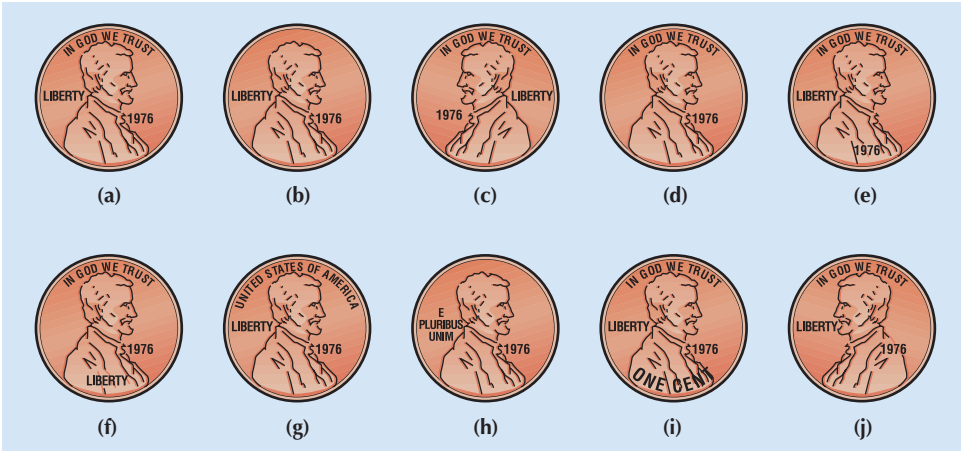
In the next few pages we offer specific, well-documented tips and strategies guaranteed to make you a more efficient and successful college student. You'll learn about active reading, time management, and improving your grades. Finally, we'll point you towards some important resources for college success. We will revisit these topics as appropriate throughout the book, specifically as related to issues such as learning, memory, thinking, motivation, and stress. The paintbrush icon will help you identify these passages.

ACTIVE READING How to Study (and Master) This Text

Have you ever read several pages of a text and then found you couldn't recall a single detail? Or have you read and believed you understood the text, yet did poorly on an exam? Such problems generally reflect a lack of *active reading*. Why do we need to be active while studying?

Try This Yourself

Whose head is on a U.S. penny? Which way is it facing? Can you identify a drawing of a real penny among fakes?



If you are like most students, you probably cannot identify the real penny (which happens to be "a"). Despite having handled probably *thousands* of pennies in your life, you likely cannot recognize a real one from a fake. The penny demonstration shows why simply reading (or even rereading) a text does not assure mastery of the material or success on exams. There are a number of ways to actively read a text. Let's begin with Step One.

STEP ONE *Familiarizing Yourself with the General Text*

Your textbook is the major tool for success in any course. Most instructors rely upon it to present basic course material, reserving class time for clarifying and elaborating on important topics. You can be a more successful student (and test-taker) if you take full advantage of all the special features offered in *Psychology in Action.* Here's how to use these features:

- **Preface.** If you have not already read the preface, do it now. It is a road map for the rest of the text.
- **Prologue.** This section presents the 21 basic components of critical thinking—an important part of this text. Learning what critical thinking is, and why it is important, can greatly improve your chances for student success.
- **Table of Contents.** Scan the table of contents for a bird's eye view of what you will study in this course. Get the big picture from the chapter titles and the major topics within each chapter.
- **Individual Chapters.** Each chapter of *Psychology in Action* contains numerous learning aids to help you master the material. There are chapter outlines, learning objectives, introductory vignettes, running glossaries, Check and Review (summaries and self-test questions), visual summaries, and more. These learning aids are highlighted and explained in the margin of Chapter 1.
- **Appendixes.** Two appendixes, (A) *Statistics* and *(B) Answers to Check and Review Questions*, present important information. The Statistics Appendix further discusses some of the concepts introduced in Chapter 1. It also explains how to read and interpret the graphs and tables found throughout the text. Appendix B contains answers to the Check and Review questions, Try This Yourself feature, and various other activities found in the chapters.
- **Glossary.** There are two glossaries in this text. A running glossary appears in the margins of each chapter to define key terms and concepts when they are first introduced. There is also an end-of-book glossary that gathers all the terms from the running chapter glossaries in one place. Use the end-of-book glossary to review terms from other chapters.
- **References.** As you read each chapter, you will see references cited in parentheses, not in footnotes, as is common in other disciplines. For example, (Brown and Brown, 1999) refers to an article written by Brown and Brown and published in 1999. All the references cited in the text are listed in alphabetical order (by the author's last name) in the References section at the back of the book.

  Note that instructors rarely (if ever) expect you to memorize these parenthetical citations. They are provided so you can look up the source of a study if you would like more information. At the same time, keep in mind that authors of certain key studies and famous psychologists *are* important to remember. Therefore, we emphasize these names in the text's discussion.
- **Name Index** and **Subject Index.** If you are interested in learning more about a particular individual, look for his or her name in the name index. The page numbers refer you to every place in the text where the individual is mentioned. If you are interested in a specific subject (e.g., anorexia nervosa or stress), check the subject index for page references.

STEP TWO *How to Read a Chapter*

Once you have a sense of the book as a whole, your next step to success is improving your general reading skills. The most important tool for college success is the ability

to read and master the assigned class text. Many colleges offer instruction in reading efficiency, and we highly recommend that you take the course. All students can become faster and more efficient readers. In this section, we can only offer the highlights of a full-length course.

One of the best ways to read *actively* is to use the SQ4R method, developed by Francis Robinson (1970). The initials stand for six steps in effective reading: Survey, Question, Read, Recite, Review, and wRite. Robinson's technique helps you better understand and remember what you read. As you may have guessed, *Psychology in Action* was designed to incorporate each of these six steps.

- **Survey.** Each chapter of the text opens with an outline, learning objectives in question format, an introductory vignette, and a short commentary on the vignette. Together, they provide an overview, or *survey*, of the chapter. Knowing what to expect can help you focus on the main points when you read.
- **Question.** To maintain your attention and increase comprehension as you read, turn the heading of each section into a *question*. The Learning Objectives listed at the beginning of each chapter and repeated in the margins already do this for the main sections. Use them as models for turning the second and third level headings into questions. Also try to anticipate the questions your instructor might ask on an exam.
- **Read.** The first R in SQ4R refers to reading. Try to answer the questions you formed in the previous step as you read the chapter. Read carefully—in short, concentrated time periods.
- **Recite.** After you have read one small section, stop and *recite*. Try to summarize what you've just read—either silently to yourself or as written notes. Also, think of personal examples of major concepts and how you might apply a certain concept to real-life situations. This will greatly increase your retention of the material.
- **Review.** Read the Interim Reviews that conclude each major section and then answer the Review Questions. Write down your responses, before checking your answers in Appendix B. When you finish the entire chapter, look back over your answers, the chapter headings, and Interim Reviews. Before each class quiz or exam, repeat this review process.
- **wRite.** In addition to the writing you do in the above steps, take brief notes in the text margins. This helps keep you focused during your reading. (The Student Study Guide that accompanies this text teaches a special "marginal marking" technique that our students find extremely helpful.)

The SQ4R method may sound time consuming and difficult. However, once you've mastered the technique it actually saves time. More importantly, it also greatly improves your reading comprehension—and exam grades!

TIME MANAGEMENT How to Succeed in College and Still Have a Life

Try This Yourself

Time management is not only desirable, it is essential to college success. If you answer 'yes' to each of the following, congratulate yourself and move on to the next section.

1. I have a good balance between work, college, and social activities.
2. I set specific, written goals and deadlines for achieving them.

3. I complete my assignments and papers on time and seldom stay up late to cram the night before an exam.
4. I am generally on time for classes, appointments, and work.
5. I am good at estimating how much time it will take to complete a task.
6. I recognize that I am less productive at certain times of the day (e.g., right after lunch), and I plan activities accordingly.
7. I am good at identifying and eliminating nonessential tasks from my schedule and delegate work whenever possible.
8. I prioritize my responsibilities and assign time accordingly.
9. I arrange my life to avoid unnecessary interruptions (visitors, meetings, telephone calls during study hours).
10. I am able to say no to unnecessary or unreasonable requests for my time.

If you cannot answer yes to each of these statements and need help with time management, here are four basic strategies:

1. **Establish a baseline.** To break any bad habit (poor time management, excessive TV watching, overeating), you must first establish a *baseline*, a characteristic level of performance for assessing changes in behavior. The first step in a successful weight loss program, for example, is to establish a caloric baseline. Before beginning a diet, dieters are asked to continue their normal eating patterns for one to two weeks, while meticulously recording every meal, snack, and caloric drink. The total number of calories consumed each day, as well as trouble spots—times when the dieter is likely to overeat—constitute a baseline against which to judge future behavior.

   A similar strategy also works for time management. Before attempting any changes, simply record your day-to-day activities for one to two weeks (see the sample in Figure 1.5). Like most dieters who are shocked at their daily eating habits, most students are unpleasantly surprised when they recognize how poorly they manage their time.

2. **Set up a realistic activity schedule.** Once you realize how you normally spend your time each day, you can begin to manage it. Start by making a daily and weekly "to do" list. Be sure to include all required activities (class attendance, study time, work, etc.), as well as basic maintenance tasks like laundry, cooking, cleaning, and eating. Using this list, create a daily schedule of activities that includes time for each of these required activities and maintenance tasks. Also be sure to schedule a reasonable amount of "down time" for sports, movies, television watching, and social activities with friends and family.

   Try to be realistic. Some students attempt to study during all the hours they previously "wasted"

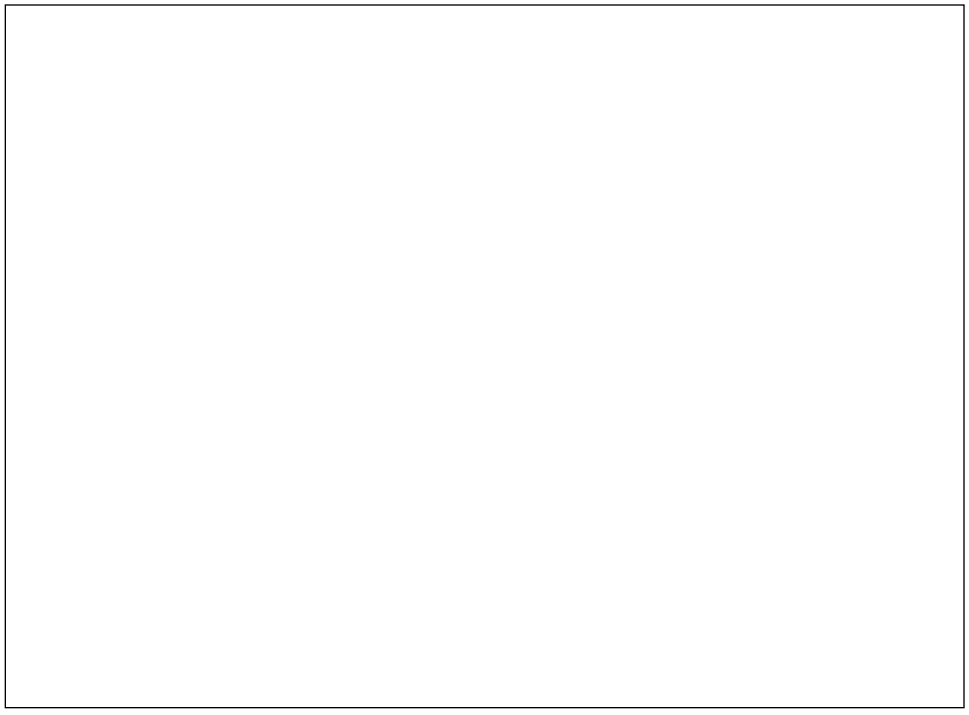


Figure 1.5 ***Sample record of daily activities.*** To help manage your time, draw a grid similar to this and record your daily activities in appropriate boxes. Then use it to fill in other necessities, such as extra study time and "down time."

watching TV or with friends, but this approach inevitably fails. To make permanent time management changes, you must *shape* your behavior (see Chapter 5). That is, start small and build skills. For example, schedule 15 minutes increased study time for the first few days then move to 30 minutes, 60 minutes, and so on.

3. **Reward yourself for good behavior.** The most efficient way to maintain good behavior is to reward it—the sooner the better (see Chapter 5). But the rewards of college (a degree and/or job advancement) are generally years away. To get around this problem and improve your time management skills, give yourself immediate, tangible rewards for sticking with your daily schedule. Allow yourself a guilt-free call to a friend, for example, or time for a favorite TV program after studying for your set period of time.
4. **Maximize your time.** Time management experts, such as Alan Lakein (1973), suggest you should "work harder, not longer." Many students report that they're studying all the time, for example, but they're generally confusing "fret time" (worrying and complaining) and useless prep time (fiddling around getting ready to study) with real, concentrated study time.

Time experts also point out that people often overlook important "time opportunities." For example, if you ride the bus to class, you can use this time to review notes or read a textbook. If you drive yourself and waste time looking for parking spaces, go earlier and spend the extra time studying in your car or classroom. While waiting for doctor or dental appointments or to pick up your kids after school, take out your text and study for 10–20 minutes. These hidden moments count!

IMPROVING YOUR GRADES Note Taking, Study Habits, and General Test-Taking Strategies

- **Note Taking.** Effective note taking depends on active listening. Find a seat in the front of the class and look directly at the instructor while he or she is talking. Focus your attention on what is being said by asking yourself, "What is the main idea?" Write down key ideas and supporting details and examples, including important names, dates, and new terms. Don't try to write everything the instructor says word for word. This is passive, rote copying, not active listening. Also be sure to take extra notes if your professor says, "this is an important concept," or if he or she writes their own notes on the board. Finally, arrive in class on time and don't leave early—you may miss important notes and assignments.
- **Distributed study time.** The single most important key to improved grades may be *distributed* study time. While it *does* help to intensively review before a quiz or exam, if this is your major method of studying you are not likely to do well in any college course. One of the clearest findings in psychology is that spaced practice is a much more efficient way to study and learn than massed practice (see Chapter 6). Just as you wouldn't wait until the night before a big basketball game to begin practicing your free throws, you can't begin to study the night before an exam.
- **Overlearning.** Many students study just to the point where they can recite the immediate information. For best results, you should repeatedly review the material until it is firmly locked in place. This is particularly important if you are subject to test anxiety. For additional help on improving memory in general, see Chapter 6.
- **Psyche out your instructor.** Pay close attention to the lecture time spent on various topics. This is generally a good indication of what the instructor considers important (and what may appear on exams).

  Try, too, to understand the perspective (and personality) of your instructor. Recognize that most instructors went into education because they *love* the academic life. They were probably model students who attended class regularly, submitted work on time, and seldom missed an exam. Try your hardest to be in class

for every exam. Remember that instructors have many students and hear lots of "dead grandmother" excuses for missing class and exams. Also bear in mind that most instructors actually enjoyed lectures during college and were trained under this system. *Never* say, "I missed last week's classes, did I miss anything important?" This is guaranteed to upset the most even-tempered instructor.

- **General Test Taking.** Here are several strategies to improve your performance on multiple-choice exams:

  1. **Take your time.** Carefully read each question and all the alternative answers. Do not choose the first answer that looks correct. There may be a better alternative farther down the list.

  2. **Be test smart.** If you're unsure of an answer, make a logical guess. Begin by eliminating any answer that you know is incorrect. If two answers both seem reasonable, try to recall specific information from the text or professor's lecture. Be sure to choose "all of the above" if you know that at least two of the options are correct. Similarly, if you are confident that one of the options is incorrect, *never* choose "all of the above."

  3. **Review your answers.** After you finish a test, go back and check your answers. Make sure you have responded to all the questions and recorded your answers correctly. Also, bear in mind that information relevant to one question is often given away in another test question. Don't hesitate to change an answer if you get more information—or even if you simply have a hunch about another answer. Although many students (and faculty) believe "your first hunch is your best guess," research clearly shows this is bad advice (Benjamin et al., 1984; Johnston, 1975). Changing answers pays off! The popular myth of *not* changing answers probably persists because we tend to pay more attention to losses than successes. Think about what happens when you get a test back. Most students only pay attention to the items they got wrong and fail to note the number of times they changed from an incorrect to a correct answer.

  4. **Practice your test taking.** Complete the Check and Review sections found in each chapter and check your answers in Appendix B. Make up questions from your lectures and text notes. Also, try the interactive quizzes on our website *(http://www.wiley.com/college/wave/huffman–vernoy5e)*. Each chapter of the text has its own sample quiz with individualized feedback. If you answer a question incorrectly, you get immediate feedback and further explanations that help you master the material.

RESOURCES FOR SUCCESS Where Can I Get Additional Help?

In addition to college counselors and financial aid officers, there are several resources that students often overlook in their search for success:

1. *Instructors.* Get to know your instructor. It's up to you to seek out the instructor for help during their scheduled office hours. If these times conflict with your schedule, ask for an alternative appointment or try to stop by right before or after class.
2. *Friends and Family.* Ask friends or family members to serve as your *conscience/coach* for improved time management and study skills. After completing your daily activity schedule (see page 39), set up weekly (or biweekly) appointments with a friend or family member to check your progress and act as your "conscience."

You may think it would be easy to lie to your conscience/coach, but most people find it much harder to lie to another person than to lie to themselves (about calories, study time, TV watching, etc.). Encourage your conscience/coach to ask pointed questions about your *actual* study time versus your *fretting* and *prepping* time.

3. *Classmates and Roommates.* Your college roommate and friendly classmates can not only serve as your conscience/coach, but also as potential study partners. Also, ask your classmates and roommates what tricks/techniques they use to maintain their attention and interest during lectures or while reading texts.

If you would like more information on student success skills, consult our *Psychology in Action* website *(http://www.wiley.com/college/wave/huffman–vernoy5e)*. In addition to the interactive tutorials and quizzes mentioned earlier, we also offer specific Internet links for student success and recommend books and articles on time management and the other topics discussed here. Best wishes for a successful course and college career!

A FINAL WORD Your Attitude

Imagine for a moment that the toilet in your bathroom is overflowing and creating a horrible, smelly mess. Who should you reward? The plumber who quickly and efficiently solves the problem? Or someone who "tries very hard"?

Some students seem to believe they can pass college courses by simply attending class and doing the homework—that this shows their great interest and effort. This may have worked for *some* students in *some* classes in high school, but it probably won't work in college. Most college professors seldom assign homework and may not notice if you skip class. They assume students are independent, self-motivated adult learners.

Professors also generally consider college a last stop on the way to the real world and believe grades should reflect knowledge and performance—not effort. While some points may be given in some classes for attendance, participation, and effort, the biggest weight will almost always come from exams, papers, and projects. Did you fix the toilet or not?

KEY TERMS

The list of key terms at the end of each chapter is helpful to your mastery of the most important terms. Try to recite aloud, or write a brief definition for each term. Then, turn to the relevant pages in the chapter and check your understanding

KEY TERMS

Understanding Psychology
applied research (p. 6)
basic research (p. 5)
behavior (p. 4)
covert (p. 5)
overt (p. 5)
pseudopsychologies (p. 8)
psychology (p. 4)
Psychological Research
case study (p. 19)
control condition (p. 13)
correlation (p. 20)
data (p. 11)
dependent variable (p. 13)
double-blind experiment (p. 15)
ethnocentrism (p. 15)
experiment (p. 11)
experimental condition (p. 14)
experimenter bias (p. 15)
hypothesis (p. 11)
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Ethics in Psychology
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Schools of Psychology
behaviorism (p. 30)
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Gestalt (p. 29)
Gestalt Psychology (p. 29)
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information processing approach (p. 31)
introspection (p. 28)
psychoanalytic theory (p. 29)
psychobiology (p. 31)
sociobiology (p. 32)
stimulus (p. 30)
structuralism (p. 28)
unconscious (p. 29)

Visual Summary for Chapter 1

Understanding Psychology

Psychology is the *scientific* study of behavior. It studies both **overt** behaviors (easily seen and identified) and **covert** behaviors (covered or hidden). **Pseudopsychologies** use nonscientific or fraudulent methods.

Specialties of Psychologists

Various areas, such as clinical, counseling, educational, school, neuropsychology, developmental, social, or industrial/organizational.

Goals of Psychology

Four major goals: describe, explain, predict, and change behavior.

Types of Research

Basic research studies theoretical questions. **Applied research** attempts to answer real-world problems.

Psychological Research

Experimental Research

- *Distinguishing Feature:* establishes cause and effect.
- *Components:* **theory, hypothesis, independent variable, dependent variable,** and experimental controls (including **control condition, experimental condition, placebo,** and **random assignment).**
- *Sources of Bias:* **experimenter bias** (can be prevented with a **double-blind experiment), ethnocentrism,** and **sample bias.**

Nonexperimental Research

- *Distinguishing Feature*: studies correlation, which allows for predicting behavior.
- *Methods*: **naturalistic observation, surveys,** and **case studies.**
- *Types of* ***Correlation:*** *positive* (both go up or both go down), *negative* (one goes up while the other goes down), or *zero* (no correlation).

Evaluating Research

1) Once **data** are collected, **statistics** indicate whether the results are **statistically significant** or due to chance.
2) **Replication** of original research also helps legitimize results.

VISUAL SUMMARY

At the end of each chapter, the entire chapter is summarized in a visual format. This unique study tool visually summarizes and organizes the main concepts of each chapter in a clear, two-page layout that serves as a quick review after completing your reading. Relationships between topics can be clearly seen and understood.

Ethics in Psychology

Research Ethics

Researchers should obtain the participant's *informed consent* and provide a **debriefing** at the close of the experiment.

Animal Research

Only about 7–8% of research done on animals and 90% of that is with mice and rats. Animal care committees help ensure proper treatment.

Clinical Practice Ethics

Therapists must conduct themselves in a moral and professional manner. Many psychologists disapprove of talk-show therapy due to time and other limitations.

Schools of Psychology

Earliest Schools

Structuralism focused on sensations and feelings of perceptual experience. Chief method was **introspection.**

Functionalism investigated function of mental processes in adapting to the environment.

Gestalt Psychology emphasized perception and that the whole **(gestalt)** is different from the sum of the parts.

Modern Psychology

Major Perspectives:

1) **Psychoanalytic theory** emphasizes **unconscious** mind.

2) **Behaviorism** focuses on objective or observable behaviors. All behavior viewed as a response to a **stimulus**.

3) **Humanistic psychology** emphasizes the inner, subjective self and the positive side of human nature.

4) **Cognitive psychology** focuses on the mental processing of information and uses the **information processing approach** in its studies.

5) **Psychobiology** explains behavior as resulting from complex chemical and biological events within the brain.

6) **Evolutionary perspective** proposes that certain behavioral characteristics evolve through natural selection. The related field of **sociobiology** studies evolutionary and biological bases of behavior.

7) **Cultural psychology** studies influence of **culture** and ethnic practice on people's behavior.

8) **Eclectic approach** considers the whole person and uses any appropriate technique.