Chapter 1

The Science of Psychology

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Careers in Psychology
Vernita Lee was 18 and unmarried in 1954 when she gave birth to a daughter in her mother’s rundown Mississippi farmhouse. The baby’s father, Vernon, was not seriously involved with Vernita, who continued to live with her mother, Hattie Mae. Four years later Vernita moved to Milwaukee, where she heard that young Black women could earn good money working as maids. Her daughter remained with Hattie Mae, helping to tend the pigs and chickens and hauling water from the well to the house. Without neighborhood friends to play with, the child entertained herself by talking to the animals, delighting in making speeches to the cows. Extremely gifted in language and encouraged by her grandmother, who highly valued education, she learned to read and write at the age of 3. Because of her remarkable ability to memorize passages from the Bible, she soon began delivering inspirational speeches in church, earning her the nickname “Little Preacher.”

But the precocious child’s life took a turn for the worse when she went to Milwaukee to live with her mother in a shabby rooming house. Vernita did not share Hattie Mae’s devotion to education and she belittled her daughter’s deep love of books. Neglected and often inadequately supervised, the girl was raped by a 19-year-old cousin when she was only 9 years old. Terrified, she kept her dark secret, only to become sexually abused by a procession of other men. Soon she blamed herself for what was happening to her. She also began to lie, steal, and run away. Vernita tried but failed to have her placed in a home for delinquent teenagers. Instead, the now pregnant 14-year-old girl went to live with her father, Vernon, in Nashville, Tennessee.

After the baby was born prematurely and died soon after birth, Vernon was able to provide his troubled daughter with the love, stability, and discipline she needed to turn her life around. He and his wife Zelma encouraged her to study hard and cultivate her talent for public speaking. Winning a speech contest earned her a 4-year scholarship to college. Other contest victories followed, capturing the attention of staff at a local radio station, who offered her a job as a newscaster even before she had graduated from high school. In college, CBS in Nashville hired her to anchor the evening news. She eventually moved to Chicago, where she began hosting a popular TV talk show. Audiences loved her personal touch and the way she often shared her innermost thoughts and feelings. Within a year the show had a new name. Rather than “A.M. Chicago,” now it was “The Oprah Winfrey Show.”

**WHAT IS PSYCHOLOGY?**

“Most psychologists study mental and emotional problems and work as psychotherapists.” Is this statement true or false?

Why have we chosen the story of Oprah Winfrey to introduce you to the subject of psychology? It is because this story raises so many fascinating questions about human beings. What motivates a person to persevere against all odds and overcome enormous challenges? Do certain personality traits give such people unusual resilience to hardship? Or could anyone, investing enough effort, accomplish what Oprah has done? Many people in Oprah’s situation would have succumbed to depression and given up trying to achieve. Why does this happen to some people but not others?

These are the same kinds of questions that psychologists also ask. Psychology is not confined to investigating abnormal behavior, as many people mistakenly assume. Psychology is the scientific study of behavior and mental processes in all their many facets. As such, viewed from a wealth of different perspectives, it encompasses every aspect of human thoughts, feelings, and actions. In fact, with new research technologies, new areas of inquiry to explore, and more collaboration with other sciences, psychology is continually redefining itself (Ardila, 2007; Belar, 2007). One way to grasp the breadth and depth of topics in psychology is to look at the major subfields within it. These are shown in Table 1–1.

**The Fields of Psychology**

Psychology is not so much a single, unified field of study as it is an umbrella concept for a loose amalgamation of different subfields (R. B. Evans, 1999). Here, we introduce you to seven of the largest subfields in psychology.
Chapter 1

Table 1–1 AMERICAN PSYCHOLOGICAL ASSOCIATION DIVISIONS (2009)

<table>
<thead>
<tr>
<th>Division*</th>
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<tbody>
<tr>
<td>1. Society for General Psychology</td>
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<td>2. Society for the Teaching of Psychology</td>
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<td>3. Experimental Psychology</td>
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<td>5. Evaluation, Measurement, and Statistics</td>
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<td>6. Behavioral Neuroscience and Comparative Psychology</td>
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<td>7. Developmental Psychology</td>
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<td>8. Society for Personality and Social Psychology</td>
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<td>10. Psychology and the Arts</td>
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<td>12. Society of Clinical Psychology</td>
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<td>13. Society of Consulting Psychology</td>
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<td>14. Society for Industrial and Organizational Psychology</td>
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<td>15. Educational Psychology</td>
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<td>16. School Psychology</td>
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<td>17. Counseling Psychology</td>
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<td>18. Psychologists in Public Service</td>
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<td>19. Military Psychology</td>
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<td>20. Adult Development and Aging</td>
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<td>21. Applied Experimental and Engineering Psychology</td>
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<td>22. Rehabilitation Psychology</td>
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<td>23. Society for Consumer Psychology</td>
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<td>26. History of Psychology</td>
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<td>27. Society for Community Research and Action: Division of Community Psychology</td>
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<td>28. Psychopharmacology and Substance Abuse</td>
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<td>29. Psychotherapy</td>
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<td>30. Society of Psychological Hypnosis</td>
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<td>31. State Psychological Association Affairs</td>
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<td>32. Humanistic Psychology</td>
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<td>33. Mental Retardation and Developmental Disabilities</td>
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<td>34. Population and Environmental Psychology</td>
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<td>35. Society for the Psychology of Women</td>
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<td>36. Psychology of Religion</td>
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<td>37. Child, Youth, and Family Services</td>
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<td>38. Health Psychology</td>
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<td>39. Psychoanalysis</td>
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<td>40. Clinical Neuropsychology</td>
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<td>41. American Psychology—Law Society</td>
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<td>42. Psychologists in Independent Practice</td>
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<td>43. Family Psychology</td>
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<td>44. Society for the Psychological Study of Lesbian, Gay, and Bisexual Issues</td>
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<td>45. Society for the Psychological Study of Ethnic Minority Issues</td>
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<td>46. Media Psychology</td>
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<td>47. Exercise and Sport Psychology</td>
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<td>48. Society for the Study of Peace, Conflict, and Violence: Peace Psychology Division</td>
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<td>49. Group Psychology and Group Psychotherapy</td>
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<td>50. Addictions</td>
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<td>51. Society for the Psychological Study of Men and Masculinity</td>
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<td>52. International Psychology</td>
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<td>53. Society of Clinical Child and Adolescent Psychology</td>
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<td>54. Society of Pediatric Psychology</td>
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<td>55. American Society for the Advancement of Pharmacotherapy</td>
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<td>56. Trauma Psychology</td>
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There are no divisions 4 or 11.

For information on a division, e-mail the APA at division@apa.org, or locate them on the Internet at http://www.apa.org/about/division.html


**Developmental Psychology** Developmental psychologists study all aspects of human growth and change—physical, mental, social, and emotional—from the prenatal period through old age. Most specialize in a particular stage of human development. *Child psychologists* focus on infants and children, concerning themselves with such issues as whether babies are born with distinct temperaments and at what age sex differences in behavior emerge. *Adolescent psychologists* look largely at how puberty affects a range of developmental phenomena, from relationships with peers and parents to the search for a personal identity. Finally, *life-span psychologists* focus on the challenges and changes of adulthood, from marrying and having children to facing the transitions related to aging and eventual death.
Physiological Psychology  Physiological psychologists investigate the biological basis of human behavior, thoughts, and emotions. Among these, neuropsychologists are interested in the workings of the brain and nervous system. How does the brain allow us to think, speak, sleep, move our bodies, and feel emotions such as anger, sadness, and joy? Neuropsychologists help to answer these and many other fundamental questions about how thoughts, feelings, and behaviors are controlled. Their colleagues known as biological psychologists study the body’s biochemistry and the ways that hormones, psychoactive medications, and “social drugs” affect us. They investigate such topics as how the hormones of puberty are related to mood swings or how alcohol consumption by a pregnant woman impairs the development of her unborn child. Behavioral geneticists add yet another dimension: They explore the impact of heredity on both normal and abnormal behavior. Do illnesses such as alcoholism and depression have a genetic component? What about differences in the ways that men and women think, act, and feel? Behavioral geneticists search for answers to questions like these.

Experimental Psychology  Experimental psychologists conduct research on basic psychological processes, including learning, memory, sensation, perception, thinking, motivation, and emotion. How do people make decisions and solve various kinds of problems? Why are some people more achievement motivated than others, constantly striving for excellence in athletics, scholarship, or the arts? Experimental psychologists search for answers to questions like these.

Personality Psychology  Personality psychologists study the differences among individuals in such traits as sociability, conscientiousness, emotional stability, self-esteem, agreeableness, aggressive inclinations, and openness to new experiences. Psychologists in this field attempt to determine what causes some people to be optimists and others to be pessimists, why some people are outgoing while others are shy, and whether there are consistent differences in the personality characteristics of males and females.

Clinical and Counseling Psychology  When asked to describe a psychologist, most people think of a therapist who sees troubled patients in an office, clinic, or hospital. This popular view is half correct. About 50% of psychologists specialize in clinical or counseling psychology, both of which seek to help people deal more successfully with their lives. The two areas also differ, however. Clinical psychologists are interested primarily in the diagnosis, causes, and treatment of psychological disorders, such as depression or acute anxiety. Counseling psychologists, in contrast, are concerned mainly with the everyday problems of adjustment that most of us face at some point in life, such as making a difficult career choice or coping with a troubled relationship. Clinical and counseling psychologists often divide their time between treating patients and conducting research on the causes of psychological disorders and the effectiveness of different types of therapy.

Social Psychology  Social psychologists start with the assumption that a person’s personality characteristics are insufficient to predict that person’s thoughts, feelings, and behaviors. This is because, like it or not, we are all greatly influenced by other people. Social psychology is the scientific study of how these social influences are exerted and the effects they have. Social psychologists investigate such issues as interpersonal attraction, obedience to authority, and conformity to group norms.

Industrial and Organizational (I/O) Psychology  Industrial and organizational (I/O) psychologists apply the principles of psychology to the workplace. They are concerned with such practical issues as selecting and training personnel and improving productivity and working conditions. I/O psychologists seek to determine in advance who will be effective as a salesperson, as an airline pilot, or in any other career. They ask whether organizations tend to operate differently under female versus male leadership and, if so,
what the drawbacks or benefits of each might be. And because research shows that high morale fosters more productive workers, I/O psychologists also search for specific strategies that managers can use to improve group morale. Wherever you might eventually find a job, that workplace will probably have been shaped to some extent by the efforts of I/O psychologists.

An overview of the major fields of psychology is presented in the Summary Table above.

### Enduring Issues

**Given this broad range of careers and interests, what unifies the field of psychology?**

What do psychologists who study organizations, psychological disorders, memory and cognition, behavioral genetics, or attachment in infants have in common? All psychologists share a common interest in five enduring issues that override their areas of specialization and cut to the core of what it means to be human.

**Person–Situation** To what extent is behavior caused by such internal processes as thoughts, emotions, motives, attitudes, values, personality, and genes? In contrast, to what extent is behavior caused or triggered by such external factors as incentives, environmental cues, and the presence of other people? Put another way, are we masters of our fate or victims of circumstances? We will encounter these questions most directly in our consideration of behavior genetics, learning, emotion and motivation, personality, and social psychology.

<table>
<thead>
<tr>
<th>Field of Psychology</th>
<th>Description</th>
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<tbody>
<tr>
<td>Developmental Psychology</td>
<td>The study of how people grow and change physically, cognitively, emotionally, and socially, from the prenatal period through death. Subfields include: child, adolescent, and life-span psychology.</td>
</tr>
<tr>
<td>Physiological Psychology</td>
<td>Investigates the biological basis of behavior. Subfields include neuroscience, biological psychology, and behavior genetics.</td>
</tr>
<tr>
<td>Experimental Psychology</td>
<td>Investigates basic psychological processes such as sensation and perception, memory, intelligence, learning, and motivation.</td>
</tr>
<tr>
<td>Personality Psychology</td>
<td>Studies the differences between individuals on such traits as sociability, emotional stability, conscientiousness, and self-esteem.</td>
</tr>
<tr>
<td>Clinical and Counseling Psychology</td>
<td>Applies the principles of psychology to mental health and adjustment. Clinical psychology focuses on the diagnosis and treatment of mental disorders while counseling psychology is more concerned with “normal” adjustment issues such as making difficult choices or coping with a troubled relationship.</td>
</tr>
<tr>
<td>Social Psychology</td>
<td>Explores how society influences the individual including such topics as interpersonal attraction, persuasion, attitude formation, obedience, conformity, and group behavior.</td>
</tr>
<tr>
<td>Industrial and Organizational (I/O) Psychology</td>
<td>Applies the principles of psychology to the workplace focusing on the practical issues of personnel selection and training, working conditions, workplace morale, and leadership.</td>
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© The New Yorker Collection, 1999, Donald Reilly from cartoonbank.com. All Rights Reserved.
Nature–Nurture  Is the person we become a product of innate, inborn tendencies, or a reflection of experiences and upbringing? This is the famous “nature versus nurture” debate. For decades, psychologists have argued about the relative influence of heredity (genes) versus environment (experience) on thought and behavior. To what degree is each responsible? This issue surfaces in our discussions of behavior genetics, intelligence, development, personality, and abnormal psychology; and it will arise elsewhere as well.

Stability–Change  Are the characteristics we develop in childhood more or less permanent and fixed, or do we change in predictable (and unpredictable) ways over the course of our lives? Is the self a cognitive construct, a “fictional character” we create to maintain a sense of inner continuity in the face of varied, sometimes unpredictable experiences? Developmental psychologists are especially interested in these and other questions, as are psychologists who specialize in personality, adjustment, abnormal psychology, and therapy.

Diversity–Universality  Because we are all human, each person is like every other person. But in some respects, each person is only like certain other people. And in other respects, each of us is like no other person. Thus, anywhere humans exist there will be both similarity and diversity. Throughout this book, we will encounter these questions: Does our understanding of human behavior apply equally well to every human being? Does it apply only to men or just to women, or only to particular racial or ethnic groups or particular societies (especially our own)? Do we perhaps need “different psychologies” to account for the wide diversity of human behaviors?

Mind–Body  Finally, how are mind and body connected? Many psychologists are fascinated by the relationship between what we experience (such as thoughts and feelings) and what our biological processes are (such as activity in the nervous system). This mind–body issue will arise most clearly in our discussions of the biological basis of behavior, sensation and perception, altered states of consciousness, emotion and motivation, adjustment and health psychology, and disorders and therapy.

These five issues represent enduring themes in the history of psychology. Depending on the events and intellectual climate of a given time period, one or another of these issues has assumed special prominence in the history of psychology. For example, at the beginning of the 21st century the role of genetics (heredity) is receiving much greater attention than in the past. Diversity is also an issue of much greater concern, as is the role of biological processes. Even within a particular time period, psychologists in one field or one school within a field may emphasize one of these issues over another. Philosophers have pondered these issues for centuries; in contrast, psychologists look at these topics through a scientific lens.
Throughout this book, we will highlight the importance of these matters. Several times in each chapter we will call your attention to the way in which the topic under consideration—whether it is new discoveries about communication within the nervous system, research into how we learn, or the reason that people abuse drugs—reflects one of these issues. In this way, we will show the surprising unity and coherence of the diverse and exciting science of psychology.

Psychology as Science
What does psychology have in common with other sciences?

Earlier we defined psychology as the science of behavior and mental processes. The key word in this definition is science. Psychologists rely on the scientific method when seeking to answer questions. They collect data through careful, systematic observation; attempt to explain what they have observed by developing theories; make new predictions based on those theories; and then systematically test those predictions through additional observations and experiments to determine whether they are correct. Thus, like all scientists, psychologists use the scientific method to describe, understand, predict, and, eventually, achieve some measure of control over what they study.

For example, consider the issue of males, females, and aggression. Many people believe that males are naturally more aggressive than females. Others contend that boys learn to be aggressive because our society and culture encourage—indeed, require—males to be combative, even violent. How would psychologists approach the issue? First, they would want to find out whether men and women actually differ in aggressive behavior. Several research studies have addressed this question; and the evidence seems conclusive: Males are more aggressive than females, particularly in terms of physical aggression (Zimmer-Gembeck, Geiger, & Crick, 2005). Perhaps girls and women make nasty remarks or yell (Ostrov & Keating, 2004; Underwood, 2003), but boys and men are far more likely to fight physically. Once psychologists have established that there are sex differences in physical aggression and described those differences, they attempt to explain them. A number of explanations are possible.

For example, if you are a physiological psychologist, you will probably ascribe these differences to genetics or body chemistry. However, if you are a social psychologist, you might explain the differences in terms of cultural norms, which require males to "stand up for themselves" and hold that physical aggression isn’t “feminine.”

Each of these explanations stands as a theory about the causes of sex differences in aggression; each attempts to distill a few principles from a large number of facts. And each theory allows you to make new hypotheses, or predictions, about the phenomenon in question. On one hand, if gender differences in aggression arise because males have higher levels of testosterone than females do, you would predict that extremely violent men should have higher levels of testosterone than do men who are generally nonviolent. On the other hand, if sex differences in aggression reflect cultural norms, you would predict that within societies that do not prohibit girls and women from fighting, or in those that consider physical aggression abnormal or improper for both sexes, the difference in aggression across the sexes should be small.

Each of these predictions or hypotheses can be tested through research, and the results should indicate whether one theory is better than another at accounting for known facts and predicting new facts. For example, if cultural norms are part of the reason for differences in aggression, then these differences should be smaller in situations in which individuals do not feel that they are being evaluated in terms of their masculinity or femininity. One research team tested this hypothesis with a computer war game (Lightdale & Prentice, 1994). When the researcher introduced participants in a way that made clear who was male or female, women played less aggressively than men; when women were told that they were anonymous to the researchers and other participants, however, women played just as aggressively as men did.
Critical Thinking: Thinking Like a Scientist

Consider the statement “Opposites attract.” Do you agree with this statement? Many people answer yes without hesitation on the grounds that “Everybody knows that.” Critical thinkers, however, question common knowledge. Learning to think critically is one of the “fringe benefits” of studying psychology. (See “Applying Psychology: The Benefits of Studying Psychology.”)

What exactly is critical thinking? It is the process of examining the information we have and then, based on this inquiry, making judgments and decisions. When we think critically, we define problems, examine evidence, analyze assumptions, consider alternatives and, ultimately, find reasons to support or reject an argument. To think critically, you must adopt a state of mind that is characterized by objectivity, caution, a willingness to challenge other people’s opinions, and—perhaps most difficult of all—a willingness to subject your deepest beliefs to scrutiny. In other words, you must think like a scientist.

Psychologists use a number of strategies in questioning assumptions and examining data. Here, we use the rules of psychological investigation to judge whether the previously mentioned assertion that “opposites attract” is correct:

- **Define the problem or the question you are investigating.** Do opposites attract each other?
- **Suggest a theory or a reasonable explanation for the problem.** People who are dissimilar balance each other in a relationship.
- **Collect and examine all the available evidence.** In doing so, be skeptical of people’s self-reports, as they may be subjectively biased. If data conflict, try to find more evidence. Research on attraction yields no support for the idea that opposites attract, whereas many studies confirm that people of similar looks, interests, age, family background, religion, values, and attitudes seek each other.
- **Analyze assumptions.** Because balancing different people’s strengths and weaknesses is a good way to form a group, you might assume it is a good basis for personal relationships as well, which would explain why people of opposite temperaments are naturally attracted to each other. Yet research evidence shows that such an assumption is false. Why should people of similar temperaments attract each other? One important reason is that they often belong to the same social circles. Research suggests proximity is a big factor in attraction.
- **Avoid oversimplifying.** Don’t overlook the evidence that people of similar temperaments find living together rather difficult in some ways. For example, living with someone who is as tense as you are may be harder than living with someone of calm temperament—your opposite.
- **Draw conclusions carefully.** It seems safe to conclude that, in general, opposites don’t attract, but there are specific exceptions to this general rule.
- **Consider every alternative interpretation.** People may cite cases that conflict with your conclusion. Remember, however, that their arguments are likely to be based on subjective observations and a far narrower database than researchers have used when studying this question.
- **Recognize the relevance of research to events and situations.** Let’s say you have been thinking of dating someone whose temperament seems quite different from yours. You may decide, based on what you now know, not to rush into things but to go more slowly, testing your own observations against your knowledge of research findings.
Chapter 1

Almost all of us study skills. Finally, you may acquire self-understanding. You will also have the opportunity to acquire job skills. Critical thinking skills. Skill in the application of the scientific method.

Although psychology is the fourth most popular undergraduate major (after Business, Social Sciences & History, and Education) (American Psychological Association, 2008b), we know that many students take psychology classes in order to fulfill a general requirement for their degree, rather than out of a compelling interest in the subject. Those students, and even some who are keenly interested in psychology, may wonder, “What am I going to gain from taking this course?” There are several benefits that you can gain from studying psychology:

• **Self-understanding.** Almost all of us want to understand ourselves and others better. In our daily lives, we often look for answers by relying on our own experience, knowledge, and assumptions. But, as you will see, that barely scratches the surface. As a psychology student, you will be challenged to go beyond the superficial in your life and confront what really lies behind your most basic actions. You will learn to look deeply into human behavior and ask complex and precise questions. In the process, you will not only achieve a better understanding of yourself and your fellow human beings, but also come to realize that much of what we consider “just plain common sense about people” doesn’t hold up under scrutiny.

• **Critical thinking skills.** In addition to greater understanding of yourself and others, by studying psychology you will also have an opportunity to acquire some specific skills. One of those skills is the ability to think critically about psychological issues: to clearly define issues, to examine the evidence bearing on them, to become more aware of hidden assumptions, to resist the temptation to oversimplify, to draw conclusions carefully, and above all to realize the relevance of empirical research to understanding psychological issues. As a result of practicing critical thinking, you will become a more sophisticated consumer of the information available to you in the mass media. You will also become more cautious about too quickly accepting what looks like “common sense.”

• **Skill in the application of the scientific method.** Because psychology uses the scientific method to understand behavior, studying psychology helps students understand and become proficient in the principles and application of the scientific method. Perhaps this is why increasing numbers of educators use psychology to teach the fundamentals of the scientific method to undergraduates who show little interest in more traditional scientific disciplines like chemistry or physics (Dingfelder, 2007).

• **Study skills.** You will also have the opportunity to acquire better study skills that will serve you well in all your courses. In addition to the study tips provided at the beginning of this text (see “To the Student”), you will find an entire chapter on human memory (Chapter 6) containing excellent information about making the most of your study time. But you will also find information about the relation between sleep and learning and the effects of drugs on memory (Chapter 4), about the nature of intelligence and its relation to success in school and in later life (Chapter 7), about the effects of motivation and arousal on the ability to learn and to perform (Chapter 8), and about age differences in the ability to learn and remember (Chapter 9).

• **Job skills.** Finally, you may acquire some skills that will help you find a job. This chapter lists many career possibilities for students who earn degrees in psychology. In addition, many careers outside psychology draw on a person’s knowledge of psychology. For example, personnel administrators deal with employee relations; vocational rehabilitation counselors help people with disabilities find employment; and day-care center supervisors oversee the care of preschool children. Indeed, employers in areas such as business and finance seek out psychology majors because of their knowledge of the principles of human behavior and their skills in experimental design and data collection and analysis.

Of course, all of these benefits are much more likely to accrue to students who regularly attend class, study, and try to apply what they learn to their own lives. As with many other opportunities, the benefits you receive are, in large part, up to you.

**CHECK YOUR UNDERSTANDING**

1. Indicate whether each of the following statements is true (T) or false (F):
   a. _____ Psychologists collect data through careful, systematic observation.
   b. _____ Psychologists try to explain their observations by developing theories.
   c. _____ Psychologists form hypotheses or predictions on the basis of theories.
   d. _____ Psychologists appeal to common sense in their arguments.
   e. _____ Psychologists systematically test hypotheses.
   f. _____ Psychologists base their conclusions on widely shared values.

   **Answers:** a. (T), b. (T), c. (T), d. (F), e. (T), f. (F)
THE GROWTH OF PSYCHOLOGY

“Psychology has a long past, but a short history.” What does that mean?

In the West, since the time of Plato and Aristotle, people have wondered and written about human behavior and mental processes. But not until the late 1800s did they begin to apply the scientific method to questions that had puzzled philosophers for centuries. Only then did psychology come into being as a formal, scientific discipline separate from philosophy. The history of psychology can be divided into three main stages: the emergence of a science of the mind, the behaviorist decades, and the “cognitive revolution.”

The “New Psychology”: A Science of the Mind

How did Wundt help to define psychology as a science of the mind?

Why did James think that sensation and perception alone couldn’t explain behavior?

Why was Freud’s theory of the unconscious shocking at the turn of the 20th century?

At the beginning of the 20th century, most university psychology programs were located in philosophy departments. But the foundations of the “new psychology”—the science of psychology—had been laid.

Wilhelm Wundt and Edward Bradford Titchener: Voluntarism and Structuralism Most psychologists agree that psychology was born in 1879, the year that Wilhelm Wundt founded the first psychological laboratory at the University of Leipzig in Germany. In the public eye, a laboratory identified a field of inquiry as “science” (Benjamin, 2000). At the outset, Wundt did not attract much attention; only four students attended his first lecture. By the mid-1890s, however, his classes were filled to capacity.

Wundt attempted to explain immediate experience and to develop ways to study it scientifically (Ardila, 2007), though he also believed that some mental processes could not be studied through scientific experiments (Blumenthal, 1975). Wundt was primarily interested in memory (Carpenter, 2005) and selective attention—the process by which we determine what we are going to attend to at any given moment. Wundt used the term
**structuralism** School of psychology that stresses the basic units of experience and the combinations in which they occur.

**functionalist theory** Theory of mental life and behavior that is concerned with how an organism uses its perceptual abilities to function in its environment.

voluntarism to describe his view of psychology. He believed that attention is actively controlled by intentions and motives; and that this sets human attention apart from attention in other organisms. In turn, attention controls such other psychological processes as perceptions, thoughts, and memories. We will examine the role of attention more closely in Chapter 4 ("States of Consciousness") and Chapter 6 ("Memory"), but for the moment it is sufficient to note that, in establishing a laboratory and insisting on measurement and experimentation, Wundt moved psychology out of the realm of philosophy and into the world of science (Benjamin, 2000; Mandler, 2007).

One important product of the Leipzig lab was its students who carried the new science of psychology to universities in other countries, including the United States: G. Stanley Hall (who established the first American psychology laboratory at Johns Hopkins University in 1883), J. M. Cattell (a professor at the University of Pennsylvania in 1888, who was the first American to be called a "professor of psychology"), and British-born Edward Bradford Titchener, who went to Cornell University. Titchener's ideas differed sharply in many respects from those of his mentor (Sundqvist, 2007; Zehr, 2000). Titchener was impressed by recent advances in chemistry and physics, achieved by analyzing complex compounds (molecules) in terms of their basic elements (atoms). Similarly, Titchener reasoned, psychologists should analyze complex experiences in terms of their simplest components. For example, when people look at a banana they immediately think, "Here is a fruit, something to peel and eat." But this perception is based on associations with past experience; what are the most fundamental elements, or "atoms," of thought?

Titchener broke down consciousness into three basic elements: physical sensations (what we see), feelings (such as liking or disliking bananas), and images (memories of other bananas). Even the most complex thoughts and feelings, he argued, can be reduced to these simple elements. Titchener saw psychology's role as identifying these elements and showing how they can be combined and integrated—an approach known as **structuralism**. Although the structuralist school of psychology was relatively short-lived and has had little long-term effect, the study of perception and sensation continues to be very much a part of contemporary psychology, as you will see in Chapter 3, "Sensation and Perception."

**William James: Functionalism** One of the first academics to challenge structuralism was an American, William James (son of the transcendentalist philosopher Henry James, Sr., and brother of novelist Henry James). As a young man, James earned a degree in physiology and also studied philosophy on his own, unable to decide which interested him more. In psychology, he found the link between the two. In 1875, James offered a class in psychology at Harvard. He later commented that the first lecture he ever heard on the subject was his own.

James argued that Titchener’s "atoms of experience"—pure sensations without associations—simply do not exist in real-life experience. Our minds are constantly weaving associations, revising experience, starting, stopping, and jumping back and forth in time. Perceptions, emotions, and images cannot be separated, James argued; consciousness flows in a continuous stream. If we could not recognize a banana, we would have to figure out what it was each time we saw one. Mental associations allow us to benefit from previous experience. When we get up in the morning, get dressed, open the door, and walk down the street, we don’t have to think about what we are doing: We act out of habit. James suggested that when we repeat something, our nervous systems are changed so that each repetition is easier than the last.

James developed a **functionalist theory** that focused on how individuals use their perceptual abilities to adapt and function in their environment. This theory raised questions about learning, the complexities of mental life, the impact of experience on the brain, and humankind’s place in the natural world that still seem current today. Although impatient with experiments, James shared Wundt and Titchener’s belief that the goal of psychology was to analyze experience. Wundt, however, was not impressed. After reading James’s *The Principles of Psychology* (1890), he commented, “It is literature, it is beautiful, but it is not psychology” (M. Hunt, 1994, p. 139).
Sigmund Freud: Psychodynamic Psychology Of all psychology’s pioneers, Sigmund Freud is by far the best known—and the most controversial. A medical doctor, unlike the other figures we have introduced, Freud was fascinated by the central nervous system. He spent many years conducting research in the physiology laboratory of the University of Vienna and only reluctantly became a practicing physician. After a trip to Paris, where he studied with a neurologist who was using hypnosis to treat nervous disorders, Freud established a private practice in Vienna in 1886. His work with patients convinced him that many nervous ailments are psychological, rather than physiological, in origin. Freud’s clinical observations led him to develop a comprehensive theory of mental life that differed radically from the views of his predecessors.

Freud held that human beings are not as rational as they imagine and that “free will,” which was so important to Wundt, is largely an illusion. Rather, we are motivated by unconscious instincts and urges that are not available to the rational, conscious part of our mind. Other psychologists had referred to the unconscious, in passing, as a dusty warehouse of old experiences and information we could retrieve as needed. In contrast, Freud saw the unconscious as a dynamic cauldron of primitive sexual and aggressive drives, forbidden desires, nameless fears and wishes, and traumatic childhood memories. Although repressed (or hidden from awareness), unconscious impulses press on the conscious mind and find expression in disguised or altered form, including dreams, mannerisms, slips of the tongue, and symptoms of mental illness, as well as in socially acceptable pursuits such as art and literature. To uncover the unconscious, Freud developed the technique of free association, in which the patient lies on a couch, recounts dreams, and says whatever comes to mind.

Freud’s psychodynamic theory was controversial at the turn of the century. Many of Freud’s Victorian contemporaries were shocked, not only by his emphasis on sexuality, but also by his suggestion that we are often unaware of our true motives and thus are not entirely in control of our thoughts and behavior. Conversely, members of the medical community in Vienna at that time generally held Freud’s new theory in high regard, nominating him for the position of Professor Extraordinarius at the University of Vienna (Esterson, 2002). Freud’s lectures and writings attracted considerable attention in the United States as well as in Europe; he had a profound impact on the arts and philosophy, as well as on psychology. However, Freud’s theories and methods continue to inspire heated debate (Merlino, Jacobs, Kaplan, & Moritz, 2008).

Psychodynamic theory, as expanded and revised by Freud’s colleagues and successors, laid the foundation for the study of personality and psychological disorders, which we will discuss in Chapters 10, 12, and 13. His revolutionary notion of the unconscious and his portrayal of human beings as constantly at war with themselves are taken for granted today, at least in literary and artistic circles. Freud’s theories were never totally accepted by mainstream psychology, however; and in recent decades his influence on clinical psychology and psychotherapy has declined (Bornstein, 2004; Westen, 1998).

Redefining Psychology: The Study of Behavior

How was Watson’s approach to human behavior different from that of Freud?

How did Skinner expand behaviorism?

Until the beginning of the 20th century, psychology was defined as the study of mental processes. The primary method of collecting data was introspection or self-observation, which occurred in a laboratory or on an analyst’s couch. At the beginning of the 20th century, however, a new generation of psychologists rebelled against this “soft” approach. The leader of the challenge was the American psychologist John B. Watson.

John B. Watson: Behaviorism While Freud explored unconscious forces in Vienna, across the ocean, John B. Watson argued that the whole idea of mental life was superstition,
behaviorism  School of psychology that studies only observable and measurable behavior.

Chapter 1

behaviorism  School of psychology that studies only observable and measurable behavior. In “Psychology as a Behaviorist Views It” (1913), Watson contended that you cannot see or even define consciousness any more than you can observe a soul. And if you cannot locate or measure something, it cannot be the object of scientific study. For Watson, psychology was the scientific study of observable, measurable behavior—and nothing more (Ardila, 2007).

Watson’s view of psychology, known as behaviorism, was based on the work of the Russian physiologist Ivan Pavlov, who had won a Nobel Prize for his research on digestion. In the course of his experiments, Pavlov noticed that the dogs in his laboratory began to salivate as soon as they heard their feeder coming, even before they could see their dinner. He decided to find out whether salivation, an automatic reflex, could be shaped by learning. He began by repeatedly pairing the sound of a buzzer with the presence of food. The next step was to observe what happened when the buzzer was sounded without introducing food. This experiment clearly demonstrated what Pavlov had noticed incidentally: After repeated pairings, the dogs salivated in response to the buzzer alone. Pavlov called this simple form of training conditioning. Thus, a new school of psychology was inspired by a casual observation—followed by rigorous experiments. We will learn more about the findings of this approach in Chapter 5, “Learning.”

Watson came to believe that all mental experiences—thinking, feeling, awareness of self—are nothing more than physiological changes in response to accumulated experiences of conditioning. An infant, he argued, is a tabula rasa (Latin for "blank slate") on which experience may write virtually anything:

Give me a dozen healthy infants, well-formed, and my own specialized world to bring them up in, and I’ll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant chief and, yes, even beggar man, and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race. (J. B. Watson, 1924, p. 104)

Watson attempted to demonstrate that all psychological phenomena—even Freud’s unconscious motivations—are the result of conditioning (Rilling, 2000). In one of the most infamous experiments in psychology’s history, Watson attempted to create a conditioned fear response in an 11-month-old boy. “Little Albert” was a secure, happy baby who enjoyed new places and experiences. On his first visit to Watson’s laboratory, Albert was delighted by a tame, furry white rat, but he became visibly frightened when Watson banged a steel bar with a hammer just behind the infant’s head. On his second visit, Watson placed the rat near Albert, and the moment the baby reached out and touched the rat, Watson banged the hammer. After half a dozen pairings, little Albert began crying the instant the rat was introduced, without any banging. Further experiments found that Albert was frightened by anything white and furry—a rabbit, a dog, a sealskin coat, cotton wool, and Watson wearing a Santa Claus mask (J. B. Watson & Rayner, 1920). Freud had labeled the transfer of emotions from one person or object to another “displacement,” a neurotic response that he traced to the unconscious. Drawing on Pavlov, Watson called the same phenomenon “generalization,” a simple matter of conditioning (Rilling, 2000). As far as Watson was concerned, psychodynamic theory and psychoanalysis were “voodooism.”

Watson was also interested in showing that fears could be eliminated by conditioning. Mary Cover Jones (M. C. Jones, 1924), one of his graduate students, successfully reconditioned a boy who showed a fear of rabbits (not caused by laboratory conditioning) to overcome this fear. Her technique, which involved presenting the rabbit at a great distance and then gradually bringing it closer while the child was eating, is similar to conditioning techniques used by psychologists today.

B. F. Skinner: Behaviorism Revisited  Following in the footsteps of Pavlov and Watson, B. F. Skinner became one of the leaders of the behaviorist school of psychology in the mid-20th century. Like Watson, Skinner fervently believed that psychologists should study only observable and measurable behavior (J. Moore, 2005; B. F. Skinner, 1938, 1987, 1989, 1990). He, too, was primarily interested in changing behavior through condition-
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Gestalt psychology
School of psychology that studies how people perceive and experience objects as whole patterns.

The Cognitive Revolution

How did Gestalt psychologists influence the way we think about perception?

What aspects of life do humanistic psychologists stress?

In the late 1960s, behaviorism began to loosen its grip on the field. On one hand, research on perception, personality, child development, interpersonal relations, and other topics that behaviorists had ignored raised questions they couldn’t readily explain. On the other hand, research in other fields (especially anthropology, linguistics, neurobiology, and computer science) was shedding new light on the workings of the mind. Psychologists came to view behaviorism not as an all-encompassing theory, but as only one piece of the puzzle (R. W. Robins, Gosling, & Craik, 1999; Tryon, 2002). They began to look into the “black box” of the human mind and put more emphasis on humans (and other animals) as sentient—conscious, perceptive, and alert—beings; that is, as active learners, rather than passive recipients of life’s lessons.

The Precursors: Gestalt and Humanistic Psychology

Even during the period that behaviorism dominated American psychology, not all psychologists had accepted behaviorist doctrines. Two schools that paved the way for the cognitive revolution were Gestalt psychology and humanistic psychology.

In Germany, psychologists Max Wertheimer, Wolfgang Köhler, and Kurt Koffka were all interested in perception, particularly in certain tricks that the mind plays on itself. For example, when we see a series of still pictures flashed at a constant rate (for example, movies or “moving” neon signs), why do the pictures seem to move? Phenomena like these launched a new school of thought, Gestalt psychology. Roughly translated from German, Gestalt means “whole” or “form.” When applied to perception, it refers to our tendency to see patterns, to distinguish an object from its background, to complete a picture from a few cues. Like William James, the Gestalt psychologists rejected the structuralists’ attempt to break down perception and distinguish among its elements. When we look at a tree, we see just that, a tree, rather than a series of isolated leaves and branches. We’ll see in Chapter 3 that Gestalt psychology paved the way for the modern study of perception.

During the same period, the American psychologist Abraham Maslow, who studied under Gestalt psychologist Max Wertheimer and anthropologist Ruth Benedict, developed a more holistic approach to psychology, in which feelings and yearnings play a key role. Maslow referred to humanistic psychology as the “third force”—beyond Freudian theory and behaviorism. Humanistic psychologists emphasize human potential and the importance of love, belonging, self-esteem and self-expression, peak experiences (when one becomes so involved in an activity that self-consciousness fades), and self-actualization.

B. F. Skinner

Gestalt psychology
School of psychology that studies how people perceive and experience objects as whole patterns.

Humanistic psychology
School of psychology that emphasizes nonverbal experience and altered states of consciousness as a means of realizing one’s full human potential.
The Rise of Cognitive Psychology

As behaviorism fell out of favor in the late 1960s, psychology began to come full circle in what can be described as a cognitive revolution—a shift away from a limited focus on behavior toward a broad interest in such mental processes as memory, decision making, and information processing. The field evolved from a period in which consciousness was considered inaccessible to scientific inquiry to one in which researchers resumed investigating and theorizing about the mind—but now with new research methods and behaviorism's commitment to objective, empirical research. As a result of this shift in focus, even the definition of psychology changed. Psychology is still the study of human behavior, but psychologists’ concept of “behavior” has been expanded to include thoughts, feelings, and states of consciousness.

This new focus applies to existing fields of psychology as well as to new subfields. In developmental psychology, for example, the idea that a child is a blank slate was replaced by a new view of babies and children as aware, competent, social beings. In this new view, children actively seek to learn about and make sense of their world. Moreover, all healthy children are “equipped” with such distinctively human characteristics as the ability to acquire language through exposure, without formal education. Developmental psychology is one of several subfields contributing to and benefiting from the emergence of cognitive psychology.

Cognitive psychology is the study of our mental processes in the broadest sense: thinking, feeling, learning, and remembering, for example. If the behaviorist model of learning resembled an old-fashioned telephone switchboard (a call or a stimulus comes in, is relayed along various circuits in the brain, and an answer or a response goes out), the cognitive model resembles a high-powered, modern computer. Cognitive psychologists are interested in the ways in which people acquire information, process that information using their cognitive “hardware” and “software,” and use the results to make sense out of the world, to solve problems, and so on.

In contrast to behaviorists, cognitive psychologists believe that mental processes can and should be studied scientifically. Although we cannot observe memories or thoughts directly, we can observe behavior and make inferences about the kinds of cognitive processes that underlie that behavior. For example, we can read a lengthy story to people and then observe what they remember from that story, the ways in which their recollections change over time, and the sorts of errors in recall that they make. On the basis of systematic research of this kind, we can gain insight into the cognitive processes underlying human memory (which we discuss in Chapter 6, “Memory”). Moreover, with the advent of new brain-imaging techniques (described in Chapter 2), cognitive psychologists have begun to address questions about the neurological mechanisms that underlie such cognitive processes as learning, memory, intelligence, and emotion, giving rise to the rapidly expanding field of cognitive neuroscience (Purves et al., 2008; Rosenzweig, Breedlove, & Watson, 2005).
New Directions

Where do evolutionary psychologists look for the roots of human behavior?

What new focus is positive psychology bringing to the study of human behavior?

Is there a single perspective dominating psychology today?

During much of the 20th century, psychology was divided into competing theoretical schools. Crossing theoretical lines was considered intellectual heresy. In the 21st century, by contrast, psychologists are more flexible in considering the merits of new approaches, combining elements of different perspectives as their interests or research findings dictate. As a result, new theories and initiatives are emerging.

Evolutionary Psychology

As the name indicates, evolutionary psychology focuses on the origins of behavior patterns and mental processes, the adaptive value they have or had, and the functions they serve or served in our emergence as a distinct species (Buss, 2005). All of the theoretical views we have discussed so far seek to explain modern humans, or Homo sapiens. In contrast, evolutionary psychologists ask, how did human beings get to be the way we are? In what ways might the roots of behavior serve to promote the survival of the species?

Evolutionary psychologists study such diverse topics as perception, language, helping others (altruism), parenting, happiness, sexual attraction and mate selection, jealousy, and violence (Bernhard & Penton-Voak, 2002; Buss, 2000a, 2000b; Caporael, 2001; G. Miller, 2000; Rhodes, 2006). By studying such phenomena in different species, different habitats, different cultures, and in males and females, evolutionary psychologists seek to understand the basic programs that guide thinking and behavior (R. W. Byrne, 2002; J. Cartwright, 2000).

We have said that cognitive psychologists tend to see the human mind as a “general purpose” computer that requires software (experience) to process information. In contrast, many evolutionary psychologists see the mind as “hardwired,” suggesting that human beings are predisposed to think and act in certain ways (Ermer, Cosmides, & Tooby, 2007; Goode, 2000b; Siegert & Ward, 2002). Further, they contend that these fixed programs evolved hundreds of thousands of years ago when our ancestors lived as hunter–gatherers, although the problem-solving strategies that benefited early humans may or may not be adaptive in the modern era. Whether evolutionary psychology finds a place among the major fields of psychology or stays on the sidelines remains to be seen (see Bering & Shackelford, 2005; Bjorklund, 2003; Buller, 2005; Buss & Reeve, 2003; C. B. Crawford, 2003; Krebs, 2003; Lickliter & Honeycutt, 2003a, 2003b; Tooby, Cosmides, & Barrett, 2003).

Positive Psychology

Another emerging perspective is positive psychology, which traces its roots back to humanistic psychology. According to this view, psychology should devote more attention to “the good life”: the study of subjective feelings of happiness and well-being; the development of such individual traits as intimacy, integrity, leadership, altruism, and wisdom; and the kinds of families, cooperative lifestyles, work settings, and communities that encourage individuals to flourish (Snyder & Lopez, 2007).

Positive psychologists argue that psychologists have learned a great deal about the origins, diagnosis, and treatment of mental illness but relatively little about the origins
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Margaret Floy Washburn and nurturance of mental wellness. There have been many studies of prejudice and intergroup hostility, for example, but very few about tolerance and intergroup harmony.

Today's positivists do not argue that psychologists should abandon their role in the science of healing. To the contrary, they support efforts to promote better, more widespread use of what psychologists have learned. But they argue that psychology has reached a point where building positive qualities should receive as much emphasis as repairing damage (Duckworth, Steen, & Seligman, 2005).

Multiple Perspectives of Psychology Today  Contemporary psychologists tend to see different perspectives as complementary, with each perspective contributing to our understanding of human behavior. When they study aggression, for example, psychologists no longer limit their explanations to the behavioral view (aggressive behavior is learned as a consequence of reward and punishment) or the Freudian perspective (aggression is an expression of unconscious hostility toward a parent). Instead, most contemporary psychologists trace aggression to a number of factors, including long-standing adaptations to the environment (evolutionary psychology) and the influences of culture, gender, and socioeconomic status on the way people perceive and interpret events—"That guy is making fun of me" or "He's asking for it"—(cognitive psychology). Similarly, physiological psychologists no longer limit themselves to identifying the genetic and biochemical roots of aggression. Instead, they study how heredity and the environment interact to elicit aggressive behavior.

Sometimes these theoretical perspectives mesh and enhance each other beautifully; at other times, adherents of one approach challenge their peers, arguing for one viewpoint over others. But psychologists agree that the field advances only when new evidence is added to support or challenge existing theories.  

Where Are the Women?

What obstacles did women face in the early years of psychology?

As you read the brief history of modern psychology, you may have concluded that the founders of the new discipline were all men. But did psychology really have only fathers and no mothers? If there were women pioneers in the field, why are their names and accomplishments missing from historical accounts?

In fact, women have contributed to psychology from its beginnings. In the United States, women presented papers and joined the national professional association as soon as it was formed in 1892. Often, however, they faced discrimination. Some colleges and universities did not grant degrees to women; professional journals were reluctant to publish their work; and teaching positions were often closed to them (Kite et al., 2001; Minton, 2002). Despite these barriers, a number of early women psychologists made important contributions and were acknowledged by some of the men in the growing discipline.

In 1906, James McKeen Cattell published American Men of Science, which, despite its title, included a number of women, among them 22 female psychologists. Cattell rated 3 of these women as among the 1,000 most distinguished scientists in the country: Mary Whiton Calkins (1863–1930), for her analysis of how we learn verbal material and her contributions to self-psychology; Christine Ladd-Franklin (1847–1930), for her work in color vision; and Margaret Floy Washburn (1871–1939) for her pioneering research examining the role of imagery in thought processes. In addition, Mary Whiton Calkins was elected and served as the first female president of the American Psychological Association (APA) in 1905, a position also held by Margaret Floy Washburn in 1921. However, because the doors
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Elizabeth Loftus’s research on the memory of eyewitnesses is helping us understand more about cognitive processes.

to an academic career remained closed, other early female psychologists found positions in therapeutic and other nonacademic settings; pursued careers in allied professions, such as child development and education, which were considered acceptable fields for women; or gained recognition by collaborating on research projects and books with their spouses (R. B. Evans, 1999).

In recent decades, the situation has changed dramatically. The number of women who receive PhDs in psychology has grown by leaps and bounds. (See Figure 1–1.) In 2005, more than 72% of the doctorate degrees in psychology were awarded to women (Cynkar, 2007). Indeed, among members of the American Psychological Association, women now outnumber men almost 2 to 1 (63% to 37%) (American Psychological Association, 2008a). No doubt some of this progress has resulted from the efforts of teachers of psychology to raise their students’ awareness of the important accomplishments of female psychologists (Moradi & Townsend, 2006). Because female psychologists perform key research in all of the psychology subfields, you will find their work referred to throughout this text. For example, Terry Amabile has studied creativity, in particular the positive effects that exposure to creative role models can have on people. Elizabeth Loftus’s research on memory has uncovered how unreliable eyewitness accounts of a crime can be. Eleanor Maccoby, Alice Eagly, and Jacqueline Eccles are prominent among the growing number of women and men who are studying sex differences in a variety of areas, such as emotionality, math and verbal ability, and helping behavior. Throughout the text, we look at this work to see what part biology and society play in differences in the behavior of women and men.

The relative absence of women from the history of psychology is only one aspect of a much bigger and more troubling concern: the relative inattentiveness to human diversity that characterized psychology through most of the 20th century. Only recently have psychologists looked closely at the ways in which culture, gender, race, and ethnicity can affect virtually all aspects of human behavior. In the next section, we begin our examination of this important topic.

Figure 1–1
Percentage of women recipients of PhDs in psychology, 1950–2005.

Elizabeth Loftus’s research on the memory of eyewitnesses is helping us understand more about cognitive processes.
Despite stereotypes of fathers as distant from their children, many fathers today take a very active role in parenting.

**LEARNING OBJECTIVE**

- Explain the importance of understanding human diversity and describe psychology's increasing attention to human diversity.

**CHECK YOUR UNDERSTANDING**

1. It was not until the late _____ that psychology came into its own as a separate discipline.  
   Answer: 1800s or 19th century.

**APPLY YOUR UNDERSTANDING**

1. Gregory believes that most of human behavior can be explained by examining our unconscious impulses. Gregory takes a ______ view of psychology.
   a. psychodynamic  
   b. behavioral  
   c. Gestalt  
   d. structuralist

2. As a contestant on the television show Jeopardy!, you are delighted that you took a psychology course when you read the clue, “Founder of the first psychological laboratory,” and you know that the correct answer (phrased in the form of a question, as required by the show) is, “Who was __________?”
   a. B. F. Skinner  
   b. John B. Watson  
   c. William James  
   d. Wilhelm Wundt

**HUMAN DIVERSITY**

Why should you learn about human diversity?

In the early 20th century, the great majority of research studies were conducted by White male professors at American universities, using White male American college students as participants. This arrangement was not a conscious or deliberate decision to study just one particular group. As in the medical community and in other sciences and prestigious professions in Europe and North America, psychology took for granted that what was true of White Western males would be true for other people as well. One critical history of psychology during this period was entitled Even the Rat Was White! (Guthrie, 1976).

For students like you, however, understanding human diversity is essential. Our major cities are home to people from diverse backgrounds, with diverse values and goals, living side by side. But proximity does not always produce harmony; sometimes it leads to aggression, prejudice, and conflict. Understanding cultural, racial, ethnic, and gender differences in thinking and behavior gives us the tools to reduce some of these interpersonal tensions. Looking at human diversity from a scientific perspective will allow you to separate fact from fiction in your daily interactions. Moreover, once you understand how and why groups differ in their values, behaviors, approaches to the world, thought processes, and responses to situations, you will be better able to savor the diversity around you. Finally, the more you comprehend human diversity, the more you will appreciate the many universal features of humanity.

The process of examining and overcoming past assumptions and biases has been slow and uneven, but a new appreciation of human diversity is taking shape (Enns & Sinacore, 2005; Ocampo et al., 2003). Psychologists have begun to question assumptions that are explicitly based on gender, race, and culture. Are women more likely than men to help a person in distress? Are African Americans more vulnerable to certain types of mental illness than are European Americans, or vice versa? Do the Japanese view children’s ability to learn in the same way Americans do? Do homosexuals have different motives and emotions than heterosexuals? Research indicates that the answer to such questions often is “no.”
Gender

How are psychologists helping us to understand the differences between men and women?

Gender has many layers. The words male and female refer to one’s biological makeup, the physical and genetic facts of being one sex or the other. Some scientists use the term sex to refer exclusively to biological differences in anatomy, genetics, or physical functioning, and gender to refer to the psychological and social meanings attached to being biologically male or female. Because distinguishing what is biologically produced from what is socially influenced is almost impossible, in our discussion of these issues, we will use the terms sex and gender interchangeably.

Gender Stereotypes In the past, men and women led very different lives. Today, women in many societies are as likely as men to obtain higher education; to work full-time, pursue careers, start businesses; and to be active in politics. And men are more likely to be more active parents and homemakers than their fathers were. Yet, stereotypes about how the "typical male" or "typical female" looks and acts still lead to confusion and misunderstandings between the sexes. In general, our culture promotes the idea that men are dominant, strong, and aggressive, whereas women are accommodating, emotional, and affectionate. As a result, many boys learn to hide their emotions, to deny feelings of weakness even to themselves, and to fight. Many girls, by contrast, learn to hide their ambitions, to deny their talents and strengths even to themselves, and perhaps to give in. Stereotypes are rarely benign. As we will see in Chapter 9, "Life-Span Development," the negative effects of these particular stereotypes on both boys and girls are significant and lasting.

Beyond our stereotypes about what males and females "typically" are like, we have general beliefs about gender roles—that is, cultural expectations regarding acceptable behavior and activities for males and females, respectively. As a rule, cultural norms change more slowly than behavior patterns. Although most modern American families depend on two salaries, the assumption that the husband should be the chief breadwinner and the wife should put her home and children first remains powerful. Working wives and mothers work a “second shift” (keeping house and caring for children) at home—as much because they feel that doing so is their responsibility and area of expertise, as because their husbands still expect them to do so (Dillaway & Paré, 2008; Kroska, 2003; Powers & Reiser, 2005).

The study of gender similarities and differences has become part of mainstream psychology. Psychologists in virtually every subfield conduct research to determine whether their findings apply equally to males and females, and if not, why not. As we will see, feminist theory is not for women only.

Feminist Psychology As the number of female psychologists has grown in recent decades (see Figure 1–1), so have their concerns about traditional psychological theories, research, and clinical practices (Minton, 2002; Robb, 2006). Feminist psychologists such as Carol Gilligan make three main points. As we have noted, much of the research supporting key psychological theories, such as moral development, was based on all-male samples. Second, reports of gender differences tend to focus on the extremes, exaggerating small differences and ignoring much greater similarities (Hyde, 2005a; Spelke, 2005). Third, the questions that psychologists ask and the topics that they study reflect what they consider to be important; male and female psychologists differ to some extent in that regard.

Beyond research and theory, contemporary feminist psychology has begun to influence every facet of psychological practice by seeking mechanisms to empower women in the community, by advocating action to establish policies that advance equality and social justice, and by increasing women’s representation in global leadership. Feminists also took the lead in urging other psychologists to recognize sexual orientation as simply another aspect of human diversity.

Sexual Orientation The term sexual orientation refers to whether a person is sexually attracted to members of the opposite sex (heterosexuality), the same sex (homosexuality), or

gender The psychological and social meanings attached to being biologically male or female.
feminist theory Feminist theories offer a wide variety of views on the social roles of women and men, the problems and rewards of those roles, and prescriptions for changing those roles.
sexual orientation Refers to the direction of one’s sexual interest toward members of the same sex, the other sex, or both sexes.
Board of Education.
is shared by a group of individuals.
including religion, language, or ancestry—that genes, facial features, and so forth).
is, geographic location, skin color, hair texture, according to an identifiable characteristic (that
ethnicity 
is a biological term used to refer to a subpopulation whose members have repro-
racial and ethnic differences?

Why are psychologists interested in racial and ethnic differences?
One of the first things we notice about a person is his or her race or ethnicity (Omi & Winant, 1994). Race is a biological term used to refer to a subpopulation whose members have reproduced exclusively among themselves and therefore are genetically similar and distinct from other members of the same species (Betancourt & López, 1993; Diamond, 1994). Most people simply take for granted the idea that the human species can be divided into a number of distinct races (Asians, Africans, Caucasians, Native Americans, and so on). However, human beings have migrated, intermarried, and commingled so frequently over time that it is impossible to identify biologically separate races (V. O. Wang & Sue, 2005). Moreover, the criteria people use to differentiate among different races are arbitrary. In the United States, we assign people to different races primarily on the basis of skin color and facial features. In central Africa, members of the Tutsi and Hutu tribes see themselves as different races, although they are similar in skin color and facial features. In spite of these different definitions, most people continue to believe that racial categories are meaningful; and as a result, race shapes people’s social ident-
ty, their sense of self, their experiences in their own and other societies, and even their health.

Whereas racial categories are based on physical differences, ethnicity is based on cultural characteristics. An ethnic group is a category of people who have migrated to another country, but still identify themselves—and are perceived by others—as distinctive because of a common homeland and history, language, religion, or traditional cultural beliefs and social practices. For example, Hispanic Americans may be Black, White, or any shade in between. What unites them is their language and culture. By the mid-1980s, there was sufficient interest among psychologists in ethnicity for the APA to create a new division (Division 45), devoted to the psychological study of ethnic minority issues. Increasing numbers of psychologists are now studying why ethnicity is so important both in our country and in others and how individuals select or create an ethnic identity and respond to ethnic stereotypes.

Racial and Ethnic Minorities in Psychology Most ethnic minorities are still under-
represented among the ranks of American psychologists. According to the APA, ethnic-
minority students account for almost 25% of college entrants, but represent only 16% of graduates who major in psychology, 14% of those who enroll in graduate school in psychology, 12% of those who receive master’s degrees in psychology, and 9% of those who earn doctorates (Sleek, 1999). Why? One possibility is that when Black, Hispanic American, Native American, and other students look at the history of psychology or the psychology faculties of modern universities, they find few role models; likewise, when they look at psychological research, they find little about themselves and their realities (Strickland, 2000). One survey of psychology journals found that less than 2% of the articles focused on U.S. racial and ethnic minorities (Iwamasa & Smith, 1996). Nonetheless, their small numbers have not prevented them from achieving prominence and making significant contributions to the field (see Pickren, 2004). For example, the late Kenneth Clark (1914–2005), a former president of the American Psychological Association, received national recognition for the important work he and his wife, the late Mamie Clark (1917–1983), did on the effects of segregation on Black children (Lal, 2002). This research was cited by the Supreme Court in the Brown v. Board of Education decision of 1954 that outlawed segregated schools in the United States (Keppel, 2002).

In an effort to remedy the underrepresentation of ethnic minorities, the APA’s Office of Ethnic Minority Affairs is sponsoring programs to attract ethnic-minority students to
psychology (Rabasca, 2000a; Townsend, 2004). This initiative includes summer programs for high school students, recruitment at the high school and college levels, mentor and other guidance programs, and a clearinghouse for college students who meet the requirements for graduate programs.

Psychologists are also working to uncover and overcome biases in psychological research that are related to gender, race, and ethnicity. The field of psychology is broadening its scope to probe the full range and richness of human diversity, and this text mirrors that expansive and inclusive approach. We will consider the problem of bias in psychological research more fully later in the chapter.

**Culture**

How does culture contribute to human diversity?

“Humans are a cultural species” (Heine & Norenzayan, 2006, p. 251). A culture provides modes of thinking, acting, and communicating; ideas about how the world works and why people behave as they do; beliefs and ideals that shape our individual dreams and desires; information about how to use and improve technology; and, perhaps most important, criteria for evaluating what natural events, human actions, and life itself mean. All large, complex modern societies also include subcultures—groups whose values, attitudes, behavior, and vocabulary or accent distinguish them from the cultural mainstream. Most Americans participate in a number of subcultures as well as in mainstream culture.

Many of the traits we think of as defining us as human—especially language, morals, and technology—are elements of culture. Even one’s sense of self is dependent on culture and subculture (Bruner, 2005: Haste & Abrahams, 2008). Thus, psychology must take cultural influences into account. In cross-cultural research, psychologists examine the way these influences affect behavior (Heine, Buchtel, & Norenzayan, 2008). For example, cross-cultural research on motivation and emotions, personality, and self-esteem has called attention to a broad distinction between individualistic cultures (which value independence and personal achievement) and collectivist cultures (which value interdependence, fitting in, and harmonious relationships) (Fujimoto & Hârtel, 2004; Kagitcibasi, 1997). Moreover, cross-cultural studies have had a significant impact on the study of gender. Anthropologist Margaret Mead’s classic work, Sex and Temperament in Three Primitive Societies (1935), is still cited by feminists and others as showing that definitions of masculinity and femininity are not biological givens, but are instead created by cultures and learned by their members along with other cultural norms, which makes them subject to change. Finally, in our increasingly multicultural society, psychologists are now dealing with diverse clients, research participants, and students (Lonner, 2005; C. C. I. Hall, 1997; Woldt & Toman, 2005). To meet this challenge, psychologists and other mental health professionals have begun working to educate and train “culturally competent” professionals (Fung, Andermann, Zaretsky, & Lo, 2008; Whealin & Ruzek, 2008).

Throughout this book, we will explore similarities and differences among individuals and groups of people. For example, we will examine differences in personality characteristics and intelligence; also, we will look at similarities in biological functioning and developmental stages. In most chapters we will examine research on males and females, members of different racial and ethnic groups, and cross-cultural studies.

**Psychology and Minority Students**

In the text, we cited Strickland’s conclusion that members of minority groups are underrepresented among psychology majors and in psychology postgraduate programs because a majority of their instructors and professors are White, and because so many of the research studies they read about in introductory psychology are based on White-only participants (Strickland, 2000).

- Do you agree with Strickland? Why or why not?
- What other reasons might explain why Whites are more likely than people of color to choose psychology as their main area of study and future career?
- How might you go about determining whether those various explanations are valid? What kind of research evidence would lead you to favor one explanation over another?

**Within the dominant culture, members of subcultures share values, attitudes, rituals, and often styles of dress.**

**Culture** The tangible goods and the values, attitudes, behaviors, and beliefs that are passed from one generation to another.

**Cross-cultural research** Research involving the exploration of the extent to which people differ from one culture to another.
LEARNING OBJECTIVES

- Describe the characteristics of case studies, surveys, correlational research and experimental research, and the strengths and weaknesses of each research method.
- Describe the differences between independent and dependent variables and between control groups and experimental groups.
- Explain the importance of sampling in psychological research. Differentiate between random and representative samples.
- Explain how unintended biases can affect the results of research.

naturalistic observation Research method involving the systematic study of animal or human behavior in natural settings rather than in the laboratory.

CHECK YOUR UNDERSTANDING

1. A ____ is a group within a larger society that shares a certain set of values, beliefs, outlooks, and norms of behavior.
2. People who have ancestors from the same region of the world and who share a common language, religion, and set of social traditions are said to be part of the same _______ group.
3. "Minority groups are seriously underrepresented among psychologists." Is this statement true (T) or false (F)?

Answers: 1. subculture 2. ethnic 3. (T)

APPLY YOUR UNDERSTANDING

1. Which of the following is NOT a reason you should study human diversity?
   a. _____ because our society is made up of so many different kinds of people
   b. _____ as a way of helping to solve interpersonal tensions based on misunderstandings of other people
   c. _____ to help define what humans have in common
   d. _____ because diversity psychology is one of the major subdivisions of psychology

2. Which of the following subcultures has been historically overrepresented in psychological research?
   a. _____ African Americans
   b. _____ homosexual men and women
   c. _____ White males
   d. _____ the homeless

Answers: 1. d. 2. c.

RESEARCH METHODS IN PSYCHOLOGY

What are some of the research methods that psychologists use in their work?

To collect data systematically and objectively, psychologists use a variety of research methods, including naturalistic observation, case studies, surveys, correlational research, and experimental research.

Naturalistic Observation

Why is a natural setting sometimes better than a laboratory for observing behavior?

Psychologists use naturalistic observation to study human or animal behavior in its natural context. One psychologist with this real-life orientation might observe behavior in a school or a factory; another might observe monkeys in the wild rather than viewing them in captivity. The primary advantage of naturalistic observation is that the behavior observed in everyday life is likely to be more natural, spontaneous, and varied than that observed in a laboratory.

For example, researchers used naturalistic observation in a study (Hammen, Gitlin, & Altshuler, 2000) designed to understand why some patients with bipolar disorder (a mental disorder discussed more fully in Chapter 12, "Psychological Disorders") are more likely to adjust successfully to the workplace than others. By carefully studying 52 people over a 2-year period in their natural settings, these investigators found that the people who displayed the most successful work adjustment were those who also had strong supportive personal relationships with other people. Because simulating a genuine workplace environment in a laboratory would have been extremely difficult (especially over an extended period of time), naturalistic observation provided a practical alternative for exploring this issue.
Naturalistic observation is not without its drawbacks. Psychologists using naturalistic observation have to take behavior as it comes. They cannot suddenly yell, “Freeze!” when they want to study in more detail what is going on. Nor can psychologists tell people to stop what they are doing because it is not what the psychologists are interested in researching. Moreover, simply describing one’s impressions of “a day in the life” of a particular group or the way that different people behave in the same setting is not science. Observers must measure behavior in a systematic way, for example, by devising a form that enables them to check what people are doing at planned timed intervals.

The main drawback in naturalistic observation is observer bias. Even psychologists who are trained observers may subtly distort what they see to make it conform to what they were hoping to see. For this reason, contemporary researchers often use videotapes that can be analyzed and scored by other researchers who do not know what the study is designed to find out. Another potential problem is that psychologists may not observe or record behavior that seems to be irrelevant. Therefore, many observational studies employ a team of trained observers who pool their notes. This strategy often generates a more complete picture than one observer could draw alone.

Unlike laboratory experiments that can be repeated, each natural situation is a one-time-only occurrence. Therefore, psychologists prefer not to make general statements based solely on information from naturalistic studies. Rather, they must test the information from naturalistic observation under controlled laboratory conditions before they draw generalizations.

Despite these disadvantages, naturalistic observation is a valuable tool. After all, real-life behavior is what psychology is all about. Naturalistic observation often provides new ideas and suggests new theories, which can then be studied more systematically and in more detail in the laboratory. This method also helps researchers maintain their perspective by reminding them of the larger world outside the lab.

### Case Studies

**When can a case study be most useful?**

A second research method is the case study: a detailed description of one person or a few individuals. Although in some ways this method is similar to naturalistic observation, the researcher here uses a variety of methods to collect information that yields a detailed, in-depth portrait of the individual. A case study usually includes real-life observation, interviews, scores on various psychological tests, and whatever other measures the researcher considers revealing. For example, the Swiss psychologist Jean Piaget developed a comprehensive theory of cognitive development by carefully studying each of his three children as they grew and changed during childhood. Other researchers have tested Piaget’s theory with experiments involving larger numbers of children, both in our own culture and in others. (See Chapter 9, “Life-Span Development.”)

Like naturalistic observation, case studies can provide valuable insights but they also can have significant drawbacks. Observer bias is as much a problem here as it is with naturalistic observation. Moreover, because each person is unique, we cannot confidently draw general conclusions from a single case. Nevertheless, case studies figure prominently in
psychological research. For example, the famous case of Phineas Gage, who suffered severe and unusual brain damage, led researchers to identify the front portion of the brain as important for the control of emotions and the ability to plan and carry out complex tasks. (See Chapter 2, “The Biological Basis of Behavior.”)

**Surveys**

What are some of the benefits of survey research?

In some respects, surveys address the shortcomings of naturalistic observation and case studies. In *survey research*, a carefully selected group of people is asked a set of predetermined questions in face-to-face interviews or in questionnaires. Surveys, even those with a low-response rate, can generate a great deal of interesting and useful information at relatively low cost, but for results to be accurate, researchers must pay close attention to the survey questions (Presser et al., 2004). In addition, the people surveyed must be selected with great care and be motivated to respond to the survey thoughtfully and carefully (Sturgis, 2006; Visser, Krosnick, & Lavrakas, 2000). For example, asking parents, “Do you ever use physical punishment to discipline your children?” may elicit the socially correct answer, “No.” Asking “When was the last time you spanked your child?” is more likely to elicit honest responses, because the question is specific and implies that most parents use physical punishment—the researcher is merely asking when. At the same time, survey researchers must be careful not to ask leading questions, such as “Most Americans approve of physical punishment; do you?” Guaranteeing anonymity to participants in a survey can also be important.

Naturalistic observations, case studies, and surveys can provide a rich set of raw data that describes behaviors, beliefs, opinions, and attitudes. But these research methods are not ideal for making predictions, explaining, or determining the causes of behavior. For these purposes, psychologists use more powerful research methods, as we will see in the next two sections.

**Correlational Research**

What is the difference between correlation and cause and effect?

A psychologist, under contract to the U.S. Air Force, is asked to predict which applicants for a pilot-training program will make good pilots. An excellent approach to this problem would be *correlational research*. The psychologist might select several hundred trainees, give them a variety of aptitude and personality tests, and then compare the results with their performance in training school. This approach would tell him whether some characteristic or set of characteristics is closely related to, or correlated with, eventual success as a pilot.

Suppose that the psychologist finds that the most successful trainees score higher than the unsuccessful trainees on mechanical aptitude tests and that they are also cautious people who do not like to take unnecessary risks. The psychologist has discovered that there is a *correlation*, or relationship, between these traits and success as a pilot trainee. If these correlations are...
confirmed in new groups of trainees, then the psychologist could recommend with some confidence that the Air Force consider using these tests to select future trainees.

Correlational data are useful for many purposes, but they do not permit the researcher to explain cause and effect (Rutter, 2007). This important distinction is often overlooked. Correlation means that two phenomena seem to be related: When one goes up, the other goes up (or down). In our pilot trainee example, high scores on tests of mechanical aptitude and caution predict success as a pilot trainee. But correlation does not identify the direction of influence. Does the tendency to shy away from taking risks make a trainee a good pilot? Or is the reverse true: Learning to be a skillful pilot makes people cautious? Or is there some unknown factor that causes people to be both cautious and capable of acquiring the different skills needed in the cockpit? Although the psychologist has described a relation between skill as a pilot and two other characteristics, he has no basis for drawing conclusions about cause and effect. (See Appendix A for more on correlation.)

Despite limitations, correlational research often sheds light on important psychological phenomena (Bentler, 2007; Joffe, 2007; Lilienfeld, 2006). In this book, you will come across many examples of correlational research. As you will learn, these interesting findings allow us to make some predictions, but psychologists want to move beyond simply making predictions. To explain the causes of psychological phenomena, psychologists most often use experimental research. 

Experimental Research
What kinds of research questions are best studied by experimental research?

A psychology instructor notices that on Monday mornings, most students in her class do not remember materials as well as they do later in the week. She has discovered a correlation between the day of the week and memory for course-related material. On the basis of this correlation, she could predict that every Monday thereafter, the students in her class will not absorb material as well as on other days. But she wants to go beyond simply predicting her students’ behavior. She wants to understand or explain why their memories are poorer on Mondays than on other days of the week.

As a result of her own experiences and some informal interviews with students, she suspects that students stay up late on weekends and that their difficulty remembering information presented on Mondays is due to lack of sleep. This hypothesis appears to make sense, but the psychologist wants to prove that it is correct. To gather evidence that lack of sleep actually causes memory deficits, she turns to the experimental method.

Her first step is to select participants, people whom she can observe to find out whether her hypothesis is correct. She decides to use student volunteers. To keep her results from being influenced by sex differences or intelligence levels, she chooses a group made up of equal numbers of men and women, all of whom scored between 520 and 550 on the verbal section of their college board exams.

The psychologist then needs to know which participants are sleep deprived. Simply asking people whether they have slept well is not ideal. Some may say “no,” so that they will have an excuse for doing poorly on the test, and others may say “yes,” because they do not want a psychologist to think that they are so unstable that they cannot sleep. And two people who both say they “slept well” may not mean the same thing by that phrase. So the psychologist decides to intervene—that is, to control the situation more closely—to determine which participants have sleep deficits. Everyone in the experiment, she decides, will spend the night in the same dormitory. They will be kept awake until 4:00 A.M. and then awakened at 7:00 A.M. She and her colleagues will patrol the halls to make sure no one falls asleep.
asleep ahead of schedule. By manipulating the amount of time the participants sleep, the psychologist is introducing and controlling an essential element of the experimental method: an independent variable.

Next, she needs to know how well the students remember new information after they are deprived of sleep. For this, she designs a memory task. She needs something that none of her participants will know in advance. If she chooses a chapter in a history book, for example, she runs the risk that some of her participants are history buffs. Given the various possibilities, the psychologist decides to print a page of geometric shapes, each labeled with a nonsense word. Circles are “glucks,” triangles are “rogs,” and so on. She gives students half an hour to learn the names from this page, then takes it away and asks them to assign those same labels to geometric shapes on a new page. The psychologist believes that the students’ ability to learn and remember the labels will depend on their having had a good night’s sleep. Performance on the memory task (the number of correct answers) thus becomes the dependent variable. According to the psychologist’s hypothesis, changing the independent variable (the amount of sleep) should also change the dependent variable (performance on the memory task). Her prediction is that this group of participants, who get no more than 3 hours of sleep, should do quite poorly on the memory test.

At this point, the experimenter begins looking for loopholes in her experimental design. How can she be sure that poor test results mean that the participants did less well than they would have done if they had more sleep? For example, their poor performance could simply be the result of knowing that they were being closely observed. To be sure that her experiment measures only the effects of inadequate sleep, the experimenter creates two groups, containing equal numbers of males and females of the same ages and with the same college board scores. One of the groups, the experimental group, will be kept awake, as described, until 4:00 A.M. That is, they will be subjected to the experimenter’s manipulation of the independent variable—amount of sleep. Members of the other group, the control group, will be allowed to go to sleep whenever they please. If the only consistent difference between the two groups is the amount of sleep they get, the experimenter can be much more confident that if the groups differ in their test performance, the difference is due to the length of time they slept the night before.

Finally, the psychologist questions her own objectivity. Because she believes that lack of sleep inhibits students’ learning and memory, she does not want to prejudice the results of her experiment; that is, she wants to avoid experimenter bias. So she decides to ask a neutral person, someone who does not know which participants did or did not sleep all night, to score the tests.

The experimental method is a powerful tool, but it, too, has limitations. First, many intriguing psychological variables, such as love, hatred, or grief, do not readily lend themselves to experimental manipulation. And even if it were possible to induce such strong emotions as part of a psychological experiment, this treatment would raise serious ethical questions. In some cases, psychologists may use animals rather than humans for experiments. But some subjects, such as the emergence of language in children or the expression of emotions, cannot be studied with other species. Second, because experiments are conducted in an artificial setting, participants—whether human or nonhuman animals—may behave differently than they would in real life.

The accompanying Summary Table groups the main advantages and disadvantages of each of the research methods we have discussed. Because each method has drawbacks, psychologists often use more than one method to study a single problem.

**Multimethod Research**

*What does multimethod research allow psychologists to do?*

Suppose that a psychologist were interested in studying creativity. She would probably combine several of the methods we have described. She might begin her research by giving a group of college students a creativity test that she had invented to measure their capacity
to discover or produce something new, and look for *correlations* among the students’ scores on her test, their grades, and their scores on commonly used intelligence tests. Then, she would spend several weeks *observing* a college class and *interviewing* teachers, students, and parents to correlate classroom behavior and the interview data with the students’ scores on the creativity test. She would go on to test some of her ideas with an *experiment* by using a group of students as participants. Her findings at any point in this research program might prompt her to revise her creativity test or her hypotheses. Eventually, her research might be able to give the general public new insights into creativity.

### The Importance of Sampling

**How can sampling affect the results of a research study?**

One obvious drawback to every form of research is that it is usually impossible, or at least impractical, to measure every single occurrence of a characteristic. No one could expect to study the responses of all individuals who suffer from the irrational fears known as phobias or to record the maternal behavior of all female monkeys. No matter what research method is used, researchers almost always study a small *sample*, or subset of the population, and
then use the results of that limited study to generalize about larger populations. For example, the psychology instructor who studied the effect of lack of sleep on memory assumed that her results would apply to other students in her classes (past and future), as well as to students in other classes and at other colleges.

How realistic are these assumptions? How confident can researchers be that the results of research conducted on a relatively small sample of people apply to the much larger population from which the sample was drawn? (See “Applying Psychology: Internet Users: A Flawed Study?”) By reducing sampling errors social scientists have developed several techniques to improve the generalizability of their results. One is to select participants at random from the larger population. For example, the researcher studying pilot trainees might begin with an alphabetical list of all trainees and then select every third name on the list to be in his study. These participants would constitute a random sample from the larger group of trainees, because every trainee had an equal chance of being chosen for the study.

Another way to make sure that conclusions apply to the larger population is to pick a representative sample of the population being studied. For example, researchers looking for a representative cross section of Americans would want to ensure that the proportion of males and females in the study matched the national proportion, that the number of participants from each state matched the national population distribution, and so on. Even with these precautions, however, unintended bias may influence psychological research. This issue has received a great deal of attention recently, particularly in relation to women and African Americans, as we discussed earlier.

**Human Diversity and Research**

*Can we generalize about research findings from one group to another?*

As we noted earlier, psychologists have recently begun to question early assumptions that the results of research conducted with White male participants would also apply to women, to people of other racial and ethnic groups, and to people of different cultures. In fact, research indicates that people’s gender, race, ethnic background, and culture often have profound effects on their behavior. Studies have found consistent cultural or gender differences, for instance, in aggression (Bergeron & Schneider, 2005; Eagly & Steffen, 1986; Haskell, 2003) and memory (Heath & Gant, 2005; Piefke, Weiss, & Markowitsch, 2005; Q. Wang & Ross, 2005).

**Unintended Biases in Research** The gender, race, or ethnicity of the experimenter may also introduce subtle, unintended biases. For example, some early research concluded that women were more likely than men to conform to social pressure in the laboratory (e.g., Crutchfield, 1955). Later research revealed no gender differences, however, when the experimenter is female (Eagly & Carli, 1981). More recent studies continue to demonstrate that the gender of the experimenter may produce different results when testing male versus female participants (Lundström & Olsson, 2005).

Similarly, evidence suggests that the results of research with African American participants may be significantly affected by the race of the experimenter (Graham, 1992; Weisse, Foster, & Fisher, 2005). Data on race and IQ scores have been widely misinterpreted as “demonstrating” innate racial inferiority. Advocates of this view (of innate racial inferiority) rarely noted that African Americans score higher on IQ and other tests when the person administering the test is also an African American (Graham, 1992). Similarly, do feminist theories, developed by and tested primarily with White, college-educated women, apply to women of color (B. Roth, 2004)?
“Sad, Lonely World Discovered in Cyberspace”
“Isolation Increases with Internet Use”
“Online and Bummed Out”

What’s behind these headlines that appeared in various publications during the fall of 1998 while the Internet was still relatively new in our culture? Researchers had found that—as these publications phrased it—“using the Internet can cause isolation, loneliness, and depression”; “the Internet is actually bad for some people’s psychological well-being”; and “greater use of the Internet leads to shrinking social support and happiness” (Kraut et al., 1998).

As a critical thinker, you should ask a number of questions about these headlines. Who was studied? How did the researchers determine Internet use? How did they measure such things as isolation, loneliness, depression, social support, and happiness? Did the researchers actually conduct a genuine experiment, manipulating the independent variable of Internet use and observing its effect on the dependent variables, or did they use some other, less powerful research design? If the latter, how do they know that Internet use caused any changes they might have observed?

The answers should motivate you to be far more cautious than the headline writers about what the research actually showed. To begin with, the researchers studied 256 people from only 93 families in Pittsburgh, and 20 of the families and 87 of the people dropped out before the study was completed. Also, households with preexisting Internet connections were excluded. Are you confident that the results from this sample can be generalized as broadly as the mass media did?

Because this was not a true experiment with an experimental group and a control group, is it possible that the Internet users were already unusually lonely or isolated or depressed? If so, how might Internet use affect these individuals?

Going further, the researchers actually tracked Internet use through software on the computer. To measure social involvement and psychological well-being, however, they relied entirely on self-report measures. Does this reliance on self-reports cause you to be cautious about the results of the research? How do we know whether these reports were accurate? (You might read ahead to Chapter 10 where we discuss concerns about research that relies heavily on self-reports.)

If you relied solely on the headlines, you might conclude that the study found dramatic differences between Internet users and nonusers. In fact, the most that could be said is that heavier users of the Internet showed very slight declines in some aspects of self-reported social involvement and only slight increases in self-reported feelings of loneliness and depression. Moreover, even those slight negative effects disappeared over time (Kraut et al., 2002).

And more recent research indicates that greater Internet use is associated with various positive outcomes (M. Ito et al., 2009; Kraut & Kiesler, 2003). For example, Mizuko Ito and her colleagues recently completed a 3-year study of computer use among young people. They concluded “Today’s youth may be coming of age and struggling for autonomy and identity as did their predecessors, but they are doing so amid new worlds for communication, friendship, play, and self-expression…. Online spaces enable youth to connect with peers in new ways…. A smaller number of youth also use the online world to explore interests and find information that goes beyond what they have access to at school or in their local community…. In both friendship-driven and interest-driven online activity, youth create and navigate new forms of expression and rules for social behavior…. Others “geek out” and dive into a topic or talent. Contrary to popular images, geeking out is highly social and engaged…. New media allow for a degree of freedom and autonomy for youth that is less apparent in a classroom setting…. While hanging out online, youth are picking up basic social and technological skills they need to fully participate in contemporary society…. “(M. Ito et al., 2009, pp. 1–3). Though you may find the results of the recent research more closely match your own experiences, don’t fail to be a critical thinker! What questions would you ask about the sample and the methods by which Ito and her colleagues collected their data?

You should always ask yourself questions about sampling and research methods when you read accounts of psychological research in the mass media. And in fairness, they are questions these researchers themselves have raised although they rarely appear in reports in the popular media.

About Internet Users

1. What other questions about this research would you add to the ones already mentioned?
2. If you read sensationalistic headlines about another research topic, such as obesity and social activity, or parenting and juvenile crime, how would you go about learning the details of the research, so you could answer your own critical thinking questions?
Chapter 1

ETHICS AND PSYCHOLOGY: RESEARCH ON HUMANS AND ANIMALS

Are there ethical guidelines for conducting psychological research?

What objections have been raised regarding research on animal subjects?

If the college or university you attend has a research facility, you may have a chance to participate in a psychology experiment. You will probably be offered a small sum of money or class credit to participate. But you may not learn the true purpose of the experiment until after it’s over. Is this deception necessary to the success of psychology experiments? And what if the experiment causes you discomfort? Before answering, consider the ethical debate that flared up in 1963 when Stanley Milgram published the results of several experiments he had conducted.

Milgram hired people to participate in what he said was a learning experiment. In a typical session, a young man would arrive at the laboratory to participate. He was met by a stern-faced researcher in a lab coat; another man in street clothes was sitting in the waiting room. The researcher explained that he was studying the effects of punishment on learning. When the two men drew slips out of the hat, the participant’s slip said “teacher.” The teacher watched as the “learner” was strapped into a chair and an electrode attached to his wrist. Then the teacher was taken into an adjacent room and seated at an impressive-looking “shock generator” with switches from 15 to 450 volts (V), labeled “Slight Shock,” “Very Strong Shock,” up to “Danger: Severe Shock,” and, finally, “XXX.” The teacher’s job was...
to read a list of paired words, which the learner would attempt to memorize and repeat. The teacher was instructed to deliver a shock whenever the learner gave a wrong answer and to increase the intensity of the shock each time the learner made a mistake. At 90 V, the learner began to grunt; at 120 V, he shouted, “Hey, this really hurts!” At 150 V, he demanded to be released, and at 270 V, his protests became screams of agony. Beyond 330 V, the learner appeared to pass out. If the teacher became concerned and asked whether he could stop, the experimenter politely but firmly replied that he was expected to continue, that this experiment was being conducted in the interests of science.

In reality, Milgram was studying obedience, not learning. He wanted to find out whether ordinary people would obey orders to cause another person pain. As part of his research, Milgram (1974) described the experiment to 110 psychiatrists, college students, and middle-class adults, and he asked them at what point they thought participants would stop. Members of all three groups guessed that most people would refuse to continue beyond 130 V and that no one would go beyond 300 V. The psychiatrists estimated that only one in a thousand people would continue to the XXX shock panel. Astonishingly, 65% of Milgram’s participants administered the highest level of shock, even though many worried aloud that the shocks might be causing serious damage to the learners.

To find out what he wanted to know, Milgram had to deceive his participants. The stated purpose of the experiment—to test learning—was a lie. The “learners” were Milgram’s accomplices, who had been trained to act as though they were being hurt; the machines were fake; and the learners received no shocks at all (Milgram, 1963). But, critics argued, the “teachers”—the real subjects of the study—were hurt. Not only did most voice concern, but also they showed clear signs of stress: They sweated, bit their lips, trembled, stuttered, or in a few cases, broke into uncontrollable nervous laughter. Critics also worried about the effect of the experiment on the participants’ self-esteem. How would you like to be compared with the people who ran the death camps in Nazi Germany? (In Chapter 14, “Social Psychology,” we will describe a 2009 study that attempted to replicate the Milgram study without raising the same ethical concerns.)

Although the design of this experiment was not typical of the vast majority of psychological experiments, it sparked such a public uproar that the APA reassessed its ethical guidelines, which were first published in 1953. A new code of ethics on psychological experimentation was approved. The code is assessed each year and periodically revised to ensure that it adequately protects participants in research studies. In addition to outlining the ethical principles guiding research and teaching, the code spells out a set of ethical standards for psychologists who offer therapy and other professional services, such as psychological testing.

The APA code of ethics requires that researchers obtain informed consent from participants and stipulates the following:

- Participants must be informed of the nature of research in clearly understandable language.
- Informed consent must be documented.
- Risks, possible adverse effects, and limitations on confidentiality must be spelled out in advance.
- If participation is a condition of course credit, equitable alternative activities must be offered.
- Participants cannot be deceived about aspects of the research that would affect their willingness to participate, such as risks or unpleasant emotional experiences.
- Deception about the goals of the research can be used only when absolutely necessary to the integrity of the research.

In addition, psychological researchers are required to follow the U.S. government’s Code of Federal Regulations, which includes an extensive set of regulations concerning the protection of human participants in all kinds of research. Failure to abide by these federal
regulations may result in the termination of federal funding for the researcher and penalties for the research institution.

Despite these formal ethical and legal guidelines, controversy still rages about the ethics of psychological research on humans. Some people contend that research procedures should never be emotionally or physically distressing. Others assert that ethical guidelines that are too strict may undermine the scientific value of research or cripple future research. Still others maintain that psychology, as a science, should base its ethical code on documented evidence about the effects of research procedures on participants, not on conjecture about what is “probably” a good way to conduct research. Yet another view is that developing the explanations necessary to produce informed consent may help researchers themselves get a better understanding of the goals and methods of research.

Animal Research

In recent years, questions have also been raised about the ethics of using animals in psychological research (Herzog, 2005). Psychologists study animal behavior to shed light on human behavior. Crowding mice into small cages, for example, has yielded valuable insights into the effects of overcrowding on humans. Animals are used in experiments in which it would be clearly unethical to use human participants—such as studies involving brain lesions (requiring cutting into the brain). In fact, much of what we know about sensation, perception, drugs, emotional attachment, and the neural basis of behavior is derived from animal research (Carroll & Overmier, 2001; Dess & Foltin, 2005). Yet, animal protectionists and others question whether it is ethical to use nonhuman animals, which cannot give their consent to serve as subjects, in psychological research.

CHECK YOUR UNDERSTANDING

Are the following statements true (T) or false (F)?
1. _____ Controversy over ethical standards in psychology has almost disappeared.
2. _____ The APA code of ethics used today is unchanged since 1953.
3. _____ Researchers who fail to follow the Federal Code of Regulations are subject to penalties.

Answers: 1. (F); 2. (F); 3. (T).

APPLY YOUR UNDERSTANDING

1. Your classmate Jared says he does not need to be concerned about ethical standards for his naturalistic observation study. On the basis of what you have learned from this chapter, your reply should be
   a. “You’re right, because there are only ethical guidelines for the protection of animals.”
   b. “You’re right. Only laboratory experiments must conform to ethics standards.”
   c. “That’s incorrect. All psychological research is subject to ethical guidelines.”
   d. “That’s incorrect. Actually, naturalistic observation is the only kind of research subject to ethics rules.”

2. Before they agree to be in her experiment, Yolanda gives the participants a short description of what they will be asked to do in the study, the reasons she is conducting the study, and any risks or discomfort that they might face. Yolanda is
   a. getting informed consent from her participants.
   b. mollycoddling her participants.
   c. deceiving her participants.
   d. not adhering to ethical guidelines for the treatment of human research participants.

Answers: 1. c, d; 2. a.
Their opponents contend that the goals of scientific research—in essence, to reduce or eliminate human suffering—justify the means, even though they agree that animals should suffer as little as possible (Novak, 1991). They argue that procedures now in place, including the use of anesthesia, already minimize animal suffering.

The APA has addressed this issue in its ethical guidelines, noting that psychologists using animals in research must ensure “appropriate consideration of [the animal’s] comfort, health, and humane treatment” (APA, 1992, 2003).

CAREERS IN PSYCHOLOGY

What can you do with a background in psychology or with an advanced degree?

Some readers may be studying psychology out of general interest; others may be considering careers in psychology. What kinds of careers are open to psychology graduates? Community college graduates with associate’s degrees in psychology are well qualified for paraprofessional positions in state hospitals, mental health centers, and other human service settings. Job responsibilities may include screening and evaluating new patients, recordkeeping, and assisting in consultation sessions.

Graduates with bachelor’s degrees in psychology may find jobs assisting psychologists in mental health centers, vocational rehabilitation facilities, and correctional centers. They may also take positions as research assistants, teach psychology in high school, or find jobs in government or business.

For those who pursue advanced degrees in psychology—a master’s degree or a doctorate—career opportunities span a wide range. Many doctoral psychologists join the faculties of colleges and universities. Others work in applied fields such as school, health, industrial, commercial, and educational psychology. Nearly half of doctoral psychologists are clinicians or counselors who treat people experiencing mental, emotional, or adaptational problems. Master’s degree graduates in psychology often work as researchers at universities; in government; or for private companies. Students with a master’s degree in industrial/organizational psychology are particularly sought by large corporations to work in personnel and human resource departments, while doctoral graduates in industrial/organizational psychology are hired into management or consulting positions in industry (B. Murray, 2002). Other graduates work in health and education. APA standards require that master’s degree graduates who work in clinical, counseling, school, or testing and measurement settings be supervised by a doctoral-level psychologist.

Many students who major in psychology want to become therapists. For these students, there are five main career paths:

- **A psychiatrist** is a medical doctor who, in addition to 4 years of medical training, has completed 3 years of residency training in psychiatry, most of which is spent in supervised clinical practice. Psychiatrists specialize in the diagnosis and treatment of abnormal behavior. In addition to providing psychotherapy, in most states, psychiatrists are the only mental health professionals who are licensed to prescribe medications.

- **A psychoanalyst** is a psychiatrist (or psychologist) who has received additional specialized training in psychoanalytic theory and practice, usually at a psychoanalytic institute that requires him or her to undergo psychoanalysis before practicing.

- **Clinical psychologists** assess and treat mental, emotional, and behavioral disorders, ranging from short-term crises to chronic disorders such as schizophrenia. They hold advanced degrees in psychology (a PhD or PsyD)—the result of a 4- to 6-year graduate program, plus a 1-year internship in psychological assessment and
psychotherapy and at least 1 more year of supervised practice. With additional training, a few states also permit clinical psychologists to prescribe medications for the treatment of mental disorders (see Chapter 13, “Therapies”).

- **Counseling psychologists** help people cope with situational problems, such as adjusting to college, choosing a vocation, resolving marital problems, or dealing with the death of a loved one.
- **Social workers** may also treat psychological problems. They typically have a master’s degree (MSW) or a doctorate (DSW). Social workers often work under psychiatrists or clinical psychologists, although in some states they may be licensed to practice independently.

A free booklet, *Psychology: Scientific Problem Solvers, Careers for the Twenty-First Century*, is available by calling the Order Department of the American Psychological Association at 1-800-374-2721. The American Psychological Association also maintains a Web site, [http://www.apa.org/](http://www.apa.org/), which provides up-to-date information about employment opportunities, as well as a vast array of related material of interest to psychology students.

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**CHECK YOUR UNDERSTANDING**

Is each of the following statements true (T) or false (F)?

1. _____ Careers in psychology are largely limited to people with PhDs.
2. _____ Almost all the careers related to a knowledge of psychology are in the mental health field.

**Answers:** 1. (F). 2. (F).

**APPLY YOUR UNDERSTANDING**

1. KeShawn is a medical doctor who specializes in diagnosing and treating people suffering from psychological disorders. He is a
   a. psychiatrist.
   b. counseling psychologist.
   c. clinical psychologist.
   d. social worker.

2. Psychologists can be found working in which of the following settings?
   a. research laboratories
   b. schools
   c. government and corporations
   d. all of the above

**Answers:** 1. a. psychiatrist.
   2. d. all of the above

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**KEY TERMS**

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**CHAPTER REVIEW**

**WHAT IS PSYCHOLOGY?**

“Most psychologists study mental and emotional problems and work as psychotherapists.” Is this statement true or false? **Psychology** is the scientific study of behavior and mental processes. Through its many subdivisions its proponents seek to describe and explain human thought, feelings, perceptions, and actions.

**Developmental psychologists** are concerned with processes of growth and change over the life course, from the prenatal period through old age and death. **Neuropsychologists and physiological psychologists** focus on the body’s neural and chemical systems, studying how these affect thought and behavior. **Behavioral geneticists** explore how genetics influence behavior. **Experimental psychologists** investigate basic psychological processes, such as learning, memory, sensation, perception, cognition, motivation, and emotion. **Personality psychologists** look at the differences among people in such traits as sociability, anxiety, aggressiveness, and self-esteem. **Clinical and counseling psychologists** specialize in the diagnoses and treatment of psychological disorders, whereas **social psychologists** focus on how people influence one another’s thoughts and actions. **Industrial and organizational psychologists** study problems in the workplace and other settings.

Given the broad range of careers and interests, what holds the subfields of psychology together as a distinct scientific discipline? Five enduring issues or fundamental themes unify the various subfields of psychology:

- **Person–Situation:** Is behavior caused more by inner traits or by external situations?
- **Nature–Nurture:** How do genes and experiences interact to influence people?
- **Stability–Change:** How much do we stay the same as we develop and how much do we change?
- **Diversity–Universality:** In what ways do people differ in how they think and act?
- **Mind–Body:** What is the relationship between our internal experiences and our biological processes?

**What does psychology have in common with other sciences?**

Like the other sciences, psychology relies on the scientific method to find answers to questions. This method involves careful observation and collection of data, the development of theories about relationships and causes, and the systematic testing of hypotheses (or predictions) to disprove invalid theories.

**THE GROWTH OF PSYCHOLOGY**

“Psychology has a long past, but a short history.” What does that mean? Psychology has a long tradition because humans have wondered about behavior and mental processes since ancient times. As a scientific discipline, however, psychology’s history is short, dating back only to the late 19th century.

Listen to an audio file of your chapter. www.mypsychlab.com

How did Wundt help to define psychology as a science of the mind? Why did James think that sensation and perception alone couldn’t explain behavior? Why was Freud’s theory of the unconscious shocking at the turn of the 20th century? Wilhelm Wundt established the first psychology laboratory in 1879 at the University of Leipzig in Germany. His use of experiment and measurement marked the beginnings of psychology as a science. One of his students, Edward Titchener, established a perspective called structuralism, which was based on the belief that psychology’s role was to identify the basic elements of experience and how they combine.

In his perspective known as functionalism, American psychologist William James criticized structuralism, arguing that sensations cannot be separated from the mental associations that allow us to benefit from past experiences. James believed that our rich storehouse of ideas and memories is what enables us to function in our environment.

The psychodynamic theories of Sigmund Freud, his colleagues, and successors added another new dimension to psychology: the idea that much of our behavior is governed by unconscious conflicts, motives, and desires.

**How was Watson’s approach to human behavior different from that of Freud? How did Skinner expand behaviorism?**

John B. Watson, a spokesman for behaviorism, argued that psychology should concern itself only with observable, measurable behavior. Watson based much of his work on the conditioning experiments of Ivan Pavlov.

B. F. Skinner’s beliefs were similar to those of Watson, but he added the concept of reinforcement or reward. In this way, he made the learner an active agent in the learning process.

**How did Gestalt psychologists influence the way we think about perception? What aspects of life do humanistic psychologists stress?** According to Gestalt psychology, perception depends on the human tendency to see patterns, to distinguish objects from their backgrounds, and to complete pictures from a few clues. In this emphasis on wholeness, the Gestalt school differed radically from structuralism.

**Humanistic psychology,** with its focus on meaning, values, and ethics, emphasizes the goal of reaching one’s fullest potential. **Cognitive psychology** is the study of mental processes in the broadest sense, focusing on how people perceive, interpret, store, and retrieve information. Unlike behaviorists, cognitive psychologists believe that mental processes can and should be studied scientifically. This view has dramatically changed American psychology from its previous behaviorist focus.

**Where do evolutionary psychologists look for the roots of human behavior? What new focus is positive psychology bringing to the study of human behavior? Is there a single perspective dominating psychology today?** Evolutionary psychology focuses on the functions and adaptive value of various human behaviors and the study of how those behaviors have
evolved. Positive psychology studies subjective feelings of happiness and well-being; the development of individual traits such as integrity and leadership; and the settings that encourage individuals to flourish. In this way, it seeks to add a new dimension to psychological research. Most contemporary psychologists do not adhere to a single school of thought. They believe that different theories can often complement one another and together enrich our understanding of human behavior.

What obstacles did women face in the early years of psychology? Although psychology has profited from the contributions of women from its beginnings, women often faced discrimination: Some colleges and universities did not grant degrees to women, professional journals were often reluctant to publish their work, and teaching positions were often closed to them.

HUMAN DIVERSITY

Why should you learn about human diversity? A rich diversity of behavior and thought exists in the human species, among individuals and groups. Being attuned to this diversity can help reduce the tensions that arise when people misunderstand one another. It can also help us to define what humans have in common.

How are psychologists helping us to understand the differences between men and women? Feminist theory explores the differences and similarities in thought and behavior between the two sexes or genders. Culturally generated beliefs regarding these differences are called gender stereotypes. Psychologists are trying to determine the hereditary and cultural causes of gender differences as well as the origins of sexual orientation.

Why are psychologists interested in racial and ethnic differences? Race, a biological term, refers to subpopulations who are genetically similar. Ethnicity involves a shared cultural heritage based on common ancestry, which can affect norms of behavior.

How does culture contribute to human diversity? The intangible aspects of culture—the beliefs, values, traditions, and norms of behavior that a particular people share—make an important contribution to human diversity. Because many subcultural groups exist, psychology must take both inter- and cross-cultural influences into account.

RESEARCH METHODS IN PSYCHOLOGY

What are some of the research methods that psychologists use in their work? Psychologists use naturalistic observation, case studies, surveys, correlational research, and experiments to study behavior and mental processes.

Why is a natural setting sometimes better than a laboratory for observing behavior? Psychologists use naturalistic observation to study behavior in natural settings. Because there is minimal interference from the researcher, the behavior observed is likely to be more accurate, spontaneous, and varied than behavior studied in a laboratory. Researchers using this method must be careful to avoid observer bias.

When can a case study be most useful? Researchers conduct a case study to investigate in depth the behavior of one person or a few persons. This method can yield a great deal of detailed, descriptive information that is useful for forming hypotheses, but is vulnerable to observer bias and overgeneralization of results.

What are some of the benefits of survey research? Survey research generates a large amount of data quickly and inexpensively by asking a standard set of questions of a large number of people. Great care must be taken, however, in the wording of questions and in the selection of respondents.

What is the difference between correlation and cause and effect? Correlational research investigates the relation, or correlation, between two or more variables. Although two variables may be related to each other, that does not imply that one causes the other.

What kinds of research questions are best studied by experimental research? An experiment is called for when a researcher wants to draw conclusions about cause and effect. In an experiment, the impact of one factor can be studied while all other factors are held constant. The factor whose effects are being studied is called the independent variable, since the researcher is free to manipulate it at will. The factor on which there is apt to be an impact is called the dependent variable. Usually an experiment includes both an experimental group of participants and a control group for comparison purposes. Often a neutral person records data and scores results, so experimenter bias doesn’t creep in.

What does multimethod research allow psychologists to do? Many psychologists combine the limitations of using a single research method by using multiple methods to study a single problem.

How can sampling affect the results of a research study? Regardless of the research method used, psychologists usually study a small sample of subjects and then generalize their results to larger populations. Proper sampling is critical to ensure that results have broader application. Random samples, in which each potential participant has an equal chance of being chosen, and representative samples, in which subjects are chosen to reflect the general characteristics of the population as a whole, are two ways of doing this.

Can we generalize about research findings from one group to another? Because of differences among people based on age, sex, ethnic background, culture, and so forth, findings from studies that use White, male, American college students as participants cannot always be generalized to other groups. In addition, the gender, race, and ethnic background of a psychologist can have a biasing impact on the outcome of research.
ETHICS AND PSYCHOLOGY: RESEARCH ON HUMANS AND ANIMALS

Are there ethical guidelines for conducting psychological research? What objections have been raised regarding research on animal subjects? The APA has a code of ethics for conducting research involving human participants or animal subjects. Researchers must obtain informed consent from study participants. Participants must be told in advance about the nature and possible risks of the research. People should not be pressured to participate.

Although much of what we know about certain areas of psychology has come from animal research, the practice of experimenting on animals has strong opponents because of the pain and suffering that are sometimes involved. Although APA and the federal government have issued guidelines for the humane treatment of laboratory animals, many animal rights advocates argue that the only ethical research on animals is naturalistic observation.

CAREERS IN PSYCHOLOGY

What can you do with a background in psychology or with an advanced degree? A background in psychology is useful in a wide array of fields because so many jobs involve a basic understanding of people. Careers for those with advanced degrees in psychology include teaching, research, jobs in government and private business, and occupations in the mental health field. Opportunities in the mental health field depend on one’s degree of training. Practice in psychiatry requires medical training; practice in clinical psychology requires a doctoral degree. Positions in counseling psychology and social work are additional career options.