THINKING ABOUT
PSYCHOLOGY
The Science of Mind and Behavior
SECOND EDITION
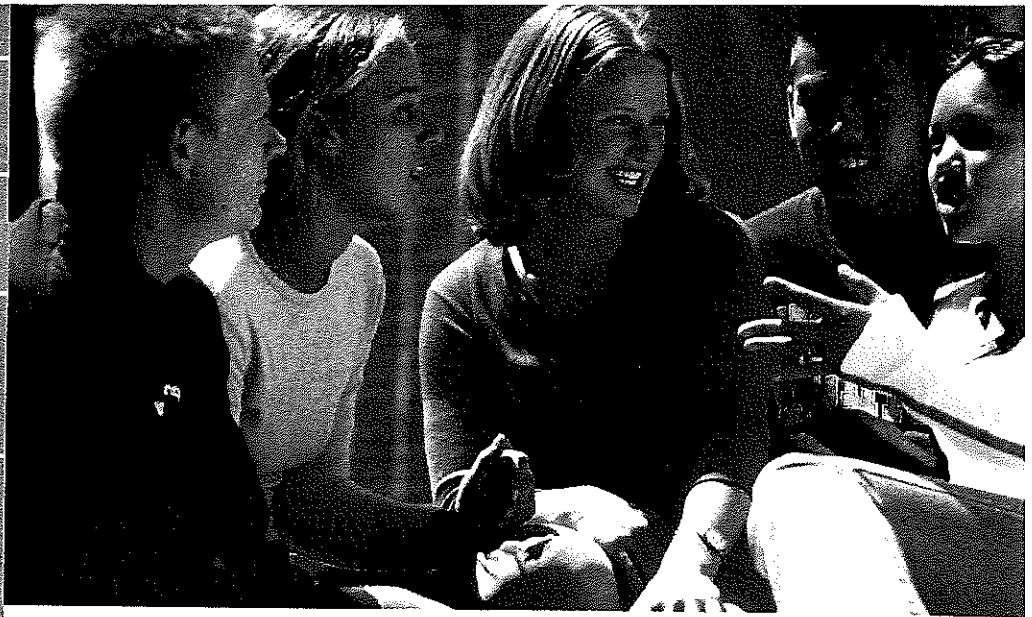
Introductory

Consider these headlines from newspapers or news-oriented websites: Local Water Pollution Levels Rise; International Conflict Continues, More Violence Predicted; Energy Conservation a Concern as Winter Approaches; More Single Parents as Divorce Rate Increases. Do you notice any threads tying these headlines together? First, all these headlines focus on some sort of problem. Second, and more interesting from a psychological perspective, all these problems involve behaviors (disposing pollutants into water supplies, fighting among countries at war, turning lights off to save energy, divorcing a spouse), which means their solutions will include the work of those who study behavior for a living: psychologists.

Psychology's success in helping solve these and other problems will partly depend on whether you, your friends, and your family understand some of psychology's fundamental beliefs. For example, we all should know that behavior has multiple causes and that psychologists have different perspectives.

The three modules in the "Introductory Chapter" help lay the foundation for understanding psychology. Module 1 looks at the definition of psychology and the different kinds of careers that psychologists have. Module 2 considers the history of psychology and the contemporary perspectives that psychologists use. Module 3 explores the ways our environment and our genetics interacted as we developed into the people we are today and continue to develop into the people we will be years from now.

Module 1:
Introduction and Careers

Sections

- The Definition of Psychology
- Careers in Psychology

Learning goals

Students will be able to:

1 Analyze the important elements of the definition of psychology.

2 Discuss what clinical psychologists do.

3 Name types of academic psychologists, and explain the basic research each might do.

4 Name types of applied psychologists, and explain how they use psychological research.

Vocabulary **Previewing Key Terms:**

psychology   basic research   applied research

Koskas David/Corbis Kipa

What Makes You Aggressive?
Psychologists study the thoughts, biology, and social factors behind aggression and seek ways to prevent violent behaviors, such as fighting, that sometimes go with aggression.

A crush of students collects outside my classroom during the 6-minute passing time between class periods. They stand on tiptoe, craning their necks side to side, attempting to gain better views of the struggle not far from my door. The tardy bell does little to disperse them.

The crowd swells in number, making it nearly impossible to identify the two combatants at the center of this undeserved attention. Then, an assistant principal intervenes, and the skirmish ends as quickly as it started. Both students receive 3-day, in-house suspensions.

Fortunately, these disruptions are rare where I teach, but talk of "the fight" buzzes from desk to desk. So we begin class by discussing some questions that psychologists might pose about the incident we just witnessed.

- Are some of us born more aggressive than others?

- How are levels of aggression affected by what we learn from our parents, peers, and cultural groups?

- What are the biological influences on aggression?

- What motivates some people to settle their differences physically and others to talk them out?

- Are young adults more likely than middle-aged adults to take part in physical confrontations?

- How could this situation have been avoided or defused?

- Why were students more likely to watch this conflict (and be late to class) than to break it up?

This psychology course will help you answer these and many other interesting questions.

The Definition of Psychology

THINKING CRITICALLY: *What is psychology, and what kinds of topics do psychologists study?*

Psychology is the scientific study of behavior and mental processes. Before going any further, let's make sure we understand the three parts of this definition—scientific study, behavior, and mental processes.

When we say that psychology is a *scientific study,* we mean that psychologists rely on scientific research methods in their attempts to unravel answers to questions such as "Why do some people offer help when others do not?" Psychologists systematically collect research data

psychology
Scientific study of behavior and mental processes.
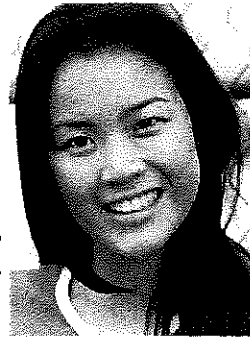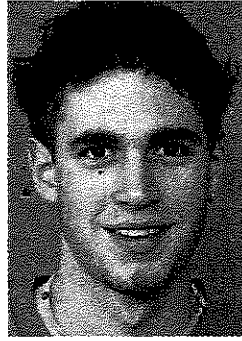
What Makes You Smile? Psychologists use scientific methods to study topics such as happiness, love, and friendship.

and use mathematical formulas to analyze the results. Scientific research methods are an essential key to unlocking psychology's secrets.

The last two parts of our definition, *behavior* and *mental processes,* establish the incredibly broad range of interesting topics that psychologists study. Any directly observable thing you do, from laughing to turning the pages of this book, is a behavior that psychologists could study. But psychologists also study the things we cannot observe directly—our mental processes, which include all our thoughts, feelings, and dreams.

Are some people simply born more aggressive than others? To find out, some psychologists might study children in a day care, watching for aggressive behaviors at early ages. Psychologist might also study the parts of the brain that are active during aggressive behavior and try to determine what chemicals affect this region of the brain. Psychologists who are less biologically inclined might examine a person's home life in search of the origins of aggressive acts. Interestingly, psychologists also study people who see aggressive behavior, trying to understand why some people help and others are apathetic and do not.

Concepts such as aggression against others, apathy toward helping, or development of children as they grow into adolescents and young adults are also explained in this textbook. The psychologists studying these concepts chose one of the many careers available to those who decide to turn psychology into an occupation.

THINKING CRITICALLY SUMMARY *Psychology is the scientific study of behavior and mental processes. Because psychology is a science, psychologists use the scientific method to study a range of topics. A psychologist might study any observable behavior or mental process.*

Careers in Psychology

THINKING CRITICALLY: *What different kinds of jobs do psychologists do?*

The most popular college major in the country is business. The second most popular major is psychology. More than 70,000 college students will graduate this year with a degree in psychology (Princeton Review, 2005). Why is this major so popular? Yes, psychology is incredibly interesting, but psychology can also prepare you for a number of jobs after you graduate.

Table 1.1

Top 10 U.S. Occupations That Employ People with a Psychology Degree

1. Top- and mid-level managers, executives, administrators
2. Sales occupations, including retail
3. Social workers
4. Other management-related occupations
5. Personnel, training, labor relations specialists
6. Other administrative (record clerks, telephone operators)
7. Insurance, securities, real estate, business services
8. Other marketing and sales occupations
9. Registered nurses, pharmacists, therapists, physician assistants
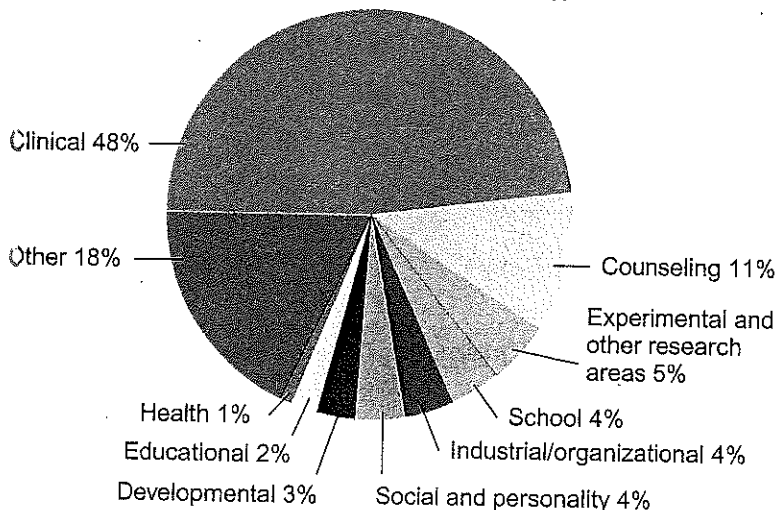10. Accountants, auditors, other financial specialists

Source: From *College majors handbook with real career paths and payoffs: The actual jobs, earnings, and trends for graduates of 60 college majors* (2nd ed.), by N. P. Fogg, P. Harrington, & T. Harrington, 2004, Boston: Jist Works.

Table 1.1 shows the top 10 occupations for people who graduate with a bachelor's degree in psychology, the degree a college undergraduate earns after 4 or 5 years of study.

To be a *psychologist*, however, you will need a graduate degree beyond a bachelor's. Most psychology graduate students take 4 to 6 years to earn a doctoral degree in one of psychology's subfields. The most common kind of psychologist is called a *clinical psychologist* or a *clinician*. These psychologists use their skills as therapists, assessment specialists, and researchers to promote psychological health in groups and individuals. The range of their work may include working to help someone overcome a phobia or to help make life better for someone with a psychological disorder such as schizophrenia. Clinicians often open up private practices, but they also work in medical systems, schools, counseling centers, government agencies, and mental health service organizations. Clinical psychologists must also pass tests to ensure competence (in conducting therapy) in the states where they practice.
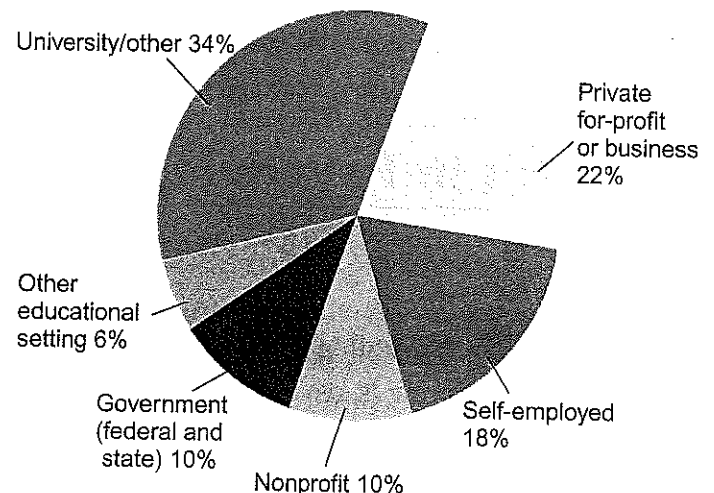
When most people think of a psychologist, they picture the therapist in a chair with notebook in hand, and the patient or client talking about life's problems while reclining on a couch in the therapist's office. Contrary to popular belief, not all psychologists make a living diagnosing and treating patients for psychological problems. As stated previously, *clinical psychologists* and *counseling psychologists* do represent the largest number of professional psychologists, but psychology is made up of a number of subfields (see Figure 1.1) and psychologists work in many different locations in addition to the mental health clinics where therapy is conducted.

Figure 1.1 Psychologists at Work These data are based on membership in the APA, which tends to have a higher percentage of clinical psychologists registered than some other psychology organizations. Nonetheless, it conveys a general idea of (a) psychologists' specialty areas and (b) the places that psychologists work (APA, 1998).
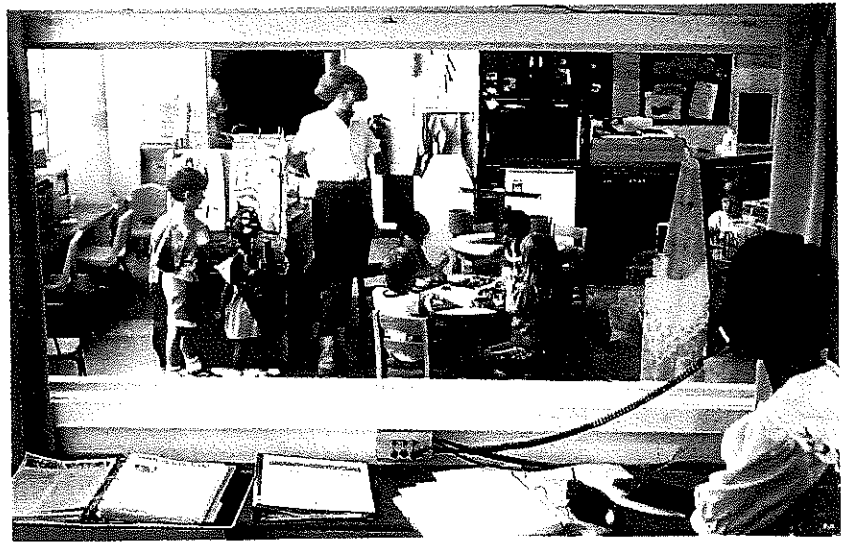
(a) Specialty Areas In Psychology

Clinical 48%
Other 18%
Counseling 11%
Experimental and other research areas 5%
Health 1%
Educational 2%
Developmental 3%
School 4%
Industrial/organizational 4%
Social and personality 4%

(b) Where Do APA Psychologists Work?

University/other 34%
Private for-profit or business 22%
Other educational setting 6%
Government (federal and state) 10%
Nonprofit 10%
Self-employed 18%

Many of those earning a doctorate in psychology become *academic psychologists*. These psychologists work in colleges and universities conducting **basic research** in a number of subfields. To appreciate some of their interests, consider these examples of academic psychologists and a question they might attempt to answer:

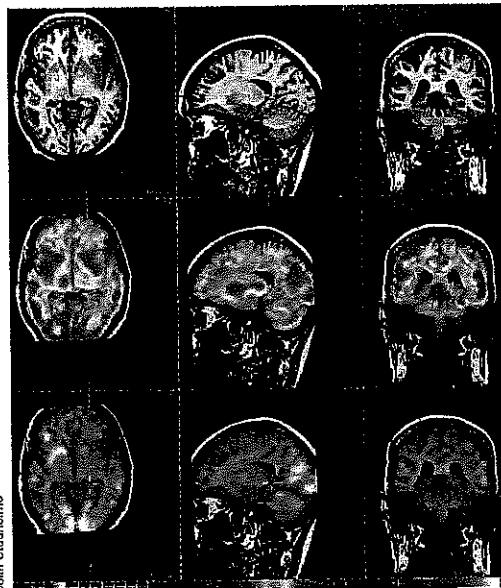- *Neuropsychologists* (also called *biological psychologists* or *biopsychologists*) explore how the structures of the brain work to produce behaviors. Using the most advanced technology, such as single photon emission computed tomography (SPECT), magnetic resonance imaging (MRI), and functional MRI (fMRI), neuropsychologists often study a disorder, such as epileptic seizure, attempting to diagnose, treat, and explain how this disease disrupts normal neurological functioning. A biological psychologist might ask, "How does the brain scan of someone experiencing an epileptic seizure differ from the brain scan of someone who has not experienced a seizure?" The answers to this and similar questions about other brain-centered diseases help neuropsychologists search for new and improved disease treatments. Neuropsychologists work most often in university or college settings, where they teach classes and conduct research.
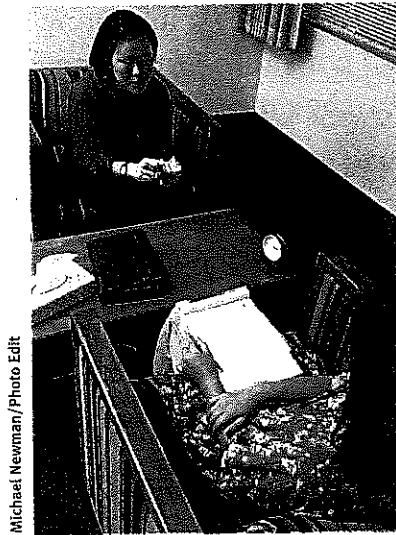
Psychology: A science and a profession Psychologists experiment with, observe, test, and treat behavior. Here we see psychologists testing a child, recording children's behavior through a two-way mirror, and doing face-to-face therapy.

basic research
Pure science that aims to increase the scientific knowledge base.

MRI and SPECT
Images like these help neuropsychologists study brain activity during disorders such as epilepsy. The top photos use MRI technology, the second row shows SPECT technology, and the third shows how the two are combined and recolored to show the differences between them.

- *Social psychologists* explore how our behaviors, feelings, and beliefs are influenced by our interactions with others. Social psychologists study topics such as conformity, attitudes, leadership, prejudice, and group behavior. They provide some of the more interesting research findings you will read in any introductory psychology textbook. A social psychologist might ask, "Under what circumstances do young adults feel compelled to light up a cigarette, even when they know it is unhealthy?" To answer this question, social psychologists might show one group of teens a video of famous people smoking at a party and then a second group of teens a video of the same celebrities at a party *not* smoking. Following the viewing of the video clips, the teens' attitudes toward smoking would be assessed. Social psychologists work in a number of settings, including businesses that conduct marketing research, consulting firms, government agencies, and universities, where they teach classes and conduct research.

- *Developmental psychologists* study the growth or development that takes place from womb to tomb. Some developmental psychologists specialize and become child psychologists, like the lead character (played by Bruce Willis) in *The Sixth Sense*. It is common for developmental psychologists to study several aspects of development (for example, growth patterns or memory skills) or to provide input on educational issues, child-care policies, or geriatric matters. A developmental psychologist might ask, "How does attending day care affect readiness for kindergarten?" To answer this question, a developmental psychologist might give a letter recognition test to 5-year-olds who attended day care and 5-year-olds who did not. Comparing the two groups to see who had more answers that were right could help parents decide whether they should put their children in day care or not. The developmental psychologists who specialize in research can be found working in university settings. Other developmental psychologists might work for senior centers, hospitals, or day-care facilities.

- *Cognitive psychologists* study thought processes in an effort to add to psychology's reservoir of knowledge. The thought processes they study include an array of topics: intelligence, anger, problem solving, attention, decision making, language, happiness, perception, memory, forgetting, and more. A cognitive psychologist might ask, "How do old memories interfere with new memories?" The work of cognitive psychologists explains why it can be difficult to remember a new password for Facebook.com or some other website. You have used the old password so many times that the memory of it interferes with the way your brain accesses the new password. Most cognitive psychologists work in educational settings, but some find jobs as industrial consultants or in other business settings.

Karen Moskowitz/Getty Images

Experimental or research psychologists specialize in doing research and can be specialists in cognition, developmental, social, or any of psychology's subfields. An experimental psychologist might ask any question relating to biological, developmental, or cognitive psychology. Most experimental psychologists work in a college or university setting, but many work for government agencies or for businesses that base their production or marketing decisions on scientific research.

applied research
Scientific study that aims to solve practical problems.

Psychologists Who Solve Problems

Other psychologists are more interested in **applied research**—solving specific, practical problems rather than expanding the scientific knowledge base of psychology. To appreciate this approach, consider the following examples of psychologists who lean toward the applied side and a question they might attempt to answer:

Forensic psychologists apply both law and psychology to legal issues. Perhaps you've seen a forensic psychologist or two on one of the many TV shows that re-create crimes. Indeed, forensic psychologists analyze crime scenes and evidence to help law officials solve crimes. However, they also use their scientific training to help solve insurance claims and custody disputes. A forensic psychologist might ask, "Is it in a
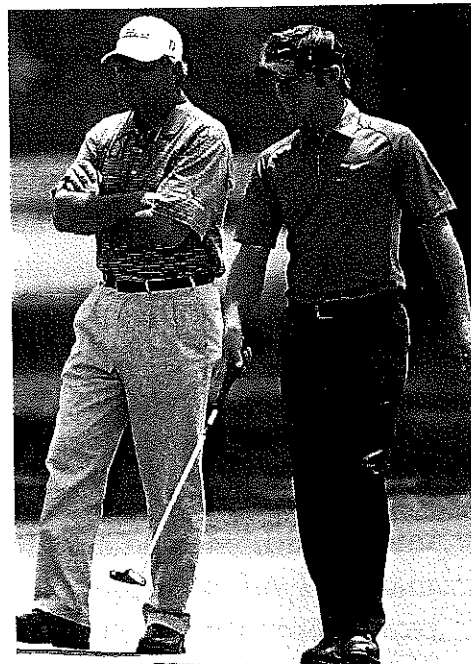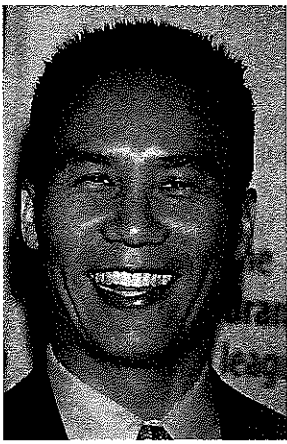

Scott Halleran/Getty Images

Psychologists Apply Research
The sports psychologist and the school psychologist in these pictures apply knowledge learned from basic research to do their jobs.

Forensic Psychologists
Forensic psychologists like the one played by B. D. Wong on *Law and Order, Special Victims Unit,* help police conduct criminal investigations.

child's best interest to testify in a custody case?" To answer this question, a forensic psychologist might look at past cases in which young children took the stand to testify and research how giving the testimony affected the children. Did the children become more withdrawn after testifying? Did they experience depression? Or did they continue to do well in school as if everything were OK? You'll find forensic psychologists working in correctional facilities, law-enforcement agencies, mental health agencies, and academic settings (including law schools).

- *Sports psychologists* explore the psychological issues revolving around the improvement of athletic performances. Golfers who have trouble putting, basketball players who miss most of their free throws, and football players who suddenly cannot kick the ball between goalposts might consider consulting a sports psychologist to help improve their concentration or focus. The sports psychologists on the U.S. Olympic team often take athletes through a "positive visualization" of their events to help prepare them for the high-stress situations they'll be in once the Olympic Games start. A sports psychologist might ask, "What kind of visual imaging should an athlete do before competing to increase the chances of success?" The sports psychologist might suggest that a golfer visualize standing over the golf ball, putter in hand, and then picture making a backswing, hitting the ball, and watching the ball go into the cup. Many sports psychologists are hired by professional sports teams, but some open private practices.

- *Educational psychologists* study how humans learn and often look for ways to improve the learning process. They study the psychological processes associated with learning, develop strategies to improve learning, and explore the relationship between learning and social or physical environment. An educational psychologist might ask, "How do we help fifth-grade students who are reading at a third-grade level catch up with their peers?" The educational psychologist would then assign and help the fifth grader work through reading exercises that, if successfully completed, would increase the chances of reading at the proper age and grade level. The educational psychologists might also be hired to design and implement the employee-training program you have to complete to work for a fast-food chain like McDonald's or Subway. Employment locations include psychology departments in university settings, school systems, and government agencies.

- *Human-factors psychologists* explore how people and machines interact at home and in the workplace to minimize frustration and maximize safety and productivity. For instance, a human-factors psychologist might examine computer software and then make

suggestions about how to make the software programs simpler to learn, install, or run. Human-factors psychologists also study workplace *ergonomics*, which includes reducing discomfort and fatigue while maximizing productivity. A human-factors psychologist might ask, "How should computer keyboards be positioned to keep hands and fingers from getting tired after prolonged use?" These psychologists work in the business world and are often hired by government and military agencies.

Industrial/organizational (I/O) psychologists use psychological concepts to help entire businesses and organizations operate better and more efficiently. An I/O psychologist might help hire the right people for a given job, suggest ways to promote job satisfaction, or study consumer behavior so that businesses can make decisions about the products they want to sell. An I/O psychologist might ask, "What's the best way to change the overall work environment to maximize productivity?" For instance, the work of I/O psychologists has suggested that multitasking actually decreases workplace productivity (Gogan, 2005). You will find I/O psychologists in government, industry, business, or academic settings, although some run their own consulting firms and are self-employed.

School psychologists work to improve the development of children in an elementary, middle, or high school setting. Most often, they are involved in the testing or assessment of children in educational settings. After analyzing testing results, a school psychologist meets with parents, educators, and specialists to develop an appropriate intervention if necessary. Helping children deal with the emotional, social, and cognitive problems they experience at school or at home is common practice for school psychologists. A school psychologist might ask, "What kind of an individual educational plan does this student need to maximize potential learning?" To help develop this plan, the school psychologist would look at the results of the data gathered on a student, perhaps a third grader having difficulty with math, and set up the mentoring sessions that would help the child learn how to multiply and divide. You will find school psychologists in child guidance centers; public or private elementary, middle, or high school systems; or in federal or government agencies.

Consumer psychologists use research to help figure out why some people buy a product and others do not. They want to know what influences consumer responses. The goal is to be able to describe and predict consumer practices, beliefs, and emotions. A consumer psychologist might ask, "What kind of a slogan or advertisement will help sell this new iPod?" The consumer psychologist would conduct tests to see whether iPod ads featuring the rock band U2 were more likely to grab attention than iPod ads featuring The

Which Band? Would you be more likely to watch an advertisement featuring the U2 or The Wiggles? The answer most likely depends on your age.

Wiggles, an Australian band that focuses on songs for children. Consumer psychologists, like many psychologists, most often work in either a business or an academic setting.

- *Rehabilitation psychologists* help those who have been in an accident or have been ill and have lost optimal cognitive or physical skills. Head injury or stroke victims often require the assistance of rehabilitation psychologists to relearn language or the motor activity involved in tasks like eating or drinking. A rehabilitation psychologist might ask, "What part of the brain has been injured?" to predict the relearning that will likely be necessary. For instance, knowing that the injured part of the stroke victim's brain was responsible for communication, the rehabilitation psychologist would create a recovery program in which the stroke patient would practice basic speaking skills. Rehabilitation psychologists most often work in medical rehabilitation settings.

- *Health psychologists* research ways to prevent disease and promote health. These psychologists are likely to design and evaluate programs to help people lose weight, stop smoking, or improve sleep. Health psychologists look for the factors that lead to health problems and suggest the interventions necessary to make life better. Another common health psychologist practice is meeting with government officials to advocate and develop public health policy. A health psychologist might ask, "What are the benefits to banning smoking from public places like restaurants and bars?" Health psychologists are employed at hospitals, public health agencies, rehabilitation centers, and universities. If a health psychologist has clinical training, working in a private practice is also likely.

- *Social workers* consist of individuals with an undergraduate or master's degree in psychology or social work who want to improve the lives of others. Usually, social workers are not psychologists.

That is, they do not have doctoral degrees. Social workers may help resolve family problems, work to find adequate housing for those who need it, or assist those facing disability, substance abuse, or unemployment. A social worker might ask, "How does improving the home environment help a person function best?" Perhaps the answer to that question begins with trying make sure the family regularly eats dinner together. Social workers are most often employed by government agencies, schools, and residential care facilities.

There are many more types of psychologists working in the field. Table 1.2 lists some of the American Psychological Association's (APA's) 55 divisions, each of which may have a number of specialized subfields. Although many psychologists help people work through depression, overcome fears, or analyze character, the range of other available roles is wide.

Table 1.2

Some APA Divisions by Number and Name

1. Society for General Psychology
2. Society for the Teaching of Psychology
3. Experimental Psychology
5. Evaluation, Measurement, and Statistics
6. Behavioral Neuroscience and Comparative Psychology
7. Developmental Psychology
8. Society for Personality and Social Psychology
12. Society of Clinical Psychology
14. Society for Industrial and Organizational Psychology
22. Rehabilitation Psychology
23. Society for Consumer Psychology
29. Psychotherapy
30. Society of Psychological Hypnosis
34. Population and Environmental Psychology
35. Society for the Psychology of Women
36. Psychology of Religion
38. Health Psychology
40. Clinical Neuropsychology
43. Family Psychology
45. Society for the Psychological Study of Ethnic Minority Issues
46. Media Psychology
47. Exercise and Sport Psychology
48. Society for the Study of Peace, Conflict, and Violence: Peace Psychology Division
50. Addictions

Source: American Psychological Association.

THINKING CRITICALLY SUMMARY *There are many subfields in psychology—and many careers. The most common career is clinical psychology. Clinicians help people with psychological health issues, such as substance addiction and mental illnesses. Other psychologists work with research instead of directly helping people with psychological issues. Academic psychologists conduct basic investigations on topics such as brain research and how culture influences behavior. Applied psychologists work to apply psychological research to specific questions, such as how to improve sports performance and what factors influence consumer behavior.*

Module 1: Thinking About Psychology and Careers in Psychology

LEARNING GOAL 1: Analyze the important elements of the definition of psychology.

- Psychology is the scientific study of behavior and mental processes.
  - Psychologists rely on scientific research methods to answer questions.
  - Any observable behavior or mental process can be studied by psychologists.

LEARNING GOAL 2: Discuss what clinical psychologists do.

- The most common psychological career is clinical psychology.
- Clinical psychologists use their skills to promote psychological health in groups and individuals.
- Clinical psychologists work in private practices, medical systems, schools, counseling centers, government agencies, and mental health service organizations.

LEARNING GOAL 3: Name types of academic psychologists, and explain the basic research each might do.

- Academic psychologists work in colleges and universities conducting basic research.
  - Neuropsychologists (or biopsychologists) explore how the structures of the brain work to produce behaviors.
  - Social psychologists explore how our behaviors and mental processes are influenced by our interactions with others.
  - Developmental psychologists study growth or development that takes place over someone's life span.
  - Cognitive psychologists study mental processes.
  - Experimental (or research) psychologists specialize in doing research and can be specialists in any of psychology's subfields.

LEARNING GOAL 4: Name types of applied psychologists, and explain how they use psychological research.

- Applied researchers work to solve specific, practical problems rather than to expand the scientific knowledge base of psychology.
  - Forensic psychologists apply the law and psychological research methods to legal issues.
  - Sports psychologists explore the psychological issues involving the improvement of athletic performance.
  - Educational psychologists study how humans learn and look for ways to improve the learning process.
  - Human-factors psychologists explore how people and machines interact to minimize frustration and maximize safety and productivity.
  - Industrial/organizational (I/O) psychologists use psychological concepts to help businesses and organizations operate better and more efficiently.
  - School psychologists work to improve the development of children in school settings.
  - Consumer psychologists use research to figure out why people buy products.
  - Rehabilitation psychologists help those who have medical conditions and have lost optimal cognitive or physical skills.
  - Health psychologists research ways to prevent disease and promote health.
  - Social workers have an undergraduate or master's degree in psychology or social work and want to improve the lives of others.

For each definition, choose the best matching term from the list that follows.

Definitions

___ 1. Apply the law and psychological research methods to legal issues.

___ 2. Explore how our behaviors and mental processes are influenced by our interactions with others.

___ 3. Explore how people and machines interact to minimize frustration and maximize safety and productivity.

___ 4. Explore how the structures of the brain work to produce behaviors.

___ 5. Explore the psychological issues involving the improvement of athletic performances.

___ 6. Have an undergraduate or master's degree in psychology but are not usually psychologists; share the desire to improve the lives of others.

___ 7. Help those who have medical conditions and have lost optimal cognitive or physical skills.

___ 8. Pure science that aims to increase the scientific knowledge base.

___ 9. Research ways to prevent disease and promote health.

___ 10. Scientific study that aims to solve practical problems.

___ 11. Specialize in doing research and can be specialists in any of psychology's subfields.

___ 12. Study growth or development that takes place over someone's life span.

___ 13. Study how humans learn and look for ways to improve the learning process.

___ 14. Study mental processes.

___ 15. Scientific study of behavior and mental processes.

___ 16. Use psychological concepts to help businesses and organizations operate better and more efficiently.

___ 17. Use research to help figure out why people buy products.

___ 18. Work to improve the development of children in school settings.

___ 19. Use their skills as therapists, assessment specialists, and researchers to promote psychological health in groups and individuals.

Terms

a. Academic psychologists
b. Applied research
c. Basic research
d. Clinical psychologists
e. Cognitive psychologists
f. Consumer psychologists
g. Developmental psychologists
h. Educational psychologists
i. Forensic psychologists
j. Health psychologists
k. Human-factors psychologists
l. Industrial/organizational psychologists
m. Neuropsychologists (or biopsychologists)
n. Psychology
o. Rehabilitation psychologists
p. School psychologists
q. Social psychologists
r. Social workers
s. Sports psychologists

1. Which of the following statements best matches the definition of psychology?
   a. The study of people
   b. Scientific research about why we act and think in the ways we do
   c. Thinking about human behaviors
   d. Investigations of the human psyche and why we think the things we think

2. What is the primary tool a psychologist uses to answer questions about behavior and thinking?
   a. Insight
   b. The unconscious mind
   c. Dream analysis
   d. The scientific method

3. If you meet a psychologist, odds are that the psychologist works as
   a. an academic psychologist.
   b. a clinical psychologist.
   c. a basic research psychologist.
   d. a social worker.

4. Which of the following issues is a clinical psychologist most likely to deal with?
   a. How children's thinking develops as they age
   b. What neurons are involved in emotional reactions
   c. A phobia about flying
   d. What teaching methods are most effective

5. Which of the following professionals is categorized as an applied psychologist?
   a. Developmental psychologist
   b. Experimental psychologist
   c. Neuropsychologist
   d. Consumer psychologist

6. Which type of psychologist is most likely to be interested in this question: Are people from the south or people from the north more likely to be aggressive in stressful situations?
   a. Social psychologist
   b. Clinical psychologist
   c. Developmental psychologist
   d. Human-factors psychologist

7. What is one goal all academic psychologists share?
   a. To help people with mental illnesses
   b. To use existing psychological research to solve specific, practical problems
   c. To use the scientific method to diagnose and treat psychological disorders
   d. To conduct basic research that expands the knowledge base of psychology

8. Which of the following professionals is categorized as a basic researcher?
   a. Neuropsychologist
   b. Forensic psychologist
   c. Sports psychologist
   d. School psychologist

9. Which type of psychologist is most likely to be interested in this question: What are the personality characteristics of the best managers in a company?
   a. Clinical psychologist
   b. Biopsychologist
   c. Developmental psychologist
   d. Industrial/organizational psychologist

10. What is one goal all applied research psychologists share?
    a. To help people with mental illnesses
    b. To use existing psychological research to solve specific, practical problems
    c. To use the scientific method to diagnose and treat psychological disorders
    d. To conduct basic research that expands the knowledge base of psychology

Writing About Psychology

Consider the 16 different psychological careers described in this module. Write (in a half a page or so) about which career you are *most* attracted to right now, which career you are *least* attracted to right now, and why. In your answer, describe the kinds of work and psychological questions relevant to the careers you chose.

Reviewing Key Terms

psychology, p. 6   basic research, p. 9   applied research, p. 11

Module 2:
History and Perspectives

Sections

- Modern Psychology's Nineteenth-Century Roots
- Psychology in the Twentieth Century
- Psychology's American Groundbreakers
- Six Contemporary Psychological Perspectives
- Psychology in the Twenty-First Century

Learning goals

Students will be able to:

1 Describe the first psychologists and the origins of psychology as a science.

2 Explain how twentieth-century psychologists changed the way psychology was studied.

3 Discuss how some of psychology's ground-breakers helped advance gender and race equality.

4 Explain the six contemporary psychological perspectives.

5 Discuss three recent areas of psychological study.

Vocabulary Previewing Key Terms and Key People:

structuralism
Gestalt psychology
functionalism
psychoanalysis
behaviorism
humanistic psychology
cognitive perspective
biological perspective

social–cultural perspective
behavior genetics
positive psychology
Wilhelm Wundt (1832–1920)
E. B. Titchener (1867–1927)

William James (1842–1910)
Sigmund Freud (1856–1939)
Ivan Pavlov (1849–1936)
John B. Watson (1878–1958)
B. F. Skinner (1904–1990)

Abraham Maslow (1908–1970)
Carl Rogers (1902–1987)
Jean Piaget (1896–1980)
Kenneth Clark (1914–2005) and Mamie Phipps Clark (1917–1983)

Modern Psychology's Nineteenth-Century Roots

THINKING CRITICALLY: *How did the study of psychology as a science get started?*

We have probably been curious about ourselves and the world around us for as long as humans have been around. But the history of modern psychology represents only about the last 125 years. Most other sciences are much older than psychology.
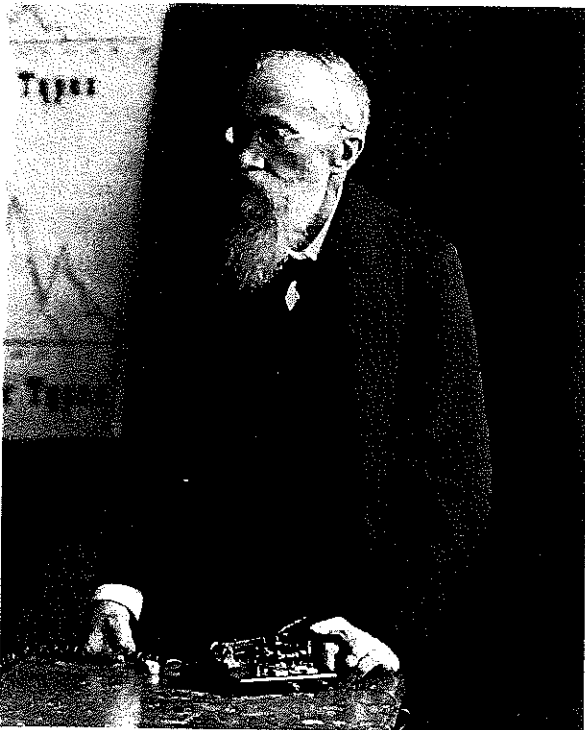
Wilhelm Wundt and the Beginning of Psychology as a Science

Psychology's earliest pioneers shared a keen interest in understanding mental processes and, later, behavior. One of these early pioneers was German philosopher and physiologist **Wilhelm Wundt** (pronounced VOONT). As a youngster, Wundt was an unlikely candidate for the founder of a new science. The son of a Lutheran minister, Wundt had trouble concentrating in school, often received bad grades, and even had to repeat a grade. But the future "father" of psychology found his academic groove and eventually graduated from medical school. Wundt wasn't that interested in practicing medicine, however; he wanted to understand human consciousness. So he began conducting experiments that tested how perceptions, sensations, and feelings related to human behavior. Wundt was given laboratory space at the University of Leipzig to run his psychological experiments in 1879, which is now recognized as the "birth year" of psychology.

Wilhelm Wundt in His Laboratory
Wundt is often called the founder of modern psychology.

Wundt attempts to understand human consciousness used a process called *introspection*. Students trained in the introspection method were taught to describe their own conscious experiences in a systematic way. Each student received the same sound or visual experience, and then Wundt used their detailed descriptions as a foundation for understanding consciousness. Reducing consciousness to its basic elements was usually at the heart of Wundt's research.

One reason Wundt is considered the founder of modern psychology was his use of experimental methods to study consciousness. For example, in one study, participants were told to press a button as soon as they saw a light come on. This was called task one. The time it took them to respond was recorded. Next, participants were told either a red or a green light would come on. Their instructions were to press the left-hand button if the light was green and the right-hand button if the light was red.

This was called task two. Again, the time to respond was recorded. Task one required only perception of a light before responding, but task two required perception of the light, a decision about which color was shown, and a second decision about whether to push the left button or the right button. The time needed to respond to the task two was longer than that for task one, and Wundt believed the time difference between tasks measured the speed of mental processes.
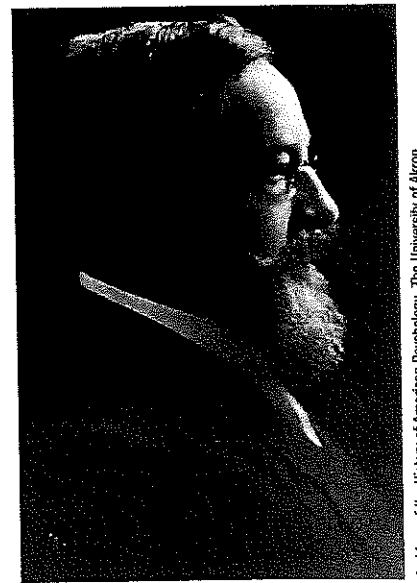
Edward B. Titchener and Structuralism

One of Wundt's students, **E. B. Titchener,** introduced structuralism, the first major school of thought in psychology. **Structuralism** is the theory that the structure of conscious experience could be understood by analyzing the basic elements of thoughts and sensations. Just as a chemist tries to understand the different elements in chemical compounds, structuralists tried to understand the *structure* of conscious experience by analyzing the intensity, clarity, and quality of its basic parts. For example, picture a blade of grass. A structuralist might have lingered over the intensity of the green color of the blade of grass, the clarity of its texture, and the roughly rectangular shape of the blade. For Titchener and his students, successful descriptions of such basic elements were the building blocks of consciousness. Like Wundt, Titchener studied the structural elements of consciousness. Unlike Wundt, Titchener did not want to use hypothetical mental processes to explain consciousness. Instead, Titchener steered psychology toward a descriptive science he could see.

Edward B. Titchener Titchener introduced a perspective he termed structuralism.

Gestalt Psychology

Ultimately, structuralism did not produce many followers, and it died out. Perhaps the greatest contribution structuralism made to psychology is that it provided a theory to disprove, giving rise to other schools of thought in psychology.

Gestalt (a German word that means "configuration" and is pronounced gih-SHTALT) **psychology** was a psychological perspective that emphasized our tendency to integrate pieces of information into meaningful wholes. Opposed to merely analyzing the elements of consciousness, Gestalt psychologists suggested that adding the individual elements of an experience together creates something new and different—that *the whole is different from the sum of its parts.* For example, think of the notes to your favorite song. Individually, each note means little, but put them together and you have a tune. Combining the elements creates something that did not exist before. Most prominent Gestalt psychologists fled Nazi Germany in the 1930s, but their work resurfaced in new psychological theories later in the century.

structuralism
Theory that the structure of conscious experience could be understood by analyzing the basic elements of thoughts and sensations.

Gestalt psychology
Psychological perspective that emphasized our tendency to integrate pieces of information into meaningful wholes.

William James and Functionalism

Another psychologist who disagreed with the structuralist approach was Harvard University Professor **William James.** James, the first American psychologist, once noted that the first psychology lecture he ever heard was his own. He went on to write the first psychology textbook, published in 1890, which influenced thousands of students over the next several decades. For James, psychology needed to study the *functions* of consciousness, or the ways consciousness helps people adapt to their environment, a view that became known as **functionalism.** James was influenced by Charles Darwin's theory of evolution and believed that mental processes evolved over time. James thought that we developed useful habits—such as washing our hands before eating or brushing our teeth after a meal—because they help us function more effectively in our daily lives. That is, washing our hands keeps us from eating germs and becoming sick, and brushing our teeth keeps us from losing them. James' idea was that consciousness helped us adapt to and function in our surroundings, and he thought that understanding this idea should be the goal of psychology.

William James James introduced the functionalism perspective.

THINKING CRITICALLY SUMMARY *Wilhelm Wundt is considered the founder of modern psychology because he established a lab (in 1879) and used experimental methods to study consciousness. E. B. Titchener's theory of structuralism studied conscious experience by analyzing the basics elements of thoughts and sensations. Gestalt psychologists studied the ways we integrate pieces of information into meaningful wholes. William James' theory of functionalism explored the ways that consciousness helps people adapt to their environment.*
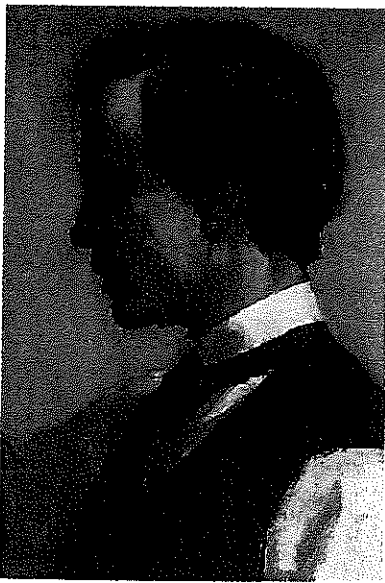
Sigmund Freud Freud is perhaps the best-known psychologist of all time.

Psychology in the Twentieth Century

THINKING CRITICALLY: *In what ways did twentieth-century psychologists change the way psychology was studied?*

As the 1900s began, the science of psychology was heading in new directions. Perhaps the most influential figure of this time was a name you have likely heard associated with psychology, Sigmund Freud.

Sigmund Freud and Psychoanalysis

Few outside of psychology have heard of structuralism and functionalism, but almost everyone has heard of the Austrian physician **Sigmund Freud.** In 1900, Freud introduced the world to the **psychoanalysis,** a theory of personality and therapeutic technique that attributes our thoughts and actions to unconscious motives and conflict. For example, a child who was afraid to express anger toward a parent might draw on the parent's newly painted bedroom walls or embark on some other destructive behavior.
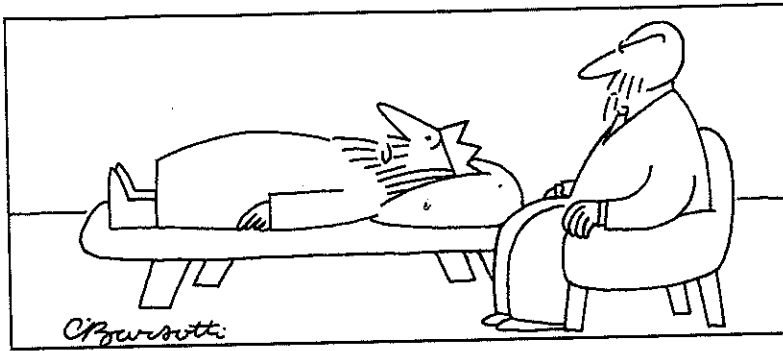
"Sure, I'm Alfred the Great now, but in high school
I couldn't get a date."

William James (1842–1910)
First American psychologist and author of the first psychology textbook.

Sigmund Freud (1856–1939)
Founder of psychoanalysis.

Ivan Pavlov (1849–1936)
Russian physiologist who showed that animals learn some things through association.

Have you seen the stereotypical therapist, complete with beard and notepad, talking to a patient reclining on a couch? The above cartoon is patterned after Freud. Freud's approach to psychology differed from Titchener's structuralism and James' functionalism in two key ways:

- Psychoanalysis focused on abnormal behavior, which Freud attributed to unconscious drives and conflicts, often stemming from childhood. For instance, Freud thought that a conflict experienced in childhood, such as a difficult time being potty trained, could reappear for that person as an obsession for order and cleanliness later in life.

- Psychoanalysis relied on personal observation and reflection instead of controlled laboratory experimentation as its means of discovery. Freud claimed his work was scientific, but he relied on self-reported reflections rather than scientific methods to gather information, so it really wasn't.

Freud died in 1939, and many of his ideas have since been disproved, but elements of Freud's original theory are still part of pop culture. A "Freudian slip," for example, is a misstatement reflective of something you'd *like* to say. "Do you want to study for tomorrow's kizz?" a boy might stammer to the girl of his dreams. The term "anal-retentive" comes from one of Freud's developmental stages and refers to someone who is excessively neat, clean, and compulsive (stuck in the "anal stage," where we supposedly come to terms with bodily functions). Freud's greater legacy, however, was his novel approach to understanding behavior, and some of these ideas have been incorporated into *psychodynamic theory*, which is a modernized version of Freud's original theories (discussed in more detail in the next section). Psychologists influenced by psychodynamic theory still assume, as Freud did, that our unconscious thoughts, inner conflicts, and childhood experiences significantly affect our personality and behaviors.

Ivan Pavlov, John Watson, and Behaviorism

In 1906, Russian physiologist **Ivan Pavlov's** classic studies of animal learning fueled a move in psychology toward interest in *observable* behaviors and from the self-examination of inner ideas and experiences.

functionalism
Theory that emphasized the functions of consciousness or the ways consciousness helps people adapt to their environment.

psychoanalysis
Theory of personality and therapeutic technique that attributes our thoughts and actions to unconscious motives and conflicts.

Pavlov's emphasis on things we can see (not mental processes) quickly caught on in the United States. Look at the following words, which appeared in *Psychological Review* 7 years after Pavlov first published his work. The words from this article struck a nerve in the world of psychology: "Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of human behavior." It can be argued that the words in this article sent the study of mental processes into hibernation for the next 40 years.

John B. Watson was the author of the article that encouraged psychologists to dismiss the study of consciousness. Watson basically considered structuralism and functionalism failures, given his belief that the methods designed to study these perspectives were unscientific. He wanted psychology to move in a more experimental direction, and to that end he launched **behaviorism,** the theory that psychology should only study observable behaviors, not mental processes. Watson's work made psychology more objective and scientific in its methods, although most behaviorists today recognize the significance of studying mental processes, as well as behaviors.

Watson's behaviorism was the most dominant school of thought in psychology in the twentieth century, and he promoted the study of the learned reflexes, originally developed by Pavlov. This method included precise experimental observations of human reactions to stimuli in their environment. His most famous study paired the presentation of a furry, white object to an infant with the presentation of a loud noise. The loud noise frightened the infant, but pairing a furry white object with the loud noise also led the child to fear furry white objects. Later, the sight of something like a white rabbit would lead to uncontrollable crying by the infant. In the past 40 years, this school of thought has been modified somewhat by other behaviorists, such as **B. F. Skinner** and Albert Bandura. Today, behaviorism focuses on learning through rewards and observation, and studies frightening small children would neither be approved by a research review panel nor be conducted by any ethical psychologist.

John Watson and Behaviorism
Watson, shown here with Rosalie Rayner and a baby known only as "Little Albert," is best know for founding the perspective called behaviorism. In this photo, he is conducting a study on learned or conditioned fear.

Behaviorism
e theory that psychology ould only study observable behaviors, not mental processes.

Humanistic psychology
School of thought that focuses on the study of conscious experience, the individual's freedom to choose, and the capacity for personal growth.

Abraham Maslow, Carl Rogers, and Humanistic Psychology

Behaviorism and psychoanalysis maintained their hold on the field into the 1960s, when a "third force" began to influence psychology (Schultz & Schultz, 1996). **Humanistic psychology** is a school of thought that focuses on the study of conscious experience, a person's freedom to

choose, and the capacity for personal growth. Humanistic psychologists such as **Abraham Maslow** and **Carl Rogers** rejected the idea that humans are controlled by a series of rewards and reinforcements. Instead, they emphasized *conscious experience* as the proper focus of psychology. They also believed that humans have free will in their decision making and that healthy people strive to reach their full potential. Furthermore, the humanistic psychologists did not believe humans could be reduced to various parts and pieces.
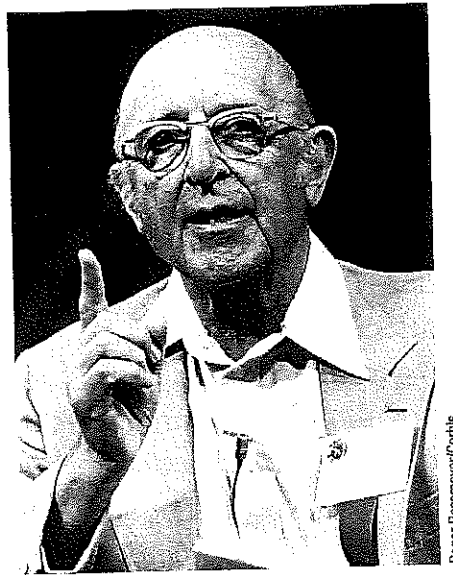
Carl Rogers Rogers helped promote the humanistic perspective.

That is, an entire human—the whole person—is different from the sum of all the parts (brain, neurons, emotions, and so on). Does this remind you of an older school of thought? Yes, the humanistic psychologists were influenced by the Gestalt psychologists who preceded them.

Humanistic psychology showed great promise early in its existence, but some believe its downfall resulted from the lack of scientific research to back up its proposals (Seligman & Csikszentmihalyi, 2000). The idea of striving to reach one's potential, proposed by Maslow 40 years ago, has been picked up by the positive psychologists of the twenty-first century, as you will see later in this module.

Jean Piaget and Child Development

Swiss biologist and psychologist **Jean Piaget** (pronounced pee-ah-ZHAY) is another pioneer; he is best known for his work on how children develop their thinking abilities. His early work focused on biology, but after moving to France in the 1920s, his interest turned to psychology. He started teaching in a school known for administering intelligence tests, and Piaget noticed an interesting phenomenon: Students of a certain age consistently made mistakes on the tests that older children did not make. This led Piaget to believe that younger children thought differently than older children. The 60-plus books Piaget published over the following 50 years most often dealt with how thinking develops in children.

THINKING CRITICALLY SUMMARY *Sigmund Freud's theory of psychoanalysis attributes our thoughts and behavior to unconscious motives and conflict (rather than consciousness). Ivan Pavlov and John Watson studied only observable behaviors (behaviorism), not mental processes. Abraham Maslow and Carl Rogers thought that psychology should study conscious experience (as did the nineteenth-century psychologists), but they emphasized this study as a way for people to achieve their full potential. Jean Piaget pioneered research in developmental psychology, focusing on how children develop their thinking abilities.*

John B. Watson (1878–1958) Founder of behaviorism.

B. F. Skinner (1904–1990) American psychologist whose brand of behaviorism focused on the role of responses in learning.

Abraham Maslow (1908–1970) Leader in the humanistic psychology movement.

Carl Rogers (1902–1987) Leader in the humanistic psychology movement.

Jean Piaget (1896–1980) Developmental and cognitive psychologist known for his studies of children's thought processes.

THINKING CRITICALLY: How did one of psychology's groundbreakers help advance gender and race equality?

Like other academic fields, early psychology lacked the ethnic and gender diversity it has today. Although difficult to imagine by today's standards, women and minority students were often discouraged from attending colleges and universities at the time of and for decades after psychology's birth. If this seems shocking, remember that women were not allowed to vote in the United States until 1920. The spirit of the times in North America and in Europe (where psychology flourished) favored the advancement of white men at the expense of nonwhite men and all women. These racial and gender barriers meant white males dominated psychology (and all sciences) because other people rarely had the opportunity to gain the education, knowledge, and training necessary to become a psychologist. Several of America's groundbreakers in psychology excelled in, and in spite of, the cultural climate (see Figure 2.1).

G. Stanley Hall was a student of Wundt's who achieved a number of psychological firsts. Hall was the first American to receive a doctoral degree (Ph.D.) in psychology. He also opened the first psychology laboratory in the United States (at Johns Hopkins University), and he was the first American Psychological Association (APA) president, elected in 1892.

Working with William James, Mary Whiton Calkins had to overcome discrimination and prejudice against women to become the first woman to complete the requirements for a Ph.D. in psychology in 1895. Harvard at that time did not admit women and so would not award her a degree. Years later, Harvard offered to give her a degree from Radcliffe College (established by Harvard to educate women). Calkins refused the offer, stating that she had completed her work at Harvard, not Radcliffe. Calkins was elected president of the APA in 1905.

Margaret Floy Washburn was E. B. Titchener's first graduate student at Cornell University, and she was the first woman to receive a Ph.D. in psychology. In 1908, Washburn wrote the first textbook on comparative psychology, which examined animal behavior.

Francis Cecil Sumner, in 1920, became the first African-American to receive a Ph.D. in psychology. Sumner wrote many articles on racial prejudice, education for African-Americans, and nature-nurture issues. Sumner also established the psychology department at Howard University.

Kenneth Clark and Mamie Phipps Clark were educational psychologists whose research was presented as evidence to the U.S. Supreme Court during the landmark court case on desegregating schools, *Brown v. Board of Education*. The Clarks helped show that internalized racism was a product of the stigmas attached to "separate but equal" schools for white children and black children. For instance, black
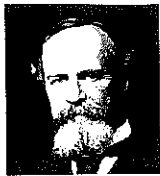
Kenneth Clark (1914–2005) and Mamie Phipps Clark (1917–1983)
Researchers whose work was used to in the *Brown v. Board of Education* case that overturned segregation in schools.

Wilhelm Wundt
(1832–1920)

William James
(1842–1910)

E. B. Titchener
(1867–1927)

G. Stanley Hall
(1844–1924)

Sigmund Freud
(1856–1939)

**Mary Whiton
Calkins**
(1863–1930)

Alfred Binet
(1857–1911)

Ivan Pavlov
(1849–1936)

**Margaret Floy
Washburn**
(1871–1930)

John B. Watson
(1878–1958)

**Francis Cecil
Sumner**
(1895–1954)

Jean Piaget
(1896–1980)

**Inez Beverly
Prosser**
(1897–1934)

B. F. Skinner
(1904–1990)

**Mamie Phipps
Clark**
(1917–1983)

Karen Horney
(1885–1952)

Eric Erikson
(1902–1994)

Abraham Maslow
(1908–1970)

Gordon Allport
(1897–1967)

Albert Bandura
(1925–)

Roger Sperry
(1913–1994)

Eleanor Maccoby
(1917–)

Sandra Bem
(1944–)

Judith Rodin
(1944–)

1879 Wilhelm Wundt opens the first psychology laboratory in Leipzig, Germany.

1890 William James publishes the first psychology textbook, *Principles of Psychology.*

1892 G. Stanley Hall founds the American Psychological Association (APA). E. B. Titchener introduces structuralism.

1900 Sigmund Freud publishes his psychoanalytic views in *The Interpretation of Dreams.*

1905 Mary Whiton Calkins becomes the first woman to be president of the APA. Alfred Binet develops the first intelligence test.

1906 Ivan Pavlov publishes his results on learning by association.

1908 Margaret Floy Washburn becomes the first woman to receive a doctoral degree (Ph.D.) in psychology.

1913 John B. Watson publishes "Psychology as the Behaviorist Views It."

1920 Francis Cecil Sumner becomes the first African-American to earn a doctoral degree in psychology.

1926 Jean Piaget publishes *The Language and Thought of the Child.*

1933 Inez Beverly Prosser becomes the first African-American woman to earn a doctoral degree in psychology.

1938 B. F. Skinner promotes behaviorism, publishing *The Behavior of Organisms.*

1939 Kenneth Clark and Mamie Phipps Clark begin work that will be cited by the U.S. Supreme Court 1954 decision ending racial segregation in public schools.

1945 Karen Horney challenges the male bias in Freud's psychoanalytic theory and proposes a social-cultural approach.

1950 Erik Erikson publishes *Childhood and Society,* outlining stages of psychosocial development.

1954 Abraham Maslow presents the humanistic perspective. Gordon Allport publishes *The Nature of Prejudice.*

1961 Albert Bandura stresses the importance of imitation in learning, proposing a social-learning theory.

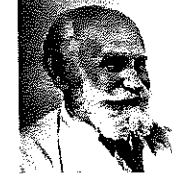1964 Roger Sperry demonstrates the importance of the brain in behavior with split-brain research.

1969 John Berry calls attention to the importance of cross-cultural research in psychology.

1974 Eleanor Maccoby and Carol Jacklin publish *The Psychology of Sex Differences.* Sandra Bem and Janet Spence develop tests assessing and promoting female competence.

1977 Judith Rodin shows the importance of perceived control.

Figure 2.1 Important People in the History of Psychology

children attending a segregated school (apart from white children) often viewed "white" as good and pretty and "black" as bad and ugly. The Supreme Court listened to the Clarks' findings and mentioned them when ruling that segregated schools were unconstitutional. Kenneth Clark was also the first African-American to be president of the APA.

Inez Beverly Prosser, the first African-American woman to earn a Ph.D. in psychology, completed the requirements in 1933 at the University of Cincinnati. She studied the development of African-American children in segregated and integrated schools.

Today, half of all psychology doctorates are awarded to women, and two-thirds of all psychology graduate students (those who already have a bachelor's degree) are women (Martin, 1995). But although roughly 33 percent of the U.S. population consists of minorities, the proportion of minority students in graduate programs is far from one in three. We can only hope that this gap will continue to close as university psychology departments across the country work to recruit the best and brightest students from all backgrounds. To meet the demands of our increasingly multicultural and ethnically diverse population, psychology will need to continue evolving.

THINKING CRITICALLY SUMMARY *Like other disciplines, the early years of psychology discriminated against women and ethnic minorities in a variety of ways. Despite this, many American thinkers left their mark on the history of psychology. Kenneth and Mamie Phipps Clark conducted research that showed an inherent racism was present in segregated schools. Their work showed that African-American children attending a segregated school often viewed "white" as good and "black" as bad. The U.S. Supreme Court cited this research in the decision that ruled segregated schools unconstitutional.*

Six Contemporary Psychological Perspectives

THINKING CRITICALLY *How do current psychological theories explain thinking and behavior?*

We can view behavior from many viewpoints, or perspectives. *Psychological perspectives, schools of thought,* and *psychological approaches* are all synonyms for the ways in which psychologists classify collections of ideas. Put another way, the psychologist who believes in a particular collection of ideas is said to view behavior from that particular perspective. For instance, a behaviorist views psychology from a behavioral perspective.

Psychology has seen perspectives come and go (see Figure 2.2). Most historical schools of thought were forerunners to one or more modern perspectives. The modern version of psychoanalysis is the psychodynamic perspective. Behaviorism has evolved into the behavioral perspective.

Figure 2.2 Historical Development of Psychology's Main Schools of Thought This figure shows the periods in which each psychological perspective had the greatest historical significance in psychology's development. (Adapted from Shultz & Shultz, 1996.)

Functionalism

Behaviorism

Social–cultural perspectives

Gestalt psychology

Psychoanalysis

Humanistic psychology

Cognitive psychology

Biological influences

| 1850 | 1875 | 1900 | 1925 | 1950 | 1975 | 2000 |

The Origin of Species published by Charles Darwin

Telephone invented

Women get the right to vote in the United States

Great Depression

World War II

Civil rights movement

Fall of the Berlin Wall

And humanistic psychology formed the basis for the humanistic perspective. The other three contemporary perspectives discussed here are the cognitive perspective, the biological perspective, and the social–cultural perspective.

To understand the contemporary perspectives, let's apply each to the same real-life possibility: whether or not a person helps a stranger pick up a spilled sack of groceries when given the opportunity. Why do some people help when others don't? Each of the six contemporary perspectives has an explanation.

Psychologists who are behaviorists work from the *behavioral perspective,* a school of thought that focuses on how we learn observable responses. Behaviorists believe we learn certain responses through rewards, punishments, and observation. So they might suggest that a person helps the stranger pick up the spilled sack of groceries because that person had observed someone being rewarded for helpful behavior in the past. Learning that rewards come to those who help others fosters helping behavior.

Psychologists who are humanists work from the *humanistic perspective,* a school of thought that focuses on how healthy people strive to reach their full potential. A humanistic psychologist might

suggest that a person who has met his own basic needs (hunger, thirst, shelter) would be able to reach out socially and help another person in need.

Psychologists who are psychoanalysts work from the *psychodynamic perspective,* a school of thought that focuses on how helping behavior springs from unconscious drives and conflicts. A psychologist influenced by the psychodynamic perspective might suggest that a person does not help the stranger pick up the groceries because she has an unresolved childhood conflict about her father always yelling at her to pick up her toys. The assumption is that there is a conflict with her father, from long ago, that needs to be resolved. And the psychologist assumes that until it is resolved, the conflict will affect behavior.

Structuralism, functionalism, and Gestalt psychology are the forerunners of the **cognitive perspective,** a school of thought that focuses on how people think—how they take in, process, store, and retrieve information. Remembering something you've learned, for example, is a cognitive activity. From the cognitive perspective, helping a stranger could be a function of how we think about or interpret a situation. We may choose to help the stranger who spills a bag of groceries because we *think* it will make us look good to others. If we think helping will cause us to look silly, then we leave the stranger to pick up the groceries alone.

The **biological perspective** is a school of thought that focuses on physical structures and substances underlying a particular behavior, thought, or emotion. Biological psychologists might remind us that levels of a naturally occurring "feel-good" chemical found in the brain could affect whether we help the stranger or not. Those lacking normal amounts of this brain chemical may be depressed, and depression could keep the person from wanting to help the stranger pick up the spilled groceries.

The **social–cultural perspective** is a school of thought that focuses on how thinking or behavior changes in different contexts or situations. Social–cultural psychologists might tell us that a person is more likely to help the stranger if that person is with a couple of friends and 50 feet from his front door and less likely if he is in a crowded, big-city grocery store he would never have been to before.

As you can see, no one perspective lays claim to having all answers to the question, "What makes us tick?" But look at these six contemporary perspectives collectively. Can you see why most psychologists today subscribe to more than one perspective? These six perspectives complement one another, and psychologists draw from them all in attempts to understand behavior and mental processes. Sometimes, they even look beyond these six—to developments on psychology's horizon—in their efforts to understand human behavior.

cognitive perspective
School of thought that focuses on how people think—how we take in, process, store, and retrieve information.

biological perspective
School of thought that focuses on the physical structures and substances underlying a particular behavior, thought, or emotion.

social–cultural perspective
School of thought that focuses on how thinking or behavior changes in different contexts or situations.

Table 2.1

Six Contemporary Perspectives on Psychology

Perspective	Explanation of Helping Behavior
Cognitive	
How we process information	Our individual interpretations of an event affect how we respond.
Biological	
How our biological structures and substances underlie a given behavior, thought, or emotion	Brain chemistry controls the emotions and thoughts that eventually produce helping behavior.
Social–Cultural	
How thinking and behavior change depending on the setting or situation	If we come from a cultural background that values helping, we're more likely to help. We're also more likely to help if we are in a comfortable situation, such as with a good friend, than if we are in a large, unfamiliar crowd.
Behavioral	
How we learn through rewards, punishments, and observation	If we have witnessed or been rewarded for helping behavior, we are more likely to help.
Humanistic	
How healthy people strive to reach their full potential	If our needs for nourishment and safety have been met, we are more likely to feel we can reach out and help others.
Psychodynamic	
How we are affected by unconscious drives and conflicts	Unresolved inner conflicts can affect whether or not we help others.

THINKING CRITICALLY SUMMARY *There are six contemporary psychological perspectives on human thinking and behavior: (1) The psychodynamic perspective explains our behavior as resulting from unconscious drives and conflicts. (2) Behaviorists believe that we learn responses through rewards, punishments, and observation. (3) Humanists focus on how healthy people strive to reach their full potential. (4) The cognitive perspective explains that how we think—how we take in, process, store, and retrieve information—determines behavior. (5) The biological perspective focuses on how parts of the central nervous system—such as the brain, the spinal cord, or chemicals in your neurons—affect behaviors, thoughts, or emotions. (6) The social–cultural perspective focuses on how thinking or behavior changes in different contexts or situations.*

Psychology in the Twenty-First Century

THINKING CRITICALLY *What are the basic ideas behind three of psychology's developing areas?*

Psychology continues to grow. Three particularly strong developing areas in psychology are behavior genetics, evolutionary psychology, and positive psychology.

behavior genetics
School of thought that focuses on how much our genes and our environment influence our individual differences.

positive psychology
Movement that focuses on the study of optimal human functioning and the factors that allow individuals and communities to thrive.

Those studying **behavior genetics** focus on how much our genes and environment influence our individual differences. Does this sound like a combination of biology and behaviorism? You bet. Apply the behavior genetics view to the helping example. A psychologist interested in behavior genetics might ask two questions: Is there a helpfulness trait? If so, is it triggered into action by growing up in a family that promotes and values helping those in need? If the answer to both questions is "yes," and if you possess the helping trait and the helpful family, then you'll be bending down to help that stranger pick up the oranges and the loaf of bread. From the perspective of behavior genetics, helping behavior is the product of learning *and* inherited genetic traits.

Some psychologists study behaviors that helped our ancestors survive. These psychologists hope to gain insight into behavior by using the *evolutionary perspective*. The evolutionary approach combines biological, psychological, and social aspects of human behavior. Is it possible to explain helping from the perspective of evolutionary psychology? Well, helping may have been a behavior generally seen as favorable, and helping could have occurred in the past because it made us more desirable to others. Those who were well liked in the community had good odds for surviving and successfully producing offspring.

Martin Seligman's 1998 APA presidential address kick-started the **positive psychology** movement, which focuses on the study of optimal human functioning and the factors that allow individuals and communities to thrive. In that address, Seligman reminded psychologists of the field's three distinct missions in the years before World War II:

1. Curing mental illness

2. Making life more productive and fulfilling

3. Identifying and nurturing high talent

According to Seligman, by the end of the twentieth century, psychology had lost track of the second and third missions. Seligman and many others have called for a return to the other two "distinct missions" of psychology. He suggests moving from a preoccupation with *repairing* the worst things in life to *building* on positive qualities. Seligman writes (Seligman & Csikszentmihalyi, 2000):

> The field of positive psychology . . . is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. At the group level, it is about civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, moderation, tolerance, and work ethic.

Some say the topics addressed by positive psychologists resemble the topics humanistic psychologists discussed 40 years ago. A major difference between the two, as mentioned earlier, is that Seligman sees

Martin Seligman Seligman is a founder of the positive psychology movement, which focuses on the study of optimal human functioning.
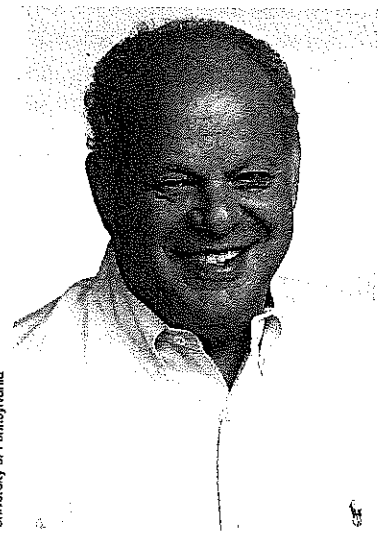
research as positive psychology's "protector and shield," guarding against the unscientific self-help techniques that grew out of humanistic psychology's great promise. Positive psychologists often encourage people to discover and build on their "signature strengths," which can be assessed by taking one of several online tests endorsed by Seligman and other positive psychologists.

THINKING CRITICALLY SUMMARY *Behavior geneticists combine the biological and behaviorist perspective to examine the influences of our genes and environment on individual differences. Evolutionary psychologists combine biological, psychological, and social theories of human behavior to think about how our behaviors evolved and adapted over time through natural selection. Positive psychologists focus on optimal human functioning and what allows people and communities to thrive.*

Module 2: Thinking About Psychology's History and Perspectives

LEARNING GOAL 1: Describe the first psychologists and the origins of psychology as a science.

- Wilhelm Wundt is considered the founder of modern psychology because he established a lab and used experimental methods to study consciousness.
- E. B. Titchener introduced structuralism, the theory that the structure of conscious experience could be understood by analyzing the basic elements of thoughts and sensations.
- Gestalt psychology emphasized our tendency to integrate pieces of information into meaningful wholes.
- William James introduced functionalism, the theory that explored the ways consciousness helps people adapt to their environment.

LEARNING GOAL 2: Explain how twentieth-century psychologists changed the way psychology was studied.

- Sigmund Freud introduced psychoanalysis, a theory of personality and therapeutic technique that attributes our thoughts and actions to unconscious motives and conflict.
  - Freud's new approach to understanding behavior and some of the ideas that developed from it have been incorporated into psychodynamic theory, which is a modernized version of Freud's original theories.

- Ivan Pavlov fostered interest in studying observable behavior by reporting how animals learn in certain situations.
- John B. Watson introduced behaviorism, the theory that psychology should only study observable behaviors, not mental processes.
  - Behaviorism was the most dominant school of thought in psychology during the twentieth century.
  - The theory has been adapted and expanded by other behaviorists, such as B. F. Skinner and Albert Bandura.
- Humanists, like Abraham Maslow and Carl Rogers, emphasized conscious experience as the proper focus of psychology. They believed that humans have free will and that healthy people strive to reach their full potential.
- Jean Piaget's pioneering research in developmental psychology focused on how children develop their thinking abilities.

LEARNING GOAL 3: Discuss how some of psychology's groundbreakers helped advance gender and race equality.

- G. Stanley Hall was the first American to receive a psychology doctoral degree, opened the first psychology laboratory in the United States, and was the first American Psychological Association (APA) president.

- Mary Whiton Calkins was the first woman to qualify for a psychology doctoral degree and was elected president of the APA in 1905.
- Margaret Floy Washburn was the first woman to receive a Ph.D. in psychology.
- Francis Cecil Sumner was the first African-American to receive a Ph.D. in psychology.
- Kenneth Clark and Mamie Phipps Clark were educational psychologists whose research was used during the *Brown v. Board of Education* Supreme Court case.
- Inez Beverly Prosser was the first African-American woman to earn a Ph.D. in psychology.

LEARNING GOAL 4: Explain the six contemporary psychological perspectives.

- Psychological perspectives describe the ways in which psychologists view thinking and behavior.
- Many historical theories were forerunners to one or more modern perspectives.
- Modern perspectives include the psychodynamic perspective, the behavioral perspective, the humanistic perspective, the cognitive perspective, the biological perspective, and the social–cultural perspective.
  - The psychodynamic perspective focuses on how our behavior springs from unconscious drives and conflicts.

- Behaviorists believe that we learn responses through rewards, punishments, and observation.
- Humanists focus on how healthy people strive to reach their full potential.
- The cognitive perspective focuses on how people think—how they take in, process, store, and retrieve information.
- The biological perspective focuses on physical structures and substances underlying a particular behavior, thought, or emotion.
- The social–cultural perspective focuses on how thinking or behavior changes in different contexts or situations.

LEARNING GOAL 5: Discuss three recent areas of psychological study.

- Behavior genetics focuses on how much our genes and environment influence our individual differences (a combination of biology and behaviorism).
- Evolutionary psychology focuses on behaviors that helped our ancestors survive and combines biological, psychological, and social theories of human behavior.
- Positive psychology focuses on the study of optimal human functioning and the factors that allow individuals and communities to thrive.

Check Your Vocabulary

For each definition, choose the best matching term from the list that follows.

Definitions

___ 1. Movement that focuses on the study of optimal human functioning and the factors that allow individuals and communities to thrive.

___ 2. Psychological perspective that emphasized our tendency to integrate pieces of information into meaningful wholes.

___ 3. School of thought that focuses on how much our genes and our environment influence our individual differences.

___ 4. School of thought that focuses on how people think—how we take in, process, store, and retrieve information.

___ 5. School of thought that focuses on how thinking or behavior changes in different contexts or situations.

___ 6. School of thought that focuses on the physical structures and substances underlying a particular behavior, thought, or emotion.

___ 7. School of thought that focuses on the study of conscious experience, the individual's freedom to choose, and the capacity for personal growth.

___ 8. Theory that psychology should only study observable behaviors, not mental processes.

___ 9. Theory of personality and therapeutic technique that attributes our thoughts and actions to unconscious motives and conflicts.

___ 10. Theory that emphasized the functions of consciousness or the ways consciousness helps people adapt to their environment.

___ 11. Theory that the structure of conscious experience could be understood by analyzing the basic elements of thoughts and sensations.

___ 12. American psychologist whose brand of behaviorism focused on the role of responses in learning.

___ 13. Developmental psychologist known for his studies of children's thought processes.

___ 14. First American psychologist and author of the first psychology textbook.

___ 15. Founder of behaviorism.

___ 16. Founder of modern psychology.

___ 17. Founder of psychoanalysis.

___ 18. Founder of structuralism.

___ 19. Leaders in the humanistic psychology movement.

___ 20. Russian physiologist who showed that animals learn some things through association.

___ 21. Researchers whose work was used in the *Brown v. Board of Education* case that overturned segregation in schools.

Terms

a. behavior genetics
b. behaviorism
c. biological perspective
d. cognitive perspective
e. functionalism
f. Gestalt psychology
g. humanistic psychology
h. positive psychology
i. psychoanalysis
j. social–cultural perspective
k. structuralism
l. Abraham Maslow (1908–1970) and Carl Rogers (1902–1987)
m. B. F. Skinner (1904–1990)
n. E. B. Titchener (1867–1927)
o. Ivan Pavlov (1849–1936)
p. Jean Piaget (1896–1980)
q. John B. Watson (1878–1958)
r. Sigmund Freud (1856–1939)
s. Wilhelm Wundt (1832–1920)
t. William James (1842–1910)
u. Kenneth Clark (1914–2005) and Mamie Phipps Clark (1917–1983)

Apply Your Knowledge

1. Wilhelm Wundt is considered the founder of psychology as a science because
   a. of his important research on the unconscious mind.
   b. he established the first experimental psychology laboratory.
   c. it was decided that clinical psychology should become a medical field.
   d. Wundt won the Nobel Prize for science.

2. Which of the following research questions would have been most interesting to the Gestalt psychologists?
   a. What is the structure of conscious experience?
   b. Can introspection be used to describe thought accurately?
   c. Why do we perceive objects in specific groups?
   d. How is our personality expressed in our dreams?

3. William James was interested in how humans change habits to adapt to their environment. Which of the following theories is most closely tied to James' research?

a. Wundt's introspection theory
b. Titchener's structuralism theory
c. Freud's unconscious theory
d. Darwin's evolutionary theory

4. Sigmund Freud's theories differed from all other early psychological theories because of the emphasis on
   a. the effect of the unconscious mind on our thinking and behavior.
   b. conscious experience and perception of the world around us.
   c. introspection as a form of gathering data about thinking.
   d. experimental research and gathering data on observable behaviors.

5. What was the primary complaint John B. Watson and B. F. Skinner had about early psychological theories that came before behaviorism?
   a. The early theories emphasized human actions instead of getting at the basic cause: thinking.
   b. The early theories addressed unconscious thinking instead of conscious experiences.

c. The early theories were based on experimental methods instead of introspection.

d. Science should be based on what we can observe, such as behaviors, instead of thinking, which we cannot directly measure.

6. A psychologist from which of the following contemporary psychological perspectives is most likely to agree with this statement: Thinking and behavior are caused by combinations of hormone and neurotransmitter activity in the brain?
   a. Social–cultural perspective
   b. Biological perspective
   c. Cognitive perspective
   d. Behavioral perspective

7. A psychologist from which of the following contemporary psychological perspectives is most likely to agree with this statement: People act in the ways that they do because of rewards and punishments we received in the past for behaving?
   a. Social–cultural perspective
   b. Biological perspective
   c. Cognitive perspective
   d. Behavioral perspective

8. A psychologist from which of the following contemporary psychological perspectives is most likely to agree with this statement: What we remember from past experiences and how we interpret events cause us to behave and think in certain ways?
   a. Social–cultural perspective
   b. Biological perspective
   c. Cognitive perspective
   d. Behavioral perspective

9. Which psychological perspective is most directly interested in how our genes and our experiences combine to form our personalities?
   a. Humanistic perspective
   b. Behavior genetics perspective
   c. Psychodynamic perspective
   d. Positive psychology perspective

10. Which psychological perspective is most directly interested in factors such as courage, perseverance, forgiveness, and wisdom?
    a. Positive psychology perspective
    b. Behavior genetics perspective
    c. Psychodynamic perspective
    d. Evolutionary perspective

Writing About Psychology

Right now, which psychological perspective do you think best explains human behavior and thought processes? In a short essay (half a page to a page long), choose one of the psychological perspectives presented in this module and argue that it best answers this basic question: What causes thinking and behavior? Identify and explain the psychological perspective you chose and contrast it with at least two other psychological perspectives.

Reviewing Key Terms and Key People

structuralism, p. 21

Gestalt psychology, p. 21

functionalism, p. 22

psychoanalysis, p. 22

behaviorism, p. 24

humanistic psychology, p. 24

cognitive perspective, p. 30

biological perspective, p. 30

social–cultural perspective, p. 30

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Wilhelm Wundt (1832–1920), p. 20

E. B. Titchener (1867–1927), p. 21

William James (1842–1910), p. 22

Sigmund Freud (1856–1939), p. 22

Ivan Pavlov (1849–1936), p. 23

John B. Watson (1878–1958), p. 24

B. F. Skinner (1904–1990), p. 24

Abraham Maslow (1908–1970), p. 25

Carl Rogers (1902–1987), p. 25

Jean Piaget (1896–1980), p. 25

Kenneth Clark (1914–2005) and Mamie Phipps Clark (1917–1983), p. 26

Module 3:
Nature and Nurture in Psychology

OVERVIEW

Sections

- Genetics in Brief
- Nature and Individual Differences
- Environment Matters

Learning goals

Students will be able to:

1 Define the nature-nurture issue and explain the key issues of the field of behavior genetics.

2 Name and describe the elements of the genetic code (chromosomes, DNA, and genes).

3 Discuss how twin studies and adoption studies are used to learn about the influences of nature and nurture.

4 Describe the research findings related to the environmental influences of early brain development, parents, peers, and our culture.

- -

Vocabulary — Previewing Key Terms:

behavior genetics	deoxyribonucleic acid (DNA)	fraternal twins	individualism
genes		heritability	collectivism
environment	mutation	culture	
chromosomes	identical twins	norms	

Nick Clements/FPG/Getty Images

Imagine for a moment that your adoring parents, who believe you are perfect, decide to clone you, creating a perfect genetic replica of you. Would the new baby, your identical twin, grow up to be exactly like you? What if the baby were exposed to a different prenatal environment—one polluted (or not) by drugs or viruses? What if your parents had to give this baby up for adoption or decided to move to a different part of the world? And how would this child be affected by growing up as a part of a different generation? (Remember that 18 years from now, when this new person is in high school, Jessica Simpson will be in her late forties, and the "golden oldies" radio stations will be playing music by Justin Timberlake, Ludacris, and Beyonce.)

These questions all illustrate one of psychology's big issues: How do our families, our friends, and the culture in which we live affect us? A whole field of study, **behavior genetics,** focuses on this key issue—studying the relative effects of genes and environment on our behavior. Psychologists call this the *nature-nurture issue.*

The influence of *nature* consists of the **genes**—the biochemical units of heredity that make up the chromosomes—passed along by your parents the moment you were conceived. The influence of *nurture* comes from the **environment**—every nongenetic influence, from prenatal nutrition to the people and things around us. Possible environmental factors are so numerous that it is impossible to keep them all in mind. Here are a few examples:

- Being exposed to placental abnormalities, viruses, and drugs in the womb or not being exposed to ill effects

- Consuming wholesome food and clean water or lower-quality food and contaminated water

- Growing up in a household with smokers or nonsmokers

- Being raised bilingually or monolingually

- Identifying with a particular cultural, ethnic, or religious group

- Learning how your culture expects boys or girls to think and act

- Making countless life choices, such as a career or partner

- Deciding to live in an urban, suburban, or rural location

behavior genetics
The study of the relative effects of genes and environment on our behavior.

genes
The biochemical units of heredity that make up the chromosomes.

environment
Every nongenetic influence, from prenatal nutrition to the people and things around us.

What roles do you think nature and nurture have played in making you who you are? In this module, we consider how genetics and the environment have worked together to make the person you see when you look in the mirror.

Genetics in Brief

You (and every creature on this planet) have your own genetic code, a biological blueprint that is found in every cell nucleus and that contains the master plan for your entire body (see Figure 3.1). Inside each nucleus are 46 **chromosomes,** threadlike structures made of molecules that contain the genes. You received 23 chromosomes each from your mother and father, paired together at the moment of conception. Your chromosomes are composed of molecules called **deoxyribonucleic acid (DNA).** The smaller sections of DNA strands, the stairs on DNA's staircase, store your genetic code, your *genes.* Our genes not only set up our physical beings—making us humans, or dogs, or watermelons—but also influence our behaviors in many ways.

Genes are distinguished from one another by four-letter codes. Each letter in the code (A, T, C, or G) is called a *nucleotide.* Your largest chromosome has about 250 million nucleotides, and the smallest has 50 million (Wade, 1999). Consider that all 46 chromosomes can be found in every cell nucleus you have: How many nucleotides must there be in every nucleus? Billions.

How many genes do you have? The fruit fly, with a circumference half that of an apple stem, has about 15,000 genes. So humans must have a million or a billion, right? Imagine the astonishment of those mapping the human genome project when they learned that humans have only about 25,000 (Pennisi, 2005). You may be surprised to learn that 99.9 percent of your four-letter DNA sequences match that of every other human (Plomin & Crabbe, 2000). Genetically, you are nearly identical to everyone else in the world. With so much identical genetic

chromosomes
Threadlike structures made of DNA molecules that contain the genes.

deoxyribonucleic acid (DNA)
A complex molecule containing the genetic information that makes up the chromosomes.

Nucleus
(the inner area of a cell that houses chromosomes and genes)

Chromosome
(threadlike structure made largely of DNA molecules)

Gene
(segment of DNA containing the code for a particular protein; determines our individual biological development)

Cell
(the basic structural unit of a living thing)

DNA
(a spiraling, complex molecule containing genes)
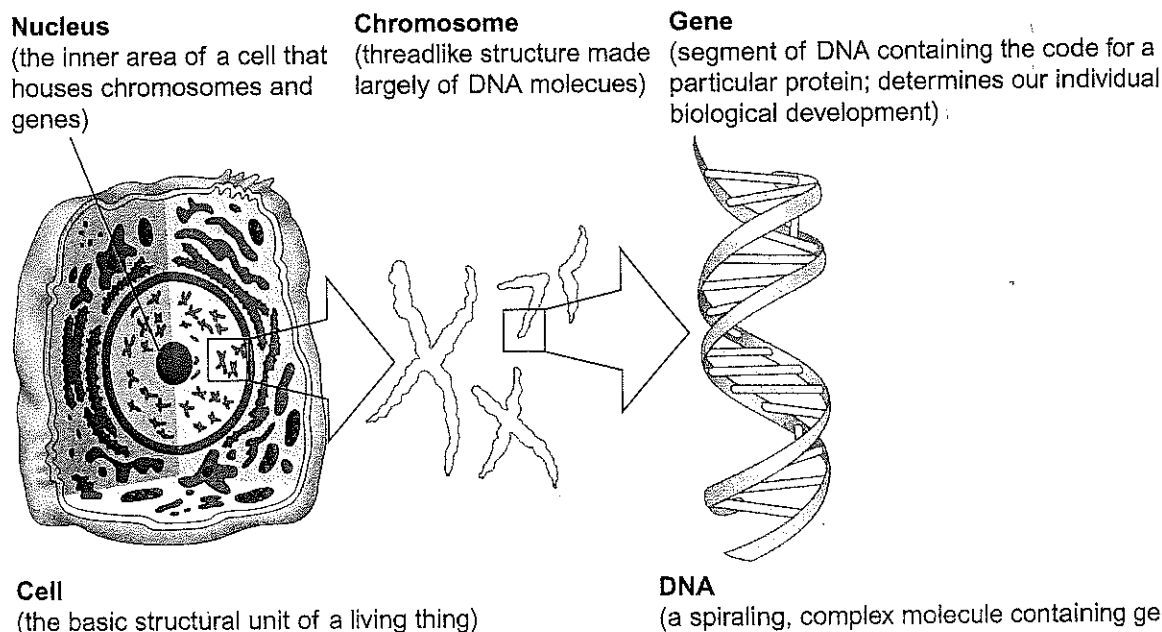
Figure 3.1 Genes: Their Location and Composition Every cell in your body has a nucleus. Note how *every* nucleus contains your chromosomes, which in turn contain your genes.

Mutation
random errors in gene replication that lead to a change in the individual's genetic code; the source of all genetic diversity.

makeup, it is not surprising that people from all countries exhibit similar behaviors. Worldwide, we enjoy greeting loved ones whom we've missed. In countries around the globe, 3-month-old babies smile, which tends to elicit smiling, cooing, and cuddling from adults. And no matter where we live, we experience happiness when we make someone feel better and disappointment when someone breaks a promise. Does this mean you should look or act like everyone else in the world? No. Genes are responsible for *predisposing* our appearance and behavior, not for concretely determining either.

We are far more similar than we are different, but we do vary from one another. Scientists have found *snips*, or sites, throughout our DNA that naturally differ between two unrelated individuals. And other variations exist where they shouldn't. These DNA **mutations** are random errors in gene replication that lead to a change in an individual's genetic code. Mutation is the source of all genetic diversity. Some mutations are desirable—most of us would appreciate a mutation leading to superior eyesight, for example. Other mutations, like those that predispose someone to cancer, are undesirable and feared. Predispositions are passed through the DNA to future generations.

Predisposition is an important concept, so let's look at this idea in a bit more detail. The presence of a predisposition for colon or breast cancer or some other disease does not necessarily doom someone to contract the disease. Predisposition merely means that the *possibility* of developing a disease exists. Whether that possibility will become reality often depends on environmental factors (poor diet, polluted air, stress). To choose a simple example, I may be predisposed to sunburn easily, but if I limit my exposure to the sun's rays, I won't have to put up with the pain of burned skin. Perhaps you can see why we refer to the nature *and* nurture issue, rather than nature *versus* nurture.

THINKING CRITICALLY SUMMARY *The human genetic code consists of 46 chromosomes made up of DNA. We have about 25,000 functional segments of DNA called genes, which predispose us to certain physical characteristics and behaviors.*

Identical Twins These teens developed from a single fertilized egg that divided into two identical copies.
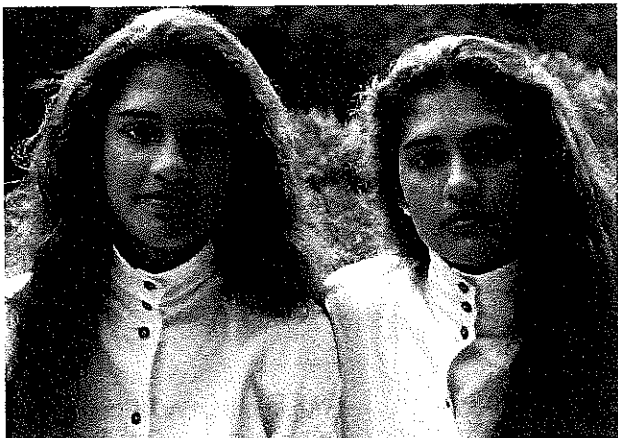
Nature and Individual Differences

THINKING CRITICALLY *How do twin studies and adoption studies help behavior geneticists study the influences of nature and nurture?*

Intertwined from the moment of conception until death, nature and nurture are the two parts of the complex equation that is you. Our genetic similarity is amazing, but there is still that fraction of a percent

that, when combined with innumerable environmental factors, can make each of us enormously different from all others. Why do some people seem "smarter" than others? Why are some people always slower at understanding a joke? Why can some people sing beautifully, yet there are others whose mouths we would prefer stayed shut? *Behavior geneticists* study such questions using twin studies and adoption studies.

Twin Studies

Only in Hollywood movies do you find cloned humans living their lives in a genetically engineered environment so that some mad scientist can study what makes them tick. But nature has provided its own potential genetics lab participants in the form of human twins. **Identical twins** are nature's human clones; they develop from a single fertilized egg that splits in two, creating two genetically identical organisms. **Fraternal twins** develop from two different fertilized eggs. They are no more genetically similar than any other two siblings, but they share a fetal environment (see Figure 3.2). So do the genetically identical twins behave more similarly than their fraternal twin counterparts? This is a question that intrigues behavior geneticists, who study the **heritability** of various traits, or the degree to which our traits are inherited.

Here is a simplified example of how a behavior geneticist might set up a study of identical and fraternal twins to investigate the heritability of intelligence.

1. Collect and compare data on the intelligence levels of *identical twins* raised in the same home.

2. Collect and compare data on the intelligence levels of *fraternal twins* raised in the same home.

3. Compare the similarity in intelligence levels of the identical twins with the similarity in intelligence levels of the fraternal twins.

If the intelligence levels of the identical twins are significantly more similar than the intelligence levels of the fraternal twins, then we can infer that genetics, or nature, is at work. And researchers have indeed found a greater similarity in intelligence among identical twins (Lykken, 1999).

Genetic influences on personality traits appear to follow the same pattern. Studies in Sweden and Finland, using thousands of twin pairs, reveal that if one identical twin is outgoing, the other identical twin is likely to be outgoing—more so than in the case of fraternal twins. The same increased similarity can be found in the emotional stability of identical twins versus fraternal twins (Brody, 1994).

identical twins
Twins who develop from a single fertilized egg that splits in two, creating two genetically identical organisms.

fraternal twins
Twins who develop from two different fertilized eggs; they are genetically no more similar than any other two siblings, but they share a fetal environment.

heritability
The degree to which traits are inherited.

Figure 3.2 **Conception of Identical Versus Fraternal Twins** Identical twins develop from a single fertilized egg that divides into two identical copies. Fraternal twins develop from two different eggs, each fertilized by a different sperm cell.

Identical twins — Same sex only

Fraternal twins — Same or opposite sex
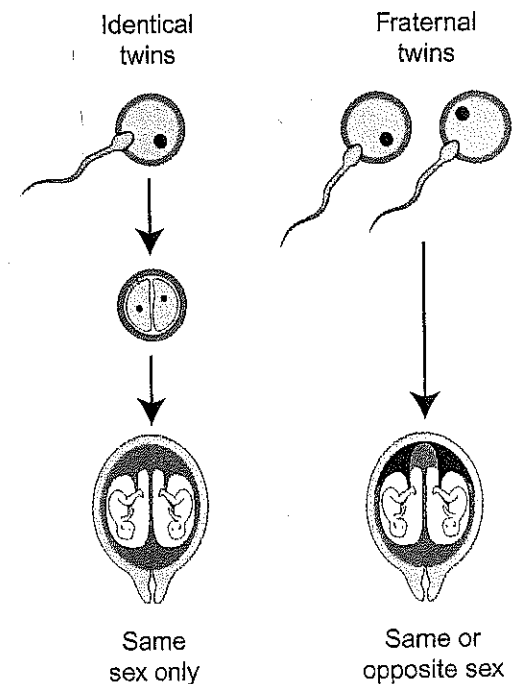
Fraternal (Nonidentical) Twins
These teens are also twins, but they developed from two different eggs, each fertilized by a different sperm cell.

One twins study (McGue & Lykken, 1992) that looked at middle-aged twin divorce rates even suggests that genes influence divorce risk. The results showed that if one identical twin was divorced, then the odds of the other identical twin divorcing went up 5.5 times. However, if a fraternal twin divorced a spouse, the other fraternal twin was only 1.6 times more likely to wind up divorced.

But wait a minute! How can divorce be heritable? It's not even an option in some cultures, which forbid it. What we must remember is that *the behavior itself*—in this case, divorce—*is not inherited*. What *is* inherited is the genetic predispositions that may lead to the behavior. For instance, those with a greater predisposition to anger or conflict may be more likely to divorce than those who are not so predisposed.

As you can see, twin studies have helped us learn about the heritability of certain traits. Equally important is that they have taught us much about the influence of environment. Studies of reunited twins, those separated at birth and raised apart from each other, have helped demonstrate that *no* trait is completely inherited and that the behaviors of identical twins are not identical. Yet these genetic replicas, who sometimes grew up in dramatically different environments, have exhibited startling similarities in tastes and habits. Take identical twins Oskar Stohr and Jack Yufe, one raised by his grandmother in Germany as a Catholic and a Nazi, the other raised in the Caribbean as a Jew. Despite the obvious differences in their environments, both enjoy spicy foods, are domineering toward women, and report flushing the toilet before using it. The similarities between the two did not stop there, but perhaps you are wondering the same thing critics of the separated twin studies wonder: Couldn't two strangers sit down at a table and over the course of a couple of hours discover many bizarre but coincidental similarities? Enter science.

Using scientific measuring equipment, psychologists have studied separated identical twins and have found remarkable similarities in heart rates, brain waves, and intelligence levels (Holden, 1980a, 1980b; Wright, 1998). Other studies have found statistically significant similarities in personalities, abilities, attitudes, and fears (Bouchard & others, 1990; DiLalla & others, 1996; Segal, 1999). If a soccer match were held to determine whether nature or nurture has a greater effect on development, clearly the evidence from genetics and twin studies would be a goal scored for the nature team. But before we announce the winner, consider adoption studies.

Adoption Studies

Another way to assess the effects of nature and nurture is through adoption studies. Here the biological parents are providing the nature, and the adoptive parents are providing the nurture. By the time an adopted, 1-week-old girl reaches the age of 10, will her personality more closely resemble her biological parents' personalities or the personalities of the parents who raised her? What's your guess?

Study after study has yielded the same surprising result: Adopted children share more personality trait similarities with their biological parents than with their adoptive parents (Plomin & Daniels, 1987). Score one more goal for nature.

Nature and Nurture In adoption studies, biological parents supply the nature, and adoptive parents supply the nurture.

But the match is far from over. Although our personality seems to be something we are mostly born with, there are many other powerful areas in which parenting can influence a child. What about values, attitudes, and manners? What about political and religious beliefs? For all of these areas, nurture scores a goal. Several adoption studies show that parenting plays a major role in belief system development and development of behaviors important to functioning as a good citizen in our diverse societies (Brodzinsky & Schechter, 1990; Kelley & De Graaf, 1997; Rohan & Zanna, 1996). Adopted children score higher on intelligence tests and are more likely to be involved in charitable activities than their biological parents (Sharma & others, 1998). Good parenting remains important. Nurture is back in the game.

THINKING CRITICALLY SUMMARY *Studies of identical twins allow researchers to determine the effects of different environments on genetically identical people. Studies of fraternal twins allow researchers to consider the effects of a similar environment on genetically different people. Adoption studies look at similarities and differences among adopted children, biological parents, and adoptive parents.*

Environment Matters

THINKING CRITICALLY *How much do our parents, peers, and culture influence us?*

One of the more celebrated separated-twin cases illustrates how easy it is to lay credit or blame at the feet of a child's parents for any given behavior. In this case, two identical twin boys, separated at birth and raised apart, were reunited in their thirties. Both could be considered "neat freaks" in the way they kept their homes, dressed, and scrubbed

Parents Matter The nurturing of parents and guardians plays an important role in the development of a child.

their "hands regularly to a raw, red color." When asked to explain the origin of the neatness, the first twin credited his mother and growing up in an extremely ordered environment, where he learned to appreciate that everything should be kept in its proper place. The second twin also credited his mother, although for different reasons. Why the perfectionism? "The reason is quite simple. I'm reacting to my mother, who was an absolute slob" (Neubauer & Neubauer, 1990).

Parents are an important part of most people's early environment. With genetic influences accounting for roughly half the variation in our personality traits, parenting is a likely source to turn toward in accounting for the other 50 percent of those traits. But how much credit do parents deserve for the child who wins a debate tournament, dances the role of Clara in the *Nutcracker Suite* ballet, or is elected president of the student council? How much blame should we heap on parents for the teenager who always shows up late to practice or rehearsal, takes up smoking, or has frequent scrapes with the law? If we listen to "pop" psychology, we hear all kinds of unfounded claims:

- Overprotective or overbearing parenting permanently underprepares a child for the real world.

- Parents who spank leave irreparable scars on a child's personality.

- Lenient parents who do not punish children severely create irresponsible children who will become troublemakers.

Is the mother or father who, even with the best intentions, occasionally pulls too hard in parenting's tug-of-war inflicting permanent psychological damage? Should we blame our parents for our failures in life and, subsequently, blame ourselves when our children fail? For answers to such questions, many researchers look to comparisons of nonidentical siblings raised together. Behavior geneticist Robert Plomin has found that "Two children in the same family [are on average] as different from one another as are pairs of children selected randomly from the population" (Plomin & Daniels, 1987). Another well-respected researcher, Sandra Scarr (1993), believes parents should receive less blame for children who do not turn out as hoped or expected and less credit for children who do.

Certainly, environment matters, but growing up in the same household accounts for only a small portion (around 10 percent) of our personality differences. What other environmental factors might account for nurture's role in personality development? Let's look at three possible answers: early learning experiences, peer influence, and culture.

Early Learning and Brain Development

You've heard the phrase, "Use it or lose it." Nowhere is this truer than with your brain, where experience nurtures nature. We do not remember everything we learn, but the brain processes we used in early learning do pave the way for later learning of more complex information. Consider the following neurological evidence:

- Rats housed for 60 days in an enriched (fun, stimulating) environment had brain weight increases of 7 to 10 percent more than rats housed in an impoverished (boring) environment (Rosenzweig & others, 1972). The same study found a dramatic 20 percent increase in communication connections in the brain (see Figure 3.3).

- Premature babies who receive special handling (touch, massage) grow more rapidly, both physically and neurologically, than preemies who do not receive the same treatment (Drummond, 1998).

- Sixth graders from impoverished environments who were given stimulating care as infants had higher intelligence test scores than their classmates who did not receive such care (Ramey & Ramey, 1992).

For our brains to meet their developmental potential, early experience is critical. The child born with perfect pitch will never have a chance to develop this gift if prevented from hearing music in early life. A child raised in abusive isolation will never learn to read, write, or speak like a normal adult.

As you get older, your brain's tissue will continue to change. The brain's pathways maintained through practice or experience will remain strong, and neglected pathways will fade with disuse. I recently found this out the hard way. Although I had learned to roller skate in sixth grade and had skated periodically after that, I had to relearn this skill after 7 years without putting on my roller blades. Similarly, you may find that the theorems and proofs you learned in geometry will seem foreign to you later in life unless you pursue a mathematically oriented career. The examples are endless, but one thing is clear: Use those brain pathways, created by nurture and nature, or lose them.

Figure 3.3 Experience Affects Brain Development Mark Rosenzweig and David Krech reared rats either alone in an environment without playthings or with others in an environment enriched with playthings that were changed daily. In 14 of 16 repetitions of this basic experiment, the rats placed in the enriched environment developed significantly more cerebral cortex (relative to the rest of the brain's tissue) than did those in the impoverished environment. (From Rosenzweig & others, 1972.)

Impoverished environment   Rat brain cell   Enriched environment   Rat brain cell
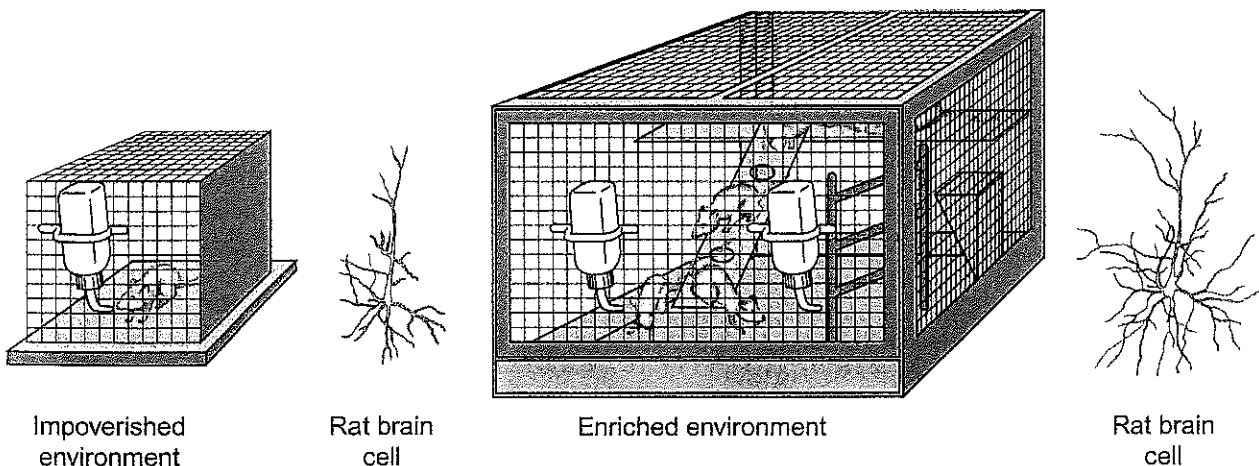
Peers Also Matter None of these teens smoke, and research indicates that if they continue to hang out together it is unlikely that any of them ever will. Peers can greatly affect our behaviors.

Peer and Parent Influence

The tango danced by nature and nurture continues from childhood into adolescence, where peer influence becomes powerfully real and tangible. One of the most reliable predictors of dropout rate and failure in school is social rejection by a peer group (Rubin & others, 1999). Why, despite the antismoking commercials, posters, and warnings on the cigarette packages, has smoking among teenagers recently increased? Those inclined to pin blame on smoking parents are surprised to learn parental concern over smoking is less of a factor than researchers originally believed. Rather, teens in peer groups in which members smoke are far more at risk to start this life-endangering habit than are those with nonsmoking peers (Rose & others, 1999). Peer groups with smokers (1) offer easy access to cigarettes, (2) model pleasure from smoking, and (3) present the message that fitting in includes lighting up. Regardless of parental protests, thousands of American teens start their smoking addiction each day.

Peer group influence has been demonstrated in younger peer groups, too. Preschoolers who won't eat a particular food at home are more likely to eat that food when seated at a table with peers who like it (Harris, 1998). Immigrant children living in an environment filled with nonimmigrant peers will quickly adopt the culture of the peer group, sometimes at the expense of the culture they share with their parents. Psychologist Howard Gardner (1998) clearly sees the importance of a peer group *and* parents in raising children:

> Parents are more important when it comes to education, discipline, responsibility, orderliness, charitableness, and ways of interacting with authority figures (Vandell, 2000). Peers are more important for learning cooperation, for finding the road to popularity, and for inventing styles of interaction among people of the same age. Youngsters may find their peers more interesting, but they will look to their parents when contemplating their own futures. Moreover, parents [often] choose the neighborhoods and schools that supply the peers.

Cultural Influences

culture
The shared attitudes, beliefs, norms, and behaviors of a group communicated from one generation to the next.

norms
Understood rules for accepted and expected behavior.

Culture is an elusive, invisible, abstract concept that forms the basis for much of our understanding of life (Ernst & others, 2000). **Culture** is the shared attitudes, beliefs, norms, and behaviors of a group communicated from one generation to the next. **Norms** are the understood rules for accepted and expected behavior within a group. Researcher David Matsumoto (1996) calls culture the "software of our minds." Culture influences our food

selection, religious choices, family activities, and more.

Because of the cultural rules we all possess, we develop a set of expectations about the kinds of behaviors others should exhibit. If others behave according to expectation, we may think, "This person is good." When others behave in a way we do not consider "normal" or socially appropriate, we have negative reactions, such as frustration and anger. In such cases, we may think, "This person is bad" or "This person is stupid." Sadly, we tend to make these snap judgments without a second thought, often toward people from cultures that differ from our own.

Cultural Effects Our cultural backgrounds are a big part of the "nurture" that influences our behavior and attitudes.

One meaningful dimension of cultural differences is individualism versus collectivism. **Individualists** give priority to their own goals over group goals, and they define their identity in terms of personal attributes rather than group identification. **Collectivists** give priority to the goals of their group (often their extended family or work group) and define personal identity accordingly. Collectivists see people as connected to others; individual needs are sacrificed for the good of the group (Matsumoto, 1997). Asians and Africans typically raise their children in a collectivist environment. Europeans and North Americans are usually raised as individualists.

These different cultural viewpoints manifest themselves in a number of ways. One interesting study asked teenagers whether the phrase "My parents will be disappointed in me" is ever a concern. Japanese teens were three times more likely than their American counterparts to express this as a concern (Atkinson, 1988).

We tend to believe that *our* culture's way of raising children is the *best* way. Be careful: Successful child rearing has been accomplished using many methods. There is tremendous diversity worldwide in the way children are brought up, and leaders and heroes have emerged from both collectivist and individualist cultures.

So how do nature and nurture work together to make us who we are? We don't yet know the answer to that question. Behavior genetics is still in its infancy. The ethical implications of genetic engineering and cloning are just beginning to emerge, and much reflection on the meaning of this research lies ahead.

individualism
Giving priority to personal goals over group goals, and defining identity in terms of personal attributes rather than group identification.

collectivism
Giving priority to the goals of the group (often the extended family or work group) and defining personal identity accordingly.

THINKING CRITICALLY SUMMARY *Peers influence specific behaviors, especially interactions with other people of the same age, in dramatic ways. Parental influences seem to be more powerful in the areas of education, personal responsibility, discipline, and attitude toward authority figures. Cultural norms influence many of our behaviors in ways we aren't consciously aware of.*

LEARNING GOAL 1: Define the nature-nurture issue and explain the key issues of the field of behavior genetics.

- Behavior geneticists study the influences of genes and environment (nature and nurture) on physical traits and behaviors.

LEARNING GOAL 2: Name and describe the elements of the genetic code (chromosomes, DNA, and genes).

- The human genetic code is made up of 46 chromosomes composed of DNA.
- Humans have about 25,000 sections of chromosomes, called genes, which predispose people for specific physical and behavioral traits.
  - Predisposition influences the possibility of developing a trait or behavior.
- Mutations in the genetic code are the source for genetic diversity.

LEARNING GOAL 3: Discuss how twin studies and adoption studies are used to learn about the influences of nature and nurture.

- Behavior geneticists use twin studies to discover the relative influences of genes and the environment on behavior.
  - Studies with identical twins help researchers consider the effects of different environments on the traits and behavior of genetically identical people.
  - Studies with fraternal twins allow researchers to consider the effects of similar environments on genetically different people.
- Behavior geneticists study adopted children and both their biological parents and their adoptive parents to investigate the influences of nature and nurture.

- Studies reveal that adopted children share more personality trait similarities with their biological parents than with their adoptive parents.
- Adopted children are more similar to their adoptive parents in belief systems and the development of behaviors important to functioning in society.

LEARNING GOAL 4: Describe the research findings related to the environmental influences of early brain development, parents, peers, and our culture.

- For our brains to meet their developmental potential, early experience is critical.
  - The brain processes we use in early learning pave the way for later learning of more complex information.
- Peers strongly influence how we learn cooperation, find the road to popularity, and learn the styles of interaction among people of the same age.
- Parents are more important when it comes to education, discipline, responsibility, orderliness, charitableness, and ways of interacting with authority figures.
- Culture is the shared attitudes, beliefs, norms, and behaviors of a group communicated from one generation to the next. Norms are the understood rules for accepted and expected behavior within a group. Our cultures and norms affect our thinking and behavior in profound ways.
  - People living in individualist cultures tend to give priority to their own goals over group goals.
  - People living in collectivist cultures tend to see people as connected to others and to sacrifice individual needs for the good of the group.

Check Your Vocabulary

For each definition, choose the best matching term from the list that follows.

Definitions

____ 1. A complex molecule containing the genetic information that makes up the chromosomes.

____ 2. Every nongenetic influence, from prenatal nutrition to the people and things around us.

____ 3. Giving priority to personal goals over group goals, and defining identity in terms of personal attributes rather than group identification.

____ 4. Giving priority to the goals of the group (often the extended family or work group) and defining personal identity accordingly.

5. Random errors in gene replication that lead to a change in the individual's genetic code; the source of all genetic diversity.

6. The biochemical units of heredity that make up the chromosomes.

7. The degree to which traits are inherited.

8. The shared attitudes, beliefs, norms, and behaviors of a group communicated from one generation to the next.

9. Threadlike structures made of DNA molecules that contain the genes.

10. Twins who develop from a single fertilized egg that splits in two, creating two genetically identical organisms.

11. Twins who develop from two different fertilized eggs; they are genetically no more similar than any other two siblings, but they share a fetal environment.

____ 12. Understood rules for accepted and expected behavior.

____ 13. The study of the relative effects of genes and environment on our behavior.

Terms
a. behavior genetics
b. chromosomes
c. collectivism
d. culture
e. deoxyribonucleic acid (DNA)
f. environment
g. fraternal twins
h. genes
i. heritability
j. identical twins
k. individualism
l. mutation
m. norms

apply Your Knowledge

1. Which of the following research questions would behavior geneticists be most interested in?
   a. Which region of the brain controls voluntary movement?
   b. How do humans perceive color?
   c. Is personality more influenced by chromosomes or environment?
   d. What is the most effective way to train an organism to respond in useful ways?

2. Which of the following is most similar to the nature-nurture issue?
   a. genes–environment
   b. individualism–collectivism
   c. culture–norms
   d. DNA–chromosomes

3. The mother contributes 23 _____ to her child.
   a. genes
   b. chromosomes
   c. DNA
   d. nucleotides

4. Which of the following statements is most correct?
   a. Genes determine our appearance, not our behaviors.
   b. Genes have little to do with our adult appearance and behaviors.
   c. Genes predispose our appearance and behaviors.
   d. Genes are either collectivist or individualist, not both.

5. Which of the following contributes most to genetic diversity?
   a. mutations
   b. identical twins
   c. fraternal twins
   d. norms

6. In twin studies, behavior geneticists are looking for
   a. differences between fraternal twins because they are raised in the same home.
   b. similarities between identical twins because they share the same genetic code.
   c. whether being a twin affects emotional development and social behaviors.
   d. how many times identical and fraternal twins occur in different cultures.

7. In a twin study, if researchers find out that the level of shyness is significantly more similar in identical twins than it is in fraternal twins, behavior geneticists might conclude that shyness is

a. a genetically predisposed trait.

b. more influenced by nurture than nature.

c. determined by one specific gene.

d. mostly caused by a certain parenting style.

8. If adopted children are more similar in political interests to their adopted parents than to their biological parents, then

    a. specific genes probably predispose people to political interests.

    b. random mutations may be responsible for the differences between adopted children and adoptive parents.

    c. the genetic code determining political interests probably occurs randomly.

    d. political interests probably are not genetically predisposed.

9. Our early experiences seem to be crucial to brain development because

a. brain pathways maintained through experience remain strong, but unused pathways will fade.

b. parental attitudes change children's attitudes because children model how their parents treat them.

c. our chromosomes and genes are still changing when we are children.

d. how our parents treat us determines our adult personality, which changes our brains.

10. Which of the following behaviors are our peers (instead of our parents) most likely to influence?

    a. whether we keep our room clean

    b. exercise habits

    c. giving money to a charity

    d. popularity at school

Writing About Psychology

Think about a trait you have that you think may be at least partially biologically predisposed. Write two to three paragraphs about how a behavior geneticist might describe the development of that trait in you and the contributions of genetics and the environment. In your answer, use specific terminology when appropriate and specifically explain a possible research method a behavior geneticist could use to study the trait.

Reviewing Key Terms

behavior genetics, p. 38

genes, p. 38

environment, p. 38

chromosomes, p. 39

deoxyribonucleic acid (DNA), p. 39

mutation, p. 40

identical twins, p. 41

fraternal twins, p. 41

heritability, p. 41

culture, p. 46

norms, p. 46

individualism, p. 47

collectivism, p. 47