

CHAPTER 1

WHAT IS PSYCHOLOGY?

Chapter at a Glance

SECTION 1: Why Study Psychology?

- Psychology is the scientific study of human behavior and mental processes.
- Psychologists seek to observe, describe, explain, predict, and modify behavior and mental processes.
- Psychologists rely on research to learn whether certain methods will work before they use them to help people.

SECTION 2: What Psychologists Do

- Major fields in psychology include clinical, developmental, and experimental psychology.
- Psychologists also work in applied, or specialized fields, such as community, forensic, and health psychology.

SECTION 3: A History of Psychology

- Psychology is as old as human history, with its roots going back to ancient Egypt and Greece.
- The scientific approach, which began in the 1500s, led to the birth of modern psychology in the 1800s.
- Modern psychologists continually propose new theories focused on behavioral and cognitive research.

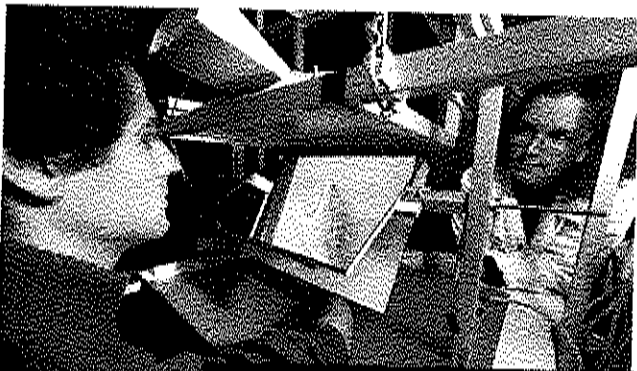
SECTION 4: Contemporary Perspectives

- Some contemporary psychologists focus on the role of biology or the role of the mind in seeking to understand behavior and mental processes.
- Other psychologists study how our personal experience affects how we perceive the world.
- Still other psychologists take a more holistic approach and study the interaction of biology, psychology, and social factors and their combined impact on people.

Think critically about the claims of astrologers. For example, does the sole fact that astrology has a lengthy tradition mean that it is true? Are the tides similar to human personality and destiny?

Astrological predictions routinely fail. But does it matter? Will believers in astrology be persuaded by facts? Probably not. Even in our age of scientific enlightenment, millions of people will continue to consult their horoscopes.

Psychology, on the other hand, is grounded in facts. It is a true science. Psychological findings are of value because they are routinely subjected to careful scrutiny. Theories are tested according to the scientific method. If the evidence does not support a theory, it is discarded, and psychologists search for new answers. In this chapter and throughout this book, you will learn about the rigorous application of the science of psychology to questions that have concerned humankind for centuries.



Psychologists carry out true scientific research and processes. Here, a psychologist uses a video of a healthy arm to help alleviate the "phantom pain" of a patient's amputated arm.

What do you think?

1. What is the basic way in which psychology differs from false sciences?
2. Why do you think false sciences are so widespread?

Why Study Psychology?

Before You Read

Main Idea

Psychology is a science. Like other scientists, psychologists seek to explain and control behavior and mental processes and test their ideas through research methods.

Reading Focus

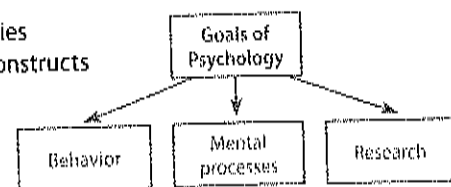
1. How are behavior and mental processes different?
2. What are some basic goals of psychology?
3. How is psychology a science?

Vocabulary

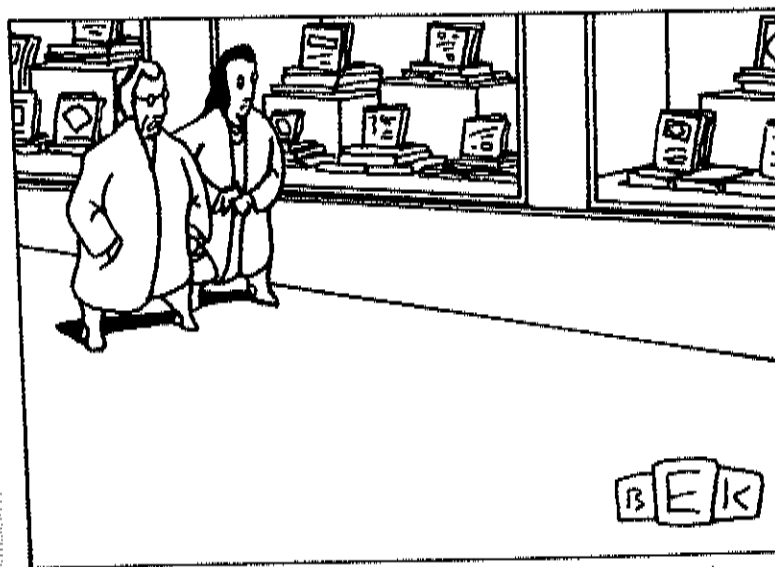
psychology
behavior
cognitive activities
psychological constructs
theory
principle

TAKING NOTES

Use a graphic organizer like this one to take notes on the goals of psychology.



SEARCHING the SELF-HELP AISLE



"I do want to solve all my problems, but I'll wait till it comes out in soft cover."

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PSYCHOLOGY CLOSE UP

Are self-help books psychologically sound? You've seen them in bookstores—entire aisles filled with books promising to make us thin, rich, and happy. Yet psychologists say that some of these self-help books give bad advice, such as encouraging their readers to vent their anger. In fact, most psychologists maintain that venting anger just helps keep it alive. Some even claim that self-help books can distract and harm their readers. Those with severe depression, for instance, are unlikely to find answers to their very real problems in a book. Unchecked, the disease may spiral out of control.

Of course, some self-help books actually do get it right. They stress the importance of family, friends, and healthy relationships. But they also provide something that may be more important than advice: they give their readers hope. Still, hope alone cannot effect change. Only those books that do not offer simplistic solutions and instead provide a sound scientific basis for their advice are most valuable. In other words, people should seek support from a source that is well researched, well documented, and proven to be effective—support that is rooted in the science of psychology. ■

Behavior and Mental Processes

Psychology is the scientific study of human behavior and mental processes. **Behavior** is any action that people can observe or measure. Behavior includes activities such as walking and talking, pressing a switch, turning left or right, sleeping, eating, and drinking. Behavior also includes automatic body functions such as heart rate, blood pressure, digestion, and brain activity. Behavior can be measured by simple observation or by laboratory instruments. For example, brain activity can be measured by scientific instruments such as the electroencephalograph (EEG).

Cognitive activities are mental processes. These activities include dreams, perceptions, thoughts, and memories. Brain waves that indicate dreaming can be measured, but dreaming itself is a mental process—dreams are known only to the dreamer. In addition, activity of the cells in a person's eyes can be measured as they respond to color, but only you can see your own mental image of the world. Memories, too, are private mental processes that cannot be measured.

Psychologists are also interested in studying people's emotions, or feelings. Emotions can affect both behavior and mental processes. For example, you might experience anxiety when you think about presenting a report in front of your class. Your heart might even race a bit at the thought. Your heart activity is an example of behavior, but your thoughts about presenting the report are private mental processes. We would be unable to observe or measure your thoughts directly. In this situation, researchers might use **psychological constructs** to learn more about human behavior. These constructs are used to talk about something we cannot see, touch, or measure directly.

Reading Check Summarize What do psychologists study?

The Goals of Psychology

Scientists seek to observe, describe, explain, predict, and control the events they study. Similarly, psychologists observe and describe behavior and mental processes to better understand them. This process enables psychologists to explain, predict, and help clients control their behavior.

Explaining Behavior An example of how psychologists apply the goals of psychology can be seen in the case of Alex Rodriguez, third baseman for the New York Yankees. In 2000, Rodriguez became the highest-paid athlete in sports history. He won many awards for his hitting and fielding, including Player of the Year in 2000 and 2002. He even earned the distinction of becoming the youngest player in baseball to hit 500 home runs. However, in time Rodriguez gained notoriety for another kind of behavior: an inability to produce hits in the postseason. Most famously, he was criticized for his performance in the 2004 American League Championship Series against the Boston Red Sox. In game six of the series, Rodriguez hit a ground ball to the Red Sox pitcher for an easy out. He compounded his weak performance by swatting the ball out of the pitcher's glove just before he was tagged out—in clear violation of the rules. The umpires called Rodriguez out, and he left the field to the boos of the New York fans.

Losing one's "cool" and failing to perform effectively in a crucial situation—such as during an important game or while taking a major test—can be very hard on a person. This type of failure can hurt an individual's self-esteem and self-confidence.

Sports psychologists can help athletes such as Alex Rodriguez handle performance problems by applying the goals of psychology. First, they observe and describe the behavior. By measuring athletes' heart rates and other body processes, psychologists know that problems may occur when athletes are highly excited. Interviews with athletes reveal that they often feel anxious during big games. They may become distracted by the cheers or jeers of the crowd and lose their concentration. They cannot focus on the jobs they are supposed to be doing.

Psychologists then explain the behavior in terms of the feelings of anxiety and the distractions that hinder the athletes' performance. The relationship between anxiety and performance is somewhat complex. A little anxiety is often a good thing. It motivates us to practice for a game or to study for a test. It makes us alert and ready. On the other hand, too much anxiety is harmful. It may make us shaky and distract us from the task at hand.

Can You Change Your Behavior?

One reason to study psychology is to better understand why you act as you do. As a result, you might be able to figure out how to change the aspects of your behavior with which you are unhappy.

PROCEDURE

- 1 Identify an activity that you enjoy doing. You might name a school activity, a hobby, or a sport you play.
- 2 On a piece of notebook paper, write two reasons explaining why you enjoy the activity.
 - a. _____
 - b. _____
- 3 Write two aspects of your performance that you would like to change.
 - a. _____
 - b. _____

ANALYSIS

1. Get together with a partner and share your notes.
2. Take turns explaining the behavior that you would like to change.
3. Take turns describing how you feel when the behavior occurs.
4. List the suggestions that you and your partner come up with to change or control your behavior.
 - a. _____
 - b. _____

CASE STUDY CONNECTION

A Social Science

Psychology is a social science, but it is rooted in the natural sciences.

Predicting and Controlling Psychologists predict that athletes will do best when anxiety is moderate. Consequently, they help athletes change and control their behavior and mental processes by teaching them ways of keeping their anxiety at a tolerable level. Psychologists also teach athletes how to filter out distracting noises and focus on the game.

One method that sports psychologists recommend to help athletes perform more effectively under pressure is called positive visualization. In this method, athletes imagine themselves in a critical game situation. For example, a basketball player might imagine taking a free throw during a close game. She sees herself raising the ball with one hand and guiding it with the other. She then imagines releasing the ball and watching it glide through the net.

The goal of “controlling” behavior and mental processes is often misunderstood. Some people mistakenly think that psychologists seek ways to make people behave as the psychologists want them to. This is not so. Psychologists know that people should be free to make their own decisions. Psychologists know much about the factors that influence human behavior, and they use this knowledge to help people accomplish their own goals.

Reading Check Find the Main Idea How do psychologists help change behavior?

Psychology as a Science

Although psychology is a social science, it has foundations in the natural sciences. The social sciences, which also include history, anthropology, economics, political science, and sociology, deal with the structure of human society and the nature and interactions of the individuals who make up society. These individuals and their behavior and mental processes are the focus of psychology.

The natural sciences, which include biology, chemistry, and physics, are concerned with the nature of the physical world. Some areas that psychologists study, such as the functioning of the brain, are closely related to the natural sciences, particularly biology. Like natural scientists, psychologists seek to answer questions by following the steps involved in scientific research. These steps include conducting surveys and experiments, collecting and analyzing data, and drawing logical conclusions.

Psychological Research As a science, psychology tests ideas through various research methods. Two widely used methods are surveys and experimentation. A survey is a method of collecting data that usually involves asking questions of people in a particular group. Experimentation usually involves either human participants or animals.

Although most psychologists are interested mainly in human behavior, some choose to focus on animal behavior, such as that of gorillas, rats, pigeons, and even sea snails. Some psychologists believe that research findings with certain animals can be applied to human beings. The biological functioning of these animals and even their psychological responses to some situations are often similar to those of people. Others, however, argue that humans are so distinct that we can only learn about them by studying people. The truth probably lies somewhere in between. For example, by studying the nerve cells of squid, psychologists have been able to learn about the workings of human nerve cells. However, only by studying people can psychologists learn about uniquely human qualities such as morality, values, and love.

Psychologists rely on research to learn whether certain methods will work before they use them with clients. Of course, when the research is conducted with human beings, psychologists make every effort to protect the research participants.

Psychological Theories Psychologists organize their research about behavior and mental processes into theories. A **theory** is a statement that attempts to explain why things are the way they are and why they happen the way they do. Psychological theories discuss

principles that govern behavior and mental processes. A **principle** is a basic truth or law, such as the assumption that you will get better grades if you study more. Psychological theories may include statements about behavior (such as sleeping or aggression), mental processes (such as memories and mental images), and biological processes (such as the effect of chemicals in the brain).

A useful psychological theory allows psychologists to predict behavior and mental processes. For example, if a theory about fatigue is useful, psychologists can apply it to predict when people will or will not sleep. If a theory does not accurately predict behavior or mental processes, psychologists consider revising or replacing the theory.

In psychology, as in other sciences, many theories have been found inadequate for explaining or predicting the things with which they are concerned. As a result, these theories have been discarded or revised. For example, many psychologists once believed that stomach contractions were the cause of hunger. But then it was observed that many people feel hungry even when they do not have stomach contractions. As a result, psychologists now believe that stomach contractions are only one of many factors affecting appetite.

Reading Check **Compare** In what ways is psychology similar to other sciences?

ACADEMIC VOCABULARY
morality the concept of right or good conduct

SECTION 1 Assessment

Reviewing Main Ideas and Vocabulary

- 1. Define** What does *theory* mean? What does *principle* mean?
- 2. Summarize** Why do psychologists believe that a little anxiety can be a good thing?

Thinking Critically

- 3. Define** What is a key difference between behavior and cognitive activities?
- 4. Explain** What characteristics of psychology differentiate it from other related social sciences?
- 5. Evaluate** Why is it important that psychologists allow their clients to make their own decisions?

- 6. Make Judgments** Using your notes, make a judgment about the adequacy of each theory listed in the graphic organizer below.

Theory	Judgment
People function better with adequate sleep.	
You will lose weight if you exercise.	
Dreams reveal a great deal about our anxieties.	

FOCUS ON WRITING

- 7. Persuasive** Write a paragraph in which you try to convince your parents why you should be allowed to take psychology rather than some other course.

Neuroimaging and Cognitive Research

Imagine being able to peer inside a living human brain and watch it light up as it works. Neuroimaging allows scientists to do just that. Using noninvasive techniques such as positron emission topography (PET) and magnetic resonance imaging (MRI), scientists can create images that show how the brain changes as it processes mental functions.

Neuroimaging has been particularly useful in cognitive research, the study of mental processes and mental disorders. For example, during REM sleep—the stage of sleep when dreams are most vivid—neuroscientists have found that the part of the brain involved in logical reasoning becomes relatively inactive, while those parts involved in visual perception and emotions become more stimulated. Neuroscientists have also discovered that they can identify and chart brain activity by detecting areas of increased or decreased blood flow. As neuroscientists trace the brain's functioning, they can literally watch it at work.

Psychologists hope that the pictures of the brain produced by neuroimaging will improve their ability to diagnose and cure mental disorders. Research in the field has been promising. In one study, scientists noted differences in the brains of people

with social anxiety disorder during public speaking. PET scans revealed that blood flow increased in a part of the brain that generates the fear response. Conversely, blood flow in the brains of people without the disorder increased to an area linked with thinking skills (Tillfors et al., 2001). In a study on depression, researchers found that participants' brains registered sharp dips and spikes in activity as their moods changed under the influence of antidepressant drugs or placebos. The study helped the researchers locate a spot in the brain that may regulate neural activity during depression (Mayberg et al., 2005).

Neuroimaging has also been used in the study of Alzheimer's disease. Images of the brain have shown that the hippocampus, the part that plays a major role in short-term memory retention, shrinks in patients with Alzheimer's. Researchers hope that PET and MRI scans will help scientists

measure this and other changes in the brain before patients show symptoms of the disease.

While neuroimaging has provided invaluable information about the brain, some psychologists remain skeptical. They claim that the neuroimages tell us much about how the brain behaves but little or nothing about how the mind, or conscious thought, works. Although the cognitive processes of the brain are related to its physical functioning, we don't really know how the two interact. In addition, many psychologists question neuroimaging research because they say that our brains are not all the same. In fact, they may differ as much as people's personalities. After all, the human brain is probably the most complex object in all of scientific study. It may be interesting and useful to see which part of the brain lights up on a particular scan. However, as one psychologist has said, "It's not at all easy to know what that activity might really mean."



A patient undergoes 3D MRI brain scanning, which allows the examiner to view the brain from every angle.



These three panels of an MRI brain scan show evidence of an abnormality.

Thinking Critically

- Analyze** Why might neuroimaging be an important aid in the treatment of mental disorders?
- Discuss** Do you think neuroimaging has much practical application in psychology? Why or why not?

What Psychologists Do

Before You Read

Main Idea

Psychologists work in many different fields, but they all focus on studying and explaining behavior and mental processes.

Reading Focus

1. What are some of the major fields in psychology?
2. How do specialists in some applied fields of psychology serve people's needs?

Vocabulary

psychiatrist
basic research



Use a graphic organizer like this one to take notes on the major fields and specialties in psychology.

Field	Characteristics

Up Close

and Personal

PSYCHOLOGY CLOSE UP

You mean I'm supposed to talk to them? You've exchanged your likes

and dislikes in music. You've shared your thoughts on your favorite movies. You've even discovered that you both dream of becoming a doctor. You're best friends. Surely it's a minor detail that you've never met. With networking Web sites or apps like Facebook, Twitter, and LinkedIn, people today can make dozens of new friends with a few mouse clicks. The trouble is that some of these people have forgotten—or have never learned—how to actually talk to someone face-to-face.

In order to help students with their interpersonal skills, some universities host events designed to promote face-to-face, rather than digital, interactions among students. For example, New York University offered a seminar in which first-year students paired off and talked for six minutes. To help them break the ice, the leader of the seminar provided a few sample questions, such as "What drew you to NYU?" and "What do you think of this workshop so far?" At the conclusion of the workshop, some of the students agreed that the encounter had been difficult; Facebook, they said, was easier. How, they asked, do you let someone know you want to talk? "Just smile," they were told.

As virtual communication becomes the principal means of connecting with others, more people may need seminars like this one. This may be a job for social psychologists. Helping people learn how to behave in social situations is one of the things they do. In this section, you will learn about social psychology as well as the work undertaken in many other fields. ■

Major Fields in Psychology

Many psychologists share a keen interest in behavior, and all believe in the value of scientific research. They also share the belief that theories about behavior and mental processes should be supported by scientific evidence. They accept something as true only if the evidence shows it is so.

Some psychologists are interested mainly in research. They investigate the factors that give rise to behaviors and that explain certain mental processes. They form theories about why people and animals do the things they do. Then they test their theories by predicting when specific behaviors will occur.

Other psychologists consult. That means that they apply psychological knowledge in the form of therapy to help people change their behavior so that they can better meet their own goals. Still other psychologists teach, sharing their knowledge of psychology in classrooms and workshops.

Clinical Psychology Clinical psychologists make up the largest group of psychologists. Clinical psychologists are the people most of us think of when we hear the term “psychologist.” Specialty areas within this field include child mental health, adult mental health, learning disabilities, geriatrics, and general health.

ACADEMIC VOCABULARY

geriatrics the branch of medicine that focuses on the diseases and problems of the elderly

The psychologists in this field help people with psychological problems, such as anxiety or depression, or severe psychological disorders, such as schizophrenia. Clinical psychologists help their clients overcome problems and adjust to the demands of their lives. They also help people who have problems with relationships, drug abuse, or weight control.

Clinical psychologists are trained to evaluate psychological problems through the use of interviews and psychological tests. Then these psychologists try to help clients understand and resolve their problems by changing ineffective or harmful behavior.

The work environment for clinical psychologists can include hospitals, prisons, university clinics, and private practices. Some clinical psychologists divide their time between clinical practice, teaching, and research.

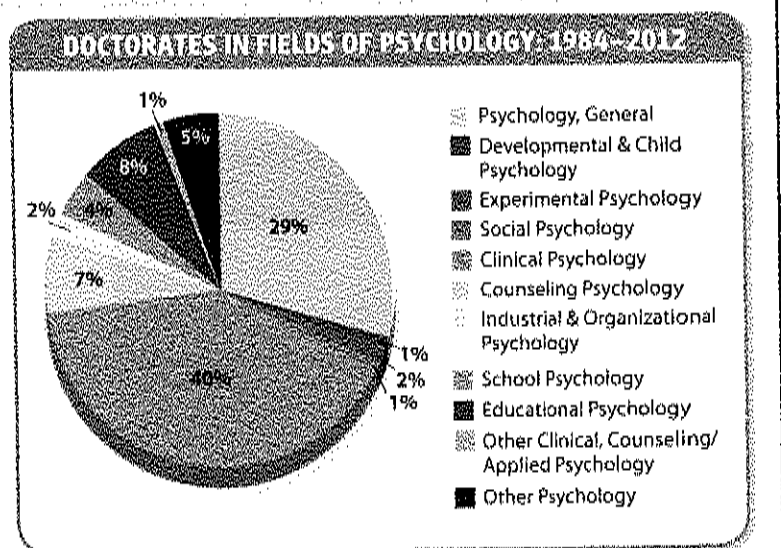
These psychologists should not be confused with psychiatrists. A **psychiatrist** is a medical doctor who specializes in the treatment of psychological problems and who can prescribe medication for clients. Psychologists also specialize in the treatment of psychological problems, but because they are not medical doctors, they may not prescribe medication for their clients. However, clinical psychologists often work together with psychiatrists to consult and determine the best course of treatment for a complex patient problem.

Statistically Speaking...

Graduate Programs in Psychology

Universities typically offer graduate programs in many fields of psychology. As you can see from the pie graph, however, 4 out of 10 doctoral graduates in psychology emerge from the clinical program.

Skills Focus **INTERPRETING GRAPHS** Which field is the second most popular? Which field is least popular?



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) (1984-2012). Completions surveys.

Counseling Psychology Like clinical psychologists, counseling psychologists use interviews and tests to identify their clients' problems. Counseling psychologists typically treat people who have adjustment problems rather than serious psychological disorders. For example, a counseling psychologist's clients may have difficulty making decisions about their careers, or they may find it hard to make friends. They may be experiencing conflicts with family members, teachers, employers, or colleagues. Counseling psychologists help their clients clarify their goals, overcome their adjustment problems, and meet challenges. Counseling psychologists are often employed in businesses and in college and university counseling and testing centers.

School Psychology Your school district may employ one or more school psychologists. School psychologists identify and help students who have problems that interfere with learning. Typical problems that school psychologists deal with include peer group and family problems, and learning disorders, which are problems in learning to read, write, or do math.

School psychologists identify students with problems by talking with teachers, parents, and the students themselves. School psychologists may also administer tests, such as intelligence tests and achievement tests. These tests, which are usually given to large groups of students, help identify students with special abilities as well as students who need assistance. For example, a school psychologist might notice a student's exceptional results on the math section of an achievement test and recommend placing her in an advanced math class.

School psychologists also observe students in the classroom to see how they interact with their teachers and peers. After gathering the information they need, school psychologists advise teachers, school officials, and parents about how to help certain students reach their potential or overcome any learning difficulties they might have.

In addition, school psychologists make recommendations regarding the placement of students in special classes and programs. In some school districts, student placement is the major responsibility of the school psychologist.

Educational Psychology Like school psychologists, educational psychologists are concerned with helping students learn. But they generally focus on course planning and instructional methods for an entire school system rather than on designing a program of study for an individual student.

Educational psychologists are concerned with theoretical issues that relate to measurement of abilities, learning, and child and adolescent development. Their research interests include the ways in which learning is affected by the following:

- psychological factors, such as motivation, emotions, creativity, and intelligence
- cultural factors, such as religious beliefs and language
- economic factors, such as the level of income earned by a person's family
- instructional methods used in the classroom

Some educational psychologists help prepare standardized tests, such as the SAT or GRE (Graduate Record Examination). They study various tests to determine the type of test that can most effectively predict success in college. They may also examine individual test items to determine whether these items adequately test critical thinking skills and make a useful contribution to the test as a whole.

Developmental Psychology Developmental psychologists study the changes that occur throughout a person's life span. These changes can be of the following types:

- physical (including changes in height and weight, adolescent growth, sexual maturity, and the physical aspects of aging)
- emotional (for example, development of self-concept and self-esteem)
- cognitive (such as changes from childhood to adulthood in mental images of the world outside or how children learn right from wrong)
- social (such as formation of bonds between parents and children, relationships with peers, or intimate relationships between adults)

Developmental psychologists also attempt to sort out the relative influences of heredity and the environment on development.

Some developmental psychologists are especially interested in the challenges of adolescence. For example, how do adolescents handle the often contradictory messages of peers (who pressure them to act in one way) and parents (who want them to act in another way)? How can psychologists help parents and school officials encourage adolescents to avoid activities that may be harmful to their physical and psychological well-being? What are the causes of depression and suicide among teens? How can people help prevent these painful situations from occurring?

Personality Psychology Personality psychologists identify human characteristics, or traits. Shyness and friendliness are examples of traits. Personality psychologists look for the many different traits people have and study the traits' development. Personality psychologists share with clinical psychologists an interest in the origins of psychological problems and disorders. These psychologists are also concerned with issues such as anxiety, aggression, and gender roles. Gender roles are the behavior patterns expected of women and men in a given culture.

Social Psychology Social psychologists are concerned with people's behavior in social situations. Whereas personality psychologists tend to look within people for explanations of behavior, social psychologists generally focus on external influences. Social psychologists study the following issues:

- the ways in which women and men typically behave in a given setting
- the physical and psychological factors that attract people to one another
- the reasons people tend to conform to group standards and expectations
- how people's behavior changes when they are members of a group
- the reasons for and the effects of prejudice and discrimination within various groups and from one group to another
- the situations in which people are hostile and those in which they help others

Experimental Psychology Psychologists in all specialties may conduct experimental research. However, experimental psychologists conduct research into basic processes

Specialized Fields

There is an astoundingly diverse range of specialized fields in psychology and a wide variety of settings in which psychologists work. Here are a few examples.

Environmental Psychology

Does crowding in cities make people irritable? Does smog have an effect on people's ability to learn? Environmental psychologists ask such questions. They focus on the ways in which people influence and are influenced by their physical environment. Environmental psychologists study whether buildings and cities serve human needs. They also investigate the psychological effects of extremes in temperature, noise, and lighting.

such as the functions of the nervous system. Other basic processes include sensation and perception, learning and memory, and thinking and motivation.

Experimental psychologists explore the biological and psychological reasons for cognitive behavior. Some combine the two and focus on the relationships between biological changes (such as the release of hormones into the bloodstream) and psychological events (such as feelings of anxiety). These psychologists are called biological psychologists.

Experimental psychologists are more likely than other psychologists to engage in basic research. **Basic research** is research that has no immediate application and is done for its own sake. The findings of experimental psychologists are often put into practice by other psychological specialists. For example, basic research into motivation has helped clinical and counseling psychologists develop ways of helping people control their eating habits. Basic research into learning and memory has helped educational psychologists enhance learning conditions in schools.

Reading Check Infer Which types of psychologists might treat patients with eating disorders?

Environmental psychologists study how light affects mood in patients with Seasonal Affective Disorder, also known as winter depression.



Comparative Psychology

What do bats have in common with dolphins? How does the prehistoric rhinoceros compare with the modern rhino? Comparative psychologists study animal behavior to try to answer such questions. They also compare the similarities and differences among different animals—modern and ancient—to gain an understanding of evolutionary relationships. The work of Charles Darwin inspired modern research on animal behavior. Today comparative psychology is a multidisciplinary field that includes the contributions of psychologists, biologists, anthropologists, ecologists, geneticists, and many others.

Consumer Psychology

Have you ever noticed that in many supermarkets, milk is shelved far away from the store entrance? Its placement results from the work of consumer psychologists, who study and predict the behavior of shoppers. Milk is placed at the rear of the store because it is an item that many people buy frequently. Its placement ensures that shoppers will pass—and perhaps buy—other items on the way to the milk shelf. Consumer psychologists also assist others in applying the findings of their studies. For instance, they work with advertisers to create effective newspaper ads and television commercials.

Applied Fields in Psychology

You have already read about sports psychologists and how they can help athletes. There are several other specialties in psychology.

Industrial and Organizational Psychology

Industrial psychologists focus on people and work. Organizational psychologists study the behavior of people in organizations, such as business firms. Industrial psychology and organizational psychology are closely related. Psychologists in these fields are often trained in both areas.

Industrial and organizational psychologists are employed by corporations to improve working conditions and increase worker output. They may assist in hiring, training, and promoting employees. They may also devise psychological tests for job applicants and conduct research into the factors that contribute to job satisfaction. In addition, some industrial and organizational psychologists help employees who have problems on the job.

Human Factors Psychology Human factors psychology is somewhat related to industrial and organizational psychology. Psychologists in this field attempt to find the best ways to

design products for people to use. These products include those that are used in schools, the workplace, and the home. Human factors psychologists consider the following when they become involved in the design of a product:

- how people will use a particular product
- how the product affects people in their daily lives
- the shape, look, and feel of the product
- how to engineer the product so that it is safe, comfortable to use, and durable

Community Psychology Community psychologists study and help create social systems that promote and foster individual well-being. These social systems might include mental health centers, hospital programs, and school-based programs. Community psychologists focus on the following:

- promoting change in the social environment rather than in the individual
- helping relatively powerless social groups, such as children and the elderly, develop coping strategies
- preventing threats to mental health in the social environment

Forensic Psychology When an attorney wants an expert witness to testify whether a person accused of a crime is or is not competent to stand trial, the attorney might call on a forensic psychologist. These psychologists work within the criminal justice system. In addition to testifying about the psychological competence of defendants, they may explain how certain kinds of psychological problems give rise to criminal behavior. Police departments employ psychologists to do some of the following jobs:

- assist in the selection of police officers
- help police officers cope with job stress
- train police officers in the handling of dangerous situations they may encounter, such as suicide threats, hostage crises, and family violence

Health Psychology Health psychologists examine the ways in which behavior and mental processes are related to physical health. They often work with many different health care professionals, including physicians, nurses, dentists, and dieticians. Health psychologists study the effects of stress on health problems such as headaches and heart disease. Many also focus on prevention and reducing the risk of disease. For instance, they help people adopt healthful behaviors such as a balanced diet and exercising.

Rehabilitation Psychology Psychologists in this field work with patients who are struggling with the effects of a disability. A disability is a condition that limits physical, sensory, cognitive, or emotional functioning. Rehabilitation psychologists may work with patients who are dealing with the effects of stroke, brain disease, amputation, or vision impairment. People with disabilities may have difficulty working, taking care of themselves or their families, or engaging in normal activities. Rehabilitation psychologists help their patients develop strategies to compensate for the disability and live meaningful lives.

Cross-Cultural Psychology Traditionally, psychology studies have focused on people in industrialized nations. Cross-cultural psychologists, on the other hand, study behavior and mental processes under different cultural conditions. For instance, they examine such issues as depression and anxiety to gauge whether these concepts are perceived differently in different cultures.

Cross-cultural psychologists have been able to bring new insights to standard psychological theories. For example, they have discovered that visual perception develops differently in cultures as a result of the shapes and angles people are exposed to every day.

Reading Check Summarize What do forensic psychologists do?

SECTION 7.2 Assessment

Reviewing Main Ideas and Vocabulary

1. **Describe** What are some of the typical problems that a school psychologist might encounter?
2. **Recall** Which field of psychology focuses on the engineering and design of products used in everyday life?

Thinking Critically

3. **Compare and Contrast** In what way does the role of a psychiatrist and that of a psychologist differ?
4. **Draw Conclusions** Social psychologists study group dynamics. Why do you think people's behavior may change when they are part of a group?
5. **Evaluate** What are some of the difficulties that cross-cultural psychologists might encounter when they conduct their research?

6. **Categorize** Using your notes and a graphic organizer like the one below, identify the psychologists who might work in a school setting and explain what their role would be in that setting.

Psychologist	Role

FOCUS ON WRITING

7. **Expository** If you decided to become a psychologist, which field would you prefer? Explain your choice in a paragraph.

Inside the Criminal Mind

A horrific crime is committed. Police detectives and forensic experts study the crime scene in minute detail. But in addition to the officers, a psychological profiler examines the evidence. After he inspects the body, evaluates the footprint on the dusty floor, and scrutinizes the cryptic message scrawled on the wall, the profiler declares that the suspect is a young, white male who lives with his parents and is uncomfortable around women. Is he right? Probably not.

Popularized in television shows and movies, the profiler is a celebrated figure in forensic psychology. Yet some have compared profilers to psychics or astrologers because they often give a broad description of a suspect that could fit just about anyone. In fact, even when the description almost completely misses the mark, investigators tend to remember the few details the profiler got right: He *was* wearing a double-breasted suit, and he *does* live with his mother. Unfortunately, the truly salient details about his age, ethnicity, and personality were completely wrong.

Perhaps people just want to believe that we possess the ability to see inside a criminal's mind. This

might explain the fascination with lie-detector tests. Even though experts have concluded that the polygraph, which measures the physical changes that occur in reaction to questions, is unreliable, thousands of polygraph tests are conducted every year. Many who support the use of polygraphs claim that they are accurate 90 percent of the time. However, that also means that the polygraph fails one out of ten times—unacceptable odds for innocent suspects. Not surprisingly, the results of polygraph tests are not admissible in court.

Other methods for detecting lies have been devised. For instance, some psychologists claim that liars betray themselves by their behavior. Liars, they say, are likely to speak more slowly, shift in their chair, and nervously fuss with their hair. The trouble is, this profile could also describe the behavior of a person who is afraid of being disbelieved.

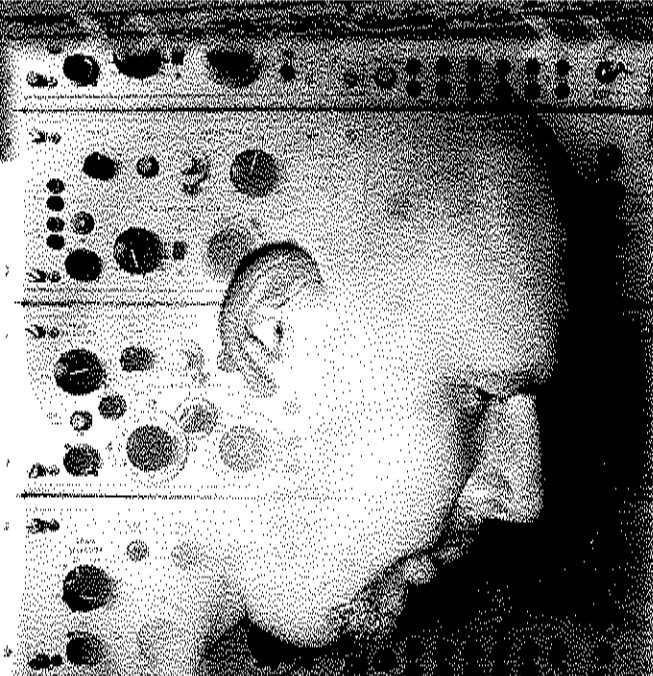
One of the latest developments in criminal mind-reading lies in the use of brain imaging. Scientists have used magnetic resonance imaging (MRI) scans for years to identify neurological disorders. Now some researchers believe that the scans can be used

to detect lies. MRI scans show the changes in blood flow when the brain performs mental processes. Since lying is believed to require more cognitive activity, the scans will reveal more blood flow when someone does not tell the truth. But many psychologists remain unconvinced. They question the assumption behind all lie-detector tests: that lying is in some way upsetting to the liar.

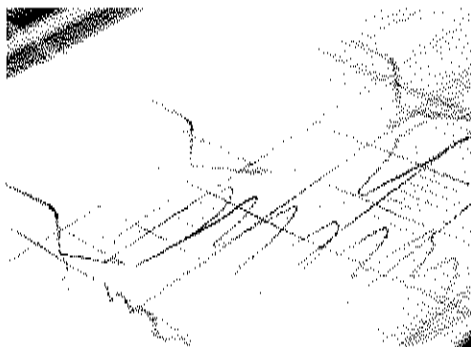
Unfortunately, criminals—like everyone else—are not so easily profiled. As much as we would like to believe that their actions will unmask them or that their hearts will race when they tell a lie, it doesn't usually work that way. In the meantime, psychologists will continue to explore the human mind, and maybe someday we'll be better able to tell who's lying and who's not.

Thinking Critically

- 1. Infer** Why do people want to believe that a reliable lie-detector test can be developed?
- 2. Discuss** Do you think a reasonable profile of a suspect can ever be deduced from crime scene evidence? Why or why not?



For years, science has tried to probe the workings of the mind.



A polygraph measures such processes as blood pressure, respiration, and heart rate, but does it show when someone is lying?

A History of Psychology

Before You Read

Main Idea

Since ancient times, philosophers and scientists have studied behavior and mental processes. Psychologists throughout history have continued to refine and develop these studies.

Reading Focus

1. What were some early views and beliefs about human behavior?
2. Who were some of the pioneers of psychology?
3. What modern developments in psychology have dominated much of the 20th century?

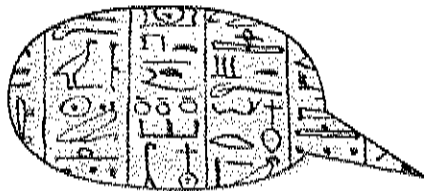
Vocabulary

introspection
associationism
structuralism
functionalism
psychoanalysis
psychodynamic thinking
behaviorism
Gestalt psychology

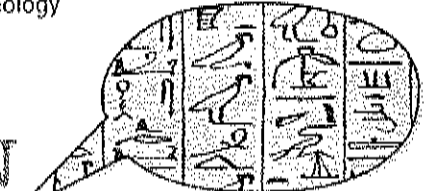
TAKING NOTES

Use a graphic organizer like this one to take notes on the different schools of psychology.

School	Ideas



Talk LIKE AN Egyptian



PSYCHOLOGY CLOSE UP

What was the first psychological study?

According to Greek historian Herodotus, the first recorded psychological study in history took place in Egypt in the latter half of the 600s B.C. Psamtik I, the king of Egypt at the time, wanted to prove that the Egyptian civilization was the oldest on earth. To test his hypothesis, Psamtik selected two babies from a lower-class family and gave them over to the care of a local shepherd. The shepherd was given strict instructions to treat the children well but to never speak a word to them. The king believed that, without any prompting, the children would naturally speak what he considered to be the original and most ancient language of humankind—Egyptian.

Unfortunately, Psamtik's hypothesis proved false. When the children were about two years old, the shepherd reported that they had uttered a word that sounded like *becos*. No doubt the children had just been babbling, but the king was greatly encouraged. It turned out, however, that *becos* was not an Egyptian word. It was Phrygian for *bread*. The heartbroken king came to the conclusion that the Phrygians were a more ancient people than the Egyptians.

Today, of course, we know that children who are not exposed to speech will not spontaneously speak any language at all, much less Egyptian. However, Psamtik did question how the mind works. That would be the focus of psychological studies for the next 2,600 years. ■

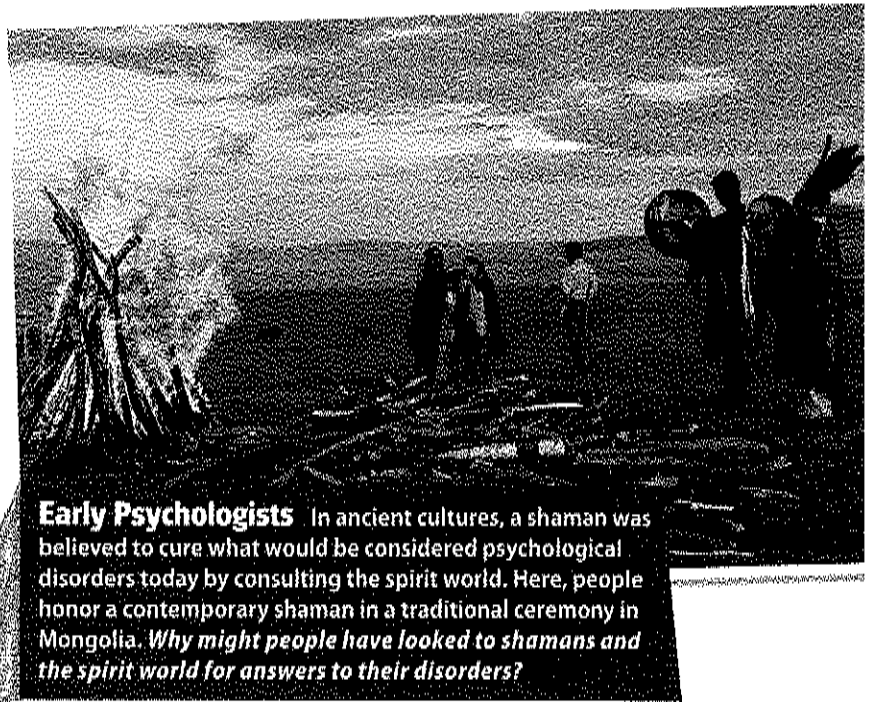
Early Views and Beliefs

We have always been interested in the behaviors of others. Thus psychology is as old as human history. Written accounts of the interest in people's actions, motives, and thoughts can be traced as far back as the philosophers and scientists of ancient times.

Ancient Greece More than 2,000 years ago, Plato (428–348 or 347 B.C.), a student of the philosopher Socrates in ancient Greece, recorded his teacher's advice: "Know thyself." This phrase has remained an important motto of psychological study ever since. Socrates suggested that we can learn much about ourselves by carefully examining our own thoughts and feelings. Psychologists call this method of learning **introspection**, which means "looking within."

One of Plato's students, Greek philosopher Aristotle (384–322 B.C.), raised many questions about human behavior that are still discussed. Aristotle outlined the laws of **associationism**, which are still at the heart of learning theory more than 2,000 years later. He showed how experiences often remind us of similar experiences in the past, how the face of a loved one makes us feel secure, and how thought leads to ideas as we dream and as we daydream. One of Aristotle's works is called *Peri Psyches*, which means "about the mind." Aristotle's approach was scientific. He argued that human behavior, like the movements of the stars and the seas, is subject to certain rules and laws. He believed one such universal law was that people are motivated to seek pleasure and to avoid pain—a view still found in some modern psychological theories. *Peri Psyches* also explores topics such as sensation and perception, thought, intelligence, needs and motives, feelings and emotions, and memory.

The ancient Greeks also theorized about various psychological problems, such as confusion and bizarre behavior. Throughout human history, many people have attributed such disorders to supernatural forces. The ancient Greeks generally believed that the gods punished people for wrongdoing by causing them confusion and madness. However, the Greek physician Hippocrates (c. 460–c. 377 B.C.) rejected these beliefs. He suggested that such problems are caused by



Early Psychologists In ancient cultures, a shaman was believed to cure what would be considered psychological disorders today by consulting the spirit world. Here, people honor a contemporary shaman in a traditional ceremony in Mongolia. *Why might people have looked to shamans and the spirit world for answers to their disorders?*

abnormalities in the brain and had a rational explanation. This idea that biological factors can affect our thoughts, feelings, and behavior influenced thinking about psychology for more than 2,000 years.

The Middle Ages Greek thinking about the human mind was lost during the Middle Ages. Most Europeans of this period believed that problems such as agitation and confusion were signs of possession by demons. A popular belief of the time was that possession was punishment for sins or the result of deals that those afflicted had made with the devil.

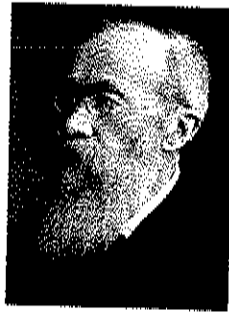
Certain "tests" were used to determine whether a person was possessed. One of the most infamous tests, the water-float test, was based on the principle that pure metals sink to the bottom during the smelting process whereas impure metals float to the surface. Individuals who were suspected of being possessed were thrown into deep water. Suspects who managed to keep their heads above water were assumed to be impure and in league with the devil. They were judged to be guilty and were then executed for associating with the devil. Those who sank to the bottom, on the other hand, were judged to be pure. Unfortunately, they met the same fate as the "guilty"—they died.

Reading Check Summarize What basic foundations of psychology did the ancient Greeks set forth?

Structuralism

Wilhelm Wundt

- Because Wundt established psychology as a field of study separate from philosophy and the natural sciences, Wundt is considered one of the founders of modern psychology.
- The lab Wundt set up in 1879 is still in operation today.
- He viewed mental processes as activities and classified feelings as pleasant or unpleasant, tense or relaxed, and excited or depressed.



Functionalism

William James

- In addition to being the father of American psychology, James is considered one of America's greatest philosophers.
- Trained in medicine, James commented that the first lecture on psychology he ever heard was the first one he presented as a new instructor at Harvard.
- He believed that since the truth of an idea can never be proved, we should focus instead on how practical or productive an idea is—its "cash value," as he called it.



Pioneers in Psychology

People of the 1500s, 1600s, and 1700s witnessed great scientific and intellectual advances. In the 1500s, for example, Polish astronomer Nicolaus Copernicus challenged the widely held view that the sun revolved around Earth, suggesting instead that Earth revolves around the sun. In the 1600s English scientist Sir Isaac Newton formulated the laws of gravity and motion. English philosopher John Locke, building on principles of associationism, theorized that knowledge is not inborn but is learned from experience. In the late 1700s French scientist Antoine Lavoisier founded the science of chemistry and explained how animals and plants use oxygen in respiration.

The scientific approach also led to the birth of modern psychology in the 1800s. Psychologists argued that ideas about human behavior and mental processes should be supported by evidence. In the late 1800s psychological laboratories were established in Europe and the United States. In these laboratories, psychologists studied behavior and mental processes using a series of experiments to test a single theory—methods similar to those Lavoisier had used to study chemistry. Most historians of psychology point to the year 1879 as the beginning of psychology as a modern laboratory science. In that year, German psychologist Wilhelm Wundt established his laboratory in Leipzig.

Wilhelm Wundt and Structuralism Wilhelm Wundt (1832–1920) and his students founded a field of psychology that came to be known as **structuralism**. Structuralists were concerned with discovering the basic elements of consciousness. Wundt broke down consciousness into objective sensations and subjective feelings. Objective sensations were assumed to accurately reflect the outside world. Subjective feelings were thought to include emotional responses and mental images.

Structuralists believed that the human mind functioned by combining these basic elements of experience. For example, a person can experience an apple objectively by observing its shape, color, texture, and taste. The person can also experience the apple subjectively by remembering how good it feels to bite into one. Using the method of introspection, Wundt and his students carefully examined and reported their experiences.

William James and Functionalism A decade after Wundt established his laboratory, Harvard University professor William James (1842–1910) asserted that conscious experience could not be broken down as structuralists believed. James maintained that experience is a continuous "stream of consciousness." He focused on the relationships between experience and behavior and described his views in *The Principles of Psychology*. Many consider this book, published in 1890, to be the first modern psychology textbook.

ACADEMIC VOCABULARY

stream of consciousness
thought regarded as a flowing series of images and ideas running through the mind

Psychoanalysis

Sigmund Freud

- Freud's declaration that people essentially have little free will and are subject to the workings of the unconscious mind was highly revolutionary.
- He psychoanalyzed himself and extensively studied his own dreams, memories, and personality and concluded that he had many mental disorders and fears.
- Many psychologists were initially scandalized by Freud's emphasis on the sexual origins of psychological disorders.



Behaviorism

John B. Watson

- Watson's most famous experiment involved conditioning a small child to fear a white rat by associating the rat with a loud, frightening sound.
- He believed that people have three basic emotional reactions: fear, rage, and love.



B. F. Skinner

- In contrast with Watson, Skinner believed that behavior depended on what happened after a stimulus—an event or sensation—and not before. He called this "operant behavior."



James was one of the founders of the school of **functionalism**. Functionalists were concerned with how mental processes help organisms adapt to their environment. They stressed the application of their findings to everyday situations.

Functionalism differed from structuralism in several ways. Whereas structuralism relied only on introspection, the methods of functionalism included behavioral observation in the laboratory as well as introspection. The structuralists tended to ask: What are the elements (structures) of psychological processes? The functionalists, on the other hand, tended to ask: What are the purposes (functions) of behavior and mental processes? What do certain behaviors and mental processes accomplish for the person (or animal)?

Functionalists proposed that adaptive behavior patterns are learned and maintained because they are successful. Less-adaptive behavior patterns are dropped or are discontinued. Adaptive (successful) actions are repeated and eventually become habits. The formation of habits is seen in such acts as riding a bicycle. At first, this act requires our full attention. But through repetition—and success—it becomes automatic. The multiple tasks involved in learning to type on a keyboard or to write in longhand also become routine through successful repetition. Habit allows us to take the mechanics of typing or writing for granted and to concentrate instead on what we are typing or writing.

Sigmund Freud and Psychoanalysis

Sigmund Freud (1856–1939), a Viennese physician, was perhaps the most famous of the early psychologists. The school of thought that he founded, called **psychoanalysis**, emphasizes the importance of unconscious motives and internal conflicts in determining and understanding human behavior.

Freud's theory, more than the others, has become a part of popular culture. You may be familiar with several Freudian concepts. For example, have you ever tried to interpret a slip of the tongue, or have you ever tried to figure out the meaning of a dream you had? The ideas that people are driven by hidden impulses and that verbal slips and dreams represent unconscious wishes largely reflect Freud's influence on popular culture.

Structuralists and functionalists conducted their research in the laboratory. However, Freud gained his understanding of human behavior through consultations with patients. He encouraged them to talk through their problems, a method that came to be called a "talking cure." Freud was astounded at how little insight these patients had into their own ideas and feelings. The ultimate goal of his consultations was to release the powerful emotional energy that he believed was locked in the unconscious mind. He came to believe that unconscious processes, particularly sexual and aggressive urges, are more important than conscious experience in governing people's behavior and feelings.

Freud's theory, which is sometimes called **psychodynamic thinking**, assumed that most of what exists in an individual's mind is unconscious and consists of conflicting impulses, urges, and wishes. According to Freud's theories, human behavior is aimed at satisfying these desires, even though some of them seem socially inappropriate or even unacceptable. But at the same time, people want to see themselves as good and decent human beings. Freud attempted to help people gain insight into their unconscious conflicts and find socially acceptable ways of expressing their wishes and meeting their needs.

Reading Check Find the Main Idea According to Freud, what is the key to people's behavior?

Modern Developments in Psychology

As the 20th century progressed, new psychological theories were proposed. Like the earlier pioneers, modern psychologists focused on behavioral and cognitive approaches.

John B. Watson and Behaviorism Picture a hungry rat in a maze. It moves along until it reaches a place where it must turn left or right. If the rat is consistently rewarded with food for turning right at that place, it will learn to turn right when it arrives there the

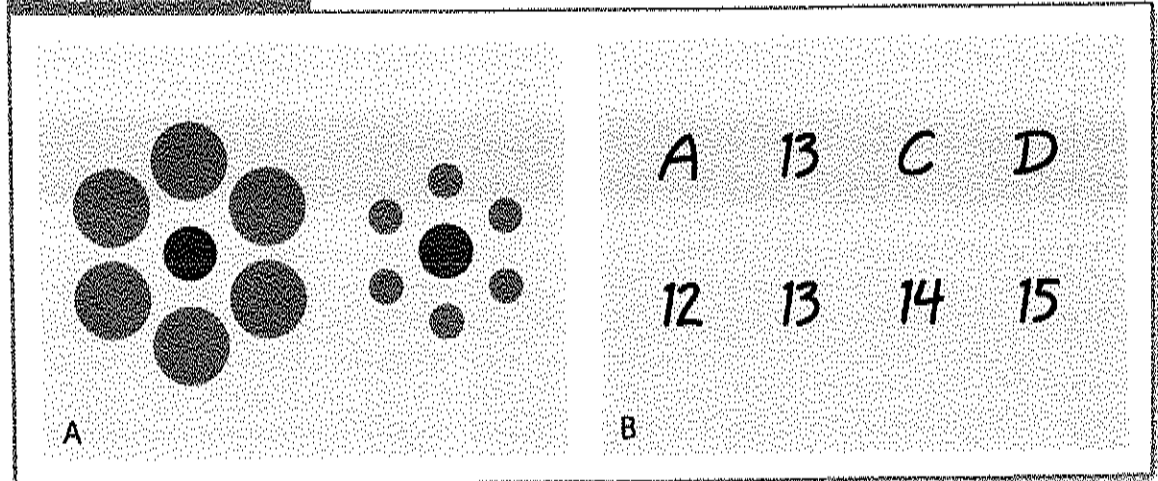
next time—at least, when it is hungry. But what does the rat *think* when it is learning to turn right at that place in the maze?

Does it seem absurd to try to place yourself in the mind of a rat? It did to John B. Watson (1878–1958) when he was asked by examiners to consider this question as a requirement for his doctoral degree in psychology.

The question was part of the exam because functionalism was the dominant school of psychology at the time. Watson agreed with the functionalist focus on the importance of learning, but he believed that it was unscientific to study a construct like consciousness—particularly the consciousness of animals. He saw consciousness as a private event that is known only to the individual. He asserted that if psychology was to be a natural science, like physics or chemistry, it must be limited to observable, measurable events—that is, to behavior. As the founder of the school of **behaviorism**, Watson defined psychology as the scientific study of observable behavior.

Watson once famously claimed that he could take a group of healthy children and train them to become doctors or lawyers or any other kind of specialist. With this claim, Watson laid the foundation for the classic behaviorist belief: Regardless of who we think we really are inside, we can be totally conditioned by external events. Our belief in individual choice is just an illusion.

GESTALT DRAWINGS



These drawings demonstrate the idea that the perception of something is affected by the context in which it occurs. Two images that are identical may appear to be different if their surroundings are different.

Skills Focus INTERPRETING VISUALS

In Drawing A, are the two dark blue circles the same size? In Drawing B, what is the second symbol in each row?

B. F. Skinner and Reinforcement Harvard University psychologist B. F. Skinner (1904–1990) added to the behaviorist tradition by introducing the concept of reinforcement. Skinner showed that when an animal is reinforced, or rewarded, for performing an action, it is more likely to perform that action again in the future. He demonstrated that laboratory animals, such as rats and pigeons, are capable of learning complex behavior patterns if they are reinforced in the right ways. Behaviorists have taught animals to push buttons, climb ladders, push toys across the floor, and even shoot baskets by rewarding the animals for performing the desired behavior.

According to Skinner, people learn in the same way animals do. Like animals, people learn to behave in certain ways because they have received the positive or negative reinforcement that guides their behavior.

Skinner scorned the efforts of other psychologists to try to understand the inner person. He believed that the effort to study personalities and feelings was unscientific. According to Skinner, all we can know are the external causes of behavior and what happens as a result of that behavior. “Thinking is behaving,” he claimed. “The mistake is in allocating the behavior to the mind.”

The Gestalt School Gestalt psychology developed as an alternative to behaviorism and structuralism. German psychologists Max Wertheimer, Kurt Koffka, and Wolfgang Köhler felt that behaviorism was only concerned with treating a specific problem outside of its larger context. These psychologists were fascinated by the ways in which context influences people’s interpretation of information. They formed the core of the school of Gestalt psychology in the early 20th century. The psychology of *Gestalt*, which means “shape” or “form” in German, is based on the idea that our perceptions of objects are more than the sums of their parts. Rather, they are wholes that give shape, or meaning, to the parts. As such, Gestalt psychology rejects the structuralist idea that experience can be broken down into individual parts or elements.

This theory can be demonstrated with a few basic principles. One of the principles is similarity. According to this principle, when objects look similar, people tend to recognize a

pattern and perceive them as a united whole. According to the principle of closure, people fill in the missing information when enough of the shape of an object is indicated.

Gestalt psychologists also reject the behaviorist notion that psychologists should concentrate only on observable behavior. In addition, Gestalt psychologists believe that learning is active and purposeful. They disagree with the behaviorist view that learning is mechanical.

Köhler and the other founders of Gestalt psychology demonstrated that much learning, particularly problem solving, is accomplished by insight, not by mechanical repetition. Insight is the reorganization of perceptions that enables an individual to solve a problem. In other words, insight is the sudden appearance of the Gestalt, or form, that enables the individual to see the solution.

Reading Check **Draw Conclusions** How do you think B. F. Skinner would view introspection?

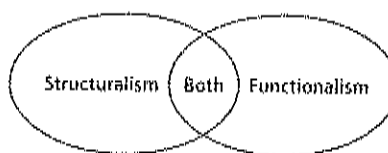
SECTION 3 Assessment

Reviewing Main Ideas and Vocabulary

1. **Recall** What are the laws of associationism?
2. **Identify** Who established the world’s first psychology lab?

Thinking Critically

3. **Draw Conclusions** How did the scientific method, which began to be applied in the mid-1500s, influence the development of psychology?
4. **Interpret** According to Gestalt psychology, what is the relationship of something’s parts to the whole?
5. **Support a Position** Do you agree with John B. Watson that a child can be trained to become a doctor, lawyer, or other specialist? Explain your answer.
6. **Compare and Contrast** Using your notes and a graphic organizer like the one below, describe the main differences between structuralism and functionalism and what they have in common.



FOCUS ON WRITING

7. **Descriptive** Describe a psychological problem that Sigmund Freud might find interesting.

Contemporary Perspectives

Before You Read

Main Idea

Contemporary psychologists have been influenced by the work of earlier pioneers. They have expanded traditional research to develop new and different approaches.

Reading Focus

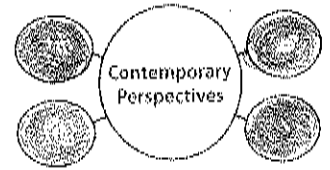
1. What is the role of biology in behavior and survival?
2. What role does the mind play in determining behavior?
3. How does the role of experience affect behavior?
4. What factors influence the biopsychosocial perspective?

Vocabulary

biological perspective
evolutionary perspective
cognitive perspective
humanistic perspective
psychoanalytic perspective
learning perspective
social-learning theory
sociocultural perspective

TAKING NOTES

Use a graphic organizer like this one to take notes on contemporary perspectives on psychology.



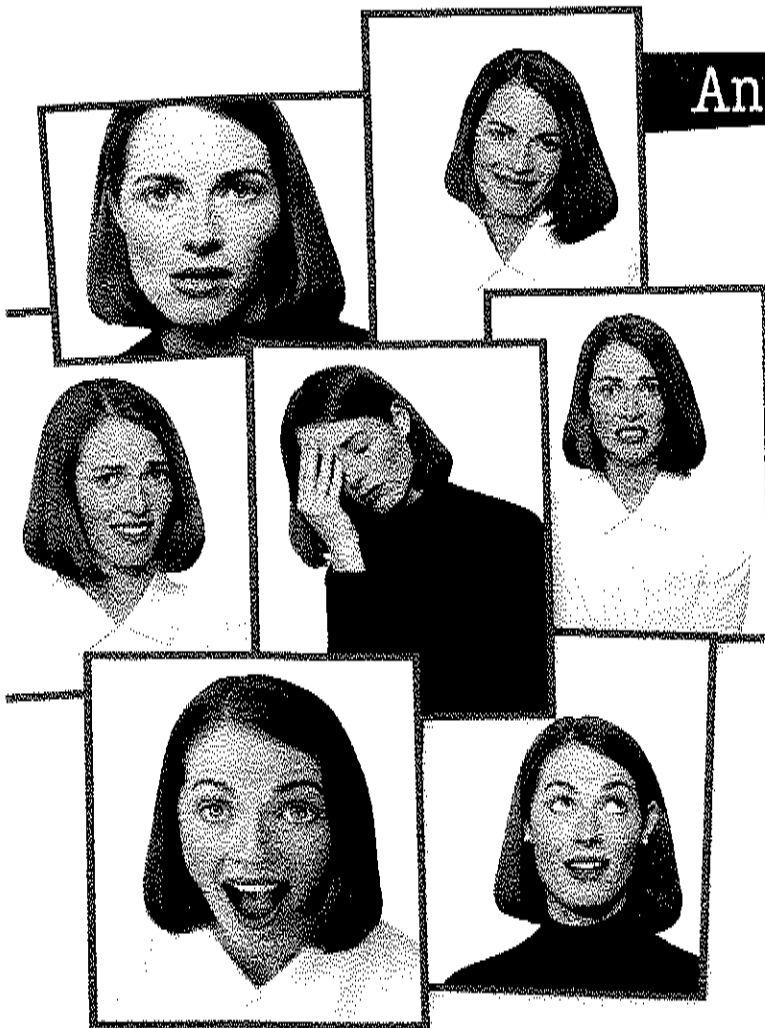
Another Kind of Smart

PSYCHOLOGY CLOSE UP

What's your EQ? By the 1990s, some psychologists had begun to claim that our EQ, or emotional quotient, is as important—if not more so—than our IQ, or intelligence quotient. Emotional intelligence refers to the ability to recognize and understand your own feelings as well as those of others. Psychologists first developed a technique for measuring emotional intelligence by testing how well subjects could identify emotions in other people's facial expressions.

Some researchers believe that emotional intelligence can be learned. They claim that people who learn how to understand and control their emotions can live more contented lives. Yet critics of emotional intelligence say that different emotions, like different types of intelligence, should be examined separately. Not everyone, after all, can master all emotions. Some people may be good at handling anger, for example, but not fear. The critics also claim that not every situation calls for the same emotion; a wide range of emotional responses may be appropriate.

Emotional intelligence is just one of the theories contemporary psychologists are studying. In this section, you will learn about other avenues of research in the ever-expanding science of psychology. ■



Can you tell what emotions this woman is expressing?

The Role of Biology

Today few psychologists describe themselves as structuralists or functionalists. Few would consider themselves Gestalt psychologists, although the school of Gestalt psychology has inspired current research in perception and problem solving. The numbers of traditional behaviorists and psychoanalysts also have been declining.

Nevertheless, the historical traditions of psychology find expression in contemporary perspectives on psychology. Each perspective emphasizes different topics of investigation and has different approaches. An important approach focuses on the role of biology.

The Biological Perspective The **biological perspective** of psychology emphasizes the influence of biology on our behavior. This perspective has roots in associationism. Psychologists assume that our mental processes—our thoughts, fantasies, and dreams—are made possible by the nervous system. They point particularly to its key component, the brain. Biologically oriented psychologists look for the connections between events in the brain, such as the activity of brain cells, and behavior and mental processes. They use several technologies, such as CAT scans and PET scans, to show which parts of the brain are involved in various mental processes. Biological psychology has shown that certain parts of the brain are highly active when we listen to music, other parts are active when we solve math problems, and still other parts are involved with certain psychological disorders. Biological psychologists have also learned that certain chemicals in the brain are connected with the storage of information—that is, the formation of memories.

Moreover, biological psychologists are interested in the influences of hormones and genes. Hormones are chemicals that glands release into the bloodstream to set in motion various body functions, such as growth or digestion. Genes are the basic units of heredity. Biological psychologists study the influences of genes on personality traits, psychological health, and various behavior patterns.

The Evolutionary Perspective Tied to biology, the **evolutionary perspective** focuses on the evolution of behavior and mental processes.

British scientist Charles Darwin theorized that in the struggle for survival, the most adaptive organisms have a greater chance of enduring. For example, people who are naturally resistant to certain diseases are more likely to transmit their genes to future generations. Evolutionary psychologists suggest that many kinds of behavior patterns, such as aggression, are examples of adaptive behavior. These psychologists believe that people learn to act in certain ways for their survival and then pass this behavior down.

Reading Check **Draw Conclusions** What role does biology play in our mental processes?

The Role of the Mind

For centuries, philosophers and scientists have been intrigued by the workings of the mind. It is not surprising, therefore, that many contemporary psychologists emphasize the role of cognition.

The Cognitive Perspective The **cognitive perspective** emphasizes the role that thoughts play in determining behavior. Cognitive psychologists study mental processes to understand human nature. They investigate the ways in which people perceive information and make mental images of the world, solve problems, and dream and daydream. Cognitive psychologists, in short, study what we refer to as the mind.

The cognitive tradition has roots in Socrates' maxim "Know thyself" and in his method of introspection for learning about the self. Cognitive psychology also has roots in structuralism, functionalism, and Gestalt psychology. Each of these schools of thought has addressed issues that are of interest to cognitive psychologists.

Another aspect of the cognitive perspective involves information processing. Many cognitive psychologists have been influenced by computer science. They see the computer as a metaphor for the brain. Computers process information to solve problems. Information is downloaded or entered into a computer. The information is then placed in working memory while the computer processes it. After processing, the information is stored more or less permanently on the computer's hard drive, or other means of memory storage.

Birth Order

According to some who follow the psychoanalytic perspective, the order in which one is born into a family can have a major impact on personality.

First-Born Children First-borns tend to be high-achievers, responsible, and conservative.

Middle Children Middle children tend to be even-tempered, loyal, and hard-working.

Last-Born Children Last-born children tend to be likeable, spontaneous, and persistent.

Only Children Only children tend to be confident, intelligent, and organized.

Many psychologists speak of people as having working memories and storage facilities (or long-term memories). If information has been placed in computer storage or in a person's long-term memory, it must first be retrieved before it can be worked on again. To retrieve information from computer storage, people must know the name of the data file and the process for retrieving data files. Similarly, cognitive psychologists believe people need certain cues to retrieve information from their long-term memories. Otherwise, it is lost to them.

Cognitive psychologists sometimes refer to our strategies for solving problems as our "software." In this computer metaphor, our brains are the "hardware" that runs our mental programs. In other words, our brains are our own *very* personal computers.

Cognitive psychologists believe that people's behavior is influenced by their values, their perceptions, and their choices. For example, an individual who interprets a casual remark as an insult may react with hostility. But the same remark directed at another person might be perceived very differently by that person and thus may meet with a completely different reaction.

The Humanistic Perspective The **humanistic perspective** stresses the human capacity for self-fulfillment and the importance of consciousness, self-awareness, and the capacity to make choices. Consciousness is seen by humanistic psychologists as the force that shapes human personality.

Humanistic psychology considers people's personal experiences to be the most important aspect of psychology. Humanistic psychologists believe that self-awareness, experience, and choice permit us to "invent ourselves." In other words, they enable us to fashion our growth and our ways of relating to the world as we go through life. Unlike the behaviorists, who assume that behavior is caused largely by the stimuli that act upon us, humanistic psychologists believe that we are free to choose our own behavior.

The humanistic perspective views people as basically good and desiring to be helpful to others. Humanistic psychologists help people explore their feelings, manage their negative impulses, and realize their potential.

Critics of the humanistic perspective, particularly behaviorists, insist that psychology should be scientific and address only observable events. They argue that people's inner experiences are unsuited to scientific observation and measurement. However, humanistic psychologists insist that inner experience is vital to the understanding of human nature.

The Psychoanalytic Perspective As you have learned, the **psychoanalytic perspective** stresses the influence of unconscious forces on human behavior. In the 1940s and 1950s, psychoanalytic theory dominated the practice of psychotherapy and greatly influenced psychology and the arts. Although psychoanalytic thought no longer dominates psychology, its influence continues to be felt. Psychologists who follow Sigmund Freud's approach today focus less on the roles of unconscious sexual and aggressive impulses and more on conscious choice.

Freud believed that aggressive impulses are common reactions to the frustrations of daily life and that we seek to vent these impulses on other people. Because we fear rejection or retaliation, we put most aggressive impulses out of our minds. But by holding aggression in, we set the stage for future explosions. Pent-up aggressive impulses demand outlets. Partial outlets can be provided by physical activity. Unfortunately, we may also direct hostile impulses toward strangers.

Reading Check **Compare and Contrast** How do humanistic and psychoanalytic psychologists differ in their views of what drives behavior?

The Role of Experience

Many psychologists study the impact of environment on behavior and mental processes. Environment includes all the ways in which someone experiences the world.

The Learning Perspective The **learning perspective** emphasizes the effects of experience on behavior. In the views of many psychologists, learning is the essential factor in observing, describing, explaining, predicting, and controlling behavior. However, the term *learning* can have different meanings in psychology. For example, behaviorists and social-learning theorists have different attitudes toward the role of consciousness in learning.

John B. Watson and other behaviorists found no role for consciousness. They believed that people act and react because of their learning histories and the influence of their situations, not because of conscious choice. Behaviorists emphasize the importance of

environmental influences and focus on the learning of habits through repetition and reinforcement.

In contrast, **social-learning theory** suggests that people can change their environments or create new ones. Furthermore, social-learning theory holds that people can learn intentionally by observing others. However, people's expectations and values influence whether they *choose* to do what they have learned how to do.

Psychologists who take the learning perspective believe that behavior is learned either from direct experience or by observing other people. For example, people will behave a certain way when they expect to be rewarded for that behavior. Like cognitive theorists, social-learning theorists believe that people act in a particular way only when they recognize that the circumstances call for that behavior. For example, we act with friendliness when we are treated well.

Contemporary Psychological Perspectives

QUICK
FACTS

These eight broad perspectives are the most common ways that contemporary psychologists view behavior today.

Perspective	Subject Matter	Key Assumption	Influenced By
Biological	Nervous system, glands and hormones, genetic factors	Biological processes influence behavior and mental processes.	Associationism and neuroscience
Evolutionary	Physical traits, social behavior	Adaptive organisms survive and transmit their genes to future generations.	Charles Darwin and evolution
Cognitive	Interpretation of mental images, thinking, language	Perceptions and thoughts influence behavior.	Structuralism, functionalism, and Gestalt psychology
Humanistic	Self-concept	People make free and conscious choices based on their unique experiences.	Introspection and belief in free will
Psychoanalytic	Unconscious processes, early childhood experiences	Unconscious motives influence behavior.	Sigmund Freud
Learning	Environmental influences, learning, observational learning	Personal experiences and reinforcement guide individual development.	John B. Watson and behaviorism
Sociocultural	Ethnicity, gender, culture, religion, socio-economic status	Sociocultural, biological, and psychological factors create individual differences.	Social, environmental, and cross-cultural psychology
Biopsychosocial	Biology, psychology, social factors	Mental processes are influenced by the interaction of biological, psychological, and social factors.	Holistic health and social psychology

ACADEMIC VOCABULARY

ethnic group

a group of people who share a common culture, race, or national origin

The Sociocultural Perspective Those psychologists who adhere to the **sociocultural perspective** study the influences of ethnicity, gender, culture, and socio-economic status on behavior and mental processes. By taking these factors into account, psychologists can better understand how people act and think.

One kind of diversity involves ethnicity. Members of an **ethnic group** are united by their cultural heritage, race, language, or common history. The sociocultural perspective helps people appreciate the cultural heritages and historical issues of various ethnic groups. Some of the psychological issues related to ethnicity are the following: the inclusion of people from various ethnic minority groups in psychological studies, bilingualism, ethnic differences in intelligence test scores, ethnic differences in vulnerability to health problems ranging from obesity to high blood pressure and cancer, and prejudice.

Sociocultural theorists also study gender, which is the state of being male or being female. Gender is not simply a matter of anatomy. It involves a complex web of cultural expectations and social roles that affect people's self-concepts and aspirations as well as their behavior.

Reading Check **Find the Main Idea** How can ethnicity and gender affect cultural expectations and social roles?

The Biopsychosocial Perspective

According to the biopsychosocial perspective, mental processes are influenced by the interaction of biological processes, psychological dispositions, and social factors. This holistic approach is actually very old, dating back to the time of the ancient Greeks.

The modern model for the approach was developed by American physician George Engel in relation to the treatment of heart disease. Engel suggested that the biological progress of heart disease should not be studied in isolation. The impact on the patient of cultural, social, and psychological factors also needs to be considered. Genetic predispositions to the disease, for instance, as well as the patient's diet, exercise, stress levels, and financial status should be taken into account. According to Engel, a physician's ability to treat the disease would be severely limited without an understanding of the psychosocial interactions with the cardiovascular system.

In recent years, biopsychosocial psychologists have taken the approach a step further. Some psychologists now claim that our social relationships from birth have a direct impact on our biological development.

Reading Check **Make Generalizations** What generalization can you make about the relation of the biopsychosocial approach to other psychological perspectives?

SECTION 4 Assessment

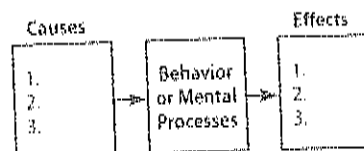
Reviewing Main Ideas and Vocabulary

1. **Identify** What metaphor do cognitive psychologists use to describe the functioning of the brain?
2. **Describe** How do humanistic psychologists view people?

Thinking Critically

3. **Explain** According to the biological perspective, what occurs during our activities and mental processes?
4. **Contrast** How do learning theorists differ from social-learning theorists in their ideas on behavior?
5. **Develop** What are some questions that a psychologist who is following the biopsychosocial approach might ask of a new cancer patient?

6. **Identify Cause and Effect** Select one of the perspectives you have read about. Then, using your notes and a graphic organizer like the one below, list what the theorists of this perspective believe are the causes and effects of behavior or mental processes.



FOCUS ON WRITING

7. **Persuasive** Write an e-mail in which you encourage a friend to seek help from a psychologist who specializes in one of the approaches you have learned about in this section.