



Chapter 1

WHAT IS PSYCHOLOGY?

CHAPTER PREVIEW QUESTIONS

- What is psychology?
- How did the fields of philosophy and science contribute to the birth of psychology?
- How was psychology created and defined as a field of study?
- How did Darwin and the functionalists change the direction of psychology?
- What was the contribution of Pavlov and Thorndike to the birth of behaviorism?
- How did the behaviorists seek to explain human and animal behavior?
- What was the approach of the gestalt school of thought in psychology?
- What role did Sigmund Freud's psychodynamic theory play in the history of psychology?
- Why were the humanistic psychologists opposed to both behaviorism and the psychodynamic school?
- How did the "cognitive revolution" change the course of psychology?
- What do biological, evolutionary, and genetic researchers study?
- What is happening in academic psychology today?
- What are some of the key issues in psychology?

DEFINING PSYCHOLOGY

What do you think of when you hear the term “psychology?” Many people picture a person reclining on a couch spilling deep personal secrets to a psychotherapist. My students are often surprised when they find out that I’m not a psychotherapist as well as a psychology instructor. Like many psychologists, I have no training in psychotherapy.

Some people also imagine that psychologists have secret insights into the minds of others. When I tell people at social gatherings that I am a psychologist, they often respond by saying, “I’ll have to watch what I say.” They think that my knowledge of psychology will allow me to figure out things about them that they would rather keep hidden. I’ve lost count of the number of times people have said, “I bet you’re trying to figure out what I’m thinking.” This is a little like meeting a person at a party who works as a server in a restaurant and saying, “I bet you’re trying to figure out what I’d like to eat.”

Human behavior is complex and difficult to predict. If psychologists do have an edge at understanding human behavior, it is a very small one. There is no evidence, for example, that psychologists are especially skilled at poker, politics, or retail sales. In addition, psychologists, like those in any other occupation, do not all have the same interests and abilities. As we’ll see later in this chapter, psychology covers many topics. Psychologists study anything that comes under the broad heading of human and animal behavior. Some *do* perform psychotherapy. Others, however, may study the visual system, learning in animals, memory, the brain, or hundreds of other topics. The one thing that all psychologists agree on is that psychology is a *science*. Like physics, chemistry, and astronomy, psychologists use the scientific method to understand the world around them.

Q: Isn't psychology just common sense in a fancy outfit?

Every psychology teacher has to fight against the widespread view that psychology is mainly just common sense. First, we should recognize that common sense has never been a very good guide to scientific truth. For hundreds of years, common sense told doctors that draining a person’s blood could cure most common diseases. It told astronomers that planets were just wandering stars. It told scientists and lay people alike that the sun went around the earth and that the earth was flat. Our common sense now tells us that these ideas are false. It is not our common sense that has improved, however. Our common sense on these topics is now based on scientific research. In every age, ideas based on scientific evidence have won out over competing ideas based on common sense.

Sometimes, psychological theories *do* appear to be simply fancy expressions of common sense. This is because ideas with solid scientific support always look reasonable in hindsight. Once we have the scientific evidence, it’s tempting to say that an idea was “obvious.” Before the scientific evidence is collected, though, common sense often leads us to false conclusions.

Another serious problem with common sense is that what it tells us varies from person to person. Today, common sense tells some people that we will be safer if more of us carry guns with us when we go out in public. It tells others that having more guns around will make us *less* safe. As states debate new laws about carrying concealed weapons, the newspapers are full of letters containing appeals to common sense on both sides of this issue. The question is a scientific one, however, and it is difficult to answer. Only carefully designed scientific research can tell us which side is correct. Because science is the best way to find out the truth, we all need to be scientists when we try to

understand the world around us. We'll talk more about the scientific techniques we can use to gather and interpret information in Chapter 2 when we discuss methodology.

If you still think that psychology is “mostly just common sense,” you might try a scientific test of your theory. Don't read the book or attend any lectures and use your common sense while taking your psychology tests. I should warn you, however, that I've seen this experiment tried many times over the years. Students who use this method usually drop the class after failing the first test by a wide margin.

Q: So, if psychology isn't common sense, what is it?

We can define psychology generally as *the scientific study of behavior and experience*. We should point out, though, that this has not always been the definition of psychology. Psychology is a particularly young science. It is just a little over 100 years old. Physics, chemistry, and astronomy, for example, have been around for thousands of years. Because psychology is so young, it is still in the process of being defined. To truly understand what psychology is, and might become, we need to look at its history. We also need to examine the forces (many of which have historical roots) that are influencing today's definition of the field. In this chapter, we'll look at psychology's roots, the important scientific issues facing contemporary psychologists, and the various areas in which modern psychologists specialize. As you read this chapter and the next one, try to keep in mind that psychology is as much a scientific method as a field of study. To understand how psychology is defined, we must look at two things. First, we need to understand what areas psychologists study. Equally important, however, is an understanding of the *methods* psychologists use to study those areas. Both of these have changed over the course of psychology's history. They continue to change today. That's why you must look at psychology's history to understand current events in psychology. Psychologists are involved in a wide variety of careers. All of them share the assumption that the principles of scientific investigation are the best approach for understanding human behavior.

basic research

Research aimed at developing or testing theories which may or may not have practical applications

applied research

Research aimed at finding practical solutions to immediate problems

Applications

CAREERS IN PSYCHOLOGY

Psychology is a particularly wide field. Although many people think of psychologists as therapists, only about 55 percent of all psychologists are in the areas of clinical or counseling psychology. Clinical psychologists focus on serious mental problems. They either treat those problems or do research on them. Counseling psychologists help people with less serious problems. A counseling psychologist might help a person plan a career, deal with unemployment, or decide which college courses to take.

Over 40 percent of psychologists work at colleges or universities. Some are clinical or counseling psychologists but many of them study one of the many other topics covered in this text. Most of these *academic* psychologists are researchers performing either *basic* or *applied* research. **Basic research** seeks knowledge for the sake of knowledge. It is usually concerned with theory rather than practical prob-

lems. **Applied research**, on the other hand, seeks answers to immediate practical problems. A basic researcher, for example, might try to develop a theory about how people process written language as they read. An applied researcher in the same field, however, would be more likely to study which techniques are most effective in teaching people to read.

The American Psychology Association has 47 separate divisions. Each division represents a particular area of study in psychology. We can't cover all 47 here, but Table 1.1 includes some of the more common specialties. Figure 1.1 shows the percentage of psychologists working in various categories. You can learn more about the various things psychologists do in *Career Paths in Psychology* (Sternberg, 1997).

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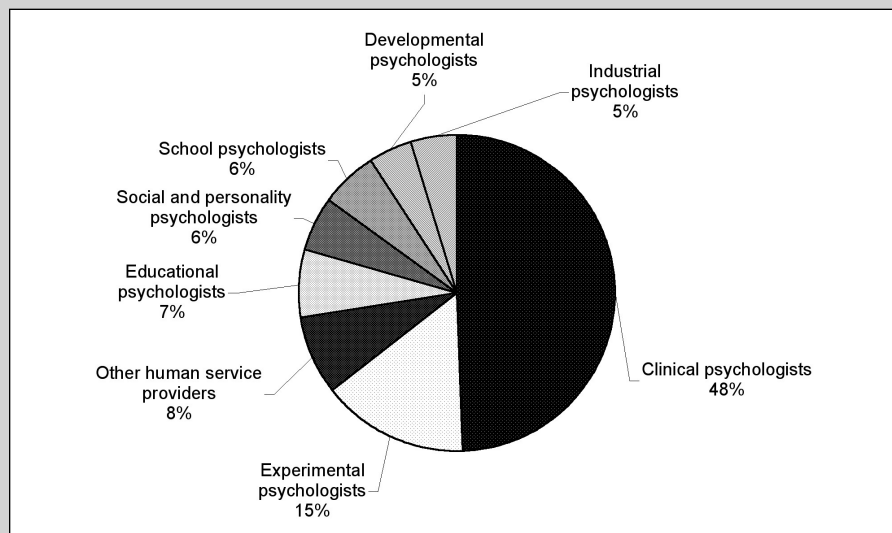
CAREER	TYPICAL TASKS
Academic psychologist	Teaching classes, conducting research, and advising students at a college or university; developing theories to explain the basic processes of learning, sensation, perception, motivation, emotion, personality, etc.
Clinical psychologist	Diagnosing and treating people with psychological problems or doing research on mental disorders
Consumer psychologist	Conducting public opinion or marketing polls; testing the effectiveness of advertising or marketing techniques
Counseling psychologist	Counseling people about their problems, choices, or conflicts
Community psychologist	Working in a community health center; providing preventive mental health care, consultation, and education.
Developmental psychologist	Doing basic research on child and adult development and aging; consulting with parents, schools, and senior care facilities
Environmental psychologist	Studying the psychological and social effects of urban crowding, noise and air pollution, and social problems. Consulting with companies, schools, and construction companies on how to design effective environments for work, learning, or housing
Forensic psychologist	Consulting with law enforcement; testifying at trials; studying methods of crime prevention and rehabilitation of criminals; helping screen candidates for police work; profiling dangerous criminals
Industrial/Organizational psychologist	Working with business and industry; selecting job applicants; assigning new hires to the appropriate jobs; improving work environments and developing incentive programs
School psychologist	Identifying and treating learning disabilities; providing counseling and psychological testing for students

TABLE 1.1
CAREERS IN PSYCHOLOGY

FIGURE 1.1 PERCENTAGES OF PSYCHOLOGISTS IN VARIOUS CAREER AREAS (APA DATA, 1992).

As you can see from this figure, many psychologists are in careers that do not involve clinical or counseling psychology (APA data, 1992)

Source: In document Title: Percentage of Psychologists in Various Career Areas.



PSYCHOLOGY'S ROOTS

Because psychology is such a young science, we don't have to look that far back to examine its roots. Before there were psychologists, people studied and discussed things that, today, would be part of psychology. In this section, we'll look first at a brief overview of the history of psychology. Then we'll examine the major events of that history in more detail. Don't worry if you don't understand everything in the overview. We'll cover the same topics again in the following sections.

History of Psychology—A Brief Overview

The two main roots of psychology are *philosophy* and *science*. Philosophers like Aristotle, René Descartes, Gottfried Wilhelm Leibnitz, and John Locke, discussed the mind and its relationship to the body. You may not know it, but psychology arose as a branch of philosophy. Until the mid-1900s at many colleges, psychology was still closely associated with philosophy. Some psychologists, like William James, were known for their contributions to philosophy. It is no surprise, then, that before the birth of psychology, philosophers discussed many issues that today are part of the field of psychology. Perception, learning, emotions, memory, and the relationship between the mind and the body, for example, were all popular topics for philosophy.

While the philosophers were wrestling with important psychological issues, scientists began to realize that the best way to understand the world was through scientific experiments. Because they were forced to use their senses while performing these experiments, they became interested in the workings of the senses and physiology in general. This led scientists like Ernst Weber, Gustav Fechner, and Hermann von Helmholtz to study the brain and the nervous system. These two trends, the study of the mind, and the interest in science and the nervous system came together in Wilhelm Wundt, who founded the field of psychology in 1879.

Soon after the birth of psychology, various *schools of thought* arose in the field. A **school of thought** (also called a *perspective*) is a particular view of the methods and areas of study that are appropriate for the field. Members of a particular school of thought tend to agree with each other on important topics in psychology and disagree with members of other schools of thought. It is important to understand the various schools of thought in psychology because their approaches still influence psychology today. We'll discuss the various schools of thought and how psychology changed after its birth in 1879 in more detail later in this chapter. For now, let's take a look at where psychology came from.

school of thought

A group of thinkers who share a particular view on a topic and reject opposing views

Pre-Psychology Philosophers and Scientists

People probably discussed psychological issues long before recorded history. Our prehistoric ancestors must have discussed dreams, mental problems, sexuality, learning, and dozens of other topics that are now part of psychology. They probably took some of these topics more seriously than we do today. In some prehistoric cultures, the survival of a whole community might depend on learning how to hunt or how to fight. There must have been serious arguments about how those subjects should be taught. Unfortunately, we have no direct record of these events. We do, however, have written records of the beginnings of Western philosophy in ancient Greece about 2500 years ago. We know that Greek philosophers, like Aristotle (pronounced AIR-iss-TOT-el), discussed the

mind, mental illness, perception, and many other psychological topics. In the following section, we'll look at how their work and the work of later philosophers and scientists led to the birth of psychology.

Ancient Greece—Aristotle Some people consider **Aristotle** (384–322 BC) one of the greatest thinkers of all time (Boring, 1957). His work in natural science, mathematics, art theory, political science, and psychology, is still influencing modern thinkers. It was Aristotle who first listed the five senses. His ideas about the principles of memory are still studied today. He studied and wrote about sleep, dreaming, personality, motivation, persuasion, perception, learning, and abnormal behavior. The subject of almost every chapter in this book can be found in the writings of Aristotle.

Aristotle's discussion of the mind was particularly influential. He wrote that the mind and the body were separate things governed by different principles. This idea is called **dualism** and it is still an important topic in both psychology and philosophy. Aristotle thought of the mind (or soul) as a single thing that couldn't be divided into parts. He expressed the notion that the mind was *free*. According to Aristotle, we were free to choose how we behave rather than simply responding to the events around us. In psychology today, the two positions on this issue are called *free will* and *determinism*. The question of whether we are free to choose (**free will**) or simply responding to outside stimuli (**determinism**) remains a key question in modern psychology. Psychologists continue to argue whether our behavior should be seen as a free choice or determined by external forces (Bandura, 1997; Bargh & Chartrand, 1999; Wegner & Wheatley, 1999)

Aristotle raised another basic question when he declared that the mind is a blank slate on which experience writes. He believed that all of our sensations, ideas, and memories come from our experiences. Not all of Aristotle's ideas are accepted today. Some, such as the idea that thinking takes place in the heart, were rejected long ago. Many modern psychologists also question Aristotle's ideas about heredity and environment, free will, and the relationship between the mind and the body. In spite of this, however, his influence lives on because we are still discussing the *issues* that he raised.

René Descartes, John Locke, Gottfried Leibnitz—Philosophers discuss the Mind Many of Aristotle's ideas were accepted almost without question for hundreds of years (Boring, 1957). The Catholic Church adopted them as official doctrine and, for many years, people could be executed for disagreeing with Aristotle's ideas. The first significant challenge to Aristotle's ideas about the mind came from French philosopher and mathematician **René Descartes** (1596–1650). Descartes (pronounced “day-CART”) spent a great deal of time thinking about the nature of the mind. He is famous for saying, “I think therefore I am.” His main contribution to the history of psychology, though, is based on what he wrote about the relationship between the mind and the body. In Descartes' time, the traditional view was that although the mind and body were separate, the mind controlled the body much like a puppeteer controls a puppet. They believed that the connection between the mind and the body went only one way. While the mind could completely control the body, the body had no influence on the mind.

Descartes accepted the *dualism* of the mind and body. He agreed that they were separate, but he believed that the mind and the body could influence *each other*. He also argued that the body rather than the mind was responsible for events such as hunger and thirst. The mind, according to Descartes, had a single function: thinking. For Descartes, the mind contained a number of what he called *innate ideas* such as the idea of the self, God, infinity, and

dualism

The idea that the mind and body are two separate entities with little in common

free will

The idea that humans can choose to behave as they wish

determinism

The opposite of free will; the idea that humans simply respond to events around them and are not free to choose their behavior

perfection. These ideas weren't learned. Instead, they were a natural, inborn part of the mind.

This new view of the body proposed by Descartes was very encouraging to scientists. Now they could hope to learn about human behaviors like hunger and perception by studying the body itself rather than the mind. Descartes also described much human behavior as *predictable*. He considered animal behavior, unlike that of humans, to be *completely* predictable. Descartes believed that animals were simply sophisticated machines with no soul, mind, feelings, or emotions (Jaynes, 1970).

According to Descartes, the interaction of the mind and body went both ways. Messages from the senses were carried to the mind. At the same time, commands from the mind to the voluntary muscles were transmitted to the body. This image had a powerful influence on scientists. As we'll see later in this chapter, their study of how information from the senses affects the mind led directly to the birth of psychology.

British philosopher **John Locke** (1632–1704) disagreed with Descartes' notion of *innate ideas* (Schultz & Schultz, 1996). For Locke (pronounced LOCK), there were no innate ideas. Like Aristotle, Locke believed that, at birth, the mind was a blank tablet (in Latin: *tabula rasa*). His classic work, *An Essay Concerning Human Understanding*, was published in 1690. In it, Locke suggested that the mind of a newborn was a, “white paper, void of all characters, without any ideas” (Locke, 1690/1959). We'll see this notion repeated by American psychologists William James and J. B. Watson in Chapter 4 when we discuss child development.

Locke believed that the mind got its knowledge through experience and the “association of ideas.” In other words, everything we know is *learned*. Locke believed that the foundation of that learning was the information coming in through the senses. The idea that all knowledge comes from sensory experience is called *empiricism*. Like Descartes' work, this too encouraged scientists to study the senses. It also raised another central issue in modern psychology. Psychologists still have heated arguments about the extent to which our skills and abilities are inborn or learned. They have debated this issue—**nature versus nurture**—for many years. Another way of putting this question is to ask which of our characteristics are *innate* (inborn) and which are *learned*. We can also ask whether our characteristics are due to *heredity* (inherited) or *environment* (learned). However the question is put, this is a central issue for developmental psychologists. As we will see in later chapters, most psychologists now believe that our characteristics result from the *interaction* between nature and nurture (Gottlieb, 1998; Wahlsten & Gottlieb, 1997).

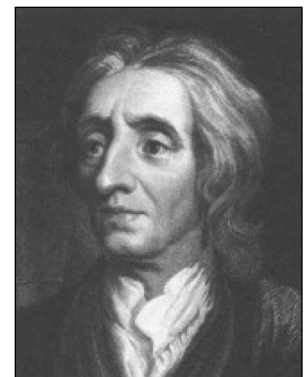
Other philosophers challenged Descartes' view on the interaction of the mind and the body. If the mind was purely mental and had no physical characteristics, they argued, how could it possibly control, or even communicate with, the body? Similarly, how could the purely physical body cause events in the mind? This dilemma, called the **mind-body problem**, is still a major issue in philosophy. In psychology, it is sometimes called the *mind-brain problem*. The exact relationship between the mind and the brain is still unsettled in modern psychology. German philosopher and mathematician, Baron **Gottfried Wilhelm von Leibnitz** (1646–1716) (pronounced “LIBE-nits”) proposed a novel solution to the mind-body problem (Boring, 1957). His idea led to a whole new way of thinking about how the mind and body were related.

Q: How did Leibnitz view the mind and the body?

Once Descartes claimed that the human body was a machine, it was only a matter of time before someone suggested that the mind was *also* a machine (Schultz & Schultz, 1996). Leibnitz went a step further, however. He claimed



René Descartes
(1596–1650)



John Locke (1632–1704)

nature versus nurture

The question of whether a person's skills and talents are inherited (innate and due to nature) or learned (due to how the person is nurtured); also referred to as heredity versus environment

mind-body problem

The question of how the mind and the body interact; especially the problem of how the mind can cause the body to move

monism

A solution to the mind-body problem that rejects dualism and claims that the mind and the body are not separate entities



Gottfried Leibniz
(1646–1716)

that the mind and the body were actually the *same* machine. In other words, he rejected *dualism*. Instead, he proposed what is called **monism** (pronounced “MONE-izzem”), the idea that there is no difference between the mind and the body. In the monist view, when you look at one of your own ideas from the “inside” it appears to be a mental event with no physical characteristics. Looked at from the “outside” however, it is simply physical activity in the brain. To understand human behavior, then, we need only to understand the workings of the machine. For Leibniz, the mind never caused behavior. Mental events and physical events simply happened at the same time.

This idea was especially influential for the American behaviorists like Watson and Skinner who argued that psychology should not study the mind at all. It also influenced the everyday view of the mind and brain. In western civilization, many people now associate the mind with physical events taking place in the brain. For psychology, monism meant that we could understand the mind by studying the brain and the nervous system.

Ernst Weber, Gustav Fechner, and Hermann von Helmholtz—Sensation and Psychophysics

As we have seen, a number of philosophers suggested that some or all of our knowledge came in through the senses. It’s no wonder, then, that by the 1800s, many scientists had begun an intensive study of the senses. In the early 1800s, **Ernst Weber** (1795–1878) (pronounced “VAY-ber”) was a professor of anatomy and physiology in Leipzig Germany (Boring, 1957). Weber was one of the first modern scientists to perform experiments on the skin senses. He studied the sensations of pain, pressure, and temperature. He developed a scientific method for measuring the sensitivity of various parts of the skin. Weber determined, for example, that the little finger was more than 30 times as sensitive as the upper arm. Weber also discovered that being able to tell two different stimuli apart depended on the intensity of the stimuli. For example, when lifting weights, we can easily tell the difference between a one-pound weight and a two-pound weight. We can’t, however, tell the difference between a 100-pound weight and a 101-pound weight even though they also differ by one pound. This principle is called Weber’s Law and we’ll discuss it further in Chapter 4 when we cover sensation and perception.

Some historians argue that the real beginnings of modern psychology start with the work of the German physicist and philosopher **Gustav Fechner** (1801–1887) (pronounced “FECK-ner”). In October of 1850, while lying in bed, Fechner had a brilliant idea about the relationship between the mind and body (Schultz & Schultz, 1996). He was well aware of Weber’s discoveries and did many of his own experiments on the senses. Fechner knew that ringing two identical bells at once doesn’t sound twice as loud as ringing one of the bells alone. He also knew that adding the sound of one bell to the sound of another bell causes a greater increase in loudness than adding the sound of that same bell to the sound of 10 already ringing bells. His idea, then, was that the relationship of the mind and body could be found by studying the mathematical relationship between the physical intensity of stimulus and the intensity of the mental event it causes.

Fechner began an intense scientific study of the relationship between physical and psychological events (Borkum, 1999). He called his field of research **psychophysics**. Fechner studied the psychological reaction to lifted weights, the brightness of lights, the loudness of bells, and stimuli touching the skin. He developed several scientific methods for doing research on the senses that are still used today. Fechner’s research on psychophysics had a powerful effect on Wilhelm Wundt, the founder of psychology. Another German scientist who played a crucial role in the birth of psychology was Hermann von Helmholtz.

Hermann Ludwig Ferdinand von Helmholtz (1821–1894) was one of the greatest scientists of the nineteenth century (Boring, 1957). His work on the

psychophysics

The study of the relationship between physical and psychological events

physiology of the eye was quite famous in both Europe and America. He invented the ophthalmoscope, which allowed physicians to examine the retina of the eye. He also studied hearing problems, eye movements, color blindness, hay fever, and a number of other topics (Schultz & Schultz, 1996). Although Helmholtz was not a psychologist, a single experiment of his was directly related to the birth of psychology. In this chapter's *Science of Psychology Journal*, there is a detailed description of that experiment.

Science of Psychology Journal

Helmholtz' Classic Experiment on the Speed of Nerve Impulses

Background

If I blindfold you and stick a pin in your toe, how much time passes before your brain is aware of the pinprick? The basic question here is the speed of transmission of nerve impulses. In the 1800s, physiologists believed that this speed was tremendously fast. Some believed that the message took no time at all to travel. They believed that the transmission of nerve impulses was instantaneous. Others estimated that the speed might be as much as 60 times faster than the speed of light. Johannes Müller, probably the most famous physiologist of the early 1800s, declared that the speed would never be measured because it was so rapid and the distances covered were so short (Boring, 1957). This view was almost universally accepted until Helmholtz (formerly Müller's student) devised a clever experiment to measure the speed of transmission of nerve impulses in humans.

The Experiment

Encouraged by his research on the speed of nerve impulses in the motor nerve of the frog, Helmholtz built a device to measure the speed in humans. He designed a machine that poked a pin into some part of a person's body. At the same time, a clock started that recorded the time that passed before the person responded to the stimulus. Blindfolded subjects were told to press a button (which stopped the clock) as soon as they felt the pinprick. Helmholtz set the machine up so that the pin stuck the person in the toe. After measuring the subject's average reaction time to this stimulus, he reset the machine so that the pin stuck the person in the thigh. He then recorded the average reaction time to this new stimulus. Notice that the important difference between these two locations (toe and thigh) is the distance to the brain. If the speed of transmission of nerve impulses was as fast as commonly thought, the two average times should have been nearly identical.

Results

The average reaction times showed clearly that it took much longer to react to a pin stuck in the toe than in the thigh. The difference between the two times told Helmholtz how much time it took for the message to travel from the toe to the thigh. Since the length of the nerves involved was known, Helmholtz had both the distance and the time it took the message to cover that distance. This allowed him to calculate the actual speed of the nerve impulse. Helmholtz, and the whole field of physiology, were shocked to find that the speed of nerve impulses was actually quite slow—about 90 feet per second. Nowhere near the speed of light and, in fact, slower than the speed of sound. The experiment showed that nerve impulses travel just a little faster than 60 miles per hour—slower than a major-league fastball or a good tennis serve.

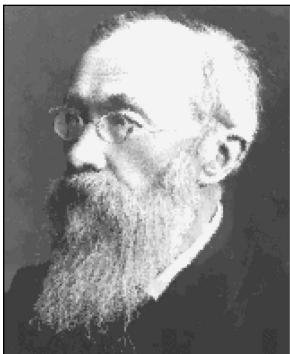
Discussion

Helmholtz' discovery had a powerful effect on the history of psychology. Before his discovery, many philosophers and scientists thought that the idea of wanting to move your arm and the movement of the arm happened at the same time. Others believed that nerve impulses traveled so fast that we would never be able to measure their speed. The discovery that nerve impulses traveled so slowly proved that both these ideas were wrong. A new view developed in which the mind (now closely associated with the brain) decided on an action and then sent messages through the nervous system to the body. When the messages arrived, the movement actually occurred. The fact that the messages were not blindingly fast also encouraged scientists to believe that they could figure out how the nervous system worked. Most of all, Helmholtz' classic experiment, along with those of Weber, Fechner, and others, showed that the experimental method could be used to study psychological events as well as physical ones. This discovery was a vital contribution to the birth of psychology as a science.

Locking It In

1. The two main historical roots of psychology are _____ and _____.
2. French philosopher and dualist René _____ thought that the mind and the body influenced each other.
3. British philosopher John _____ believed that all knowledge came in through the senses.
4. Monist philosophers like Leibnitz believed that the mind and the body were the same thing (T/F).
5. Fechner studied the relationship between physical and psychological events. He called his field _____.
6. In his classic experiment, Helmholtz discovered that the speed of nerve impulses was remarkably slow compared to current estimates (T/F).
7. Critical Thinking: Why were scientists so interested in the study of the senses?

Answers: 1) philosophy, science, 2) Descartes, 3) Locke, 4) T, 5) psychophysics, 6) T



Wilhelm Wundt
(1832–1920)

Q: Who actually founded psychology?

Wilhelm Wundt—The First Psychologist

By the mid-1800s, the two main roots of psychology—philosophy and science—were starting to come together. The philosophical ideas about the mind were now combined with the scientific study of mental events. Philosophers had emphasized the importance of the senses. Scientists studying physiology had developed reliable ways to study the senses. Weber, Fechner, Helmholtz, and many others made important contributions in this area. Any one of them could have created the field of psychology. None of them, however, had any interest in “founding” a new science. That task, then, fell to another German, **Wilhelm Wundt** (1832–1920) (pronounced “VOONT”), the first person who truly deserves to be called a psychologist (Schultz & Schultz, 1996).

The Birth of Psychology—1879 Wundt was the first to use the term “experimental psychology.” In 1867, Wundt offered the first college course in physiological psychology at Heidelberg. A few years later, he published his lectures as a book called *The Principles of Physiological Psychology*. In 1875, Wundt moved to Leipzig Germany and taught both philosophy and psychology at the university there. Four years later, in 1879, Wundt founded the first formal psychological laboratory in the world (Boring, 1957). This date, 1879, is considered the birthday of psychology as an independent science.

Looking into the Mind—Introspection Wundt wanted to study conscious experience in a scientific way. Because consciousness is private, he needed a method that would let people report on their mental experiences. Wundt’s experiments used a single technique, called *introspection*. **Introspection** comes from two Latin roots, *intro* (inward), and *spectare* (to look). Wundt’s subjects, then, *looked inward* into their own minds and reported their experiences. When you say, “I’m hungry,” you are performing introspection. Wundt didn’t invent introspection. What he did do, however, was to carefully control the conditions under which introspection was done. He hoped to make it a reliable scientific technique.

introspection

Wundt’s technique in which subjects looked into their own minds to provide information about consciousness

Wundt’s Downfall—The Failure of Introspection Wundt based all his research on introspection. He wrote, “all psychology begins with introspection” (Boring, 1957). In the end, however, introspection turned out to be unreliable as a scientific technique. Because introspection is private, we have no way of checking the accuracy of introspection experiments. When two different people are shown the same stimulus but report different experiences through introspection, we have no way of judging the accuracy of their reports. Most psychologists today agree that Wundt’s experiments taught us nothing except the weaknesses of introspection as a scientific technique. Many of the discoveries of Weber, Fechner, and Helmholtz appear at various places in this text. Nowhere, however, will you find anything that we learned from Wundt. Still, we must give Wundt credit for his devotion to science, his dedication, and his courage in creating psychology as a separate field of study.

Q: How did Wundt define psychology?

Wundt’s definition of psychology shows the traces of its main roots. Wundt defined psychology as, “the scientific study of the mind.” We should note that current psychologists generally do *not* consider this an acceptable definition for the field. We use a different definition today mainly because of Wundt’s lack of success in studying the mind with introspection. As we’ll see, much of early American psychology is based on the *rejection* of Wundt’s ideas, especially the study of consciousness. Many American psychologists worked hard to avoid Wundt’s mistakes by studying only *observable behavior*. We’ll discuss the rise of American *behaviorism* a little later in this chapter. First, however, we’ll look at how Wundt’s ideas came to America and at how American psychologists reacted to them.

Structuralism and Functionalism in American Psychology

Wundt’s student, E. B. Titchener brought introspection and the study of consciousness to America in the late 1800s. His approach to psychology, called *structuralism*, was opposed by a number of American psychologists. These psychologists, influenced by the evolutionary theory of Charles Darwin, proposed a more practical approach, called functionalism. Functionalists, such as William James, helped set the stage for *behaviorism*.

Q: What is structuralism?

E. B. Titchener—Structuralism English philosopher and physiologist **Edward Bradford Titchener** (1867–1927) was one of Wundt’s star pupils (Boring, 1957). Titchener received his doctorate under Wundt in Leipzig Germany in 1892. Titchener soon returned to Oxford England where he hoped to found a major school of psychology. His colleagues were not very receptive to Wundt’s ideas and, after only a few months, Titchener left for America. He founded a psychological laboratory at Cornell University and taught psychology there for the next 35 years. More than 50 students received doctoral degrees under Titchener at Cornell.

Titchener called his approach to psychology **structuralism**. He wanted to understand the *structure* of the mind. Like Wundt, he had no interest in the practical uses of psychology. He argued that psychology had no business trying to “cure” sick minds or reform society or individuals (Schultz & Schultz, 1996). Psychology’s only goal, for Titchener, was to use experiments to understand the structure of the mind and the contents of consciousness. Although Titchener considered himself a scientist, psychology was still considered part of philosophy. Titchener’s classic paper on “structural psychology” was published in 1898 in the journal, *Philosophical Review*.

Like Wundt, Titchener relied completely on introspection as a technique. He and his students performed hundreds of carefully designed experiments in which observers reported on their conscious experiences. Titchener was extremely

structuralism

Titchener’s approach to psychology, which focuses only on the structure of the mind and consciousness



Margaret Floy Washburn
(1871–1939)

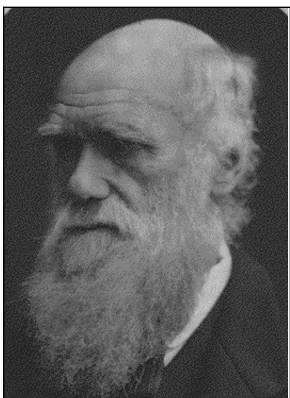
popular with his students. His treatment of them was a curious mixture of old-fashioned and modern ideas. On the one hand, he banned women from meetings where he and his students compared research notes. Banning women from the meetings makes Titchener sound like a primitive male chauvinist. At the same time, however, Titchener accepted women as graduate students at a time when many colleges did not. More than a third of the students who earned doctorates under Titchener were women (Furumoto, 1988). He also supported the hiring of women as faculty members at Cornell—an extremely radical idea at the time (Schultz & Schultz, 1996). The first woman to receive a doctoral degree in psychology was also Titchener’s first graduate student. The student, Margaret Floy Washburn (1871–1939), was the first woman elected to the National Academy of Sciences. She served as the president of the American Psychological Association and wrote an influential book on comparative psychology called *The Animal Mind* in 1908 (Scarborough, 1990).

Charles Darwin—The Theory of Evolution As we have said, much of early American psychology was a reaction against the work of Wundt and Titchener. American psychologists rejected the study of consciousness and the use of introspection. They believed that these approaches were unscientific. Much of the basis for their ideas comes from an older source. Before Wundt created psychology as a field, naturalist **Charles Darwin** (1809–1882) was already laying the groundwork for several of the major forces in early American psychology: functionalism, behaviorism, and animal psychology. Darwin was not a psychologist but his ideas had a powerful influence on early American psychologists.

Darwin spent 5 years (from 1831–1836) aboard the sailing ship *H.M.S. Beagle* (Schultz & Schultz, 1996). The British Government had sent the *Beagle* on a round-the-world scientific mission. Darwin went along as the ship’s naturalist. Darwin observed wildlife off South America, in Tahiti, New Zealand, and the Azores. He was struck by the tremendous diversity of species he encountered. He was especially impressed with the adaptations of specific species to their own environments. Darwin was also aware of the fossilized bones of animals that no longer existed. He concluded that every species adapted to its particular environment over time through the process of natural selection. In this process, the “survival of the fittest” guaranteed that animals with superior characteristics would be more likely to survive and reproduce. These successful animals, then, were more likely to pass their characteristics on to future generations. Over time, every species becomes increasingly well adapted to its environment. Along with this idea, came the notion that the animals of today, including humans, are descended from ancestors that may have had very different characteristics. A hippopotamus, for example, may have descended from a primitive horse. A human, on the other hand, may be descended from earlier species of apes or monkeys. Darwin’s first book, *On the Origin of Species by Means of Natural Selection*, was published in 1859.

Q: What did people think about Darwin’s ideas?

Darwin’s ideas were hotly debated. The theory of evolution was, and is, an emotional issue for many people. Within a year after the publication of Darwin’s *Origin of Species*, a debate was held at Oxford University in England (Desmond & Moore, 1991). Famous philosophers, scientists, and theologians argued heatedly about Darwin’s ideas. The controversy over Darwin’s ideas is far from over. As late as 1968, some states still had laws that made it illegal to teach the theory of evolution in public schools (“Case focuses on evolution,” 1986). While Darwin’s ideas about evolution are sometimes rejected as “just a theory,” the theory has great deal of evidence to support it. Most widely accepted facts are also theories.



Charles Darwin
(1809–1882)

For example, the idea that the Earth revolves around the Sun and that a dropped stone falls to earth because of the force of gravity are also “just theories.” Among scientists, there is little doubt that evolution has occurred, and that natural selection can explain changes in species over many generations (Patterson, 1987).

Darwin argued that the similarities between humans, gorillas, and monkeys exist because we all have a common ancestor. Darwin wrote that, “There is no fundamental difference between man and the higher mammals in their mental faculties” (Darwin, 1871, p. 66). This meant that we could learn about human behavior by studying the behavior of other animals. Many psychologists began to do just that. The study of *animal intelligence* blossomed in many parts of the Western world. In addition, Darwin helped turn the focus of psychology away from consciousness. Darwin wrote about how specific *behaviors* helped an animal survive and reproduce. This focus on the *function* of behaviors played a major role in the development of a particularly American idea called *functionalism*.

In addition to the functionalists, Darwin’s ideas influenced other psychologists. Until Darwin pointed out the wide variations in behavior *within* each species, scientists had focused on general laws that applied to all human behavior. Once Darwin had opened the door, psychologists and others began to study **individual differences** in human behavior. In the 1860s, Francis Galton, stimulated by the work of Darwin (his half cousin), began to study individual differences in intellectual ability (Hunter, 1987). We’ll look at Galton’s work in Chapter 9 when we discuss intelligence. Later in this chapter, we’ll see that Darwin had a major influence on the *psychodynamic* theory of Sigmund Freud. Darwin’s work is also at the heart of one of the fastest-growing parts of modern psychology—evolutionary psychology, which we’ll discuss in more detail later in this chapter.

Q: What is functionalism?

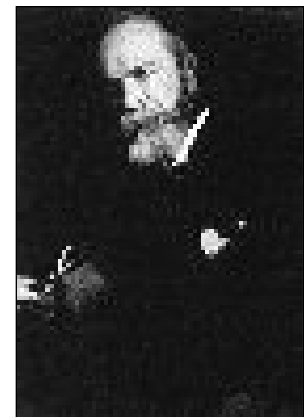
William James—Functionalism Many American psychologists and philosophers took a very practical approach to the study of human behavior. Wundt and Titchener had little or no interest in practical information. They wanted to study the structure of consciousness. As we discussed earlier in this chapter, Titchener (1898) called his approach *structuralism*. In America, however, many people wanted to use the science of psychology to solve practical problems. They were also impressed with Darwin’s careful descriptions of how specific animal behaviors helped the animals survive and reproduce. The American psychologists hoped that psychology would provide useful information about education, child-raising, mental health, and other everyday problems.

Philosopher and psychologist **William James** (1842–1910) wrote his famous psychology textbook *The Principles of Psychology* in 1890. It was required reading for several generations of psychology students (Weiten & Wight, 1992). In his book, James treated psychology as a biological science. He presented the job of psychology as the study of how living people adapt to the environment around them (Schultz & Schultz, 1996). James had little time for structuralism. He wanted to know what the mind *did* rather than just examining its contents. He was much more interested in learning how the mind produces useful behavior. This interest in how the mind operates came to be called **functionalism**.

James speculated on a number of psychological topics. He wanted to study practical issues, such as, how people could strengthen good habits and how an intention leads to an action. James played an important role in turning psychology away from the pure study of the mind. In James, we can see the beginnings of the practical side of psychology. His interest in learned habits and in behavior, demonstrates two major forces that shaped American psychology in the 1900s. During this period, American psychologists focused on

individual differences

Differences between people that psychologists attempt to explain; for example, differences in athletic ability, intelligence, or musical talent



William James
(1842–1910)

functionalism

The opposite of structuralism; an attempt to study how the mind functions in everyday life and use the information for practical purposes



Mary Whiton Calkins
(1863–1930)

both learning and behavior. James expressed the hope that psychology would become a natural science like biology (Fuchs, 2000).

Like Titchener, James also supported the education of women in psychology. One of his students, Mary Whiton Calkins (1863–1930), became the first woman president of the American Psychology Association in 1905. In 1906, she was ranked 12th among the 50 most important psychologists in the United States (Furumoto, 1990). Although she completed all the requirements for her doctorate, Harvard University refused to grant her a Ph.D. because she was a woman. Despite James' efforts, Harvard never did grant her degree. Columbia University later awarded her an honorary degree (Denmark & Fernandez, 1992). Calkins went on to perform important experiments on gender differences and memory (Milar, 2000; Madigan & O'Hara, 1992).

Animal Intelligence—Anecdotal Versus Empirical Evidence James was not an experimenter. He made guesses and proposed theories but left testing those theories to others. As we mentioned earlier, Darwin's theories led scientists to believe that they could learn about human behavior by studying that of other animals. It is no surprise, then, that much of the early work in psychology involved research with animals. One early student of animal behavior was George John Romanes (1848–1894). Romanes, a personal friend of Darwin's, published his book *Animal Intelligence* in 1883. In his book, Romanes claimed that there is no difference between the reasoning of a man and that of a crab (Richards, 1987). The book was filled with stories about remarkable feats of intelligence performed by animals of all kinds. Romanes based his conclusions on these stories, or anecdotes. This form of support is called **anecdotal evidence** (pronounced "ANN-eck-DOH-tull"). Many of the stories Romanes used came from unreliable observers. Others may have been made up or exaggerated. Romanes far-fetched theories of animal intelligence, then, were based almost completely on anecdotal evidence. Some of his followers went so far as to suggest that many animals were more intelligent than the average human (Schultz & Schultz, 1996). Over time, psychologists rejected anecdotal evidence as unreliable. They turned instead to **empirical evidence** gathered from carefully designed scientific experiments.

Research on animal intelligence continues today in an area called *comparative psychology*. Researchers in **comparative psychology** look at similarities and differences between human and animal behavior.

anecdotal evidence

Using stories about individual events to develop and support scientific theories

empirical evidence

Information from carefully designed scientific research

comparative psychology

The study of similarities and differences between humans and other animals

Locking It In

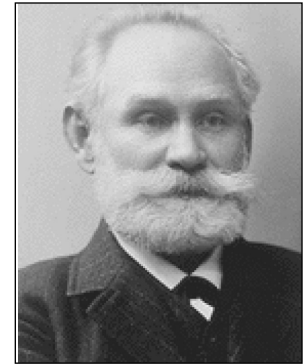
1. Wilhelm Wundt founded the field of psychology in 1650 (T/F).
2. Wundt used a technique called _____ to study the mind.
3. Wundt's student, E. B. Titchener, brought Wundt's ideas to America in the late 1800s (T/F).
4. Titchener founded the school of thought called _____.
5. Psychologists in America were influenced by the evolutionary theories of Charles _____.
6. The theory of evolution led psychologists that they could understand human behavior by studying the behavior of animals (T/F).
7. Unlike Titchener, American philosopher and psychologist William _____ was a functionalist.
8. Critical Thinking: Why was functionalism more popular in America than in Europe?

Answers: 1) F, 2) introspection, 3) T, 4) structuralism, 5) Darwin, 6) T, 7) James

Behaviorism—Focusing on the Observable

Although the study of animal intelligence was not very successful, it led to a number of valuable studies on another topic: learning. The idea that studying animal behavior could lead to an understanding of human behavior was an influential force in American psychology in the early 1900s. Research on learning gave birth to a number of psychological theories about how both human and animal behavior changed as a result of experience. The work of Ivan Pavlov in Russia and E. L. Thorndike in the United States played an important role in the development of one of American psychology's most influential theories: Behaviorism. Behaviorists, J. B. Watson, E. C. Tolman, and B. F. Skinner developed a whole school of thought based on the principles of learning and a focus on observable behavior.

Ivan Pavlov—The Conditioned Reflex While the American functionalists were battling the structuralists, research was going on in Russia that would have a profound influence on American psychology. Russian physiologist **Ivan Pavlov** (1849–1936) was an eminent scientist and in 1904, he received the Nobel Prize for his work on digestion in dogs (Schultz & Schultz, 1996). He discovered the *salivary reflex*—the reflex that led a dog to salivate when food was placed on its tongue. At first, Pavlov assumed that the reflex was like the wiring of a light switch. Putting food on the dog's tongue, he thought, completed a circuit that “turned on” the reflex. He began to notice, however, that over time the dogs began to salivate *before* the food was placed on their tongues. He was fascinated by this bizarre event. Eventually, he concluded that the dogs were *learning* to salivate to other stimuli that had been associated with the food (Todes, 1997). He called this new response a *conditioned reflex* (sometimes translated as *conditional reflex*). Pavlov developed a theory of human and animal learning based on his discovery. We'll discuss Pavlov's work in more detail in Chapter 7 when we cover learning and conditioning.



Ivan Pavlov (1849–1936)

Q: Why was Pavlov's work so popular with American psychologists?

American psychologists were very impressed by Pavlov's work. For one thing, Pavlov was doing careful scientific research on behavior that did not involve consciousness. In explaining the dogs' behavior, he never talked about what the dogs were thinking. Rather than giving mental explanations, he stuck to the observable facts (Cuny, 1965). Pavlov actually fined his assistants for giving mentalistic explanations of the dogs' behaviors. At a time when American psychologists were turning away from consciousness and mentalism, Pavlov's work was just what they were looking for.

Pavlov also set a high standard for careful scientific research. In order to make sure that his dogs weren't distracted by outside influences, he constructed a three-story laboratory that was, for its time, a technological marvel (Schultz & Schultz 1996). The lab had soundproof windows and airtight steel doors. The steel girders of the building were embedded in sand and the laboratory was surrounded by a “moat” filled with straw. The laboratory rooms were designed to eliminate vibrations, noises, odor, drafts, and changes in temperature or humidity. This careful control of any variables that might affect the research became a hallmark of modern experimental psychology.

A third reason for the popularity of Pavlov's work was his focus on *learning*. As we mentioned earlier in this chapter, American psychologists had a strong bias toward environmental rather than hereditary explanations. In part, this came from the American political idea that we are all “created equal.” If people are equal at birth, they must get their various talents through learning. If you want to claim that many human skills and abilities are *learned*, you need a theory of learning. This is just what Pavlov provided.

Pavlov, in turn, was impressed with the work of the early American psychologists. In his later years, he read publications by both Thorndike and Watson. He wrote that he admired their work and felt that it confirmed many of his conclusions (Schultz & Schultz, 1996). For most of his career, Pavlov did not consider himself a psychologist. Later, however, he saw himself as part of the tradition of scientific psychology. Toward the end of his life, he even referred to himself as an experimental psychologist. His use of this term is quite appropriate. There is no question that Pavlov played an important role in the history of psychology.



E. L. Thorndike
(1874–1949)

law of effect

Thorndike's principle that behaviors followed by positive consequences are more likely to be repeated while those followed by negative consequences are less likely to be repeated; a basic principle of modern behaviorism

E. L. Thorndike—The Law of Effect About the same time that Pavlov was doing his early work in Russia, psychologist **E. L. Thorndike** (1874–1949) was performing laboratory experiments with baby chicks in William James' basement (Schultz & Schultz, 1996). Later, he worked with cats and dogs at Columbia University. Thorndike put his cats and dogs in specially designed "puzzle boxes." The animals had to perform some action such as pulling a string or moving a lever to escape from the boxes. (We'll discuss Thorndike's work in more detail in Chapter 7.)

In his influential book, *Animal Intelligence* (1911), Thorndike rejected mentalistic explanations of the animal's behavior. He was particularly critical of Romanes' use of anecdotal evidence and Romanes' conclusions about the mental abilities of animals. Thorndike also argued that psychology had no business studying consciousness. He based his conclusions on carefully designed scientific experiments using his puzzle boxes. According to Thorndike, the animals learned through trial and error. The pleasure that went along with escaping from the puzzle box became associated with the behavior that got the animal out. This meant that when the animal was placed in that same situation again, the successful actions were more likely to occur. He called this principle the **law of effect**. Over time, the animals performed what appeared to be "intelligent" actions. The actions, though, were not the result of intelligence, but of a long string of errors and, finally, accidental successes.

Both Pavlov and Thorndike contributed to the birth of *behaviorism* in America. The behaviorists believed that psychology should turn away from mentalistic explanations and focus directly on behavior. Pavlov and Thorndike were careful experimenters who focused on observable behavior. They also stressed the connection between *stimuli* and *responses* rather than using mental events to explain that behavior. Their research on learning led directly to the behaviorist theories of two of America's most influential psychologists: J. B. Watson and B. F. Skinner.



J. B. Watson (1878–1958)

Q: Who founded the behaviorist school of thought?

John B. Watson—American Behaviorism Although Pavlov, Thorndike, and others contributed to the birth of behaviorism, none of them can be said to have founded it. That task fell to American psychologist **John B. Watson** (1878–1958). In 1903, at the age of 25, Watson became the youngest person to earn a doctorate from the University of Chicago (Schultz & Schultz, 1996). By the time Watson was 31, he was the editor of the influential *Psychological Review* and one of the most influential psychologists in America. In 1913, he published a groundbreaking article in *Psychological Review*. The article, "Psychology as the Behaviorist Views it," shows that Watson was very conscious of founding a new school of thought in psychology. He spelled out his ideas in more detail in his 1914 book, *Behavior*, and in a 1919 book, *Psychology from the Standpoint of a Behaviorist*. In 1915, Watson was elected president of the American Psychological Association.

Watson believed that conscious experiences had no part to play in the science of psychology because they were unobservable directly by outsiders. He also thought that the person having the experiences could not be trusted to report them accurately. He was well aware of the problems Wundt and others had when they tried to use introspection to study mental events. Watson argued that psychology, as a science, had to study *observable* behavior rather than consciousness or mental events. (Murray, Kilgour, & Wasylkiw, 2000). This approach, called **behaviorism**, became the dominant force in American psychology in during the middle years of the 20th century. In the spirit of functionalism, Watson wanted psychology to be a practical science. He gave advice on child rearing, education, and other everyday applications of psychology. He performed experiments based on the work of Pavlov and tried to explain all human learning using Pavlov's principles. We'll look at Watson's work in more detail in Chapter 7 when we discuss learning and conditioning.

Like Thorndike, Watson focused on the relationship between stimuli and responses. Because of this emphasis on stimulus-response connections, behaviorism is sometimes called *S-R psychology*. Watson wrote in 1913 (p. 158) that psychology is, "a purely objective experimental branch of natural science." For Watson, the only goal of psychology was, "the prediction and control of behavior."

Shortly after founding the behaviorist school, Watson became embroiled in a public scandal (Buckley, 1994). His marriage had deteriorated and he fell in love with his graduate assistant, Rosalie Rayner. Watson wrote a number of torrid love letters to Rayner, 15 of which were discovered by his wife. During the sensational divorce proceedings, excerpts from the letters were published in the *Baltimore Sun*. In the wake of the scandal, Watson lost his job at Johns Hopkins University and was out of the field of psychology for good. Watson married Rosalie Rayner and lived with her until her death in 1935. Eventually, Watson went to work for an advertising agency (at four times his university salary). He applied the principles of careful research and learning theory to selling and became a very successful advertising executive. Sadly, just before Watson died in 1958, he burned all of his letters, manuscripts, and notes. Their contents were lost forever (Buckley, 1989).

E. C. Tolman—Rats and Mazes One of the earliest converts to behaviorism was **E. C. Tolman** (1886–1959). Although he was trained as a structuralist in the tradition of Titchener, by the time he was in graduate school he already suspected that introspection was a dead end (Schultz & Schultz, 1996). He was quite impressed with Watson's work and turned toward behaviorism.

Like many of the behaviorists, Tolman studied learning. His rats ran through mazes to find food. Over time, they took less and less time to reach the goal. Tolman believed that the rats learned because finding the food strengthened the connection between the stimulus of being in a particular part of the maze and the response that would take them to the food. This idea is similar to Thorndike's *law of effect*. It also helped set the stage for the concept of reinforcement later developed by B. F. Skinner. Tolman considered himself a scientist and a behaviorist. Like Watson, he rejected introspection and the study of consciousness. He was not interested in "mental" events that could not be observed objectively.

Earlier in this chapter, we discussed E. L. Thorndike's work in which animals learned to escape from puzzle boxes. Thorndike believed that animals learned by associating specific responses with specific stimuli. Tolman disagreed. He believed that while learning to navigate a maze, the rats developed a *cognitive map*—a kind of internal picture of the maze—that helped them find the food. He did not believe that the rats learned to make specific responses to specific stimuli. Instead, he thought that the rats learned to travel to specific locations in the maze by consulting the cognitive map they had learned.

behaviorism

A school of thought in psychology that focuses on observable behavior and the relationship between stimuli and responses; sometimes called S-R psychology

Like any good behaviorist, Tolman didn't discuss what was going on in a rat's mind as it ran a maze. Instead, he claimed that the rat's observable behavior proved that it had knowledge of the pattern of the maze. Tolman's idea that learning could involve knowledge rather than just connections between stimuli and responses helped set the stage for *cognitive psychology*, which would challenge behaviorism in the 1960s. We'll discuss cognitive psychology in more detail later in this chapter.



B.F. Skinner (1904–1990)

B. F. Skinner—The Rise of Behaviorism Although Watson founded American behaviorism, it was **B. F. Skinner** (1904–1990) who made it a major force in psychology. Although Watson and Skinner were both powerful figures in the behaviorist school of thought, the two men never met. By the time Skinner had become famous, Watson was no longer part of the field.

Skinner agreed with Watson and Pavlov that psychology should focus on observable behavior and reject introspection as a technique. Like Thorndike and Pavlov, he was interested in learning and the connections between stimuli and responses. In his most influential book, *Science and Human Behavior* (1953), Skinner laid out the principles of behaviorism. Skinner believed that humans are complex machines that simply respond to events (stimuli) in the environment around them. Skinner denied that we have *free will* or that we can *choose* to behave in a particular way. As we discussed earlier in this chapter, this idea is called *determinism* because it assumes that all our behavior is *determined* by outside forces. The conflict between *free will* and *determinism* continues to be a major issue in modern psychology.

Skinner believed that we could only learn to explain behavior by studying how animals (including humans) respond to particular stimuli. Like Watson, Skinner was strongly opposed to explaining behavior in terms of mental events. He believed that psychologists, as scientists, should think of a person as a *black box*. We can see what goes into the box—events that enter through the person's senses (stimuli). We can also see what comes out of the box—the person's observable behavior (responses). For example, suppose that you are driving a car. You see a red light and step on the brake pedal. The red light is a stimulus. Stepping on the brake pedal is your response. We can observe both of these events. We can't, Skinner believed, observe what, if anything, went on in your "mind" between the two. Using introspection, you might make a guess about what happened between the stimulus and response but we would have no way of verifying your answer. Skinner argued that mental events are not available for scientific study. As scientists, then, we must base our knowledge on observable behavior. Suppose that we want to explain why a person is eating. Skinner would say that explaining eating behavior by saying that the person is "hungry" tells us nothing. We can't see or measure the hunger directly. A much more scientific approach, according to Skinner, would be to say that the person is eating because it has been 6 hours since his or her last meal.

At the heart of Skinner's scientific explanations of behavior is the idea of reinforcement, a principle closely related to Thorndike's *law of effect*. In experiments with rats, pigeons, and other animals, Skinner demonstrated that responses that were followed by food (a reinforcer) were more likely to occur in the future. Similarly, responses that are followed by *punishment* are *less* likely to occur in the future. He believed that this same principle applied to human behavior. To explain most behavior, then, we need only look at the animal's history of reinforcement and punishment. The behaviors we see are the ones that have been reinforced in the past. This idea has many practical applications. According to the behaviorists, any behavior that we would like to see more often should be followed by reinforcement. Behaviorists proposed, for example, that teachers, parents, and psychotherapists could use reinforcement to modify the

behavior of student, children, and people with emotional problems. In Chapter 16, we'll discuss how therapists use **behavior modification** to help people overcome problems such as depression, phobias, and anxiety.

The rise of behaviorism and the influence of Watson and Skinner changed the definition of psychology. As we discussed earlier in this chapter, Wundt defined psychology as *the scientific study of the mind*. The behaviorist revolution brought a dramatic change in that definition. Both Watson and Skinner defined psychology as *the scientific study of behavior*. At the peak of the behaviorist revolution, in the 1950s and 1960s, psychologists studied the observable behavior of rats, pigeons, cats, dogs, chimpanzees, and other animals. They hoped to develop laws that would explain all of human behavior in the same way that Newton's laws of physics explain the behavior of objects. Like Pavlov and Thorndike, Watson and Skinner spent most of their time studying learning. They believed that most behavior was learned and that the study of learning was the key to explaining human and animal behavior. We'll look at the research of Pavlov, Watson, and Skinner in much more detail in Chapter 7 when we discuss theories of learning.

For many years, behaviorism was the most powerful force in American academic psychology—the psychology carried out in colleges and universities. In the meantime, several other schools of thought were developing both inside and outside of academic psychology. *Gestalt* psychology, the *psychodynamic* school of Sigmund Freud, and *humanistic* psychology, each proposed alternative views of how human behavior should be explained. Later, *cognitive* psychologists challenged the behaviorist approach and proposed yet another change to the definition of psychology. We'll examine each of these *schools of thought* in the following sections of this chapter.

behavior modification

Using behaviorist learning principles to change a person's behavior; usually by following desired behaviors with positive consequences

1. Russian researcher Ivan _____ performed important work on conditioned reflexes and learning.
2. American animal researcher E. L. _____ formulated the law of effect.
3. American psychologist J. B. _____ founded the behaviorist school of thought.
4. Behaviorists believed that psychologists should study only observable _____.
5. Behaviorist psychologist E. C. _____ performed learning experiments by putting rats in mazes.
6. Reinforcement and punishment played a central role in the work of B. F. _____.
7. Critical Thinking: Why was the Pavlov's work so popular with American psychologists?

Answers: 1) Pavlov, 2) Thorndike, 3) Watson, 4) behavior, 5) Tolman, 6) Skinner

Locking It In

Gestalt Psychology

Max Wertheimer (1880–1943), **Kurt Koffka** (1886–1941), and **Wolfgang Köhler** (1887–1968) were the most important figures in the school of thought called *gestalt psychology*. Like the behaviorists, the gestalt psychologists fought against Wundt and Titchener's approach to psychology. They fought just as hard, however, against the behaviorist approach.

Gestalt psychology

A school of thought based on the study of whole patterns of stimuli rather than breaking those stimuli down into their component parts

Q: What is Gestalt psychology?

The gestalt psychologists believed that little could be learned by looking at how people or animals responded to individual stimuli. In real life, they argued, we respond to structured organizations of stimuli. For example, if you look at a triangle made up of small squares you can never see the triangle by looking at the individual squares. You have to look at the entire figure *holistically*. Similarly, you can't recognize a face by looking only at small parts of it, no matter how long you look. The German word *gestalt* has no exact translation in English. It is sometimes translated as “whole unitary form” (Schultz, 1981). **Gestalt psychology**, then, is the study of how we perceive overall patterns. We'll look at some of the Gestalt principles in more detail in Chapter 5 when we discuss perception.

The Gestalt psychologists studied perception, learning, and problem solving. They were very critical of the animal research of the behaviorists. They argued that the behaviorists had put animals in such simplified situations that the animals were forced to behave in simple ways. A rat in a maze, for example, was forced to blunder around and use trial and error because it could never see the pattern of the whole maze. The Gestalt psychologists believed that consciousness and *insight* played a role in real-world problem solving for humans and for other intelligent animals. Wolfgang Köhler, for example, gave apes complex problems to solve. He concluded that the apes thought about the problems and solved them through insight rather than trial and error. The ideas of the Gestalt psychologists laid some of the groundwork for *cognitive psychology*, which we'll discuss later in this chapter. First, however, we'll look at another major figure in the history of psychology, Sigmund Freud.

The Psychodynamic View—A Medical Perspective

When beginning psychology students are asked to name a major figure in psychology, they often respond with the name of **Sigmund Freud** (1856–1939). Many of them are surprised to find out that Freud's theories are not popular with most academic psychologists in the United States. Freud's ideas are not really part of the American academic tradition. His theories came from another field entirely—medicine. Freud was a doctor who specialized in mental problems. Freud's theories about *unconscious motivation* and *mental illness* revolutionized the practice of therapy. Freud, with fellow-physician Josef Breuer, developed **psychoanalysis**, a technique for helping people deal with their emotional problems. The *neo-Freudians*, other thinkers who were heavily influenced by Freud but disagreed with him on certain points, helped spread Freud's ideas throughout the world.

Sigmund Freud—The Birth of Psychoanalysis As a young medical student, Freud was fascinated by the work of Charles Darwin (Schultz & Schultz, 1996). Darwin had written at length about how physical characteristics and behaviors had evolved through natural selection. Freud became interested in how *mental* behavior had also evolved. Freud received his MD in 1881, but was much more interested in science than in seeing patients. In order to earn a living, however, he began practicing as a clinical neurologist, specializing in disorders of the nerves.

Freud became friends with another physician, **Josef Breuer** (1842–1925). Like Freud, Breuer was interested in the mental aspects of medicine. Together, they published *Studies on Hysteria* in 1895. The book contained the famous case study of a patient they referred to as “Anna O.” Anna O. had a number of physical complaints including sudden paralysis, memory loss, disturbances of vision, and pain in various parts of her body. Freud and Breuer became convinced that there was nothing physically wrong with Anna. They concluded



Sigmund Freud (1856–1939) and his daughter Anna (1895–1982)

that she was suffering from *mental illness*. Over time, Freud developed a therapy called **psychoanalysis** in order to help patients like Anna O. with their psychological problems. We'll discuss psychoanalysis in more detail, and learn more about "Anna O." in Chapter 16.

The Psychodynamic School of Thought Freud's theories are the basis for the *psychodynamic* school of thought. The term *psychoanalysis* refers to the specific form of therapy Freud and his followers used to help people with emotional problems. The term **psychodynamic**, on the other hand, refers to Freud's general theories about human nature, personality development, the unconscious, and mental illness. Because Freud's therapy was based on psychodynamic theory, however, you may sometimes see the term *psychoanalytic* used to refer to Freud's psychodynamic theories.

There are several key features of Freud's psychodynamic theory. He believed that the most important parts of our personality were formed in early childhood. This was a radical idea at a time when many people believed that the experiences we had as small children played little or no role in our adult personalities. Another important aspect of psychodynamic theory is the idea that we don't know why we do certain things. In Freud's time, the idea that powerful forces in our unconscious minds drive much of our behavior was relatively new. It was Freud's belief that unconscious urges were the cause of most mental problems and that most of these urges were sexual (Murray, Kilgour, & Wasylkiw, 2000). For Freud, a person's personality depended on the balance of forces in his or her unconscious. That balance, in turn, was determined largely by the person's childhood experiences. We'll look at Freud's ideas on personality in more detail in Chapter 12.

One of the most influential of Freud's ideas was the concept of mental illness. In Freud's time, many doctors would have said the Anna O. was only pretending to have physical problems. Freud, however, argued that people could have diseases of the mind as well as the body. This concept led to the widespread use of the term **mental illness**. The belief that mental problems are really *medical* problems and should be treated by doctors is widespread but somewhat controversial today. We'll look at some of the issues surrounding this topic in Chapter 15. There is no question, though, that the concept of mental illness has had a powerful influence on modern culture.

The Neo-Freudians Even in his own time, Freud's ideas were the subject of a great deal of discussion and argument. Some people were completely devoted to Freud's theories. Others thought his ideas were silly or even dangerous (Drucker, 1979; Sulloway, 1979). The term **neo-Freudian** is used to describe theorists who began as followers of Freud but who came to disagree with certain of his principles (the word *neo* means new). Their ideas still owe much to Freud but each contributed his or her own ideas about personality. Neo-Freudians Anna Freud (Sigmund Freud's daughter), **Carl Jung**, **Karen Horney**, and **Alfred Adler**, each made an important contribution to the modern interpretation of Freud's ideas. We'll look at the neo-Freudians in more detail in Chapter 12. The ideas of **Erik Erikson**, a modern neo-Freudian, are discussed in Chapter 3.

Humanism—Abraham Maslow and Carl Rogers

The **humanistic** psychologists **Abraham Maslow** (1908–1970) and **Carl Rogers** (1902–1987) disagreed in at least some ways with both the Freudians and the behaviorists. They thought that Freud's view of human nature was far too negative. They argued that he only looked at unhealthy people while making up his theories. The humanists believed that any theory of human nature should be based on looking at healthy, well-adjusted people.

psychoanalysis

A specific form of psychotherapy based on Freud's psychodynamic theories

psychodynamic

Freud's theory of human motivation and behavior; focuses on competing unconscious forces and the importance of early childhood experiences



Karen Horney
(1885–1952)

mental illness

The idea that psychological disorders are medical problems that should be described with medical terms such as "diagnosis" and "treatment" and should be treated by people with medical training

neo-Freudian

A psychodynamic theorist who agrees with Freud's general approach but disagrees with Freud on one or more specific topics

humanistic psychology

A school of thought in psychology that emphasizes free will, self-actualization, and the positive aspects of human nature



Left: Abraham Maslow (1908–1970), Right: Carl Rogers (1902–1987)

self-actualization

Being the best person one can be; fulfilling one's potential as a human being

The humanists also disagreed strongly with the behaviorist idea that all behavior is determined. The behaviorists believed that a person's behavior is completely determined by his or her past history and the current situation. The humanists, on the other hand, believed that we have *free will*. That means that we can choose how we will behave in many situations. The humanists choose not to look at behavior from the outside as behaviorists do. They also criticized the behaviorists for drawing conclusions about human behavior after studying the behavior of rats and pigeons. The humanists did no animal research. Instead, they tried to study each person's own feelings and sense of self. This approach is often called *phenomenology*. The humanists think personality is the collection of values, decisions, and spiritual concerns each person has inside of them.

Both Maslow and Rogers believed that within each of us there is a powerful motive called **self-actualization**. Self-actualization is a drive that makes us try to reach our full potential as persons. The humanistic school of thought, then, stresses human dignity, free will, and self-actualization. We'll look at the humanistic theories of Maslow and Rogers in more detail in Chapter 12 when we discuss personality theory.

The humanists' focus on human dignity raised important ethical questions about experiments using human subjects. The humanists questioned whether it is acceptable for psychologists to lie to subjects or put them in stressful situations. The concerns of the humanistic psychologists led to a number of changes in how experiments are conducted. The American Psychological Association has extensive guidelines that govern research with both human and animal subjects. Today, subjects are informed of any possible negative effects of a particular experiment. Usually, they sign a *consent form* verifying that they understand and accept the risks. Experimenters also try not to deceive subjects any more than is necessary to carry out the experiment. At the end of any experiment, subjects are informed completely and truthfully about the purposes and procedures of the experiment.

Locking It In

1. Wertheimer, Koffka, Köhler (1887–1968) were the most important figures in the school of thought called _____ psychology.
2. The theories of physician Sigmund Freud led to the _____ school of thought.
3. Freud believed that mental disorders were caused by conflicts in the _____ part of the mind.
4. Freud developed specific kind of psychotherapy called _____.
5. Anna Freud, Carl Jung, Karen Horney, and Alfred Adler are usually referred to as _____-Freudians.
6. Psychologists Abraham _____ and Carl _____ helped create the humanistic school of thought.
7. The humanistic psychologists stressed human dignity, free will, and the motive for self-actualization (T/F).
8. Critical Thinking: What objections did the humanists have to behaviorism and the psychodynamic school?

Answers: 1) Gestalt, 2) psychodynamic, 3) unconscious, 4) psychoanalysis, 5) neo, 6) Maslow, Rogers, 7) T

The Return of Consciousness—The Cognitive Revolution

Behaviorism was the primary force in academic psychology until around 1960. During that time, most academic psychologists avoided studying (or even referring to) mental events such as thinking and knowing. Eventually, however, some psychologists began to turn away from the narrow “stimulus and response” focus of the behaviorists. In the 1960s and 1970s, scientists attempted to simulate human thinking and problem solving with increasingly powerful computers. The new field of *information processing* helped stimulate a new school of thought called **cognitive psychology**. The cognitive psychologists believed that the traditional behaviorist approach was not very helpful in explaining problem solving, language development, and other complex cognitive (mental) tasks. Many cognitive psychologists argued that we could not hope to explain human behavior without referring to what people “know” and “understand.” **George Miller** (1962) argued that the behaviorist approach was limited because it ignored mental events. In his influential 1967 book *Cognitive Psychology*, psychologist **Ulrich Neisser** suggested that psychology must study the selection and use of stored information rather than simply looking at stimuli and responses.

With the rise of cognitive psychology, thinking, consciousness, and mental events were again proper subjects for study in psychology. During what has been called the “cognitive revolution,” the definition of psychology underwent another change. As we discussed earlier in this chapter, Wundt defined psychology as “the scientific study of the mind.” The behaviorists changed the definition to, “the scientific study of behavior.” The cognitivists changed the definition again. They defined psychology as, “the scientific study of behavior and mental events.” As we’ll see a little later in this chapter, behaviorism is far from dead. Behaviorists still object to including private “mental events” in the definition of psychology. There is no denying, however, that cognitive psychology has become a powerful force in modern psychology. As we’ll see in the following section, one cutting-edge area of cognitive psychology is the field of *cognitive neuroscience*.

Biological, Evolutionary, and Genetic Approaches

The explanation and prediction of behavior is a primary goal for the science of psychology. Some researchers look to biological forces to explain human behavior. *Neuroscientists*, for example, study physical activity in the brain. *Evolutionary psychologists* believe that Darwin’s theory of natural selection can help explain many complex human behaviors. Scientists studying *behavior genetics* look for individual differences caused by differences in our genetic makeup. Those interested in *Molecular genetics*, on the other hand, hope to identify and sometimes modify individual genes that control specific human characteristics. Let’s look at these various areas in more detail.

Neuroscience The attempt to explain behavior by studying biology and the nervous system (especially the brain) has been around for a long time. As we’ll see in Chapter 3, many new techniques in **neuroscience** allow us to see what is happening in the brain from moment to moment. Techniques such as thermography, the PET scan, and the functional MRI (fMRI), indicate which parts of the brain are active at any given time. We can also measure the firing rate of individual brain cells. In Chapter 3 we’ll look at these techniques in more detail. Neuroscientists hope that studying the brain will help us understand human behavior. Some scientists are combining cognitive psychology and brain research in an approach called **cognitive neuroscience**. Cognitive neuroscientists observe the brains of subjects who are performing cognitive tasks

cognitive psychology

A school of thought in psychology that focuses on thinking and knowledge in order to explain human behavior

neuroscience

The study of the nervous system, especially the brain; often with the use of sophisticated medical equipment

cognitive neuroscience

A combination of cognitive psychology and neuroscience that studies responses in the brain during cognitive events

such as making decisions, decoding language, solving problems, etc. Earlier in this chapter, we discussed Wundt's use of introspection to study mental events. Modern psychologists agree that, as a scientific technique, introspection was a complete failure. Cognitive neuroscientists believe that we now have more reliable scientific tools for studying the relationship between behavior and mental events.

evolutionary psychology

A school of thought in psychology that uses Darwin's theory of evolution and tries to explain behavior in terms of inherited adaptations

Evolutionary Psychology In a growing area of psychology called **evolutionary psychology**, researchers attempt to use Charles Darwin's principles of natural selection to explain complex human behaviors. They are especially interested in traits that are shared by humans in many cultures. Why, for example, is it so easy for humans to develop a fear of snakes, spiders, and heights? Evolutionary psychologists suggest that in the past, humans who feared these things were more likely to survive and reproduce. That, in turn, increased the chances that genes supporting those fears would be passed on to future generations.

Most evolutionary psychologists believe that specific brain mechanisms have evolved to solve specific problems such as language use, object perception, the identification of edible foods, etc. (Pinker, 1997). They consider the brain an organ for processing information in ways that led to survival and reproduction in the ancestral environment (Cosmides, 1989). Although the principles of evolutionary psychology can be useful in explaining human behavior, we must be careful how we apply them. As scientists, we must avoid simply making up evolutionary explanations for existing behaviors. Responsible evolutionary psychologists make predictions about behavior. These scientific predictions are based on logical conclusions about the adaptive behaviors of our ancestors. When the theories accurately predict behavior in many cultures, they are on solid scientific ground. We'll look at some specific applications of evolutionary psychology in later chapters.

behavior genetics

The attempt to explain individual differences in terms of inherited genetic differences

Behavior Genetics Evolutionary psychologists concentrate on the ways in which we are all alike. They hope to find evolutionary explanations for many common behaviors. Scientists studying **behavior genetics**, on the other hand, study individual differences caused by our genetic blueprint (Plomin et al., 2003). An evolutionary psychologist, for example, might seek to explain why we have two eyes that face forward. A behavior geneticist might be more interested in gene-based differences between people with blue eyes and those with brown eyes. We'll discuss behavior genetics in more detail in Chapter 3.

molecular genetics

The search for specific genes that influence behavior

Molecular Genetics Scientists who study **molecular genetics** search for specific genes that influence behavior. They also seek ways to detect and correct genetic abnormalities. To track down specific genes, researchers compare the DNA of individuals who have a specific condition with the DNA of family members who do not have the condition. If specific genes can be identified that make a person susceptible to a disorder such as depression, heart disease, or alcoholism, steps can be taken to prevent that disorder. In the future, genetic diagnosis may allow us to identify individuals who are at risk long before they show signs of a disorder. In addition, genetic engineering may allow us to repair or replace defective genes and provide genetic cures for various diseases. At the same time, there are risks associated with molecular genetics. Once people with certain genetic factors are identified, they may be victims of discrimination. For example, employers might be reluctant to hire a person who was genetically predisposed to develop heart disease, diabetes, or depression. We'll look at this topic in more detail in Chapter 3.

Four Views of Human Nature

To many students, the *history* of psychology is a dry and perhaps useless topic. If we look closely, however, we find that the central issues of that history have powerful everyday applications. In the modern world, we face critical social problems. The daily news is full of stories about crime, mental illness, and poverty. How we deal with those issues depends directly on our view of human nature. Let's take the example of criminal behavior and look how it might be approached by four basic schools of thought in psychology: the behaviorists, the psychodynamic school of Freud, the humanists, and the evolutionary psychologists.

THE BEHAVIORIST PERSPECTIVE

For behaviorists such as B. F. Skinner, reinforcement and punishment control most of our social behavior. As we'll see in Chapter 7, most behaviorists believe that punishment is not a very useful technique for controlling behavior. A behaviorist would argue that the threat of prison will do little to deter criminal behavior. Instead, behaviorists generally prefer rewarding people for behaviors we want to encourage. A behaviorist would solve the problem of crime by trying to make sure that children are rewarded for morally correct behavior. Once they have established the habit of being good, that habit should generalize to most situations they will encounter. The behaviorist would also try to make sure that people are not rewarded for *bad* behavior. Behaviorists have little interest in people's motivations or their understanding of right and wrong. Instead, they focus on the effects of reward and punishment. The behaviorist's view of human nature is relatively neutral with respect to whether people are, by nature, good or bad. They assume that we are whatever our history of reward and punishment makes us.

THE PSYCHODYNAMIC PERSPECTIVE

Sigmund Freud takes a very different view from the behaviorists. It is not too much of an exaggeration to say Freud believed that inside each of us is a rapist and a killer trying to break free. His view of human nature was quite negative. For Freud, unconscious forces constantly drive us toward destructive sexual and aggressive behaviors. The only way to keep people behaving well, according to Freud, is to teach them to suppress these urges. Fear and the threat of punishment play an important role in this process. Freud would approach the problem of crime by assuming that each of us is a

potential criminal. We need many laws, lots of prisons, and an extensive police force to keep ourselves in line. For Freud, the function of civilization is to keep our dangerous impulses under control.

THE HUMANISTIC PERSPECTIVE

The humanistic psychologists such as Abraham Maslow and Carl Rogers, have a very positive view of human nature. At heart, the humanists believe, we are good, caring, cooperative, loving, sharing, and generous. According to the humanistic view, civilization often corrupts people and leads them away from their basic good nature. For the humanistic psychologists, a child raised with love, affection, and respect, in a safe, healthy environment would never engage in criminal acts. A humanistic approach to crime, then, would focus on making sure that every child has food, shelter, love, and respect, and is not abused or neglected in any way. Providing a healthy environment for children would eventually make most prisons and police officers unnecessary according to the humanistic psychologists.

THE EVOLUTIONARY PERSPECTIVE

In the view of evolutionary psychologists, we are products of the process of evolution. Our behaviors evolved because they maximized *fitness*—the chances of surviving and reproducing. They believe that the behaviors we engage in are optimized to pass our genes on to future generations. For the evolutionary psychologists our behaviors can be good or bad depending on the consequences for the survival of our genes. We may behave generously, for example, toward relatives who carry copies of our genes. Under the right circumstances, we may even sacrifice our own safety to protect others. On the other hand, we may also commit horrible crimes to defend ourselves and our close relatives against threats to their survival. We also attempt to gather resources and protect our mates. These too can result in constructive or destructive behaviors. According to the evolutionary psychologists, these are biologically programmed behaviors. For them, it is no surprise that murder is often inspired by sexual jealousy. They would approach the problem of crime by analyzing the evolutionary processes that lead to criminal behavior such as the motive to maintain social status, the desire to stockpile resources, and the pursuit of successful

(continued)

mating strategies. They would focus on violent behavior that is triggered by threats to status, resources, or mating. By altering these situations or stepping in when circumstances put people at risk of violence, criminal behavior might be reduced.

SOME FINAL THOUGHTS

We've looked at several different views of human nature—one positive (humanistic), one negative (psychodynamic) and two more or less neutral (behaviorism and evolutionary). They are not necessarily mutually exclusive. That is, if one is right, it doesn't necessarily mean that the other three are wrong. It may be that parts of all four will play a role in dealing effectively with social problems such as crime. As we have said in this chapter, Sigmund

Freud's ideas have had a powerful influence on Western culture. In the United States, we have more prisons and more people in prison than anywhere else *in* the world. At the same time, we have one of the world's highest rates of violent crime. We might want to consider some other approaches. It might, for example, be worth trying the humanistic approach to crime prevention. Compared to many of the things we do as a society, preventing child abuse and making sure that children have safe, healthy environments are relatively inexpensive. We know that many children are abused, hungry, or neglected but we do not commit sufficient resources to help them. If doing so brought the crime rate down by even 10 percent, we would save the money many times over in reduced prison, mental health, and law enforcement costs.

Q: What's the current status of the various schools of thought in psychology?

ACADEMIC PSYCHOLOGY TODAY

Most of the schools of thought described in this chapter are still influencing psychology. Behaviorism, humanism, psychoanalysis, cognitive psychology, evolutionary psychology, neuroscience, and genetics, still exist as approaches to explaining human behavior. Psychologists taking the various approaches still argue about the proper study of psychology. Because psychology is such a young science, it is difficult (and probably foolish) to predict what direction the field will take in the next 50 years. The most powerful force in academic psychology today is cognitive psychology. Cognitive psychology has been influential enough that some university psychology departments have been renamed “cognitive science” departments (Schultz & Schultz, 1996).

It may be too soon to tell whether the dominance of the cognitive school of thought is a permanent condition. None of the earlier schools of thought remained dominant forever and psychology is still a relatively young science. Modern behaviorists such as Gregory Kimble (1999, 2000) and J. E. R. Staddon (1999) have argued, as Watson and Skinner did, that behavior is the only thing scientists can study directly. As Kimble (1999) puts it, “Sciences have the goal of understanding some realm of publicly observable happenings in the world, and the only such events available to psychology are the things that organisms do (responses) and the situations in which they do them (stimuli)” (p. 2). Kimble goes on to say that, “Psychology ... can be as clinical, social, even humanistic as it chooses, provided only that its concepts have ties to stimuli and responses” (p. 5). The cognitive school of thought continues to have many critics (Blumberg & Wasserman, 1995; Brooks, 1991; Searle, 1992; Staddon & Buono, 1991). These critics believe that the cognitive school has not really solved the problems that plagued Wundt and Titchener.

We may yet see the mainstream of psychology turn to a form of cognitive psychology more directly based on observable behavior. On the other hand, cognitive psychologists may be successful in developing theories about mental events that accurately explain and predict behavior without referring to stimuli and responses. With the rise of cognitive approaches, we may also see some of Freud's ideas about conscious and unconscious

processes come back into fashion (Pribram, 1998; Pribram & Gill, 1976). Another recent trend, inspired in part by humanistic psychology, is a focus on the positive aspects of humans and human nature (Bandura, 1998; Bohart & Greening, 2001; Diener, 2000; Myers, 2000; Seligman & Csikszentmihalyi, 2000). Psychologists in this tradition, called *positive psychology*, focus on the study of happiness, excellence, and optimal human functioning. Whatever happens, it is likely that psychology will continue to change. As Blumberg and Wasserman (1995, p. 142) put it, “Psychology has proved to be especially susceptible to radical shifts in its intellectual foundations, perhaps because of its relative youth as an independent discipline and the humbling complexity of its subject matter.”

As we said at the beginning of this chapter, the only way to truly understand the psychology of today is to know its roots. Being familiar with the various schools of thought in psychology will help you understand the information in the remaining chapters. Psychology is a science, but it doesn’t offer a specific point of view on human behavior. Human behavior is complex and difficult to understand. In addition, psychology is a very young discipline. Psychologists, then, have many different ideas on how to explain behavior. As we’ve seen, they also disagree on what *approach* to studying human behavior is likely to be most helpful. As a result, psychology can best be seen as a scientific *method* rather than a specific point of view. We’ll discuss that method in detail in Chapter 2.

Psychologists are dedicated to the idea that a scientific approach involving carefully designed experiments is the best way to discover the secrets of human behavior. The theories that generate the experiments may be different, but the scientific method is a common underlying principle. Only time will tell whether one of the existing approaches, some combination of them, or some new approach yet to be seen, will be most fruitful in helping us explain and understand our own behavior.

1. Psychologists George _____ and Ulrich _____ helped create the cognitive school of thought in psychology.
2. Some psychological researchers combine cognitive psychology and brain research in an approach called _____ neuroscience.
3. _____ psychologists apply the principles of Charles Darwin to explain human and animal behavior.
4. The general ability to survive and reproduce is called _____.
5. _____ genetics is the study individual differences caused by our genetic blueprint.
6. The search for specific genes that influence behavior is called _____ genetics.
7. Critical Thinking: Why did cognitive psychologists reject behaviorism and return to the study of mental events?

Answers: 1) Miller, Neisser, 2) cognitive, 3) evolutionary, 4) fitness, 5) behavior, 6) molecular

Locking It In

KEY ISSUES IN PSYCHOLOGY—A REVIEW

We have discussed several key issues for psychologists in this chapter. We looked at free will versus determinism, the nature/nurture question, dualism versus monism, and the value of empirical and anecdotal evidence. We’ll revisit

these issues in many of the following chapters. Let's take one last look at them here. Make sure that you understand them before moving on to Chapter 2.

Free Will Versus Determinism Are we free to make choices about our own behavior, or do we simply respond mechanically to the stimuli that come in through our senses? It's not an easy question to answer. Perhaps a car thinks it can *choose* to go faster or slower. We know it is simply responding to pressure on the accelerator or the brake. We may *think* that we choose our behaviors, but we could be mistaken. Perhaps, like the car, we simply respond mechanically to events in our environment. Our responses are a lot more complex than those of the car, but they may be just as mechanical. Can we, for example, choose to fall asleep or do we simply fall asleep when the circumstances are right? The argument of those who believe in *determinism* is that we respond mechanically to the events in our lives. For determinists, the idea that we can make free choices is an illusion. Those who believe in *free will*, on the other hand, believe that we *do* make free choices all the time. As we discussed earlier, Freud and the behaviorists took a deterministic view. In contrast, the humanistic psychologists believed strongly in free will.

Nature Versus Nurture People differ dramatically in their skills and talents. A few centuries ago, it was assumed that these differences were inherited. In other words, *nature* determined what we could and couldn't do. People thought that a person with musical talent, a good sense of humor, or criminal tendencies had inherited those characteristics. They might say, for example, that a burglar had inherited a tendency toward crime from his great-uncle Harry, the pirate. In the early 1900s, most American psychologists took the opposite position. They believed that we were all created equal. Almost all of our skills and talents depend on how we are *nurtured*. The *nature versus nurture* issue is also referred to as the question of *heredity versus environment*. We can also ask whether our skills and talents are *innate* or *learned*. Psychologists today believe that both of the earlier views are wrong. Our skills and talents are the result of an *interaction* between nature and nurture. The question today is not whether we are shaped by nature or nurture. Instead, psychologists study the relative strength of the two factors and how they interact to determine our characteristics.

Dualism Versus Monism Is the mind simply the brain doing its job? For *dualists* like Descartes, the answer is no. Descartes believed that the mind was purely *mental*—it had no physical characteristics at all and no physical location. Descartes believed that if you destroyed the brain, the only effect on the mind would be that it no longer received information from the senses. Consciousness, memories, ideas, plans, etc. would continue as before. The *monists*, on the other hand, argued that the brain and the mind are the same thing. For them, if you destroyed the brain, the mind would no longer exist. They believed that we could learn about the mind by studying the brain. Modern scientists have tended to be monists. For this reason, psychologists who want to learn about the mind tend to do research on the brain. This question is not settled, however. Some psychologists and philosophers are dualists. They believe that there is more to the mind than just the physical events in the brain.

Empirical Versus Anecdotal Evidence An anecdote is simply an account of a particular event. In other words, it's a brief story about something that happened. If you believe that white dogs are dangerous because a white dog once bit your brother, you are relying on *anecdotal evidence*. Similarly, if you believe that most people on welfare are cheating the system because you have heard many stories about welfare cheats, you are relying on anecdotal evidence. *Em-*

pirical evidence, on the other hand, is carefully gathered, sound, scientific evidence. To investigate our first example, we might look at police reports on dog bites and count the number of black and white dogs involved. For our second example, we might hire a private investigator to visit a representative sample of welfare recipients and see how many are cheating the system.

Psychologists (and scientists in general) prefer empirical evidence. While anecdotal evidence may give us ideas about what to study, it should never be used to draw scientific conclusions. In this book, we will be approaching various questions about human nature from a scientific perspective. In every chapter, we will be presenting the empirical evidence for and against various psychological theories. In some cases, one theory will have much better support than competing theories. In other cases, however, the evidence may be contradictory. In those cases, some studies will support one theory while other studies support a different theory. In every case, though, you should try to approach the issue as a scientist does. Don't use anecdotal evidence or common sense to judge the theories. Instead, look carefully at the empirical evidence for each theory. Sometimes, when the evidence is contradictory, we simply have to wait for more studies and better evidence.

Try to keep an open mind as you read this book. I've changed my mind many times over the years about various issues in psychology. Be ready to accept new ideas that are backed by solid scientific evidence. Remember, too, that you don't need to form a strong opinion about every issue in psychology. The field is still young and explaining human behavior far from easy. On many topics, the most intelligent conclusion is that we need more information before making up our minds.

1. The question of whether we are free to choose how we behave is referred to as free will versus _____.
2. The question of whether our skills and talents are inherited or learned is referred to as nature versus _____.
3. The question of dualism versus _____ is based on how we view the relationship between the mind and the body.
4. Psychologists generally prefer _____ evidence over anecdotal evidence.
5. Critical Thinking: Why is anecdotal evidence often misleading?

Answers: 1) determinism, 2) nurture, 3) monism, 4) empirical

Locking It In

Chapter Summary

What is psychology?

- Psychology is the scientific study of behavior and experience. Psychologists rely on scientific evidence rather than common sense to help them understand human and animal behavior. The definition of psychology has changed several times during its short history. In order to understand what psychology is and what it may become, it is important to understand its historical roots.

How did the fields of philosophy and science contribute to the birth of psychology?

- The two main roots of psychology are philosophy and science. Before psychology existed, philosophers like Aristotle, René Descartes, John Locke, and Gottfried Wilhelm Leibnitz, discussed the mind and its relationship to the body. At the same time, scientists like Ernst Weber, Gustav Fechner, and Hermann von Helmholtz were studying the senses and psychophysics. They also studied the brain and the nervous system. Their work set the stage for the birth of psychology in the late 1800s.

How was psychology created and defined as a field of study?

- Wilhelm Wundt, the founder of psychology, built the first psychological laboratory in Leipzig Germany in 1879. Wundt defined psychology as, “the scientific study of the mind.” Wundt used introspection to try to understand consciousness.
- Wundt’s student, E. B. Titchener, brought Wundt’s ideas to America in the late 1800s. Titchener called his approach structuralism. Like Wundt, he was interested only in consciousness and had no interest in the practical applications of psychology.

How did Darwin and the functionalists change the direction of psychology?

- Charles Darwin’s ideas about evolution and natural selection influenced American psychology. His work led people to believe that humans and other animals had similar evolutionary histories. This meant that we could learn the principles of human behavior by the behavior of animals. Darwin also emphasized the function of behaviors in the survival process. This led to the development of functionalism, which grew rapidly in opposition to the structuralism of Titchener.
- American functionalists like William James wanted to use the science of psychology to solve practical problems. They hoped that psychology would provide useful information about education, child-rearing, mental health, and other everyday problems.

What was the contribution of Pavlov and Thorndike to the birth of behaviorism?

- American psychologists were impressed by Ivan Pavlov’s study of conditioned reflexes in Russia. His careful research methods and focus on learning fit well with the Americans’ ideas about making psychology a natural science. They were also influenced by the fact that Pavlov based his theories on observable behavior without any discussion of mental events.
- Like Pavlov, E. L. Thorndike explained behavior in terms of stimuli and responses. His work with animals learning to escape from puzzle boxes set the stage for the behaviorist theories of Watson, Tolman, and Skinner.

How did the behaviorists seek to explain human and animal behavior?

- John Watson believed that conscious experiences had no part to play in psychology because they were unobservable directly by outsiders. He rejected introspection as a scientific technique. Watson founded the behaviorist school of thought. He argued that psychology should be defined as the scientific study of behavior.
- Behaviorist E. C. Tolman followed in Watson’s footsteps. He studied the learning behavior of rats and tried to develop laws of behavior that would apply to humans.
- It was B. F. Skinner who made behaviorism the dominant school of thought in academic psychology until the 1960s. Skinner’s idea that our behavior was determined by our history of reinforcement and punishment had many practical applications.

What was the approach of the gestalt school of thought in psychology?

- Gestalt psychologists Max Wertheimer, Kurt Koffka, and Wolfgang Köhler, believed that little could be learned by looking at responses to individual stimuli. They studied how people and animals perceived overall patterns.

What role did Sigmund Freud psychodynamic theory play in the history of psychology?

- Physician Sigmund Freud approached human behavior from a medical perspective. He believed that unconscious conflicts caused mental illness. Freud founded the psychodynamic school of thought. He thought that unconscious sexual and aggressive motives controlled most human behavior. He also developed psychoanalysis—a type of therapy designed to help people deal with psychological disorders by gaining insight into their unconscious wishes.
- Freud’s psychodynamic ideas are not well accepted by academic psychologists who generally find them unscientific and poorly defined. In spite of this, Freud’s ideas have been tremendously influential in Western society. The neo-Freudians such as Anna Freud, Carl Jung, Karen Horney, and Alfred Adler carried on the psychodynamic tradition although each of them disagreed with Freud about certain issues.

Why were the humanistic psychologists opposed to both behaviorism and the psychodynamic school?

- Humanistic psychologists such as Abraham Maslow and Carl Rogers thought that Freud’s view of human nature was far too negative. They also objected to the behaviorists’ attempts to learn about human behavior by studying animals in the laboratory. The humanists stressed free will and the motive to become self-actualized. Their concern for human dignity led to the development of ethical principles for conducting experiments.

How did the “cognitive revolution” change the course of psychology?

- Cognitive psychologists such as George Miller and Ulrich Neisser brought the study of thinking and knowledge back into psychology. They believed that the traditional behaviorist approach was not very helpful in explaining problem solving, language development, and other complex cognitive (mental) tasks. The cognitive psychologists rejected the stimulus-response psychology of the behaviorists as overly simplistic. They proposed that psychology be defined as the scientific study of behavior and mental events.

What do biological, evolutionary, and genetic researchers study?

- Neuroscientists use sophisticated techniques to study the functioning of the brain. Cognitive neuroscientists study what happens in the brain during cognitive processes such as memory, problem solving, and language use.
- Evolutionary psychologists attempt to use Charles Darwin’s principles of natural selection to explain complex human behaviors. They seek to explain human behavior by finding out what adaptations helped our ancestors to survive and reproduce.
- Behavior genetics is the study of how our genetic makeup contributes to differences in our behavior. Molecular geneticists look for individual genes that control specific behaviors or physical characteristics.

What is happening in academic psychology today?

- Behaviorism, humanism, psychoanalysis, cognitive psychology, evolutionary psychology, neuroscience, and genetics, still exist as approaches to explaining human behavior. Cognitive psychology is the most influential at the moment but psychology has changed several times in the past and is likely to change again in the future.

What are some of the key issues in psychology?

- The issues of free will versus determinism, nature versus nurture, and dualism versus monism are still alive in psychology. Psychologists continue to fight for the use of empirical evidence rather than anecdotal evidence to settle questions about human and animal behavior.

Important Terms and Concepts

school of thought
dualism
free will
determinism
nature versus nurture
mind-body problem
monism
psychophysics
introspection
structuralism
individual differences

functionalism
anecdotal evidence
empirical evidence
comparative psychology
law of effect
behaviorism
behavior modification
Gestalt psychology
psychoanalysis
psychodynamic
mental illness

neo-Freudian
humanistic psychology
self-actualization
cognitive psychology
neuroscience
cognitive neuroscience
evolutionary psychology
behavior genetics
molecular genetics
basic research
applied research

Important Names

Aristotle
René Descartes
John Locke
Gottfried Wilhelm von Leibnitz
Ernst Weber
Gustav Fechner
Hermann Ludwig Ferdinand von Helmholtz
Wilhelm Wundt
Edward Bradford Titchener
Charles Darwin
William James
Ivan Pavlov
E. L. Thorndike
John B. Watson
E. C. Tolman
B. F. Skinner
Max Wertheimer
Kurt Koffka
Wolfgang Köhler
Sigmund Freud
Josef Breuer
Anna Freud
Carl Jung
Karen Horney
Alfred Adler
Erik Erikson
Abraham Maslow
Carl Rogers
George Miller
Ulrich Neisser