The Science of Mind
The Discipline of Psychology

Learning Objectives
1. Explain the subject matter that psychologists study, addressing the meaning of mind and psychology’s role as a hub science.
2. Analyze the respective contributions of philosophy and the physical sciences as the “roots” of modern psychology.
3. Compare and contrast the early movements in psychology—structuralism, Gestalt psychology, functionalism, behaviorism, psychodynamic theory, and humanism—in terms of leading figures, core principles, and contributions to modern psychology.
4. Differentiate the seven major perspectives of modern psychology in terms of typical research questions, research methods, and focal causes of behavior.
5. Analyze the ways in which the seven major perspectives can be integrated to address a single psychological problem or topic.
6. Explain why psychology’s role as a “hub science” allows psychologists to pursue a wide range of career paths with respect to professional specialties and research areas.

Studying the science of psychology can lead you to see yourself and other people in completely new ways. A lifetime of observation teaches us many things about our own behavior and about the behavior of others, but psychological science can uncover new and exciting explanations for behavior that we otherwise might miss.

Let’s begin with a seemingly simple and familiar example: our ability to taste. We all know a lot about taste—what we like or dislike, the different qualities of taste, and so on. You might even be aware that some types of taste seem stronger than others. Most of us can taste sweetness in a solution of one part sugar in 200 parts water; this ability shows an impressive taste...
Introspection is the personal observation of our own thoughts, feelings, and behaviors. Because we are not perfect observers of the operations of our own minds, psychologists developed other methods that provide truly scientific insight into the mind. In this functional magnetic resonance imaging (fMRI) scan, areas of the brain that were activated when the participant was hungry are highlighted. Through technology, researchers can better understand how the brain regulates hunger.


sensitivity, to be sure. As remarkable as this sensitivity appears to be, however, people can detect one part bitter substance (like quinine) in 2 million parts water. This contrast in taste sensitivity between sweet and bitter does not reflect the actual difference between sweet and bitter substances—that is, bitter tastes are not 10,000 times stronger than sweet tastes, but that is how we experience them. Why would we have such a vast difference in sensitivity between these tastes?

Our observations of taste do not help us out much in answering this question, but psychology can. As it turns out, our greater sensitivity to bitter tastes is highly adaptive: Most poisons or toxins taste bitter, and if you want to stay alive, it is more important to avoid swallowing poison than to enjoy something sweet. Being far more sensitive to tastes that are bitter is a trait that has served our species well, because it helps us avoid eating things that could potentially kill us. Psychology helps us understand why we do the things we do by providing a context for understanding behavior.

To gain that understanding, psychology has to act like the zoom feature in Google Earth. In some parts of this textbook, we will be zooming in on human behaviors, like looking at the highly magnified image at the beginning of the chapter of the tongue, which allows us to taste, and tracing the messages about taste sent from the tongue to the brain. At other times, we’ll zoom back out again to take in the larger picture, to better understand why the boy on the previous page is giving his bitter-tasting broccoli a skeptical look.

Psychologists zoom in to the study of the mind using in-depth perspectives, which we will be describing in this chapter. For example, we can look at the little boy’s reaction to his broccoli from a developmental perspective, which tells us that taste sensitivity decreases over the lifespan. Or, using the social perspective, we can think about social influences like culture on food preferences. Cottage cheese, enjoyed by many Americans, is viewed with disgust in some other parts of the world. Fruit bat pie, a delicacy in Palau, might not be a popular item for a campus dining facility in the United States.

Although single perspectives can tell us a lot about a phenomenon like our sensitivity to bitter tastes, no one perspective can give us a complete answer. The best view of all comes from zooming back out again by putting multiple perspectives together into a whole. You can learn a lot about your house from Google Earth by zooming in, but when you see how your home fits into the larger scene of city, state, country, and planet, that viewpoint adds something special to your understanding.

We’ll start by learning more about psychology’s main perspectives, along with a little background about their origins. At that point, we’ll be in a better position to understand how these perspectives come together to give us the big picture.
What Is Psychology?

The study of the mind is as fascinating as it is complex. Psychological scientists view the mind as a way of talking about the brain and its activities, including thought, emotion, and behavior. A quick look at this textbook’s table of contents will show you the variety of approaches to mind that you will encounter along this voyage, such as the thinking mind (cognitive psychology) and the troubled mind (abnormal psychology).

The word psychology is a combination of two Greek words: psyche (or psuche), or “soul,” and logos, “the study of.” For the ancient Greeks, the use of the word “soul” was closer to our modern view of a spirit or mind. Logos is the source of all our “ologies,” such as biology, anthropology, and so on. Literally translated, therefore, psychology means “the study of the mind.”

Contemporary definitions of psychology refine this basic meaning. Most psychologists today define their field as the scientific study of behavior and mental processes—that is, the scientific study of the mind.

The phrase behavior and mental processes has undergone several changes over the history of psychology. Behavior refers to any action that we can observe. As we will see in our chapter on research methods, observation has been an important tool for psychologists from the very early days of the discipline. Notice, too, that our definition does not specify whose behavior is to be examined. Although the bulk of psychology focuses on human behavior, animal behavior has been an essential part of the discipline, both for its own sake and for the sake of comparison with human behavior.

The study of mental processes has been highly dependent on the methods available to psychologists. Early efforts to study mental processes were generally unsatisfactory, as they relied on the use of introspection, or the personal observation of your own thoughts, feelings, and behaviors. Because it is difficult for others to confirm an individual’s introspections, this subjective approach does not lend itself well to the scientific method. If you say that you are feeling hungry, how can anyone else really know if your observation is accurate or not? In the last 30 years, however, revolutions in the methods used to observe brain activity have allowed psychologists to revisit the question of mental processes with much greater objectivity and success.

As you learn more about psychology, some conclusions will seem obvious to you. After all, we already know a great deal about the mind from our own experiences. In other cases, the conclusions of psychological research might challenge your firmly held beliefs. You may be surprised to learn that having a “good cry” can make you feel worse instead of better, or that people are less likely to come to another person’s aid when they are part of a crowd of observers than when they are the only ones available to help. Sometimes, we even believe ideas that contradict each other. Everyone knows that opposites attract and that birds of a feather flock together. It takes the science of psychology to determine when and under what conditions these beliefs are actually correct.

**mind** The brain and its activities, including thought, emotion, and behavior.

**psychology** The scientific study of behavior and mental processes.

**introspection** Personal observation of your own thoughts, feelings, and behavior.
What Are Psychology's Roots?

Psychology is a relatively young discipline, dating back only to the 1870s. However, topics that interest modern psychologists go back much farther in the history of human thought. People living as long ago as 6000–5000 BCE in Assyria described their dreams (Restak, 1988). Among these accounts are descriptions of being chased, which are still among the most common dreams experienced by people (Nielsen et al., 2003). See Figure 1.1 for common dream themes that many people experience.

The psychology family tree includes two major roots: philosophy and the physical sciences. Psychologists answer questions traditionally posed by philosophers by borrowing the methods of the physical sciences. We examine scientific methods in detail in our next chapter.

Philosophers and psychologists share an interest in questions regarding the nature of the self, the effects of early experience, the existence of free will, and the origin of knowledge. Both disciplines consider the relative balance of biological factors (nature) and environmental factors (nurture) in the resulting human behavior. Both attempt to determine the relationships between self-interest and the welfare of the community, between body and mind, and between humans and the other species with whom we share the planet. Although we typically consider questions of the unconscious mind

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**Figure 1.1**

Many People Report Dreams With the Same Themes. Although we don't understand why we dream about certain things, many people report similar themes in their dreams. Source: Adapted from Nielsen et al. (2003).
and abnormal behavior to be the realm of the psychologist, philosophers investigated these issues thousands of years before the first psychologist was born.

A comprehensive survey of the philosophical roots of psychology is beyond the scope of an introductory textbook like this one, but we can provide you with a small sample of this heritage. The point we would like you to take away from this discussion is that many of the questions you will read about in this textbook are not unique to psychology, but have fascinated thinkers for thousands of years. What is the mind? What is the relationship between the body and mind? Is the mind inborn or is it formed through experience?

The ancient Greek philosopher Plato (427–347 BCE) was one of the earliest thinkers to tackle the question “What is the mind?” Plato’s version of the mind featured three parts that must be in balance: reason, spirit, and appetite. He compared these parts to a team of horses (spirit and appetite) guided by a driver (reason). Plato’s division of the mind is echoed in the more modern work of Sigmund Freud (1856–1939). Freud also divided the mind into three parts: the id (inborn aggressive and sexual impulses), the ego (the self), and the superego (conscience). Later in this textbook, we will see that Freud’s concept of the ego serves the role of Plato’s driver, overseeing and balancing the two horses: the impulses of the id and the restrictions imposed by the superego. You might relate to the dilemma of the driver (reason/ego) when you are faced with an opportunity to indulge an impulse (id) while hearing that little voice in the back of your head (superego) telling you that this really isn’t a very good idea.

Another question with ancient roots asks about the relationship between body and mind, a topic that we will explore further in our chapter on biological psychology. On one side of the question were thinkers who believed in dualism, or the idea that body and mind are quite different and separate. To the dualist, our bodies are physical, but our minds are something nonphysical and somewhat more mysterious. Arguing against this point of view were the proponents of monism, the idea that mind and body are not separate. Another way of thinking about monism is to assume that the mind is the result of activity in the brain. Does one of these positions seem closer to your own way of thinking than the other?

The ancient Greek philosophers were nearly evenly split between monism and dualism. Democritus (460–370 BCE) and Aristotle (384–322 BCE) argued in favor of monism, while Pythagoras (580–500 BCE), Socrates (469–399 BCE), and Plato believed in dualism. As the classical world of Greece and Rome gave way, monism moved to the background while medieval Christian thinkers wrote about a dualism between body and soul. Dualism continued to dominate discussion during the Renaissance. The French philosopher René Descartes (1596–1650) was a vocal proponent of dualism. He saw the body as mechanical but the mind as a nonphysical entity not suitable for scientific inquiry.
Contemporary scientists studying the brain support monism, but they agree with Descartes’ belief that the mind and body influence one another. In our biological psychology chapter, we emphasize the reciprocal relationships between biology and behavior. Our biology clearly impacts our behavior, as when hormones released during times of stress increase our heart rate and make our palms sweaty, but our behavior also affects our biology, as the situations we choose to enter (e.g., skydiving) influence the release of stress hormones. This reciprocal influence between biology and behavior can be seen in social situations, too. We know that among primates, males’ testosterone levels predict their amount of sexual activity. At the same time, however, the males’ testosterone levels increase in the presence of larger numbers of available and receptive females (Cacioppo & Berntson, 1992). That is, the social context affects the physiology of the male primates.

Just as philosophers disagreed about the relationship of mind and body, they argued about whether the mind’s knowledge was inborn or the product of experience. Just as psychologists have different views about the mind-body relationship, they disagree about the scientific and practical implications of this relationship.

Psychology as a Hub Science

Psychology connects to other disciplines.

Psychology is all about people, and there are very few occupations that do not require an understanding of people and their behavior. An architect cannot design a functional space without considering how people respond to crowding. An attorney cannot cross-examine a witness without an understanding of memory, motivation, emotion, and stress. A teacher cannot encourage students to reach their potential without an understanding of child development. The study of psychology, then, provides you with better insight into and understanding of many different occupations and fields of study.

You have probably seen applications that allow you to map your friendship networks on social media, with shorter links indicating greater connectivity than longer links and with larger bubbles indicating more overlapping friendships with another person. Kevin Boyack and his colleagues generated a similar map of the sciences (see Figure 1.2), but used reference lists in journal articles instead of friendship networks (Boyack, Klavans, & Börner, 2005). The resulting analysis shows that psychology is one of the major "hub" sciences, with strong connections to the medical sciences, the social sciences, and education. In our upcoming chapters, we will highlight these connections with examples that are relevant to each particular chapter.
What are Psychology’s Roots?

John Locke (1632–1704) and other empiricist philosophers believed that the mind was a “blank slate” at birth and that knowledge was gained through experience. Beginning in the 17th century, this idea flourished in the British philosophical school of empiricism. The empiricists viewed the mind as a “blank slate” at birth that was filled with ideas gained by observing the world. As one of the major empiricists, John Locke (1632–1704), wrote in An Essay Concerning Human Understanding:

Let us then suppose the mind to be, as we say, white paper void of all characters, without any ideas. How comes it to be furnished? . . . To this I answer, in one word, from EXPERIENCE. (Locke, 1690, II.1.2)

Empiricism contributed two important ideas that continue to influence contemporary psychologists. First, empiricism is the foundation for science itself, which allows us to gain knowledge through careful and systematic observation, resulting in “empirical” results.
The empiricists had a profound influence on the foundations of American political thought—All of us are created equal. For generations, Europe had been ruled by people who were born into positions of power instead of earning the privilege of leading through hard work and education. If knowledge is not innate or inborn, any of us can learn enough to grow up to be President.

Second, empiricism guided the 20th-century behaviorists, psychologists who examined behaviors that were the result of experience and that could be directly observed. The behaviorists’ contributions to psychology will be discussed in detail in our chapter on learning.

The philosophical debate about the source of knowledge is echoed in psychology as researchers consider the relative contributions of inborn or innate factors (nature) and experience (nurture) to particular behaviors. You might have heard people debate the importance of genes (nature) or good schools (nurture) on shaping the intelligence of children, a topic we discuss in a later chapter on cognition and intelligence. Contemporary psychology no longer views the question of nature and nurture as either/or. Instead, we see the mind as a result of complex interactions between inborn characteristics and experiences. We might have a genetic predisposition for intelligent behavior, but intelligence depends on experience, too. During the 1970s, children in Romanian orphanages experienced extremely deprived social conditions due to a lack of funding for their care. The children had few opportunities to interact with other people or with the environment. They spent most of their days in cots surrounded by sheets, preventing them from even seeing other children. Children who were adopted from these orphanages at young ages were able to recover, but the children who had endured years of deprivation experienced permanent cognitive deficits (Ames, 1997). In our chapters on genetics and development, we will revisit these debates in depth.

If philosophers and psychologists ask the same questions, what makes these two fields different from each other? As we noted earlier, the structure and operations of the mind are not always obvious, even to the most brilliant philosopher, and the scientific methods of the psychologist helped develop additional theories of the mind and behavior. The branching of psychology from philosophy was gradual. Nineteenth-century philosophers began to argue for the experimental study of human behavior, and some, like Alexander Bain (1818–1903), wrote psychology textbooks and founded psychology journals. As philosophical ideas were tested scientifically, new explanations for the mind and behavior began to emerge, and the march toward psychological science as an independent discipline became irreversible.

Running along a parallel track to the early philosophers, ancient physicians were laying the foundation of our biological knowledge of the brain and nervous system, discussed in greater detail in our chapter on biological psychology. During this pursuit, physicians helped
What are Psychology’s Roots?

Ancient people developed the scientific methods that would become central to contemporary psychology and previewed the application of the knowledge they gained to the improvement of individual well-being.

Although some confusion occurred along the way, as in Aristotle’s belief that the mind was located in the heart, ancient people had a rudimentary understanding that the head and later the brain were important for mental life. As long as 7,000 years ago, healers using a technique known as trepanation drilled holes in a person’s skull to cure some unspecified conditions, possibly headache or hallucination. Subsequent growth of the skull bones indicates that some patients actually survived this procedure. The early Egyptians correctly understood that paralysis of a part of the body was due to brain damage and that such damage was permanent (Breasted, 1930).

As early as 500 BCE, Greek physicians began to systematically dissect human bodies. Not only did they correctly conclude that the brain was the organ of memory, thinking, and understanding, but they noticed the connection of the brain to the sense organs, such as the eyes, and recognized that the brain is the source of many emotional problems. Later Greek physicians offered a rudimentary theory of personality that remained popular until the 19th century. According to this approach, personality would be affected by the relative amounts of four different body fluids: yellow bile (a type of gastric fluid), black bile, blood, and phlegm. For example, a person with a sad disposition suffered from excess black bile, whereas a person with a lot of blood would be cheerful. Medical practices such as “bleeding” a patient were applications of this theory.

For many centuries, the whole of medicine remained a primitive business. Beginning in the 17th and 18th centuries, scientists armed with new technologies, including the light microscope (see ● Figure 1.3), began to make a series of important new discoveries about the human body and mind. For example, they demonstrated that a single sensory nerve carried one type of information, instead of multiple types. You might have already duplicated this research yourself while rubbing your sleepy eyes—you see a flash of light. The nerves serving the retina of the eye do not know how to process information about touch or pressure. When stimulated, they are capable of one and only one type of message—light. These types of discoveries about the physical aspects of the mind convinced scientists that, contrary to Descartes’ conclusions, the mind really could be studied scientifically.

The work of Hermann von Helmholtz (1821–1894) on the speed of nerve signaling provided further evidence that the mind had a physical basis. Von Helmholtz asked his participants to push a button when they felt a touch. If a thigh were touched, participants reacted faster than when the toe was touched. Because the toe is farther from the brain than the thigh, signals from the toe required more time to reach the brain. Von Helmholtz used these differences in reaction time to show that voluntary behavior did
not occur instantaneously as previously thought. The fact that behavior is not instantaneous, but requires time for the system to process physical signals, contributed to a more scientific, less mystical view of the nervous system.

At the same time that the philosophers began to incorporate physiological and psychological concepts into their work, the physical scientists began to explore the questions asked by the philosophers. The gradual merger of these approaches resulted in a series of experiments that looked more and more like contemporary psychology. Scientists began to ask questions about the relationships between physical stimulation and its resulting sensations. For example, Gustav Fechner (1801–1889) was able to identify the softest sound a person could hear by randomly presenting sounds of different intensities, to which a participant would respond “yes” or “no.” When the “yes” responses reached 50%, Fechner concluded that the sound was within the range that the human ear could detect. The stage was set for a modern science of psychology.

Figure 1.3

Microscopes Changed the World of Science. This light microscope was used by Anton von Leeuwenhoek to discover red blood cells in 1676. Microscopes opened a whole new world to scientists interested in living things.

A = A screw for adjusting the height of the object being examined
B = A metal plate serving as the body
C = A skewer to impale the object and rotate it
D = The lens itself, which was spherical

The work of Hermann von Helmholtz (1821–1894) on reaction time helped establish the mind as something that could be studied scientifically.
## Summary 1.1

### Highlights in the Philosophical and Scientific Roots of Psychology

<table>
<thead>
<tr>
<th>Person or group</th>
<th>Things to remember</th>
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<tbody>
<tr>
<td>Ancient physicians</td>
<td>The brain is the source of the mind.</td>
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<tr>
<td>Ancient Greek philosophers</td>
<td>Provided natural, not supernatural, explanations for their observations.</td>
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<td>Descartes</td>
<td>Mind-body dualism.</td>
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<tr>
<td>British empiricists</td>
<td>Knowledge is the result of experience.</td>
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<td>17th- and 18th-century physical scientists</td>
<td>Discoveries about sensation and movement showed that the mind was physical.</td>
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<tr>
<td>Von Helmholtz</td>
<td>Studies of reaction time reinforced the idea of the mind as physical.</td>
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How Did the Science of Psychology Begin?

As psychology developed from the gradual merger of philosophical questions and scientific reasoning, the young discipline struggled to determine which questions and methods were best suited to its goals. Lively debates arose among psychologists who helped to shape the field.

The credit for being the first psychologist goes to Wilhelm Wundt (1832–1920), who conducted the first documented psychological experiment in his laboratory at the University of Leipzig in 1879. This landmark experiment was a simple test of reaction time. How quickly after hearing a ball drop onto a platform could a person respond by striking a telegraph key?

Wundt, trained in medicine and physiology, was one of the physical scientists who became interested in the mind. Wundt believed that the goal of a new science of psychology was to understand consciousness, which we discuss in a later chapter.

Wundt saw mental experience as a hierarchy. The mind constructs an overall perception (the food I’m eating tastes good) out of building blocks made up of separate sensations (such as taste or vision) and emotional responses. One of Wundt’s students, Edward Titchener (1867–1923), expanded on Wundt’s views to establish a theory of structuralism, in which the mind could be broken down into the smallest elements of mental experience. Titchener’s approach to psychology paralleled the general trends in the physical sciences of his day, such as efforts in chemistry to break molecules into elements and attempts by physicists to describe matter at the level of the atom.

Both Wundt and Titchener employed introspection as an experimental technique, but they meant somewhat different things when they used the term. Recall that we earlier defined introspection as observing your own thoughts, feelings, and behaviors. Wundt’s approach to introspection is illustrated by his reaction time experiment with the falling ball. This experiment is introspective in the sense that pressing a telegraph key indicates an internal state—I heard the ball fall. Titchener’s approach to introspection was more consistent with the building block approach to experience. He would instruct his research participants to describe an object, perhaps a cup, in great detail (size, color, shape, and so on), hoping that these details would serve as the building blocks for the mind’s overall perception of the cup.
The structuralists’ effort to break behavior down into its essential elements was rejected by a group of early 20th-century German psychologists, including Kurt Koffka, Max Wertheimer, and Wolfgang Köhler, who founded Gestalt psychology. Gestalt, although lacking a clear translation into English, means “form” or “whole.” The Gestalt psychologists believed that breaking a “whole” perception into its building blocks, as advocated by the structuralists, would result in the loss of some important psychological information. For example, take a look at the middle image in Figure 1.4. It is the same in both the top and bottom rows, yet in the context of the first row, most people would interpret the image as the letter B. In the context of the bottom row, however, the image looks like the number 13. The structuralists would have a difficult time explaining why the same visual building blocks could lead to such different conclusions.

While largely known for their work in perception, the Gestalt psychologists also had wide-ranging interests in learning, memory, motivation, and group dynamics. The influence of Gestalt psychologists will resurface in our later discussions of perception and cognitive psychology, the study of thinking and information processing.

While the structuralists and Gestalt psychologists continued their debate, a new type of psychology emerged, partly in response to the publication of Charles Darwin’s *The Origin of Species* in 1859 and *The Descent of Man* in 1871. Functionalism viewed behavior as purposeful, since it led to survival. Nineteenth-century United States politics and culture, which valued individuality, practicality, and frontier survival, embraced functionalism. Instead of restricting themselves to exploring the
structure of the mind, functionalists were more interested in why behavior and mental processes worked in a particular way. To answer these questions, functionalists broadened their research techniques beyond the introspection used by Wundt and Titchener.

Functionalism’s chief proponent was William James (1842–1910), whose textbook, *Principles of Psychology* (1890), dominated the field of psychology for 50 years. At Harvard University, James offered a course in psychology and established a laboratory in 1875, four years before Wundt’s first lab. However, James’s lab served primarily as a demonstration lab for his course rather than a research lab like Wundt’s. Because of psychology’s emphasis on research contributions, Wundt is still given credit for being the first psychologist.

There are few topics in psychology that James did not address in his *Principles*, and many of his ideas sound thoroughly modern. For example, James coined the term *stream of consciousness* to describe the flow of ideas people experience while awake. Throughout his discussions of mental processes and behavior, James emphasized the role of evolution. For the functionalist, the value of an activity depended on its consequences. Behaviors that enhance survival are repeated, and those that are either irrelevant

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**Connecting to Research**

**The Experiment That Launched Gestalt Psychology**

The Gestalt movement traces its origin to a single experiment conducted by Max Wertheimer in 1912 that demonstrated the apparent movement of objects (Wertheimer, 1912).

According to historians, Wertheimer was inspired to conduct his study after playing with a toy stroboscope, which he bought from a vendor at a train station (Boring, 1942). If you look through the slits in the rotating disk of a stroboscope, like the one in Figure 1.5, it looks like the images behind the disk are moving, somewhat like an old cartoon. Most of us would probably just enjoy the toy, but Wertheimer immediately saw a deeper meaning, which he tested in his experiment.

**The Question:** Can the perceived movement between two stimuli be explained in structuralist terms? If Wundt and the structuralists were correct and all perceptions could be broken down into their elements, then we would not “see” movement when viewing stationary stimuli.

**METHODS**

Wertheimer used a stroboscope to control the timing of the appearance of two black lines (one vertical and the other horizontal) against a white background. The first line would appear and then disappear, followed some time later by the appearance and disappearance of the second line. The amount of time between the disappearance of the first line and the appearance of the second, which depended on the speed with which the wheel on the stroboscope was turned, varied from trial to trial, and the observers noted whether they perceived movement or not.

**RESULTS**

When the interval between the appearance of the two lines was
or damaging to survival are abandoned. If we dream, it must be because dreaming improves our chances of survival. If we enjoy ice cream, it must be because eating sweet, high-fat foods enhances survival—at least it did for our ancestors, for whom famine was a much more likely problem than obesity.

It is difficult to overestimate the impact of William James on psychology. Although he really didn’t establish a particular “school” or train large numbers of students as did Wundt or other early psychologists, James’s ideas have become so dominant in psychology that we no longer refer to any separate “functionalist” approach. Structuralism came and went, but all contemporary psychologists are generally functionalists at heart. As described by psychology historians, “As a systematic point of view, functionalism was an overwhelming success, but largely because of this success it is no longer a distinct school of psychology. It was absorbed into the mainstream psychology. No happier fate could await any psychological point of view” (Chaplin & Krawiec, 1979, p. 53).

James, like the Gestalt psychologists, rejected the notion that you can study the mind by breaking it into elements or building blocks, as this division would result in a loss of understanding. As psychology entered the 20th century, this “big picture” approach of William James eventually broke up into a variety of separate perspectives, as psychologists attempted to gain understanding by limiting their research to particular aspects of the mind and behavior.

about 30 milliseconds (a millisecond is one one-thousandth of a second), the observers reported that the lines appeared and disappeared together. With intervals longer than 60 milliseconds, observers reported seeing one line that moved from a vertical to horizontal orientation.

CONCLUSIONS
Wertheimer realized that his participants were “seeing” something—movement—that could not be explained by the sensations of lines appearing and disappearing. Wundt and the structuralists must be wrong—there is more to perception than just sensing elements, like lines. An application of Wertheimer’s work can be seen in the “moving” words in scrolling electric signs, which are really just groups of lights flashing on and off.

Scrolling signs take advantage of the apparent movement observed by Wertheimer. Nothing in the sign is moving at all, but perception of movement results when the lights flash on and off in sequence.
Beginning at the dawn of the 20th century, the “mental processes” in our definition of psychology took a backseat to observable behavior for the better part of the next 50 years, as psychologists following the perspective of behaviorism concentrated on observable, measurable behaviors. As part of their effort to measure behavior carefully, many behaviorists restricted their research to studies using animals. Armed with Darwin’s evidence linking humans to animals, the behaviorists comfortably drew parallels between their observations of animals and their assumptions about human behavior. In particular, behaviorists were fascinated by learning, which we define as any persistent change in behavior due to experience. We will examine the behaviorists’ contributions to this area in depth in a later chapter on learning.

Ivan Petrovitch Pavlov (1849–1936) had a particularly significant impact on the course of behaviorism and psychology. While studying digestion in dogs, he realized that the dogs’ salivation in response to the arrival of the handler or to being harnessed for an experiment indicated that the dogs had associated, or linked, these signals with the arrival of food. The dogs’ ability to use this learned association to anticipate important future events was a remarkable advantage in terms of survival. This type of learning is now referred to as classical or Pavlovian conditioning, which we will discuss in detail in our chapter on learning.

Psychology textbooks would not spend too much time on Pavlov if his research applied only to salivating dogs. Although classical conditioning occurs in rather primitive organisms, including fruit flies, snails, and slugs, it also occurs quite frequently in humans. Many of our emotional responses associated with environmental cues are the result of this type of learning. If you feel especially anxious prior to taking an exam, you can thank classical conditioning. If you are repulsed by the idea of eating a food that you once consumed just before becoming ill, this is again a likely result of classical conditioning. A war veteran who experiences distress while filling a pickup truck with diesel fuel (a common battlefield smell) is also likely to be experiencing the results of classical conditioning.

John B. Watson (1878–1958) began experimenting with learning in rats, and independently came to many of the same conclusions as Pavlov. Watson also echoed the “blank slate” approach of the British empiricist philosophers in his emphasis on the role of experience in forming human behavior. In a famous speech given in 1926, Watson made the following claim:

Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I’ll guarantee to take any one at

behaviorism An approach to psychology that features the study and careful measurement of observable behaviors.
random and train him to become any type of specialist I might select—a doctor, lawyer, artist, merchant-chief, and yes, even into beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations and race of his ancestors. (Watson, 1925, p. 10)

Later in Watson's career, he applied his understanding of behavior to the budding American advertising industry. By 1930, Watson was earning $70,000 per year as an advertising executive, an astronomical salary for the time and quite different from the $3,000 per year he earned as a professor. After discovering that blindfolded participants couldn't tell the difference between brands of cigarettes, Watson concluded that to be successful, a product must be associated with an appealing image. The advertising industry was never the same, and today's advertisers continue to apply Watson's principles. Old Spice aftershave achieved great success with its ads featuring NFL wide receiver Isaiah Mustafa, implying that using Old Spice would make a man more “manly.”

Watson's legacy in psychology was enormous. He changed the goal of the discipline from Wundt’s desire to understand consciousness to the prediction and control of behavior. He also restricted psychology to the study of observable behavior. As we will see in our section on research methods and throughout this text, even those psychologists who are interested in internal events, like the visual recognition of an object, seek related observable behaviors, such as brain images, reaction time, or other similar measures.

Like Pavlov's, Watson's approach to psychology focused on the relationships between environmental cues and behavior. Other behaviorists were much more interested in the effects of consequences on behavior, an idea that was derived from basic functionalism. Edward Thorndike (1874–1949) proposed a law of effect, which suggested that behaviors followed by pleasant or helpful outcomes would be more likely to occur in the future, whereas behaviors followed by unpleasant or harmful outcomes would be less likely to occur. Thorndike based his law on observations of cats' behavior in a puzzle box he had constructed (see Figure 1.6). To escape the box, a cat was required to complete a sequence of behaviors. Through trial-and-error learning, the cat would escape faster and faster on
successive trials. In other words, the cat repeated effective behaviors and abandoned ineffective ones.

Like Thorndike, B. F. Skinner (1904–1990) was very interested in the effects of consequences on how frequently behaviors were performed. Skinner shared Watson's belief that psychology did not benefit from any consideration of consciousness or internal mental states. Skinner believed that inner, private states such as thinking and feeling existed, but he viewed them as behaviors that followed the same rules as public behaviors, like driving a car (Jensen & Burgess, 1997). He not only reduced his study of behavior to the actions of rats and pigeons in adapted cages that came to be known as Skinner boxes, but he was very comfortable generalizing from the behavior of rats and pigeons to complex human behaviors. In spite of its strong focus on a limited set of animals and situations, Skinner's behaviorism has provided a wealth of beneficial applications. Smokers attempting to quit, doctors and nurses engaged in self-paced continuing education courses, and children receiving treatment for autism are all likely to be benefiting from Skinner's efforts.

By the 1950s, the behaviorists' disinterest in mental states and activity was challenged by scientists from diverse fields, including linguistics and computer science, leading to a cognitive revolution. Cognition covers the very private and internal mental processes the behaviorists avoided studying—information processing, thinking, reasoning, and problem solving. Ulric Neisser (1928—) gave the new field its name in his 1967 book, *Cognitive Psychology* (Neisser, 1967).
Breakthroughs in computer technology allowed these new cognitive psychologists to use mathematical and computer models to illuminate the mental processes leading to observable behaviors. Alan Newell (1927–1992) and Herbert Simon (1916–2001) wrote groundbreaking artificial intelligence programs using human information processing as their model. The hardware of the computer was viewed as a metaphor for the brain, and its software mirrored the brain’s activity. By the 1980s, most university psychology departments were offering courses in cognition. By the 1990s, collaborations between cognitive and biological psychologists led to the new field of cognitive neuroscience, which seeks to identify brain structures and functions involved in processing information. In a later chapter on cognition, language, and intelligence, we will explore more detail about the contributions of cognitive psychologists in more detail.

To illustrate how the behaviorist and cognitive approaches differ, we can take a look at how each explains language learning by children. Behaviorists like Skinner believed that children acquired language in response to feedback, such as parental approval or being understood. In contrast, linguist Noam Chomsky proposed that human beings are born with innate mechanisms for learning language, which is exactly the type of specialized internal mental processing Skinner rejected. As we will see in our chapters on development and cognition, the cognitive approach to language learning dominates our current understanding.

In contemporary departments of psychology, behaviorist approaches are represented by professors and researchers specializing in learning, who continue to explore the nuances of the effects of experience on behavior. Many of the big questions tackled by behaviorists are now examined through the lens of the cognitive or biological perspective. Behavioral approaches make important contributions to real-world problems, including how best to pay employees and the treatment of psychological disorders and addiction.

Clinical Roots: Freud and the Humanists

With the exception of occasional bursts of insight from the ancient Egyptians and Greeks, the most common view of psychological disorders over the course of history has been the supernatural approach. According to this view, psychological disorders resulted from the actions of evil spirits or other external, magical forces. Although improvements in science and medicine led to more natural than supernatural explanations of psychological disorders, effective treatments were not rapidly forthcoming. Patients in the 17th and 18th centuries were often subjected to bizarre treatments, including being spun around in a chair. As recently as the 1940s, patients with schizophrenia were regularly experimented on. They were subjected to questionable techniques such as “insulin shock therapy,”
Until about 60 years ago, no effective treatments for psychological disorders existed. The application of scientific principles to treatment has finally led to real help.

in which insulin injections led to comas, and were restrained in lukewarm baths. We discuss schizophrenia and its treatment in more detail in our chapters on psychological disorders and therapies.

Between the 17th and 19th centuries, supernatural explanations for psychological disorders began to give way to two scientific approaches: a medical model and a psychological model. The medical model of psychological disorder emphasized physical causes of abnormal behavior and medical treatments, such as medication. The psychological model suggested that abnormal behavior can result from life experiences, leading to fear, anxiety, and other counterproductive emotional responses. Psychological treatments take many forms, from offering support to applying cognitive and behavioral methods to help people think and problem solve in new ways. As we will see in our chapters on psychological disorders and therapies, contemporary psychologists typically combine these approaches to understand disorders and develop effective treatments. For example, we

**Figure 1.7**

Milestones in the History of Psychology.

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know that feeling depressed has both physical components (changes in the activity of chemical messengers in the brain) and experiential components (exposure to stressful situations). Treatment for depression often combines medication with efforts to change the way a person thinks about his or her situation.

Sigmund Freud  Sigmund Freud (1856–1939) built a bridge from his medical training as a physician to his belief in the impact of life experiences on behavior. His psychodynamic theory and its applications to the treatment of psychological disorders dominated much of psychological thinking for the first half of the 20th century. Freud managed to combine and communicate ideas about the existence of the unconscious mind, the development of sexuality, dream analysis, and psychological roots of abnormal behavior in such a way that his theories influenced not just psychology but culture. He nearly single-handedly founded the study of personality in psychology,
and we will explore his theories more fully within that context. He developed the techniques of psychoanalysis for treating mental disorders, which we discuss in our chapter on therapies. He popularized the use of psychological principles for explaining everyday behavior, and his theories are just as likely to be discussed in your English literature course as they are in a psychology course.

Our enthusiasm for Freud is tempered by a number of valid concerns. As you read and hear about Freud throughout the remainder of this course, keep in mind that he did no real experimentation. His theories are based primarily on his own introspections along with those of his patients, who as primarily upper-class Viennese housewives were not typical of the general population. Freud’s theories do not lend themselves to experimentation, an essential requirement for any scientific theory, as we discuss further in our chapter on research methods. For example, how could you possibly design an experiment to demonstrate that dreaming about water indicates you have unconscious concerns about sex? Finally, although psychoanalysis is still used as a therapy technique, it is rarely conducted in the strict Freudian manner. Other techniques, discussed in our chapter on therapies, exceed psychoanalysis in effectiveness and popularity among therapists.

**Humanistic Psychology** By the 1960s, American psychology was primarily characterized by behaviorism on one side and Freud’s theories on the other. Structuralism had fallen into disfavor, and functionalism and Gestalt psychology were no longer distinct schools of thought. Just as other aspects of American culture began to feature rebelliousness against current ways of thinking, some psychologists began to push against the restrictions of behaviorism and psychoanalysis. Many of these disenchanted psychologists had been trained in psychoanalysis, but were not seeing the results they desired. This dissatisfaction with prevailing views led these **humanistic psychologists** to propose new ways of thinking about the human mind.

Humanistic psychologists rejected the idea that people are innately uncivilized and must be taught to be good. Freud, James, and Skinner all believed that human behavior was on a continuum with animal behavior, which led to their assumption that humans naturally shared the aggressive impulses of animals. For Freud in particular, society had a civilizing function on the otherwise selfish and aggressive human being. In contrast, the humanists extended the philosophy of Jean Jacques Rousseau and other 18th-century Romantic philosophers into a belief that people are innately good, are motivated to improve themselves, and only behave badly when corrupted by society.

Instead of focusing on what went wrong in people’s lives, humanist **Abraham Maslow** (1908–1970) asked interesting questions about what made a person “good.” Maslow introduced a major theory of motivation, which we describe in more detail in our chapter on motivation. According to Maslow, the pinnacle of motivation is the goal of **self-actualization.** The 1990s U.S. Army slogan, “Be all you can be,” captures much of the flavor of self-actualization. We will see Maslow’s emphasis on what is good about
people, as opposed to Freud’s focus on what goes wrong with people, reemerge in the form of contemporary positive psychology.

Humanist therapists rebelled against Freudian approaches to treatment. One humanist therapist, **Carl Rogers** (1902–1987), developed a new approach to therapy, *client-centered therapy*. In this type of therapy, the people receiving treatment are referred to as clients rather than patients, reflecting their more equal standing with the therapist and their more active role in the therapy process. Humanistic approaches to therapy have also influenced communication, group process, parenting, and politics. The emphasis on active listening and the use of “I hear what you’re saying” reflections have become nearly cliché in courses of leadership training and interpersonal communication. Advice to parents to provide “unconditional” love to their children is a direct application of humanist beliefs, which we discuss in more detail in our chapter on development. Finally, humanistic psychology continues to flavor our political and social domains. When issues such as capital punishment arise, the humanistic contention that there are no bad people, just bad societies, typically appears as part of the debate.

When a case of capital punishment occurs, we often read about the prisoner’s terrible childhood from one side and the need to protect society from further misdeeds by this person from the other side. Where would the Freudians and humanists line up in this debate?

Humanist therapists, like Carl Rogers (1902–1987), often rebelled against Freudian approaches to therapy. For example, Rogers (in the white shirt leading a group therapy session) referred to people as “clients” rather than “patients” as Freud did.
## Summary 1.2

### Pioneering Approaches to Psychology

<table>
<thead>
<tr>
<th></th>
<th>Foundation of psychology</th>
<th>Things to remember</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilhelm Wundt (1832–1920)</td>
<td>Structuralism</td>
<td>Behavior can be broken down into its components.</td>
</tr>
<tr>
<td>Max Wertheimer (1880–1943)</td>
<td>Gestalt psychology</td>
<td>Breaking behavior into components loses meaning.</td>
</tr>
<tr>
<td>William James (1842–1910)</td>
<td>Functionalism</td>
<td>Behavior is purposeful and contributes to survival.</td>
</tr>
<tr>
<td>Ivan Pavlov (1849–1936)</td>
<td>Behaviorism</td>
<td>Experience is the primary source of behavior.</td>
</tr>
<tr>
<td>Ulric Neisser (1928– )</td>
<td>Cognitive revolution</td>
<td>Private mental processing can be studied scientifically.</td>
</tr>
<tr>
<td>Sigmund Freud (1856–1939)</td>
<td>Freud’s psychodynamic theory</td>
<td>Ideas about the unconscious mind, the role of experience in abnormal behavior, and new approaches to therapy laid a foundation for later study in personality and therapy.</td>
</tr>
<tr>
<td>Abraham Maslow (1908–1970)</td>
<td>Humanism</td>
<td>People are naturally good and are motivated to improve.</td>
</tr>
</tbody>
</table>
What Are Psychological Perspectives?

Like William James, the behaviorists and Freudians tried to answer the “big questions” of psychology with one single approach. However, it is difficult to build a big theory (which we discuss in our research methods chapter) without a large body of experimental data, and psychology was still a young science. To fill this gap, some psychologists began to pursue an understanding of behavior from more specific points of view, or perspectives. By specializing in only one part of the discipline, as opposed to trying to answer everything at once, these psychologists began to gain an in-depth understanding of the mind.

By the second half of the 20th century, the majority of psychologists were pursuing the perspective approach. Examining psychological phenomena from different perspectives does not imply disagreement, conflict, or a lack of awareness of alternate perspectives. In most cases, a psychologist’s perspective simply means that he or she is examining behavior from that point of view. For example, watching a child learn a new vocabulary word will have very different meanings to the biological, developmental, evolutionary, cognitive, social, or behavioral psychologist.

Reflecting the traditional divisions of the field, it is common for psychologists to refer to themselves as social psychologists, developmental psychologists, and so on, indicating their area of specialization and interest. Departments of psychology at universities often continue this organization, and students applying to graduate school in psychology might apply to one particular area of expertise, like choosing an undergraduate major. To illustrate the distinctions among some of the main perspectives, we will consider how each might approach the question of human memory, discussed in detail in a later chapter on memory, as this topic is especially important to students who wish to perform well on their exams.

Seven Perspectives of Psychology

Biological psychology, also referred to as behavioral neuroscience, focuses on the relationships between mind and behavior and their underlying biological processes, including genetics, biochemistry, anatomy, and physiology. In other words, biological psychologists are interested in the physical mechanisms associated with behavior. As we will see in our chapter on biological psychology, technological advances beginning in the 1970s, especially new methods for observing brain activity, initiated an explosion of knowledge about the connections between brain and behavior. Using these new technologies, biological psychologists have approached the question of storage and retrieval of memories in many different ways, ranging from observing changes in communication between nerve cells in slugs to investigating the effects of stress hormones on the ability to form memories. The focus of this perspective is on the mechanisms used to store and retrieve memories, such as changes in the structure of nerve cells or in the biochemical environment of the nervous system.

The great question that has never been answered and which I have not been able to answer, despite my thirty years of research into the feminine soul, is “What does a woman want?”

—Sigmund Freud
Evolutionary psychologists are interested in how our modern behaviors were shaped by our species' history.

A closely related perspective, evolutionary psychology, attempts to answer the question of how our physical structure and behavior have been shaped by their contributions to our species' survival. This perspective should sound familiar to you—it is a modern extension of William James's functionalism, which we discussed previously. Earlier, we also saw evolutionary psychology at work in the shaping of our sensitivity to bitter tastes. The basic principle of evolutionary psychology is that our current behavior exists in its present form because it provided some advantage in survival and reproduction to our ancestors. An evolutionary psychologist might be interested in the fact that we have a very good memory for faces, and particularly for faces of people who have cheated us in the past (Barclay & Lalumière, 2006). In the world of the hunter-gatherer, being cheated out of one's fair share of the hunt was likely to lead to starvation for you and your family, and people who could not keep track of the cheaters were unlikely to survive and reproduce.

Cognitive psychology focuses on the process of thinking, or the processing of information. Because our ability to remember plays an integral part in the processing of information, a cognitive psychologist is likely to have a lot to say about the storage and retrieval of memories. A cognitive psychologist might ask why processing seems different when we are trying to remember names and dates while taking a history test compared to remembering how to ride a bicycle. What processes lead to the frustrating experience of “tip of the tongue,” in which you remember the first letter or a part of the word you're trying to retrieve but not the whole thing? What strategies can we use to make our memories more efficient? We address these and similar issues in our chapters on memory and cognition.

Social psychology is important to our understanding of many contemporary problems, including prejudice. In one experiment, some people describing what they heard from other participants about a drawing of a White man threatening a Black man with a razor switched the races of the two men (Allport & Postman, 1945). They now “remembered” hearing about a Black man threatening a White man. Given our judicial system's dependence on eyewitness testimony, understanding these social tendencies provides important guidance.

Social psychology
The psychological perspective that investigates how behavior is influenced by the presence of other people and social contexts.

Evolutionary psychology
The psychological perspective that investigates how physical structure and behavior have been shaped by their contributions to survival and reproduction.

Cognitive psychology
The psychological perspective that investigates information processing, thinking, reasoning, and problem solving.
Social psychology describes the effects of the social environment, including culture, on the behavior of individuals. Social psychologists recognize that we each construct our own realities and that the social environment influences our thoughts, feelings, and behavior. Early psychologists were limited in their understanding of the mind by their exclusive focus on their own sociocultural contexts. More recently, social psychologists have emphasized the need to explore the influences of sociocultural context and biology on our behavior. Returning to our memory example, the social psychologist might ask how being in the presence of others influences the storage and retrieval of data. When we sit comfortably in our own homes, the answers to Who Wants to Be a Millionaire questions come quite easily. In front of millions of viewers, however, we might be lucky to remember our own names.

Developmental psychology explores the normal changes in behavior that occur across the lifespan. Using the developmental perspective, a psychologist might look at how memory functions in people of different ages. Three-month-old babies can retain the memory that kicking moves a mobile suspended above their crib for about a month without further practice (Rovee-Collier, 1997). However, most of us have difficulty recalling events that occurred before the age of 3 to 4 years or so. Teens and young adults are able to remember names much faster than are older adults (Bashore, Radderinkhof, & van der Molen, 1997). We explore these and other age-related changes in memory in our chapter on lifespan development.

Psychologists continue to be interested in what happens when normal behavior breaks down. The clinical psychology perspective seeks to explain, define, and treat abnormal behaviors. More recently, clinical and counseling psychologists have expanded their perspective to include the
Developmental psychologists look at the behavior that is typical for people of certain ages, from infancy to old age.

Individual differences
An approach to psychology that investigates variations in behavior from one person to the next.

Personality
An individual's characteristic way of thinking, feeling, and behaving.

Promotion of general well-being, which we describe in a later chapter on positive psychology. Many types of psychological disorders impact memory. Freud believed that traumatizing experiences were more difficult to remember, a process he labeled repression (which will be discussed further in our chapters on memory and psychological disorders). In other cases, war veterans and others who have experienced trauma might be troubled by memories that are too good, producing intrusive flashback memories of disturbing events.

Finally, although much of psychology explores how the average person thinks, feels, or acts, some people are not average at all. Psychologists interested in all varieties of behavior, not just the most typical types, pursue an individual differences perspective (see Figure 1.8). Recognizing individual differences is especially important to psychologists interested in variations in personality. Using our example of memory, we can see how individual differences in “need for cognition” can predict memory for verbal material (Cacioppo, Petty, Feinstein, & Jarvis, 1996). People who have a high need for cognition enjoy mental challenges, like solving difficult puzzles. As we’ll see in our chapter on social psychology, individuals who are high in need for cognition also respond differently to persuasive messages.

Thinking Scientifically

Can the Use of a Single Perspective Be Misleading?

We have argued that restricting our thinking about an aspect of mind to the information provided by one perspective can result in an incomplete picture, but can this single-perspective approach actually lead us in the wrong direction?

The answer to that question is a resounding yes. Consider the following example. You are a biological psychologist interested in the effects of amphetamine on aggression. You know from past experience that rhesus monkeys are very social animals, so it doesn’t make much sense to study them in isolation. Much to your surprise, you find that amphetamine produces no effects at all on the aggressiveness of a colony of rhesus monkeys (Dawe, Davis, Lapworth, & McKetin, 2009).

Your single biological psychology perspective can help explain why the individual monkeys are more aggressive under the influence of amphetamine, but it does not provide much help in explaining why you don’t see the same results when you study the monkeys in a group. However, when you add the insights of social psychology to those of biological psychology, a clearer picture emerges. The social world of the rhesus monkey consists of a strong hierarchy, or pecking order, with each male monkey knowing his position relative to all the others in the colony. Higher ranking monkeys engage in dominance behaviors, including vocalizations and threats, to remind the lower ranking monkeys about who is the boss. Lower ranking monkeys avoid aggression and other signs of dominance by engaging in submissive behaviors designed to prevent aggression, such as imitation (Adams, 1982).
Studying individual rhesus monkeys will provide useful information, but for these very social animals, incorporating a social perspective helps us understand them more fully.

When you take a monkey’s rank in the social hierarchy into account (adding the social perspective to the biological one), a clear picture of the results emerges. Amphetamine has different results on aggression that depend on the social status of the animal. Amphetamine increases dominance behavior by dominant monkeys and increases submissive behavior by submissive monkeys. If you just added up all the amphetamine effects for the group, the increases and decreases would cancel each other out, making it look like amphetamine had no effects at all. By adding the social perspective to the question, the discrepancy between the individual and group results can be explained easily. This example illustrates that restricting ourselves to one perspective might cloud our understanding.

**Figure 1.8**

**Individual Differences: The Geography of Personality.** Where in the United States do you think the most outgoing, extroverted people live? Would you believe that North Dakota has more extroverts than California or New York? Psychologists studying individual differences found that the Midwest has the highest proportion of extroverted people in the country. Why would this be the case? Perhaps the need to develop tight social networks to survive the harsh climate in this part of the United States favored extroverts.

When you take a monkey’s rank in the social hierarchy into account (adding the social perspective to the biological one), a clear picture of the results emerges. Amphetamine has different results on aggression that depend on the social status of the animal. Amphetamine increases dominance behavior by dominant monkeys and increases submissive behavior by submissive monkeys. If you just added up all the amphetamine effects for the group, the increases and decreases would cancel each other out, making it look like amphetamine had no effects at all. By adding the social perspective to the question, the discrepancy between the individual and group results can be explained easily. This example illustrates that restricting ourselves to one perspective might cloud our understanding.
Entering the 21st century and armed with in-depth research results compiled in the various perspectives, psychologists are returning to the more comprehensive view of the mind envisioned over 100 years ago by William James. Their questions and methods are more likely to blur the lines of the perspectives outlined earlier, often with remarkable results.

Although the 20th-century perspective approach to psychology generated detailed understanding of aspects of behavior and mental processes, it has become more apparent that single perspectives are insufficient for fully describing and explaining psychological phenomena. For example, if we want to understand the phenomenon of drug abuse, many perspectives can contribute to our understanding, but no one specialty offers a complete explanation. Biological psychologists approach drug abuse by tracing pathways in the brain correlated with cravings, developmental and social psychologists consider the family and peer influences, and so on. In each case, we learn something valuable about drug abuse, but understanding the “whole” requires us to zoom out for a more comprehensive perspective (see Figure 1.9).

We don’t have a crystal ball that will allow us to foresee psychology’s future. However, we strongly believe that this future will be one of combining and integrating new and existing perspectives. Many of these new ways of looking at the mind will take advantage of the revolution in techniques for studying the
brain that began in the 1970s and continues. Already, today’s cognitive neuroscientists investigate the brain as an information-processing system and search for the biological basis of topics such as attention, decision making, and memory. Social neuroscientists investigate the biological factors that vary along with people’s feelings and experience of social inclusion, rejection, or loneliness. Behavioral neuroscientists pick up previous lines of research on learning, memory, motivation, and sleep and search for connections between these processes and our biology. Clinical and counseling psychologists are more likely today to consider biological processes in their theories about the causes of psychological disorders. By merging our seven perspectives of mind, we stand a much better chance of tackling the remarkable problem of understanding the human mind (see Figure 1.10).

**What Does It Mean to Be a Psychologist?**

In 2006–2007, more than 90,000 students in the United States received bachelor’s degrees in psychology (APS Observer, 2010). This amounts to approximately 6% of the 1.5 million bachelor’s degrees awarded that year. What are these students likely to be doing in the workforce?

Some students with undergraduate degrees in psychology prefer employment in fields that are directly related to psychology, such as working in research facilities or rehabilitation centers for drug abuse or brain damage. Others are quite successful in a wide variety of “people-oriented” jobs, such as those found in management, sales, service, public affairs,
education, human resources, probation, and journalism. This diversity of career pathways reflects once again the “hub” nature of psychology to other fields.

Graduates with master’s degrees in psychology, usually requiring one to two years of additional study past the bachelor’s degree, can teach at the community college (2-year) level and obtain licensing as therapists in most states, as we discuss further in our chapter on therapies. Many master’s level psychologists are employed in health, industry, and education (American Psychological Association [APA], 2009). School psychologists typically work on elementary, middle school, or high school campuses. These psychologists participate in academic and career counseling as well as the identification and remediation of problems that interfere with student success.

Many people working in psychology have earned doctoral degrees, which usually take 2 to 5 years of study beyond the master’s level. As shown

Experiencing Psychology

Which Psychology Careers Work for Me?

Please don’t assume that we are trying to recruit you to a career in psychology, but just in case you might consider the possibility of becoming a psychologist, you can take the following quiz to help you identify which type of psychology career might fit you best. Obviously, your campus career counselors offer many additional resources to help you make important choices about your career path, and we recommend that you take advantage of their expertise.

For each question, circle the answer that fits you best.

These questions can be used to divide students’ interests into therapy, applied, and research tracks in psychology. Therapists, as we have described in this chapter, typically work with clients but might also teach. Examples of applied psychology include forensic psychology (application of psychology to the study of crime and the legal system) and sports

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you enjoy working directly with people to help them overcome problems?</td>
<td>Yes</td>
<td>No</td>
<td>Sometimes</td>
</tr>
<tr>
<td>2. Do you enjoy solving theoretical problems?</td>
<td>Yes</td>
<td>No</td>
<td>Sometimes</td>
</tr>
<tr>
<td>3. Do you enjoy classes that focus on experimental design?</td>
<td>Yes</td>
<td>No</td>
<td>Sometimes</td>
</tr>
<tr>
<td>4. Are you good at mathematics and statistics?</td>
<td>Yes</td>
<td>No</td>
<td>Somewhat</td>
</tr>
<tr>
<td>5. Do you enjoy working to solve practical, real-world problems?</td>
<td>Yes</td>
<td>No</td>
<td>Somewhat</td>
</tr>
<tr>
<td>6. Would you enjoy working with clients in a doctor’s office, hospital, or mental health clinic?</td>
<td>Yes</td>
<td>No</td>
<td>Somewhat</td>
</tr>
<tr>
<td>7. Is earning a high salary important to you?</td>
<td>Yes</td>
<td>No</td>
<td>Somewhat</td>
</tr>
<tr>
<td>8. Are you able to deal with high-stress situations with people who may be psychologically or emotionally unstable?</td>
<td>Yes</td>
<td>No</td>
<td>Possibly</td>
</tr>
</tbody>
</table>
in Figure 1.11, about 32% of new doctoral level psychologists do what your professor and the authors of your textbook do: teach and conduct research at colleges and universities. About 37% of new doctoral level psychologists work as therapists, either in private practice or in hospitals and clinics. Smaller numbers of new doctoral level psychologists find employment in business and government settings, elementary and secondary schools, and other related fields.

Psychologists entering doctoral programs traditionally identify with one of the major perspectives we discussed earlier, such as social, cognitive, psychology (working with athletes to optimize performance). Psychologists who teach and conduct research on college and university campuses have pursued the experimental track.

Use the following table to identify which of the tracks is most similar to your answers. Circle your answer for each question and see if you can find a pattern.

<table>
<thead>
<tr>
<th>Question number</th>
<th>Therapy</th>
<th>Applied</th>
<th>Experimental</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>Sometimes</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Sometimes or No</td>
<td>Sometimes or No</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Sometimes or No</td>
<td>Sometimes or No</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Somewhat or No</td>
<td>Somewhat or No</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td>Somewhat or No</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>Somewhat</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>Yes</td>
<td>Somewhat or No</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>Possibly</td>
<td>No</td>
</tr>
</tbody>
</table>

Forensic psychologists attempt to understand the criminal mind and to develop effective treatments for criminal behavior.

Sports psychologist Vietta Wilson uses biofeedback to help Canadian biathlete Graham Mater maximize his performance.
or biological. The distribution of new doctoral graduates in psychology by perspective is shown in Figure 1.12. Choosing a graduate perspective is similar to choosing an undergraduate major. Although all psychology graduate students might take core courses in research methods and statistics, they typically pursue coursework and research in their particular area of specialization. However, training of psychologists in the 21st century is beginning to reflect the connections occurring in the field itself. Increasingly, students are being trained in combined specialties (e.g., cognitive neuroscience) as psychology becomes a more integrated field of study.

The most rigid distinction occurs between graduate students planning to specialize in clinical or counseling psychology and those who do not. The clinical or counseling “major” includes extensive internships and supervised training prior to government-regulated licensure that usually add at least one year to students’ graduate studies. Do not assume that your psychology professors are all therapists. The likelihood is that they are not. It is also important to distinguish between therapists with doctoral degrees in psychology and psychiatrists, who are medical doctors. Currently, the biggest difference between the two professions is that psychiatrists can prescribe medication, but psychologists usually cannot. In New Mexico and Louisiana, however, specially trained psychologists can legally prescribe medications, and this trend might spread to other states. In our chapter on therapies, we will provide more detail about the different types of therapists who treat adjustment problems and psychological disorders.
### Summary 1.3

#### Seven Psychological Perspectives

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Things to remember</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological psychology</td>
<td>Investigates the connections between the mind, behavior, and biological processes.</td>
</tr>
<tr>
<td>Evolutionary psychology</td>
<td>Asks how our evolutionary past continues to shape our behavior.</td>
</tr>
<tr>
<td>Cognitive psychology</td>
<td>Investigates mental processes including thinking, problem solving, and information processing.</td>
</tr>
<tr>
<td>Social psychology</td>
<td>Asks how our behavior is affected by the presence of others.</td>
</tr>
<tr>
<td>Developmental psychology</td>
<td>Investigates the normal changes in behavior that occur across the lifespan</td>
</tr>
<tr>
<td>Clinical psychology</td>
<td>Explains, defines, and treats psychological disorders and promotes general well-being</td>
</tr>
<tr>
<td>Individual perspective and personality</td>
<td>Recognizes that behavior varies around averages and that individual differences often interact with environments.</td>
</tr>
</tbody>
</table>
Summary 1.3 (continued)

What Do Psychologists Do?

<table>
<thead>
<tr>
<th>Typical academic degree</th>
<th>Possible areas of employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s degree</td>
<td>Rehabilitation, research assistance, management, sales, service, public affairs, education, human resources, probation, journalism</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>Community college teaching, marriage and family counseling, health, education</td>
</tr>
<tr>
<td>Doctor of Philosophy (PhD)</td>
<td>University teaching and research, therapy, business, government, education</td>
</tr>
<tr>
<td>Medical doctor (MD)*</td>
<td>Psychiatry</td>
</tr>
</tbody>
</table>

*Medical doctors who practice psychiatry are not really "psychologists," as implied by the title of the table, but we think it’s important for you to know where they fit in.

Interpersonal Relationships
From the Psychological Perspective

We gave quite a lot of thought to how we might help you, the students reading our book, to see psychology more as an interconnected discipline than as a collection of separate perspectives. The introductory psychology course provides a unique opportunity to see all the perspectives at one time, in contrast to upper division courses that typically focus on one specialty area at a time (personality, social, cognitive, and so on).

One way to connect the dots is to take a single problem and see how the different perspectives represented in the subsequent chapters would address it. We used a mini version of this approach in this chapter when we discussed memory from the vantage point of each perspective. In each chapter, this feature will have more of a perspective flavor, but by the end of the textbook, you will have seen everybody weigh in with different perspectives to give you the whole picture. Because it is most helpful to know something about the perspectives before seeing how they apply, we are saving this feature for the end of each chapter. Ideally, seeing the chapter material in action will make it more memorable for you.
The single problem we have chosen to consider this way is one that we know to be on the minds of many of our students: relationships. We are a social species, and the quality of our relationships has a huge impact on our physical and psychological well-being (Cacioppo & Hawkley, 2009). We will see how each of the major perspectives view the question of quality relationships and how the perspectives work together to give us the best understanding possible of this important aspect of life.

By three methods we may learn wisdom: First, by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest.

—Confucius

INTERPERSONAL RELATIONSHIPS FROM THE PSYCHOLOGICAL PERSPECTIVE
This chapter began with a question about why we are so much more sensitive to bitter tastes than to sweet tastes. Initially, this question might have seemed straightforward, best answered by a psychologist who specializes in sensation and perception. We hope that after reading this chapter, you now realize that yes, the specialist has a great deal to say about taste, but we more fully understand psychological questions when we integrate the explanations of specialists working in multiple perspectives.

Just as the Gestalt psychologists that you read about in this chapter believed that perceptions were different than the sum of individual sensations, we believe that our understanding of psychological phenomena benefits from the integration of the contributions of individual specialties. In the case of the bitter tastes, the sensation and perception specialist might emphasize the physical qualities of the taste stimulus, the taste receptors, and the pathways taken by taste information to the brain. Although this is essential and useful information, we gain even more understanding by integrating the specialist’s information with input from additional perspectives. The evolutionary perspective highlights the benefits of sensitivity to bitter tastes for avoiding poisons, which of course enhances survival. The developmental perspective reminds us that children are more sensitive to taste than adults, which is probably why the bitter broccoli elicits a strong response from the little boy in the photograph at the beginning of the chapter. Our social connectivity and culture also play important roles, as we eat differently in the presence of others and form likes and dislikes depending on our exposure to certain flavors.

In the remaining chapters, we will continue to emphasize benefits of zooming out periodically to view the whole of psychological phenomena, not just the separate parts contributed by single perspectives.
KEY TERMS The Language of Psychological Science

Be sure you can define these terms and use them correctly.

behaviorism, p. 18
biological psychology, p. 27
clinical psychology, p. 29
cognitive psychology, p. 28
culture, p. 29
developmental psychology, p. 29
evolutionary psychology, p. 28

functionalism, p. 15
Gestalt psychology, p. 15
humanistic psychology, p. 24
individual differences, p. 30
introspection, p. 5
mind, p. 5
personality, p. 30

philosophy, p. 6
physical science, p. 6
psychology, p. 5
social psychology, p. 29
structuralism, p. 14

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