

Module 1



Psychology and Its History

LEARNING TARGETS

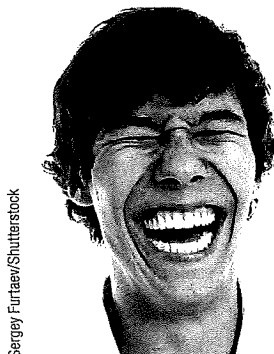
- 1-1 Explain how psychology is a science and why the “rat is always right.”
- 1-2 Describe the three key elements of the scientific attitude and how they support scientific inquiry.
- 1-3 Explain how critical thinking feeds a scientific attitude, and smarter thinking for everyday life.
- 1-4 Describe how psychology developed from early understandings of mind and body to the beginnings of modern science.
- 1-5 Describe some important milestones in psychology’s early development.
- 1-6 Explain how behaviorism, Freudian psychology, and humanistic psychology furthered the development of psychological science.



AP® EXAM TIP

To assist your active learning of psychology, Learning Targets are grouped together at the start of each module and then framed as questions that appear at the beginning of the pertinent section of reading. It helps to keep the question in mind as you read through a section to make sure that you are following the main point of the discussion.

Once upon a time, on a planet in our neighborhood of the universe, there came to be people. Soon thereafter, these creatures became intensely interested in themselves and in one another: “Who are we? What produces our thoughts? Our feelings? Our actions? And how are we to understand and manage those around us?”



Sergey Furtsov/Shutterstock



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Jim Craigmyle/Getty Images

A smile is a smile the world around The science of psychology builds from the input of multiple disciplines in many lands. As you will see throughout this book, we’ve come to learn not only of our cultural and gender diversity but also of the similarities that define our shared human nature. People in different cultures vary in when and how often they smile, for example, but a naturally happy smile *means* the same thing anywhere in the world.

Psychology Is a Science

- 1-1 How is psychology a science, and why is it the “rat is always right?”

Underlying all science is, first, a passion to explore and understand without misleading or being misled. Some questions (*Is there life after death?*) are beyond science. Answering them in any way requires a leap of faith. With many other ideas (*Can some people demonstrate ESP?*), the proof is in the pudding. Let the facts speak for themselves.

Magician James Randi has used a scientific *approach* when testing those claiming to see glowing auras around people’s bodies:

Randi: Do you see an aura around my head?

Aura seer: Yes, indeed.

Randi: Can you still see the aura if I put this magazine in front of my face?

Aura seer: Of course.

Randi: Then if I were to step behind a wall barely taller than I am, you could determine my location from the aura visible above my head, right?

Randi once told me [DM] that no aura seer had agreed to take this simple test.

Thinking Critically About: The Scientific Attitude

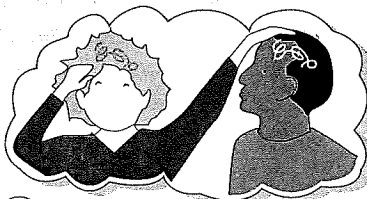
Three basic attitudes helped make modern science possible.

1-2 What are the three key elements of the scientific attitude, and how do they support scientific inquiry?

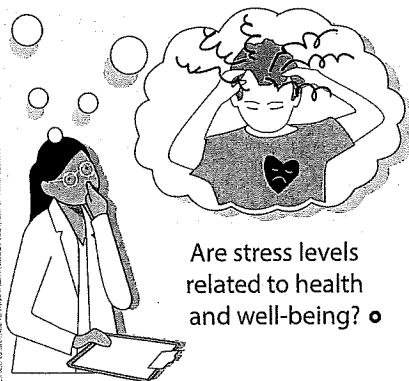
1 CURIOSITY:

Does it work?

When put to the test, can its predictions be confirmed?



Can some people read minds?



Are stress levels related to health and well-being? •

No one has yet been able to demonstrate extrasensory mind-reading.

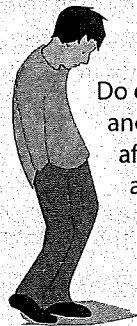
- Many studies have found that higher stress relates to poorer health.

2 SKEPTICISM:

What do you mean?

How do you know?

Sifting reality from fantasy requires a healthy skepticism—an attitude that is not cynical (doubting everything), but also not gullible (believing everything).



Do our facial expressions and body postures affect how we actually feel? •

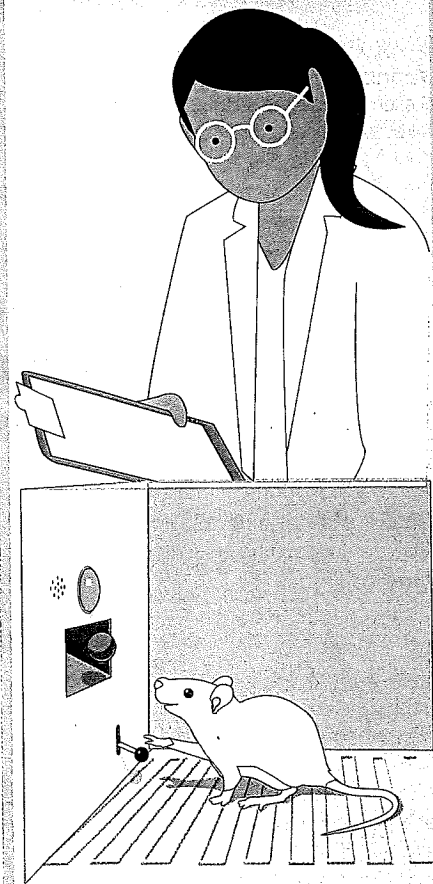


Do parental behaviors determine children's sexual orientation—or not? •

- Our facial expressions and body postures can affect how we feel.
- As you will see in Module 53, there is not a relationship between parental behaviors and a child's sexual orientation.

3 HUMILITY:

Researchers must be willing to be surprised and follow new ideas. People and other animals don't always behave as our ideas and beliefs would predict.



The rat is always right.



The Amazing Randi The magician James Randi exemplifies skepticism. He has tested and debunked supposed psychic phenomena.

No matter how sensible-seeming or how wild an idea, the smart thinker asks *Does it work?* When put to the test, do the data support its predictions? Subjected to such scrutiny, crazy-sounding ideas sometimes find support. During the 1700s, scientists scoffed at the notion that meteorites had extraterrestrial origins. When the Yale scientists challenged the conventional opinion, Thomas Jefferson reportedly jeered, "Gentlemen, I would rather believe that those two Yankee professors would lie than to believe that stones fell from Heaven." Sometimes scientific inquiry turns jeers into cheers.

More often, science becomes society's garbage disposal, sending crazy-sounding ideas to the waste heap, atop previous claims of perpetual motion machines, miracle cancer cures, and out-of-body travels into centuries past. To sift reality from fantasy, sense from nonsense, verified facts from fake news therefore requires a scientific attitude: being skeptical but not cynical, open but not gullible. When ideas compete, careful testing can reveal which ones best match the facts. Can astrologers predict your future based on the planets' position at your birth? Is electroconvulsive therapy (delivering an electric shock to the brain) an effective treatment for severe depression? As we will see, putting such claims to the test has led psychological scientists to answer *No* to the first question and *Yes* to the second.

Putting a scientific attitude into practice requires not only curiosity and skepticism but also humility—an awareness of our own vulnerability to error and openness to new perspectives. What matters is not my opinion or yours, but the truths revealed by our questioning and testing. If people or other animals do not behave as our ideas predict, then so much the worse for our ideas. This humble attitude was expressed in one of psychology's early mottos: "The rat is always right" (See Thinking Critically About: The Scientific Attitude.)

Critical Thinking

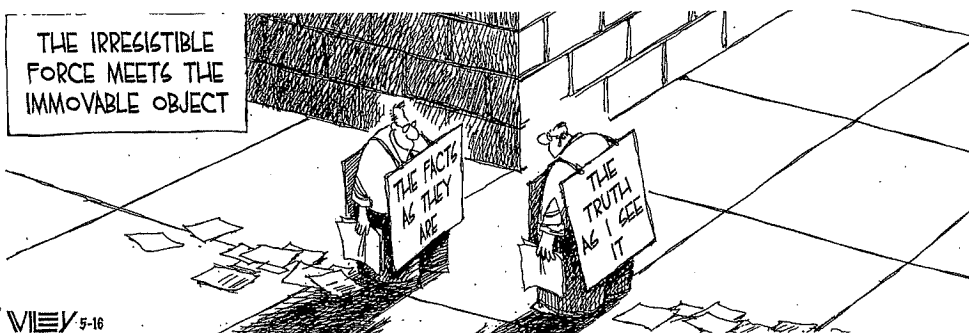
critical thinking thinking that does not blindly accept arguments and conclusions. Rather, it examines assumptions, appraises the source, discerns hidden biases, evaluates evidence, and assesses conclusions.



1-3 How does critical thinking feed a scientific attitude, and smarter thinking for everyday life?

The scientific attitude—curiosity + skepticism + humility—prepares us to think harder and smarter. This thinking style, called **critical thinking**, examines assumptions, appraises the source, discerns hidden biases, evaluates evidence, and assesses conclusions. Whether reading a research report or an online opinion, or listening to news or a talk show, critical thinkers ask questions: *How do they know that? What is this person's agenda? Is the conclusion based on evidence?*

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on anecdote, or on evidence? Does the evidence justify a cause-effect conclusion? What alternative explanations are possible?

Critical thinkers wince when people make factual claims based on gut intuition: “I *feel like* climate change is [or isn’t] happening.” “I *feel like* self-driving cars are more [or less] dangerous.” “I *feel like* my candidate is more honest.” Such beliefs (commonly mislabeled as feelings) may or may not be true. Critical thinkers are open to the possibility that they might be wrong. Sometimes, they know, the best evidence confirms their intuitions. Sometimes it challenges them and beckons them to a different way of thinking.

Critical thinking, informed by science, helps clear the colored lenses of our biases. Consider: Does climate change threaten our future, and, if so, is it human-caused? In 2016, climate-action advocates interpreted record Louisiana flooding as evidence of climate change. In 2015, climate-change skeptics perceived North American bitter winter cold as discounting global warming. Rather than having their understanding of climate change swayed by recent weather, critical thinkers say, “Show me the evidence.” Over time, is the Earth actually warming? Are the polar ice caps melting? Are vegetation patterns changing? And is human activity emitting atmospheric CO₂ that would lead us to expect such changes?

When contemplating such issues, critical thinkers will also consider the credibility of sources. They will also look at the evidence (*Do the facts support them, or are they just makin’ stuff up?*). They will recognize multiple perspectives. And they will expose themselves to news sources that challenge their preconceived ideas.

Some religious people may view critical thinking and scientific inquiry, including psychology’s, as a threat. Yet many of the leaders of the scientific revolution, including Copernicus and Newton, were deeply religious people acting on the idea that “in order to love and honor God, it is necessary to fully appreciate the wonders of his handiwork” (Stark, 2003a,b)

Critical thinking can lead us to surprising findings. Some examples from psychological science: Massive losses of brain tissue early in life may have minimal long-term effects (see Module 12). Within days, newborns can recognize their mother by her odor (see Module 45). After brain damage, a person may be able to learn new skills yet be unaware of such learning (see Modules 31–33). Diverse groups—men and women, old and young, rich and middle class, those with and without disabilities—report roughly comparable levels of personal happiness (see Module 83).

As later modules illustrate, critical inquiry sometimes also debunks popular pre-suppositions. Sleepwalkers are *not* acting out their dreams (see Module 24). Our past experiences are *not* all recorded verbatim in our brains; with brain stimulation or hypnosis, one *cannot* simply replay and relive long-buried or repressed memories (see Module 33). Most people do *not* suffer from unrealistically low self-esteem, and high self-esteem is *not* all good (see Module 59). Opposites tend *not* to attract (see Module 79). In these

FYI

Throughout the text, important concepts are **boldfaced**, and important people are underlined. As you study, you can find the key terms with their definitions in a nearby margin and in the Glossary/Glosario at the book’s end. (In the e-book, definitions are always a click away.) You will find a list of each unit’s key contributors in the Unit Review and in Appendix C, Psychological Science’s Key Contributors, at the back of the book.

From a tongue-in-cheek Twitter feed:

“The problem with quotes on the Internet is that you never know if they’re true.”

Abraham Lincoln

“My deeply held belief is that if a god anything like the traditional sort exists, our curiosity and intelligence are provided by such a god. We would be unappreciative of those gifts . . . if we suppressed our passion to explore the universe and ourselves.”

Carl Sagan, *Broca’s Brain*, 1979



Life after studying psychology The study of psychology and its critical thinking strategies have helped prepare people for varied occupations, as illustrated by Facebook founder Mark Zuckerberg (who studied psychology and computer science while at Harvard) and Natalie Portman (who majored in psychology and co-authored a scientific article at Harvard—and on one of her summer breaks was filmed for *Star Wars: Episode I*).

Paul Sakuma/AP Images

Photos 12/Alamy

FYI

Information sources are cited in parentheses, with name and date. Every citation can be found in the end-of-book References, with complete documentation that follows American Psychological Association (APA) style.

instances and many others, what psychological scientists have learned is not what is widely believed.

Psychology's critical inquiry can also identify effective policies. To deter crime, should we invest money in lengthening prison sentences, or increase the likelihood of arrest? To help people recover from a trauma, should counselors help them relive it, or not? To increase voting, should we tell people about the low turnout problem, or emphasize that their peers are voting? What matters is not what we "feel" is true, but what *is* true. When put to critical thinking's test—and contrary to common practice—the second option in each of this paragraph's examples wins (Shafir, 2013).

**Check Your Understanding****Ask Yourself**

- Were you surprised to learn that psychology is a science? How would you defend that point if someone else now asked you about this?

Test Yourself

- Describe what's involved in critical thinking.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

**AP® EXAM TIP**

Memory research reveals a *testing effect*: We retain information much better if we actively retrieve it by self-testing and rehearsing. (More on this in Module 2.) To bolster your learning and memory, take advantage of the self-testing opportunities you will find throughout this text. These Check Your Understanding sections will appear periodically throughout each module. The *Ask Yourself* questions will help you relate the material to your life (making it more memorable). You can check your answers to the *Test Yourself* review questions in Appendix E. (In the e-book, answers are a click away.)

Prescientific Psychology**1-4 How did psychology develop from early understandings of mind and body to the beginnings of modern science?**

To be human is to be curious about ourselves and the world around us. We can trace many of psychology's current questions back to historic *philosophical* and *physiological* approaches. These early thinkers wondered: How does our mind work? How does our body relate to our mind? How much of what we know comes built in? How much is acquired through experience?

In ancient Greece, the philosopher-teacher Socrates (469–399 B.C.E.) and his student Plato (428–348 B.C.E.) concluded that mind is separable from body and continues after the body dies, and that knowledge is innate—born within us. Unlike Socrates and Plato, who derived principles by logic, Plato's student Aristotle (384–322 B.C.E.) loved data. An intellectual ancestor of today's scientists, Aristotle derived principles from careful observations. Moreover, he said knowledge is *not* preexisting (sorry, Socrates and Plato); instead it grows from the experiences stored in our memories.

The next 2000 years brought few enduring new insights into human nature, but that changed in the 1600s, when modern science began to flourish. With it came new theories of human behavior and new versions of the ancient debates. A frail but brilliant Frenchman named René Descartes [day-CART] (1595–1650) agreed with Socrates and Plato about the existence of innate ideas and mind's being "entirely distinct from body" and able to survive its death. Descartes' concept of mind forced him to wonder, as people have ever since, how the immaterial mind and physical body communicate. A scientist as well as a philosopher, Descartes dissected animals and concluded that the fluid in the brain's cavities contained "animal spirits." These spirits, he surmised, flowed from the brain through what we call the nerves (which he thought were hollow) to the muscles, provoking movement. Memories formed as experiences opened pores in the brain into which the animal spirits also flowed.

Descartes was right that nerve paths are important and that they enable reflexes. Yet, genius though he was, and standing upon the knowledge accumulated from 99+ percent of our human history, he hardly had a clue of what today's average 12-year-old knows. Indeed, most of the scientific story of our self-exploration—the story told in this book—has been written in but the last historical eye-blink of human time.

“If I see further, it is by standing on the shoulders of giants.”

Isaac Newton, writing to a friend in 1676

Meanwhile, across the English Channel in Britain, science was taking a more down-to-earth form, centered on experiment, experience, and commonsense judgment. Francis Bacon (1561–1626) became one of the founders of modern science, and his influence lingers in the experiments of today's psychological science. Bacon also was fascinated by the human mind and its failings. Anticipating what we have come to appreciate about our mind's hunger to perceive patterns even in random events, he wrote that "the human understanding, from its peculiar nature, easily supposes a greater degree of order and equality in things than it really finds" (*Novum Organum*, 1620).

Some 50 years after Bacon's death, John Locke (1632–1704), a British political philosopher, sat down to write a one-page essay on "our own abilities" for an upcoming discussion with friends. After 20 years and hundreds of pages, Locke had completed one of history's greatest late papers (*An Essay Concerning Human Understanding*). In it he famously argued that the mind at birth is a *tabula rasa*—a "blank slate"—on which experience writes. This idea, adding to Bacon's ideas, helped form modern **empiricism**, the idea that what we know comes from experience, and that observation and experimentation enable scientific knowledge.

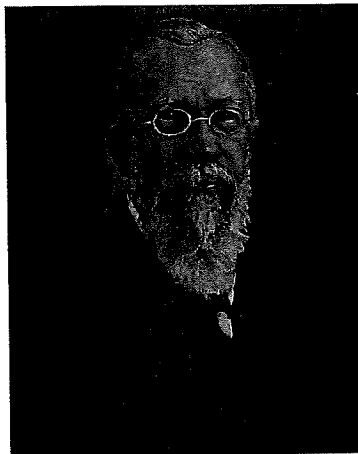
empiricism the idea that knowledge comes from experience, and that observation and experimentation enable scientific knowledge.

Psychological Science Is Born

 **1-5** What were some important milestones in psychology's early development?

Psychology's First Laboratory

Philosophers' thinking about thinking continued until the birth of psychology as we know it. That happened on a December day in 1879, in a small, third-floor room at Germany's University of Leipzig. There, two young men were helping an austere, middle-aged professor, Wilhelm Wundt, create an experimental apparatus. Their machine measured how long it took for people to press a telegraph key after hearing a ball hit a platform (Hunt, 1993). Curiously, people responded in about one-tenth of a second when asked to press the key as soon as the sound occurred—and in about two-tenths of a second when asked to press the key as soon as they were consciously aware of perceiving the sound. (To be aware of one's awareness takes a little longer.) Wundt was seeking to measure "atoms of the mind"—the fastest and simplest mental processes. So began the first psychological laboratory, staffed by Wundt and by psychology's first graduate students. (In 1883, Wundt's American student G. Stanley Hall went on to establish the first formal U.S. psychology laboratory, at Johns Hopkins University.)



AP® EXAM TIP

Every question on the AP® Psychology exam will reflect the fact that psychology is a science built on the tradition of Wundt and his laboratory. Correct test answers are based on what research has revealed, not on "common sense"!

Wilhelm Wundt (1832–1920)

Wundt established the first psychology laboratory at the University of Leipzig, Germany.

Psychology's First Schools of Thought

 **Flip It Video: Structuralism vs. Functionalism**

Before long, this new science of psychology became organized into different branches, or schools of thought, each promoted by pioneering thinkers. These early schools included *structuralism*, *functionalism*, and *behaviorism*, described here (with more on behaviorism in Modules 26–30), and two schools described in later modules: *Gestalt* psychology (Module 19) and *psychoanalysis* (Module 55).

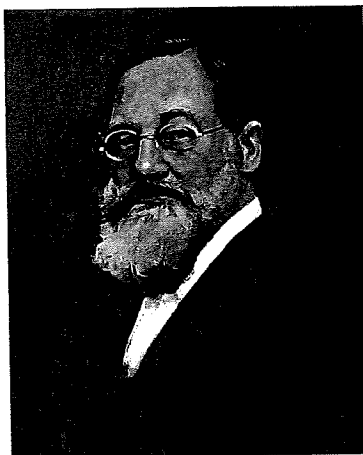
Structuralism

Soon after receiving his Ph.D. in 1892, Wundt's student Edward Bradford Titchener joined the Cornell University faculty and introduced **structuralism**. Much as chemists developed the periodic table to classify chemical elements, Titchener aimed to classify and understand

structuralism an early school of thought promoted by Wundt and Titchener; used introspection to reveal the structure of the human mind.

Edward Bradford Titchener (1867–1927) Titchener used introspection to search for the mind's structural elements.

introspection the process of looking inward in an attempt to directly observe one's own psychological processes.



elements of the mind's structure. He engaged people in self-reflective **introspection** (looking inward), training them to report elements of their experience as they looked at a rose, listened to a metronome, smelled a scent or tasted a substance. What were their immediate sensations, their images, their feelings? And how did they relate to one another? Alas, structuralism's technique of introspection proved somewhat unreliable. It required smart, verbal people, and its results varied from person to person and experience to experience. Moreover, people often just don't know why we feel what we feel and what we do. Research suggests that people's recollections frequently err. So do their self-reports about what, for example, has caused them to help or hurt another (Myers, 2002). As introspection waned, so did structuralism.

Functionalism

Hoping to assemble the mind's structure from simple elements was rather like trying to understand a car by examining its disconnected parts. Philosopher-psychologist William James thought it would be more fruitful to consider the evolved functions of our thoughts and feelings. Smelling is what the nose does; thinking is what the brain does. But *why* the nose and brain do these things? Under the influence of evolutionary theorist Charles Darwin, James assumed that thinking, like smelling, developed because it was *adaptive*—helped our ancestors survive and reproduce. Consciousness serves a function. It enables us to consider our past, adjust to our present, and plan our future. As a **functionalist**, James studied down-to-earth emotions, memories, willpower, habits, and moment-to-moment streams of consciousness.

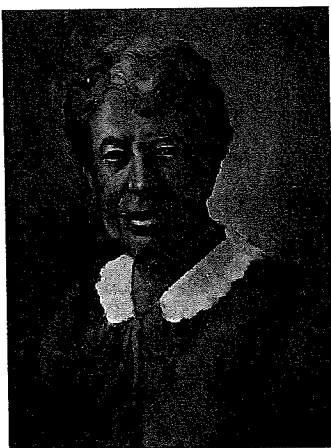
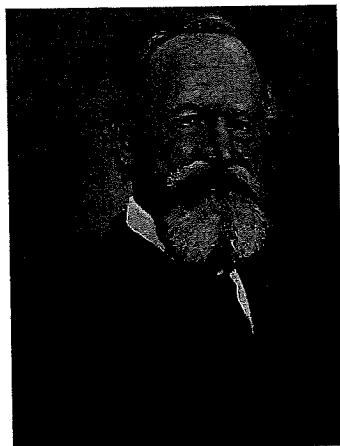
functionalism an early school of thought promoted by James and influenced by Darwin; explored how mental and behavioral processes function—how they enable the organism to adapt, survive, and flourish.

James' greatest legacy, however, came less from his laboratory than from his Harvard teaching and his writing. When not plagued by ill health and depression, James was an impulsive, outgoing, and joyous man, who once recalled that "the first lecture on psychology I ever gave was the first I ever gave." During one of his wise-cracking lectures, a student interrupted and asked him to get serious (Hunt, 1993). He loved his students, his family, and the world of ideas, but he was tired of painstaking chores such as proofreading. "Send me no proofs!" he once told his editor. "I will return them unopened and never speak to you again" (Hunt, 1993, p. 145).

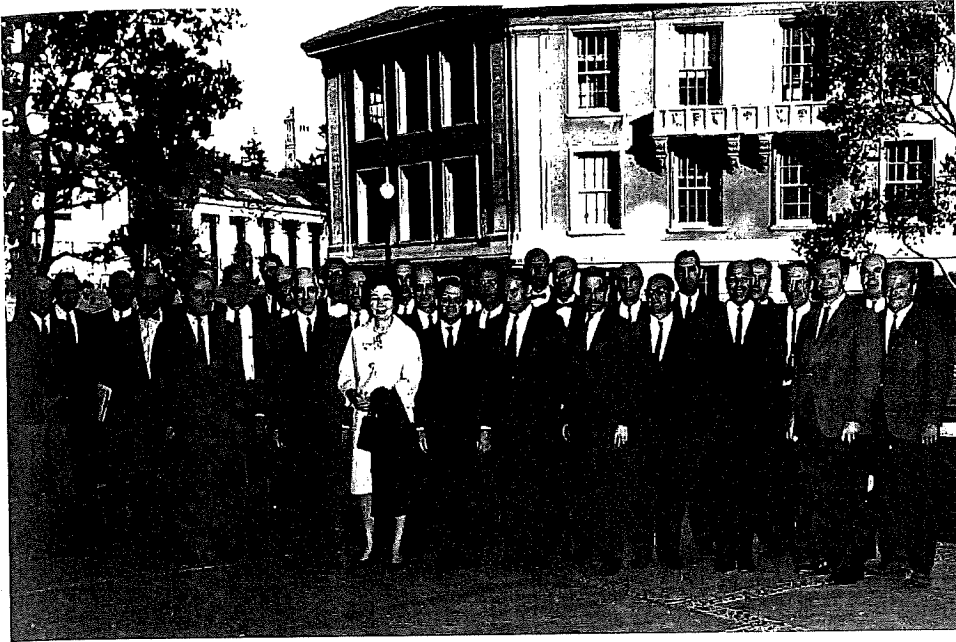
James' writings moved the publisher Henry Holt to offer James a contract for a textbook on the new science of psychology. James agreed and began work in 1878, with an apology requesting two years to finish his writing. The text proved an unexpected chore and actually took him 12 years. (Why are we not surprised?) More than a century later, people still read the resulting *Principles of Psychology* (1890) and marvel at the brilliance and elegance with which James introduced psychology to the educated public.

Psychology's First Women

James' legacy stems from his Harvard mentoring as well as from his writing. In 1890, thirty years before American women had the right to vote, he admitted Mary Whiton Calkins into his graduate seminar—over the objections of Harvard's president (Scarborough & Furumoto, 1987). When Calkins joined, the other students (all men) dropped out. So James tutored her alone. Later, she finished all of Harvard's Ph.D. requirements, outscoring all



William James (1842–1910) and Mary Whiton Calkins (1863–1930) James was a legendary teacher-writer who authored an important 1890 psychology text. He mentored Calkins, who became a pioneering memory researcher and the first woman to be president of the American Psychological Association.



1964 meeting of the Society of Experimental Psychologists in Berkeley, California. Reprinted by permission of the Society of Experimental Psychologists. <http://www.sepsych.org/1964.php>

Formerly male and pale Over the past half century, psychology has shifted from a mostly white, male discipline to one where women now receive most Ph.D.s. Pioneering female psychologists, such as Inez Beverly Prosser (the first African-American woman to receive a psychology Ph.D., in 1933) and Eleanor Gibson (the only woman in this photo from the 1964 Society of Experimental Psychologists—the group that had barred Margaret Floy Washburn), helped pave the way. In 1971, Kenneth Clark became the APA's first African-American president, and psychology has since then increasingly flourished in diverse communities around the world.

male students on the qualifying exams. Alas, Harvard denied her the degree she had earned, offering her instead a degree from Radcliffe College, its undergraduate “sister” school for women. Calkins resisted the unequal treatment and refused the degree. She nevertheless went on to become a distinguished memory researcher and in 1905 became the first female president of the American Psychological Association (APA)—a national organization of professional and academic psychologists.

The honor of being the first official female psychology Ph.D. later fell to Margaret Floy Washburn, who also wrote an influential book, *The Animal Mind*, and became the second female APA president in 1921. Her thesis was the first foreign study Wundt published in his psychology journal, but Washburn's gender barred doors for her, too. She could not join the all-male organization of *experimental psychologists* (who explore behavior and thinking with experiments), despite its being founded by Titchener, her own graduate adviser (Johnson, 1997). What a different world from the recent past—1997 to 2017—when women were 10 of the 20 elected presidents of the science-oriented Association for Psychological Science. In the United States, Canada, and Europe, most psychology doctorates are now earned by women.



Margaret Floy Washburn (1871–1939) The first woman to receive a psychology Ph.D., Washburn synthesized animal behavior research in *The Animal Mind* (1908).



Check Your Understanding

Ask Yourself

- How do you think psychology might change in the future as more women contribute their ideas to the field?

Test Yourself

- What event defined the start of modern scientific psychology?
- Why did introspection fail as a method for understanding how the mind works?

- The school of _____ used introspection to define the mind's makeup; _____ focused on how mental processes enable us to adapt, survive, and flourish.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Psychological Science Matures



1-6 How did behaviorism, Freudian psychology, and humanistic psychology further the development of psychological science?



AP® EXAM TIP

There are lots of important people in psychology. As you study, focus on the significance of their accomplishments. You are more likely to be tested on what a finding means than who discovered it.

behaviorism the view that psychology (1) should be an objective science that (2) studies behavior without reference to mental processes. Most psychologists today agree with (1) but not with (2).

In psychology's early days, many psychologists shared with the English essayist C. S. Lewis the view that "there is one thing, and only one in the whole universe which we know more about than we could learn from external observation." That one thing, Lewis said, was ourselves. "We have, so to speak, inside information" (1960, pp. 18–19). Wundt and Titchener focused on inner sensations, images, and feelings. James also engaged in introspective examination of the stream of consciousness and of emotion. For these and other early pioneers, *psychology* was defined as "the science of mental life."

Behaviorism

That definition endured until the 1920s, when the first of two provocative American psychologists appeared on the scene. John B. Watson, and later B. F. Skinner, dismissed introspection and redefined *psychology* as "the scientific study of observable behavior." At all, they said, science is rooted in observation: What you cannot observe and measure, you cannot scientifically study. You cannot observe a sensation, a feeling, or a thought, but you *can* observe and record people's *behavior* as they are *conditioned*—as they respond to and learn in different situations. Many agreed, and **behaviorism** was one of two major forces in psychology well into the 1960s.

Freudian (Psychoanalytic) Psychology

The other major force was Sigmund Freud's psychoanalytic psychology, which emphasized the ways our unconscious mind and childhood experiences affect our behavior. (In later modules, we'll look more closely at Freud's teachings, including his theory of personality.)

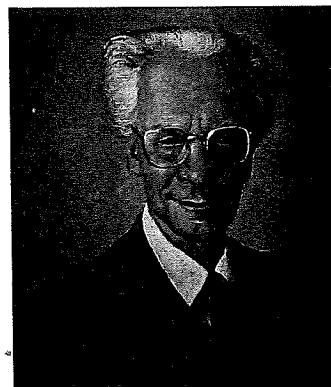
John B. Watson (1878–1958) and Rosalie Rayner (1898–1935)

Working with Rayner, Watson championed psychology as the scientific study of behavior. In a controversial study on a baby who became famous as "Little Albert," he and Rayner showed that fear could be learned. (More about this in Module 26.)

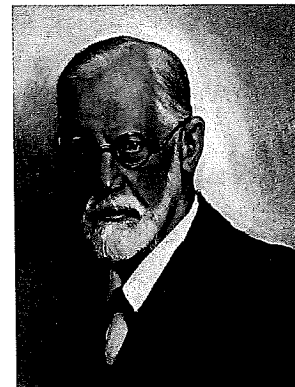


B. F. Skinner (1904–1990)

(Left) This leading behaviorist rejected introspection and studied how consequences shape behavior.



Sigmund Freud (1856–1939) (Right) The controversial ideas of this famed personality theorist and therapist have influenced humanity's self-understanding.



and his views on unconscious sexual conflicts and the mind's defenses against its own wishes and impulses.)

Humanistic Psychology

As the behaviorists had rejected the early 1900's definition of *psychology*, other groups rejected the behaviorist definition. In the 1960s, **humanistic psychologists**, led by Carl Rogers and Abraham Maslow, found both behaviorism and Freudian psychology too limiting. Rather than focusing on conditioned responses or childhood memories, the humanistic psychologists focused on our potential for personal growth. (More about the humanistic psychologists in Module 57.)

humanistic psychology a historically significant perspective that emphasized human growth potential.



Check Your Understanding

Ask Yourself

- Before this course, how would you have characterized the influence of Freudian theories in psychology? Would you have placed this influence in a historical or modern context?

Test Yourself

- From the 1920s to the 1960s, the two major forces in psychology were _____ and _____ psychology.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 1 REVIEW

1-1 How is psychology a science, and why is it the "rat is always right"?

- Psychology's findings are the result of careful observation and testing, and the so-called "rat" (as in a psychologist's maze, for example) is always right, because the facts are the facts even when we find them surprising.

1-2 What are the three key elements of the scientific attitude, and how do they support scientific inquiry?

- The scientific attitude equips us to be curious, skeptical, and humble in scrutinizing competing ideas or our own observations.

1-3 How does critical thinking feed a scientific attitude, and smarter thinking for everyday life?

- Critical thinking puts ideas to the test by examining assumptions, appraising the source, discerning hidden biases, evaluating evidence, and assessing conclusions.

1-4 How did psychology develop from early understandings of mind and body to the beginnings of modern science?

- The ancient Greeks—Plato and Aristotle—pondered whether mind and body are connected or distinct, and whether human ideas are innate or result from experience.
- Descartes and Locke reengaged those ancient debates, with Locke offering his famous description of the mind

as a "blank slate" on which experience writes. The ideas of Bacon and Locke contributed to the development of modern *empiricism*.

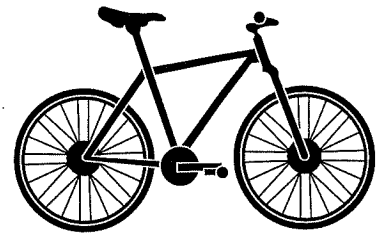
1-5 What were some important milestones in psychology's early development?

- Wilhelm Wundt established the first psychological laboratory in 1879 in Germany.
- Two early schools of thought in psychology were *structuralism* and *functionalism*.
- Structuralism, promoted by Wundt and Titchener, used self-reflection to learn about the mind's structure. Functionalism, promoted by James, explored how behavior and thinking function.

1-6 How did behaviorism, Freudian psychology, and humanistic psychology further the development of psychological science?

- Early researchers defined *psychology* as "the science of mental life." In the 1920s, under the influence of John B. Watson and the behaviorists, the field's focus changed to the "scientific study of observable behavior." *Behaviorism* became one of psychology's two major forces well into the 1960s.
- The second major force of *Freudian psychology*, along with the influence of *humanistic psychology*, revived interest in the study of mental processes.

Today's Psychology and Its Approaches



Contemporary Psychology

- 🔗 **2-1** How has contemporary psychology focused on cognition, biology and experience, culture and gender, and human flourishing?

Simultaneous with humanistic psychology's emergence, psychologists in the 1960s pioneered a *cognitive revolution*. This led the field back to its early interest in *cognition*—how our mind processes and retains information. **Cognitive psychology** today continues its scientific exploration of how we perceive, process, and remember information and of how thinking and emotion interact in anxiety, depression, and other disorders. The marriage of cognitive psychology (the science of mind) and neuroscience (the science of brain) gave birth to **cognitive neuroscience**. This specialty, with researchers in many disciplines, studies the brain activity underlying mental activity.

Today's psychology builds on the work of many earlier scientists and schools of thought. To encompass psychology's concern with observable behavior *and* with inner thoughts and feelings, we now define **psychology** as the *science of behavior and mental processes*. Let's unpack this definition. *Behavior* is anything an organism *does*—any action we can observe and record. Yelling, smiling, blinking, sweating, talking, and questionnaire marking are all observable behaviors. *Mental processes* are the internal, subjective experiences we infer from behavior—sensations, perceptions, dreams, thoughts, beliefs, and feelings.

The key word in psychology's definition is *science*. Psychology is less a set of findings than a way of asking and answering questions. Our aim, then, is not merely to report results but also to show you how psychologists play their game. You will see how researchers evaluate conflicting opinions and ideas. And you will learn how all of us, whether scientists or simply curious people, can think harder and smarter when experiencing and explaining the events of our lives.

Psychology has roots in many disciplines and countries. The young science of psychology developed from the more established fields of philosophy and biology. Wundt was both a philosopher and a physiologist. James was an American philosopher. Freud was an Austrian physician. Ivan Pavlov, who pioneered the study of learning, was a Russian physiologist. Jean Piaget, the last century's most influential observer of children, was a Swiss biologist. These "Magellans of the mind," as psychology historian Morton Hunt (1993) called them, illustrate the diversity of psychology's origins.

Like those pioneers, today's estimated 1+ million psychologists are citizens of many lands (Zoma & Gielen, 2015). The International Union of Psychological Science has 82 member nations, from Albania to Zimbabwe. In China, the first university psychology department was established in 1978; by 2016 there were some 270, not counting AP® Psychology courses now taught in some secondary schools (Zhang, 2016). Moreover, thanks to international publications, joint meetings, and the Internet, collaboration and communication cross borders more than ever. Psychology is *growing*, and it is *globalizing*. The story of psychology—the subject of this book—continues to develop in many places, at many levels, with interests ranging from the study of nerve cell activity to the study of international

LEARNING TARGETS

- 🔗 **2-1** Describe how contemporary psychology focuses on cognition, biology and experience, culture and gender, and human flourishing.
- 🔗 **2-2** Describe the biopsychosocial approach and psychology's main theoretical perspectives.
- 🔗 **2-3** Explain how psychological principles can help you learn, remember, and thrive, and do better on the AP® exam.

cognitive psychology the study of mental processes, such as occur when we perceive, learn, remember, think, communicate, and solve problems.

cognitive neuroscience the interdisciplinary study of the brain activity linked with cognition (including perception, thinking, memory, and language).

psychology the science of behavior and mental processes.

nature–nurture issue the longstanding controversy over the relative contributions that genes and experience make to the development of psychological traits and behaviors. Today's science sees traits and behaviors arising from the interaction of nature and nurture.



AP® EXAM TIP

Pay close attention to what your authors, David Myers and Nathan DeWall, are emphasizing as they tell the story of psychology. When they say the nature–nurture issue is the *biggest* issue in psychology, that's a sign that it's likely to be covered on the AP® exam.

natural selection the principle that inherited traits that better enable an organism to survive and reproduce in a particular environment will (in competition with other trait variations) most likely be passed on to succeeding generations.

evolutionary psychology the study of the evolution of behavior and the mind, using principles of natural selection.

behavior genetics the study of the relative power and limits of genetic and environmental influences on behavior.

A nature-made nature–nurture experiment Identical twins (left) have the same genes. This makes them ideal participants in studies designed to shed light on hereditary and environmental influences on personality, intelligence, and other traits. Fraternal twins (right) have different genes but often share a similar environment. Twin studies provide a wealth of findings—described in later modules—showing the importance of both nature and nurture.

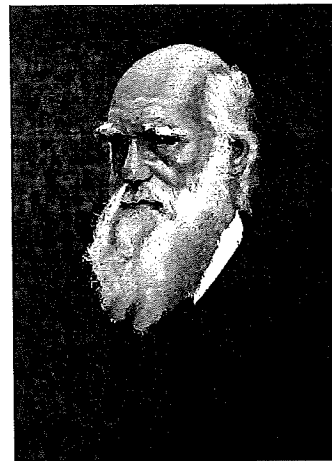
conflicts. Contemporary psychology, shaped by many forces, is particularly influenced by our understanding of biology and experience, culture and gender, and human flourishing.

Evolutionary Psychology and Behavior Genetics

Are our human traits inherited, or do they develop through experience? This has been psychology's biggest and most persistent issue. As we have seen, the debate over **nature–nurture issue** is ancient. The ancient Greeks debated this, with Socrates and Plato assuming that we inherit character and intelligence and that certain ideas are also innate, and Aristotle countering that there is nothing in the mind that does not first come in from the external world through the senses.

In the 1600s, philosophers rekindled the debate. Locke rejected the notion of innate ideas, suggesting that the mind is a blank slate on which experience writes. Descartes disagreed, believing that some ideas are innate. Descartes' views gained support from a curious naturalist two centuries later.

In 1831, an indifferent student but ardent collector of beetles, mollusks, and shells set out on a historic round-the-world journey. The 22-year-old voyager, Charles Darwin, pondered the incredible species variation he encountered, including tortoises on one island that differed from those on nearby islands. Darwin's 1859 *On the Origin of Species* explained this diversity by proposing the evolutionary process of **natural selection**: From among chance variations, nature selects traits that best enable an organism to survive and reproduce in a particular environment.



Charles Darwin (1809–1882)
Darwin argued that natural selection shapes behaviors as well as bodies.

Darwin's principle of natural selection—what philosopher Daniel Dennett (1996) has called “the single best idea anyone has ever had”—is still with us 150+ years later as biology's organizing principle. Evolution also has become an important principle for twenty-first-century psychology. It would surely have pleased Darwin, who believed his theory explained not only animal structures (such as a polar bear's white coat) but also animal behaviors (such as the emotive expressions associated with human lust and rage).

The nature–nurture issue recurs throughout this text as today's psychologists explore the relative contributions of biology and experience. They ask, for example, how we humans *alike* because of our common biology and evolutionary history? That's the focus of **evolutionary psychology**. And how do we individually *differ* because of our differing genes and environments? That's the focus of **behavior genetics**.



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We can, for example, ask: Are gender differences biologically predisposed or socially constructed? Is children's grammar mostly innate or formed by experience? How are intelligence and personality differences influenced by heredity and by environment? Are sexual behaviors more "pushed" by inner biology or "pulled" by external incentives? Should we treat psychological disorders—depression, for example—as disorders of the brain, disorders of thought, or both?

Such debates continue. Yet over and over again we will see that in contemporary science the nature–nurture tension dissolves: *Nurture works on what nature provides*. Our species is biologically endowed with an enormous capacity to learn and adapt. Moreover, every psychological event (every thought, every emotion) is simultaneously a biological event. Thus, depression can be both a brain disorder and a thought disorder.



Check Your Understanding

Ask Yourself

- Think of one of your own unique traits. How do you think that trait was affected by the influences of nature and nurture?

Test Yourself

- How did the cognitive revolution affect the field of psychology?

- What is natural selection?

- What is contemporary psychology's position on the nature–nurture issue?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

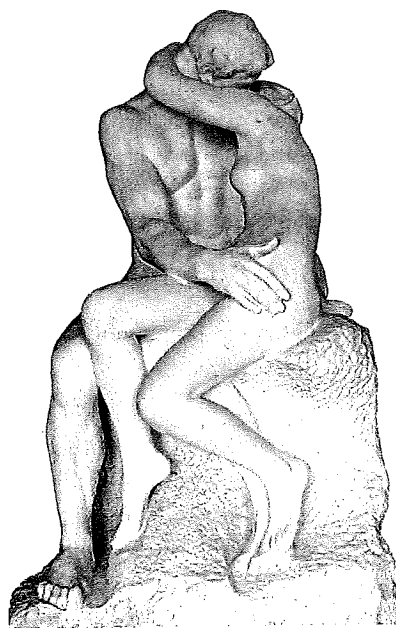
Cross-Cultural and Gender Psychology

What can we learn about people in general from psychological studies done in one time and place—often with participants from what psychologists have called the WEIRD cultures (Western, Educated, Industrialized, Rich, and Democratic [Henrich et al., 2010])? As we will see time and again, **culture**—shared ideas and behaviors that one generation passes on to the next—matters. Our culture shapes our behavior. It influences our standards of promptness and frankness, our attitudes toward premarital sex and varying body shapes, our tendency to be casual or formal, our willingness to make eye contact, our conversational distance, and much, much more. Being aware of such differences, we can restrain our assumptions that others will think and act as we do.

culture the enduring behaviors, ideas, attitudes, values, and traditions shared by a group of people and transmitted from one generation to the next.



Mark Outhbert/Getty Images



Henis/Alamy

Culture and kissing Kissing crosses cultures. Yet how we do it varies. Imagine yourself kissing someone on the lips. Do you tilt your head right or left? In Western cultures, in which people read from left to right, about two-thirds of couples kiss right, as in William and Kate's famous kiss, and in Auguste Rodin's sculpture, *The Kiss*. In one study, 77 percent of Hebrew- and Arabic-language right-to-left readers kissed tilting left (Shaki, 2013).

“All people are the same; only their habits differ.”

Confucius, 551–479 B.C.E.

It is also true, however, that our shared biological heritage unites us as a universal human family. The same underlying processes guide people everywhere. Some examples:

- People diagnosed with *specific learning disorder* (formerly called dyslexia) exhibit the same brain malfunction whether they are Italian, French, or British (Paulesu et al., 2001).
- Variation in languages may impede communication across cultures. Yet all languages share deep principles of grammar, and people from opposite global hemispheres communicate with a smile or a frown.
- People in different cultures vary in feelings of loneliness (Lykes & Kemmelmeier, 2014). Even across cultures, loneliness is magnified by shyness, low self-esteem, and being unmarried (Jones et al., 1985; Rokach et al., 2002).

We are each in certain respects like all others, like some others, and like no other. Studying people of all races and cultures helps us discern our similarities and our differences, our human kinship and our diversity.

You will see throughout this book that one's socially defined *gender* (as well as one's biologically defined sex) matters, too. Today's researchers report gender differences in what we dream, in how we express and detect emotions, and in our risk for alcohol use disorder, depression, and eating disorders. Gender differences fascinate us, and studying them is potentially beneficial. For example, many researchers have observed that women carry conversations more readily to build relationships, while men talk more to give information and advice (Tannen, 2001). Understanding these differences can help us prevent conflicts and misunderstandings in everyday interactions.

But again, psychologically as well as biologically, women and men are overwhelmingly similar. Whether female or male, we learn to walk at about the same age. We experience the same sensations of light and sound. We remember vivid emotional events and forget mundane details. We feel the same pangs of hunger, desire, and fear. We exhibit similar overall intelligence and well-being.

The point to remember: Even when specific attitudes and behaviors vary by gender across cultures, as they often do, the underlying processes are much the same.

Positive Psychology

Psychology's first hundred years often focused on understanding and treating troubles such as abuse and anxiety, depression and disease, prejudice and poverty. Much of today's psychology continues the exploration of such challenges. Without slighting the need to repair damage and cure disease, Martin Seligman and others (2002, 2005, 2011) have called for more research on *human flourishing*. These psychologists call their approach **positive psychology**. They believe that happiness is a by-product of a pleasant, engaged, and meaningful life. Thus, positive psychology uses scientific methods to explore the building of a “good life” that engages our skills and a “meaningful life” that points beyond ourselves.

positive psychology the scientific study of human flourishing, with the goals of discovering and promoting strengths and virtues that help individuals and communities to thrive.

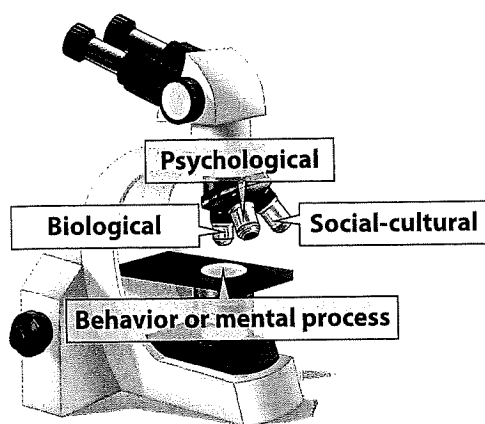
The Biopsychosocial Approach and Psychology's Theoretical Perspectives



2-2 What is the biopsychosocial approach, and what are psychology's main theoretical perspectives?

Each of us is a complex system that is part of a larger social system. But each of us is also composed of smaller systems, such as our nervous system and body organs, which are composed of still smaller systems—cells, molecules, and atoms.

These tiered systems offer complementary outlooks. Consider horrific school shootings: Have they occurred because the shooters have brain disorders or genetic tendencies that cause them to be violent? Because they have observed brutality and mayhem in the media?

**Biological influences:**

- genetic *predispositions* (genetically influenced traits)
- genetic *mutations* (random errors in gene replication)
- natural selection of adaptive traits and behaviors passed down through generations
- genes responding to the environment

Psychological influences:

- learned fears and other learned expectations
- emotional responses
- cognitive processing and perceptual interpretations

Behavior or mental process**Social-cultural influences:**

- presence of others
- cultural, societal, and family expectations
- peer and other group influences
- compelling models (such as in the media)

or played violent video games? Because they live in a gun-toting society? Such perspectives are complementary. Together, the biological, psychological, and social-cultural viewpoints form an integrated **biopsychosocial approach** (Figure 2.1).

Within this broad approach, psychology has more focused theoretical perspectives. Each offers a way of looking at a behavior or mental process, yet each by itself is incomplete. Each theoretical perspective described in **Table 2.1** asks different questions and has its limits. Together they complement one another. Consider, for example, how they shed light on anger:

- Someone working from the **behavioral** perspective might attempt to determine what triggers angry responses or aggressive acts.
- Someone working from the **biological** perspective might study brain circuits that cause us to be red in the face and “hot under the collar,” or how heredity and experience influence our individual differences in temperament.
- Someone working from the *cognitive* perspective might study how our interpretation of a situation affects our anger and how our anger affects our thinking.
- Someone working from the *evolutionary* perspective might analyze how anger facilitated the survival of our ancestors’ genes.
- Someone working from the *humanistic* perspective (a historically important approach defined earlier in this unit) might be interested in understanding how angry feelings affect a person’s potential for growth. As we will see, modern-day *positive psychology* incorporates humanistic psychology’s emphasis on human flourishing.

Figure 2.1**Biopsychosocial approach**

This integrated approach incorporates three viewpoints to offer a more complete picture of any given behavior or mental process.

AP® EXAM TIP

You will see versions of Figure 2.1 throughout the text. Spend some time right now familiarizing yourself with how the figure’s three viewpoints might contribute to behavior or mental processes, the very stuff of psychology.

biopsychosocial approach

an integrated approach that incorporates biological, psychological, and social-cultural viewpoints.

behavioral psychology the scientific study of observable behavior, and its explanation by principles of learning.

biological psychology the scientific study of the links between biological (genetic, neural, hormonal) and psychological processes. (Some biological psychologists call themselves *behavioral neuroscientists*, *neuropsychologists*, *behavior geneticists*, *physiological psychologists*, or *biopsychologists*.)

AP® EXAM TIP

These perspectives will come up again and again throughout your AP® Psychology course, and they likely *will* be on the exam. You need to become very comfortable with the meaning of terms such as *behavioral*, *cognitive*, and *psychodynamic*. Ask your teacher for clarification if you are the least bit unclear about what the perspectives mean.

TABLE 2.1 Psychology's Theoretical Perspectives

Perspective	Focus	Sample Questions
<i>Behavioral</i>	How we learn observable responses	How do we learn to fear particular objects or situations? What is the most effective way to alter our behavior, for example, to lose weight?
<i>Biological</i>	How the body and brain enable emotions, memories, and sensory experiences; how our genes and our environment influence our individual differences	How do pain messages travel from the hand to the brain? How is blood chemistry linked with moods and motives? To what extent are psychological traits such as intelligence, personality, sexual orientation, and vulnerability to depression products of our genes? Of our environment?
<i>Cognitive</i>	How we encode, process, store, and retrieve information	How do we use information in remembering? Reasoning? Solving problems?
<i>Evolutionary</i>	How the natural selection of traits has promoted the survival of genes	How does evolution influence behavior tendencies?
<i>Humanistic</i>	How we achieve personal growth and self-fulfillment	How can we work toward fulfilling our potential? How can we overcome barriers to our personal growth?
<i>Psychodynamic</i>	How behavior springs from unconscious drives and conflicts	How can someone's personality traits and disorders be explained by unfulfilled wishes and childhood traumas?
<i>Social-cultural</i>	How behavior and thinking vary across situations and cultures	How are we affected by the people around us, and by our surrounding culture?

psychodynamic psychology a branch of psychology that studies how unconscious drives and conflicts influence behavior and uses that information to treat people with psychological disorders.

social-cultural psychology the study of how situations and cultures affect our behavior and thinking.

- Someone working from the **psychodynamic** perspective (which evolved from Freud's psychoanalysis) might view an outburst as an outlet for unconscious hostility.
- Someone working from the **social-cultural** perspective might explore how expressions of anger vary across cultural contexts.

The point to remember: Like two-dimensional views of a three-dimensional object, each of psychology's perspectives is helpful. But each by itself fails to reveal the whole picture.

With perspectives ranging from the biological to the social, psychology relates to many fields. As we will see in Module 3, psychologists may be found in settings ranging from laboratory to the clinic to the office. They may teach in medical schools, law schools, and high schools, or work in hospitals, factories, and corporate offices. They engage in interdisciplinary



Views of anger How would each of psychology's theoretical perspectives explain what's going on here?

studies, such as psychohistory (the study of people's historical motivations), psycholinguistics (the study of language and thinking), and psychoceramics (the study of crackpots).¹

Psychology also influences modern culture. Knowledge transforms us. Learning about the solar system and the germ theory of disease alters the way people think and act. Learning about psychology's findings also changes people: They less often judge psychological disorders as moral failings, treatable by punishment and ostracism. They less often regard and treat women as men's mental inferiors. They less often view and raise children as ignorant, willful beasts in need of taming. "In each case," noted Morton Hunt (1990, p. 206), "knowledge has modified attitudes, and, through them, behavior." Once aware of psychology's well-researched ideas—about how body and mind connect, how a child's mind grows, how we construct our perceptions, how we learn and remember, how people across the world are alike (and different)—your mind may never again be quite the same.

But bear in mind psychology's limits. Don't expect it to answer the ultimate questions, such as those posed by Russian novelist Leo Tolstoy (1904): "Why should I live? Why should I do anything? Is there in life any purpose which the inevitable death that awaits me does not undo and destroy?"

Although many of life's significant questions are beyond psychology, some very important ones are illuminated by even a first psychology course. Through painstaking research, psychologists have gained insights into brain and mind, dreams and memories, depression and joy. Even the unanswered questions can renew our sense of mystery about things we do not yet understand. And, as you will see in Modules 4–8, your study of psychology can help teach you how to ask and answer important questions as you evaluate competing ideas and claims.

Psychology deepens our appreciation for how we humans perceive, think, feel, and act. By so doing it can enrich our lives and enlarge our vision. Through this book we hope to help guide you toward that end. As educator Charles Eliot said a century ago: "Books are the quietest and most constant of friends, and the most patient of teachers."

“Once expanded to the dimensions of a larger idea, [the mind] never returns to its original size.”

Oliver Wendell Holmes, 1809–1894



Check Your Understanding

Ask Yourself

- ▶ How have your cultural experiences influenced your development?
- ▶ When you signed up for this course, what did you think psychology would be all about?

Test Yourself

- ▶ What advantage do we gain by using the biopsychosocial approach in studying psychological events?
- ▶ The _____ perspective in psychology focuses on how behavior and thought differ from situation to situation and from culture to culture, while the _____ perspective emphasizes observation of how we respond to and learn in different situations.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Use Psychology to Become a Stronger Person—and a Better Student



2-3 How can psychological principles help you learn, remember, and thrive, and do better on the AP® exam?

Throughout this text, we will offer evidence-based suggestions that you can use to live a happy, effective, flourishing life, including the following:

- *Get a full night's sleep.* Unlike sleep-deprived people, who live with fatigue and gloomy moods, well-rested people live with greater energy, alertness, and productivity.

¹Confession: I [DM] wrote the last part of this sentence on April Fool's Day.

- *Make space for exercise.* Aerobic activity not only increases health and energy, it also is effective remedy for mild to moderate depression and anxiety.
- *Set long-term goals, with daily aims.* Successful people take time each day to work toward their goals, such as exercising or sleeping more, or eating more healthfully. Over time they often find that their daily practice becomes a habit.
- *Have a “growth mindset.”* Rather than seeing their abilities as fixed, successful people view their mental abilities as like a muscle—something that grows stronger with effective use.
- *Prioritize relationships.* We humans are social animals. We flourish when connected in close relationships. We are both happier and healthier when supported by (and supporting) caring friends.

testing effect enhanced memory after retrieving, rather than simply rereading, information. Also referred to as a *retrieval practice effect* or *test-enhanced learning*.

SQ3R a study method incorporating five steps: Survey, Question, Read, Retrieve, Review.

Psychology's research also shows how we can learn and retain information. Many students assume that the way to cement new learning is to reread. What helps even more—what this book therefore encourages—is repeated self-testing and rehearsal of previously studied material. Memory researchers Henry Roediger and Jeffrey Karpicke (2006) call this phenomenon the **testing effect**. They note that “testing is a powerful means of improving learning, not just assessing it.” In one of their studies, English-speaking students recalled the meaning of 40 previously learned Swahili words much better if tested repeatedly than if they spent the same time restudying the words (Karpicke & Roediger, 2008). Many of these studies, including in college classrooms, confirm that *frequent quizzing and self-testing boost students' retention* (McDaniel et al., 2015; Trumbo et al., 2016).

As you will see in Modules 31–33, to master information you must *actively process* it. Your mind is not like your stomach, something to be filled passively; it grows strong only with effort. Countless experiments reveal that people learn and remember best when they put material in their own words, rehearse it, and then retrieve and review it again.

The **SQ3R** study method incorporates these principles (McDaniel et al., 2015; Robinson, 1970). SQ3R is an acronym for its five steps: Survey, Question, Read, Retrieve, Review. We have organized this book in a way that facilitates your use of the SQ3R study system.

To study a module, first *survey*, taking a bird's-eye view. Scan the headings, and note how the module is organized. Before you read each main section, try to answer its numbered Learning Target (for this section: “How can psychological principles help you learn, remember, and thrive, and do better on the AP® exam?”). Roediger and Bridgid Finn (2001) have found that “trying and failing to retrieve the answer is actually helpful to learning. Those who test their understanding *before* reading, and discover what they don't yet know, will learn and remember better.

Then *read*, actively searching for the answer to the question. At each sitting, read only a portion of the module (usually a single main section) as you can absorb without tiring. Read actively and critically. Ask questions. Take notes. Make the ideas your own: How does what you've read relate to your own life? Does it support or challenge your assumptions? How convincing is the evidence?

Having read a section, *retrieve* its main ideas: “Active retrieval promotes meaningful learning,” says Karpicke (2012). So *test yourself*. This will not only help you figure out what you know, the testing itself will help you learn and retain the information more effectively. Even better, test yourself repeatedly. We offer many self-testing opportunities throughout each module. For example, in the Check Your Understanding sections. After answering the Test Your

“It pays better to wait and recollect by an effort from within, than to look at the book again.”

William James, *Principles of Psychology*, 1890

²Also sometimes called “Recite.”

questions there, you can check your answers in Appendix E at the end of this text and reread as needed.

Finally, *review*: Read over any notes you have taken, again with an eye on the module's organization, and quickly review the whole module. Write or say what a concept is before rereading to check your understanding.

The *Module Review* provides answers to the learning target questions along with helpful review questions. The *Unit Review* offers Key Terms and Key Contributors, along with AP® Exam Practice Questions. In addition to learning psychology's key concepts and key people, you will also need to learn the style of writing that is required for success on the exam. The sample grading rubrics provided for some of the *Free-Response Questions* (essay-style questions) in the module and unit reviews will help get you started.

Four additional study tips may further boost your learning:

Distribute your study time. One of psychology's oldest findings is that *spaced practice* promotes better retention than *massed practice*. You'll remember material better if you space your time over several study periods—perhaps one hour a day, six days a week—rather than cram it into one week-long or all-night study blitz. For example, rather than trying to read an entire module in a single sitting, read just one main section and then turn to something else. *Interleaving* your study of psychology with your study of other subjects boosts long-term retention and protects against overconfidence (Kornell & Bjork, 2008; Taylor & Rohrer, 2010).

Spacing your study sessions requires a disciplined approach to managing your time. At the beginning of this text, Richard O. Straub explains time management in a helpful preface.

Learn to think critically. Whether you are reading or in class, note people's assumptions and values. What viewpoint or bias underlies an argument? Evaluate evidence. Is it anecdotal? Or is it based on informative experiments? (More on this in Module 6.) Assess conclusions. Are there alternative explanations?

Process class information actively. Listen for the main ideas and sub-ideas of a lesson. *Write them down.* Ask questions during and after class. In class, as with your homework, process the information actively, and you will understand and retain it better. As psychologist William James urged a century ago, "*No reception without reaction, no impression without . . . expression.*" Make the information your own. Relate what you read to what you already know. Tell someone else about it. (As any teacher will confirm, to teach is to remember.)

Also, take notes *by hand*. Handwritten notes, in your own words, typically engage more active processing, with better retention, than does verbatim note taking on laptops (Mueller & Oppenheimer, 2014).

Overlearn. Psychology tells us that overlearning improves retention. We are prone to overestimating how much we know. You may understand a module as you read it, but that feeling of familiarity can be deceptively comforting. By using the Check Your Understanding questions, you can test your knowledge and *overlearn* in the process.



More learning tips To learn more about the testing effect and the SQ3R method, view the 5-minute animation "Make Things Memorable," at tinyurl.com/HowToRemember.

Memory experts Elizabeth Bjork and Robert Bjork (2011) offer simple, scientific advice for how to improve your retention and your grades:

Spend less time on the input side and more time on the output side, such as summarizing what you have read from memory or getting together with friends and asking each other questions. Any activities that involve testing yourself—that is, activities that require you to retrieve or generate information, rather than just representing information to yourself—will make your learning both more durable and flexible. (p. 63)



Check Your Understanding

Ask Yourself

- Of all of these helpful principles, which ones seem most relevant and important for improving your own life and studies?

Test Yourself

- The _____ describes the enhanced memory that results from repeated retrieval (as in self-testing) rather than from simple rereading of new information.
- What does the acronym SQ3R stand for?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 2 REVIEW



2-1 How has contemporary psychology focused on cognition, biology and experience, culture and gender, and human flourishing?

- The cognitive revolution in the 1960s led psychology back to its early interest in the mind, and its current definition as the science of behavior and mental processes.
- Our growing understanding of biology and experience has fed psychology's most enduring debate. The *nature–nurture issue* centers on the relative contributions of genes and experience, and their interaction in specific environments.
- Charles Darwin's view that *natural selection* shapes behaviors as well as bodies led to *evolutionary psychology's* study of our similarities because of our common biology and evolutionary history, and *behavior genetics'* focus on the relative power and limits of genetic and environmental influences on behavior.
- Cross-cultural and gender studies have diversified psychology's assumptions while also reminding us of our similarities. Attitudes and behaviors may vary somewhat by gender or across *cultures*, but because of our shared human kinship, the underlying processes and principles are more similar than different.
- Psychology's traditional focus on understanding and treating troubles has expanded with *positive psychology's* call for more research on human flourishing and its attempt to discover and promote traits that help people to thrive.



2-2 What is the biopsychosocial approach, and what are psychology's main theoretical perspectives?

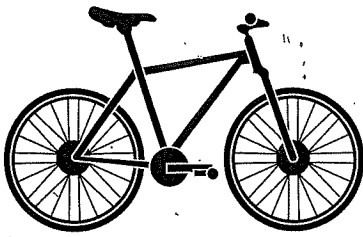
- The *biopsychosocial approach* integrates information from three differing but complementary viewpoints: biological, psychological, and social-cultural.
- This approach offers a more complete understanding that could usually be reached by relying on only one of psychology's theoretical perspectives (*behavioral, biological, cognitive, evolutionary, humanistic, psychodynamic, and social-cultural*).



2-3 How can psychological principles help you learn, remember, and thrive, and do better on the AP® exam?

- The *testing effect* shows that learning and memory are enhanced by actively retrieving, rather than simply rereading, previously studied material.
- The SQ3R study method—survey, question, read, retrieve, and review—applies principles derived from memory research and can help you learn and remember material.
- Four additional study tips are (1) distribute your study time, (2) learn to think critically, (3) process class information actively, and (4) overlearn.
- Psychological research has shown that people who live happy, thriving lives (1) manage their time to get a night's sleep, (2) make space for exercise, (3) have a growth mindset, and (4) prioritize relationships.

Module 3



Subfields in Psychology

LEARNING TARGETS

🔍 **3-1** Explain the difference between basic and applied psychology.

🔍 **3-2** Describe what psychologists working in various subfields do, and where they work.

psychometrics the scientific study of the measurement of human abilities, attitudes, and traits.

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

developmental psychology a branch of psychology that studies physical, cognitive, and social change throughout the life span.

educational psychology the study of how psychological processes affect and can enhance teaching and learning.

personality psychology the study of individuals' characteristic patterns of thinking, feeling, and acting.

social psychology the scientific study of how we think about, influence, and relate to one another.

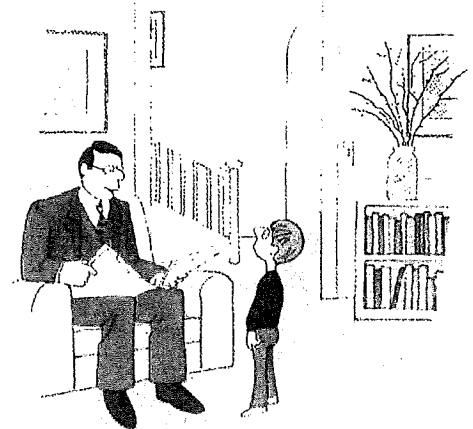
applied research scientific study that aims to solve practical problems.

industrial-organizational (I/O) psychology the application of psychological concepts and methods to optimizing human behavior in workplaces.

human factors psychology a field of psychology allied with I/O psychology that explores how people and machines interact and how machines and physical environments can be made safe and easy to use.

Picturing a chemist at work, you may envision a laboratory scientist surrounded by test tubes and high-tech equipment. Picture a psychologist at work and you would be right to envision

- a white-coated scientist probing a rat's brain.
- an intelligence researcher measuring how quickly an infant shows boredom by looking away from a familiar picture.
- an executive evaluating a new "healthy lifestyles" training program for employees.
- a researcher at a computer analyzing "big data" from Twitter or Facebook status updates.
- a therapist actively listening to a depressed client's thoughts.
- a traveling academic visiting another culture and collecting data on variations in human values and behaviors.
- a teacher or writer sharing the joy of psychology with others.



"I'm a social scientist, Michael. That means I can't explain electricity or anything like that, but if you ever want to know about people I'm your man."

The cluster of subfields we call psychology is a meeting ground for different disciplines. "Psychology is a hub scientific discipline," said Association for Psychological Science past president John Cacioppo (2007). Thus, it's a perfect home for those with wide-ranging interests.

Basic and Applied Psychology

🔍 **3-1** What is the difference between basic and applied psychology?

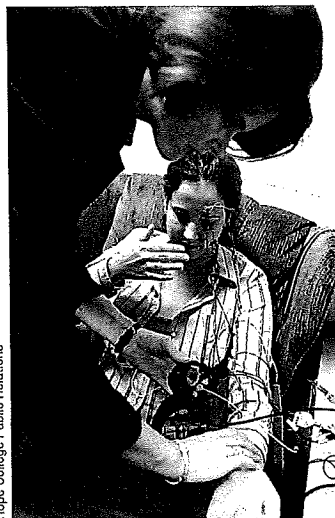
In its diverse activities, from biological experimentation to cultural comparisons, the tribe of psychology is united by a common quest: *describing and explaining behavior and the mind underlying it*. There is even a branch of psychology, called **psychometrics**, devoted to studying the measurement of our abilities, attitudes, and traits.

Some psychologists conduct **basic research** that builds psychology's knowledge base. We will meet a wide variety of such researchers, including

- **biological psychologists** exploring the links between body and mind.
- **developmental psychologists** studying our changing abilities from womb to tomb.



LAURENT/GLUCK/AGE Fotostock



Hope College Public Relations



Scott J. Ferrell/Getty Images

Psychology: A science and a profession Psychologists experiment with, observe, test, and help modify behavior. Here we see psychologists testing a child, measuring emotion-related physiology, and doing face-to-face therapy.

- **cognitive psychologists** experimenting with how we perceive, think, and solve problems.
- **educational psychologists** studying influences on teaching and learning.
- **personality psychologists** investigating our persistent traits.
- **social psychologists** exploring how we view and affect one another.

These and other psychologists also may conduct **applied research**, tackling practical problems. **Industrial-organizational (I/O) psychologists**, for example, use psychology's concepts and methods in the workplace to help organizations and companies select and train employees, boost morale and productivity, design products, and implement systems. In a related subfield, **human factors psychologists** focus on the interaction of people, machines, and physical environments. (More on this subject in Enrichment Module 82.)

Psychology is a science but also a *helping profession* that guides people toward healthier relationships, overcoming anxiety or depression, and raising thriving children. **Counseling psychologists** help people to cope with challenges and crises (including academic, vocational, and relationship issues) and to improve their personal and social functioning. **Clinical psychologists** assess and treat people with mental, emotional, and behavior disorders. Both counseling and clinical psychologists administer and interpret tests, provide counseling and therapy, and sometimes conduct basic and applied research. By contrast, **psychiatrists**, who also may provide psychotherapy, are medical doctors licensed to prescribe drugs and otherwise treat physical causes of psychological disorders.

We will study the history of therapy, including the role of pioneer Dorothea Dix, in the Therapy unit. Reformers such as Dix and Philippe Pinel led the way to humane treatment of those with psychological disorders.

Rather than seeking to change people to fit their environment, **community psychologists** work to create social and physical environments that are healthy for all

counseling psychology

a branch of psychology that assists people with problems in living (often related to school, work, or marriage) and in achieving greater well-being.

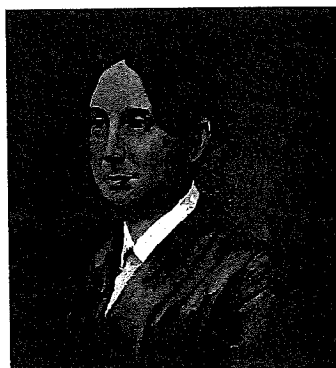
clinical psychology a branch of psychology that studies, assesses, and treats people with psychological disorders.

psychiatry a branch of medicine dealing with psychological disorders; practiced by physicians who are licensed to provide medical (for example, drug) treatments as well as psychological therapy.

community psychology a branch of psychology that studies how people interact with their social environments and how social institutions affect individuals and groups.

AP® EXAM TIP

Take careful note of the fact that psychiatry is a medical specialty. You should be able to summarize the similarities and differences among counseling psychologists, clinical psychologists, and psychiatrists for the AP® exam.



(Bradshaw et al., 2009; Trickett, 2009). To prevent bullying, for example, they might consider ways to improve the culture of the school and neighborhood, and how to increase bystander intervention (Polanin et al., 2012).

Dorothea Dix (1802–1887)

"I . . . call your attention to the state of the Insane Persons confined within this Commonwealth, in cages."



Check Your Understanding

Ask Yourself

► Before taking this course, where would you have pictured psychologists working? Which work setting has surprised you the most so far?

Test Yourself

► Match the specialty below with the description on the right.

- | | |
|-------------------------|--|
| 1. Clinical psychology | a. Works to create social and physical environments that are healthy for all. |
| 2. Psychiatry | b. Studies, assesses, and treats people with psychological disorders but usually does not provide medical therapy. |
| 3. Community psychology | c. Branch of medicine dealing with psychological disorders. |

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

FYI

The "Basic Research Subfields," "Applied Research Subfields," and "The Helping Professions" sections were written by Jennifer Zwolinski (University of San Diego).

Psychology's Main Subfields

3-2 What do psychologists working in various subfields do, and where do they work

If you major in psychology in college, you will graduate with a scientific mindset and awareness of basic principles of human behavior (biological mechanisms, nature–nurture interactions, life-span development, cognition, psychological disorders, social interactions). This background will prepare you for success in many areas, including business, the helping professions, health services, marketing, law, sales, and teaching. You may even go on to graduate school for specialized training to become a psychology professional. This module provides an overview of some of psychology's key subfields. Appendix Preparing for Further Psychology Studies, provides tips for preparing to earn a bachelor's, master's, or doctoral degree in psychology, with information about the career options that become available at those varying levels of education.

Let's look at some of the basic research, applied research, and helping professions subfields (arranged alphabetically), most of which require a graduate degree for entrance.

Basic Research Subfields

COGNITIVE PSYCHOLOGISTS study human thinking, with a focus on such topics as perception, language, attention, problem solving, memory, judgment and decision making, forgetting, and intelligence. As a cognitive psychologist, you might work as a professor, corporate consultant, or human factors specialist in an educational or business setting.

DEVELOPMENTAL PSYCHOLOGISTS conduct research on age-related behavioral changes and apply their scientific knowledge to educational, child-care, policy, and related fields.



AP® EXAM TIP

You are about to read about a lot of career possibilities in psychology. Note the division between basic subfields and applied subfields. The work of some of these specialties is pretty obvious (it's not that hard to figure out in general what an *educational psychologist* or a *health psychologist* might do). Questions about psychology's specialties have previously been on the AP® exam. Devote extra attention to those specialties that may be unfamiliar to you.



Cognitive consulting Cognitive psychologists may advise businesses on how to operate more effectively by understanding the human factors involved.

Karen Moskowitz/The Image Bank/Getty Images

settings. As a developmental psychologist, you would investigate change across a broad range of topics, including the biological, psychological, cognitive, and social aspects of development. Developmental psychology informs a number of applied fields, including educational psychology, school psychology, child psychopathology, and gerontology. The field also informs public policy in areas such as education and child-care reform, maternal and child health, and attachment and adoption. You would probably specialize in a specific stage of the life span, such as infancy, childhood, adolescence, or middle or late adulthood. Your work setting could be an educational institution, day-care center, youth group program, or senior center.

EDUCATIONAL PSYCHOLOGISTS are interested in the psychological processes involved in learning. They study the relationship between learning and the physical and social environments, and they develop strategies for enhancing the learning process. As an educational psychologist, working in a university psychology department or school of education, you might conduct basic research on topics related to learning or develop innovative methods of teaching to enhance the learning process. You might design effective tests, including measures of aptitude and achievement. You might be employed by a school or government agency or charged with designing and implementing effective employee-training programs in a business setting.

EXPERIMENTAL PSYCHOLOGISTS are a diverse group of scientists who investigate a variety of basic behavioral processes in humans and other animals. Prominent areas of experimental research include motivation, learning, perception, and language. Most experimental psychologists identify with a particular theoretical perspective, such as cognitive psychology, depending on their interests and training. Many other psychologists rely on experimental methodology to conduct studies. As an experimental psychologist, you would most likely work in an academic setting, teaching courses and supervising students' research in addition to conducting your own research. Or you might be employed by a research institution, zoo, business, or government agency.

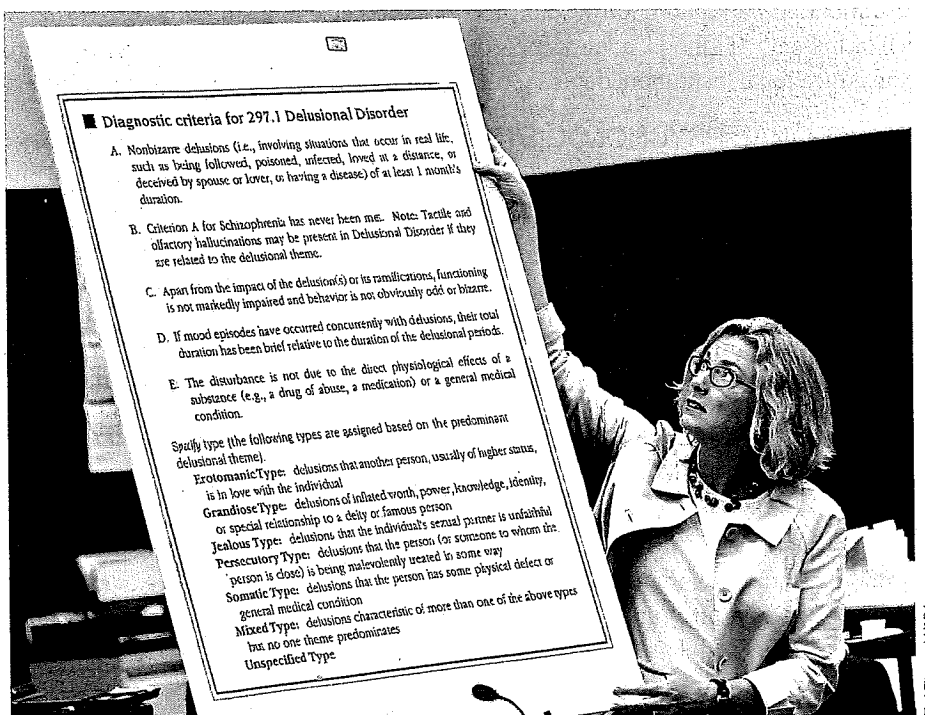
PSYCHOMETRIC AND QUANTITATIVE PSYCHOLOGISTS study the math-related methods used to acquire psychological knowledge. A psychometric psychologist may update existing neurocognitive or personality tests or devise new tests for use in clinical and school settings or in business and industry. These psychologists also administer, score, and interpret such tests. Quantitative psychologists collaborate with researchers to design, analyze, and interpret the results of research programs. As a psychometric or quantitative psychologist, you will need to be well trained in research methods, statistics, and computer technology. You will most likely be employed by a university or college, a testing company, a private research firm, or a government agency.

SOCIAL PSYCHOLOGISTS are interested in our interactions with others. Social psychologists study how our beliefs, feelings, and behaviors are affected by and influence other people. They study topics such as attitudes, aggression, prejudice, interpersonal attraction, group behavior, and leadership. As a social psychologist, you would probably be a college or university faculty member. You might also work in organizational consultation, market research, or other applied psychology fields, including social neuroscience. Some social psychologists work for hospitals, federal agencies, social networking sites, or businesses performing applied research.

Applied Research Subfields

FORENSIC PSYCHOLOGISTS apply psychological principles to legal issues. They conduct research on the interface of law and psychology, help to create public policies related to mental health, help law-enforcement agencies in criminal investigations, or consult on jury selection and deliberation processes. They also provide assessment to assist the legal community. Although most forensic psychologists are clinical psychologists, many have expertise in other areas of psychology, such as social or cognitive psychology. Some also hold law degrees. As a forensic psychologist, you might work in a university psychology department, law school, research organization, community mental health agency, law-enforcement agency, court, or correctional setting.

Psychology in court Forensic psychologists apply psychology's principles and methods in the criminal justice system. They may assess witness credibility or testify in court on a defendant's state of mind and future risk.



ENVIRONMENTAL PSYCHOLOGISTS study the interaction of individuals with their natural and built (urban) environments. They are interested in how we influence and are affected by these environments. As an environmental psychologist, you might study wildlife conservation, the impact of urbanization on health, or cognitive factors involved in sustainable lifestyle choices. Environmental psychologists tend to address these kinds of questions by working with other professionals as part of an interdisciplinary team. As an environmental psychologist, you might work in a consulting firm, an academic setting, the nonprofit sector, or the government.

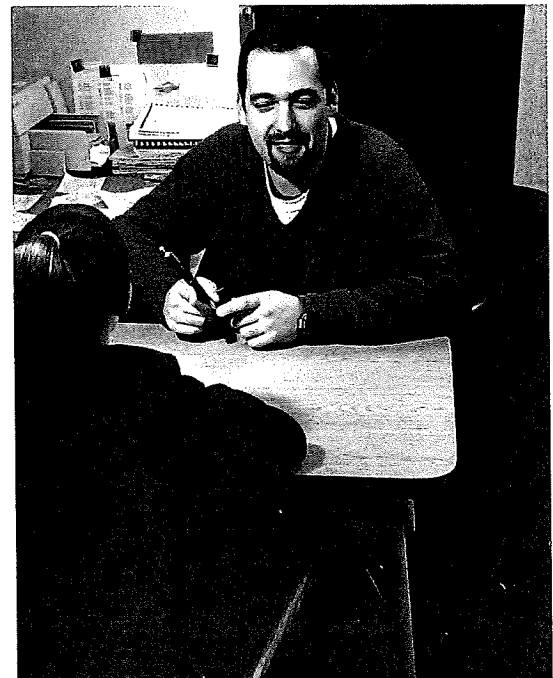
HEALTH PSYCHOLOGISTS are researchers and practitioners concerned with psychology's contribution to promoting health and preventing disease. As applied psychologists or clinicians, they may help individuals lead healthier lives by designing, conducting, and evaluating programs to stop smoking, lose weight, improve sleep, manage pain, prevent the spread of sexually transmitted infections, or treat psychosocial problems associated with chronic and terminal illnesses. As researchers and clinicians, they identify conditions and practices associated with health and illness to help create effective interventions. In public service, health psychologists study and work to improve government policies and health care systems. As a health psychologist, you could be employed in a hospital, medical school, rehabilitation center, public health agency, college or university, or, if you are also a clinical psychologist, in private practice.

INDUSTRIAL-ORGANIZATIONAL (I/O) PSYCHOLOGISTS study the relationship between people and their working environments. They may develop new ways to increase productivity, improve personnel selection, or promote job satisfaction in an organizational setting. Their interests include organizational structure and change, consumer behavior, and personnel selection and training. As an I/O psychologist, you might conduct workplace training or provide organizational analysis and development. You may find yourself working in business, industry, the government, or a college or university. Or you may be self-employed as a consultant or work for a management consulting firm. (For more on I/O psychology, see Appendix A, Psychology at Work.)

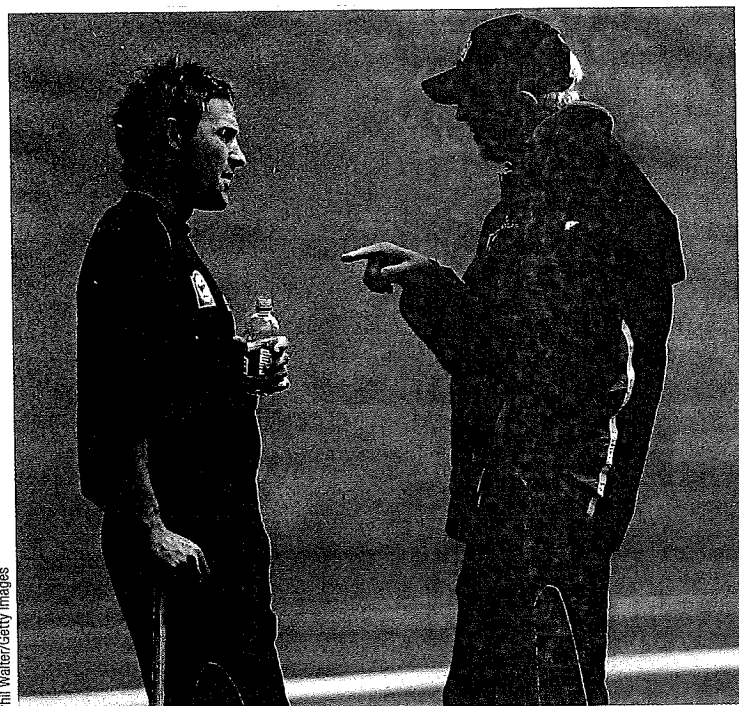
NEUROPSYCHOLOGISTS investigate the relationship between neurological processes (the structure and function of the brain) and behavior. As a neuropsychologist you might assess, diagnose, or treat central nervous system disorders, such as Alzheimer's disease or stroke. You might also evaluate individuals for evidence of head injuries; learning and developmental disabilities, such as autism spectrum disorder; and other psychiatric disorders, such as attention-deficit/hyperactivity disorder (ADHD). If you are a *clinical neuropsychologist*, you might work in a hospital's neurology, neurosurgery, or psychiatric unit. Neuropsychologists also work in academic settings, where they conduct research and teach.

REHABILITATION PSYCHOLOGISTS are researchers and practitioners who work with people who have lost optimal functioning after an accident, illness, or other event. As a rehabilitation psychologist, you would probably work in a medical rehabilitation institution or hospital. You might also work in a medical school, university, state or federal vocational rehabilitation agency, or in private practice serving people with physical disabilities.

SCHOOL PSYCHOLOGISTS are involved in the assessment of and intervention for children in educational settings. They diagnose and treat cognitive, social, and emotional problems that may negatively influence



Assessing and supporting children School psychologists may find themselves working with children individually or in groups. They receive interdisciplinary training in mental health assessment and behavior analysis, research methods and design, and special needs education. They work primarily in schools but also in a range of other settings, including pediatric hospitals, mental health centers, and correctional facilities.



Phil Walter/Getty Images

Cricket cures Sport psychologists often work directly with athletes to help them improve their performance. Here a sport psychologist consults with Brendon McCullum, a record-breaking athlete who plays international cricket for New Zealand.

children's learning or overall functioning at school. A school psychologist, you would collaborate with teachers, parents, and administrators, making recommendations to improve student learning. You would work in an academic setting, a federal or state government agency, a clinic, a guidance center, or a behavioral research laboratory.

SPORT PSYCHOLOGISTS study the psychological factors that influence, and are influenced by, participation in sports and other physical activities. Their professional activities include coach education and athlete preparation as well as research and teaching. Sport psychologists who also have a clinical or counseling degree can apply their skills to working with individuals with psychological problems, such as anxiety or substance abuse, that might interfere with optimal performance. As a sport psychologist, you were not working in an academic or research setting; you would most likely work as part of a team or an organization or in a private capacity.

The Helping Professions

CLINICAL PSYCHOLOGISTS promote psychological health in individuals, groups, and organizations. Some clinical psychologists specialize in specific psychological disorders.

Others treat a range of disorders, from adjustment difficulties to severe psychopathology. Clinical psychologists often provide therapy but may also engage in research, teaching, assessment, and consultation. Clinical psychologists work in a variety of settings, including private practice, mental health service organizations, schools, universities, industries, legal systems, medical systems, counseling centers, government agencies, correctional facilities, nonprofit organizations, and military services.

To become a clinical psychologist, you will need to earn a clinical psychology doctorate. The APA sets the standards for clinical psychology graduate programs, offering *accreditation* (official recognition) to those who meet their standards. In all U.S. states, clinical psychologists working in independent practice must obtain a license to offer services such as therapy and testing.

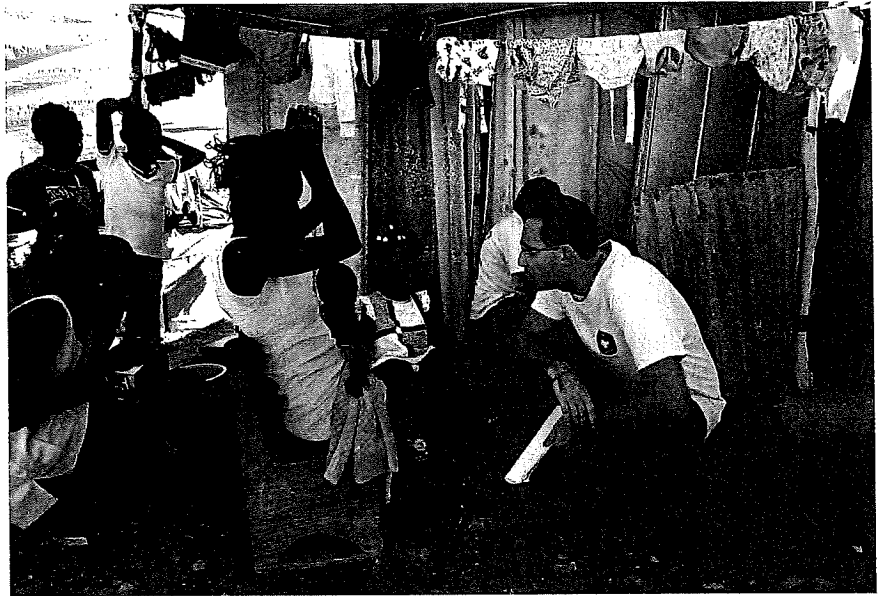
COMMUNITY PSYCHOLOGISTS move beyond focusing on specific individuals and families and deal with broad problems of mental health in community settings. They believe that human behavior is powerfully influenced by the interaction between people and their physical, social, political, and economic environments. They seek to promote psychological health by enhancing environmental settings—focusing on preventive measures and crisis intervention, with special attention to the problems of underserved groups and ethnic minorities. Some community psychologists collaborate with professionals in other areas, such as public health, with a shared emphasis on prevention. As a community psychologist, your work settings could include federal, state, and local departments of mental health, corrections, and welfare. You might conduct research or help evaluate research in health service settings, serve as an independent consultant for a private or government agency, or teach and consult as a college or university faculty member.

COUNSELING PSYCHOLOGISTS help people adjust to life transitions or make style changes. Although similar to clinical psychologists, counseling psychologists typically

help people with adjustment problems rather than severe psychopathology. Like clinical psychologists, counseling psychologists conduct therapy and provide assessments to individuals and groups. As a counseling psychologist, you would likely emphasize your clients' strengths, helping them to use their own skills, interests, and abilities to cope during transitions. You might find yourself working in an academic setting as a faculty member or administrator or in a university counseling center, community mental health center, business, or private practice. As with clinical psychology, if you plan to work in independent practice you will need to obtain a state license to provide counseling services to the public.

* * *

So, the next time someone asks you what you could do if you pursue psychology in college, tell them you would have a lot of options. You might use your acquired skills and understanding to get a job and succeed in any number of fields, or you might pursue graduate school and then career opportunities in associated professions. In any case, what you learn about behavior and mental processes will surely enrich your life (Hammer, 2003).



Paul Chiasson/AP Images

Community care Community psychologists in Haiti have helped residents work through the ongoing emotional challenges that followed the devastating 2010 earthquake and, more recently, the widely destructive 2016 hurricane.



Check Your Understanding

Ask Yourself

- Which of psychology's subfields were you aware of before taking this course? Which ones seem most interesting to you?

Test Yourself

- Name each of these subfields: (a) focuses on people and their work environments; (b) studies how people change over the life span; (c) considers the human thinking involved in perceiving, remembering, speaking, and decision making; and (d) focuses on diagnosing and treating psychological disorders.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 3 REVIEW



3-1 What is the difference between basic and applied psychology?

- Within the science of psychology, researchers may conduct *basic research* to increase the field's knowledge base (often in *biological, developmental, cognitive, educational, personality, and social psychology*) or *applied research* to solve practical problems (in *industrial-organizational and human factors psychology*, for example).



3-2 What do psychologists working in various subfields do, and where do they work?

- Psychology's subfields include the basic research fields (cognitive, developmental, educational, experimental,

psychometric and quantitative, and social psychology), the applied research fields (forensic, health, industrial-organizational, neuropsychology, rehabilitation, school, and sport psychology), and the helping professions (clinical, community, and counseling).

- Work settings for psychologists include a wide range of government agencies, industrial and business settings, clinics and counseling centers, health care institutions, schools, universities, and research organizations.