Prologue: The Story of Psychology

"WHEN YOU SIT DOWN, YOU GET A SHOCK. OPEN A BOOK, YOU GET A SHOCK. WRITE SOMETHING, ANOTHER SHOCK. IT'S A TYPICAL PSYCHOLOGY CLASS."

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"I have made a ceaseless effort not to ridicule, not to bewail, not to scorn human actions, but to understand them."

Benedict Spinoza,
A Political Treatise, 1677

"What's it like being married to a psychologist?" people occasionally ask my wife. "Does he use his psychology on you?"

"So, does your Dad, like, analyze you?" my children have been asked many times by friends.

"What do you think of me?" asked one barber, hoping for an instant personality analysis after learning that I was a psychologist.

For these questioners, as for most people whose exposure to psychology comes from popular books, magazines, and TV, psychologists analyze personality, offer counseling, and dispense child-rearing advice.

Do they? Yes, and much more. Consider some of psychology's questions that from time to time you may wonder about:

Have you ever found yourself reacting to something just as one of your biological parents would—perhaps in a way you vowed you never would—and then wondered how much of your personality you inherited? *To what extent is one's personality predisposed by one's genes? To what extent by the home and neighborhood environments?*

Have you ever played peekaboo with a 6-month-old infant and wondered why the baby finds the game so delightful? The baby reacts as though, when you momentarily move behind a door, you actually disappear—only to reappear later out of thin air. *What do babies actually perceive and think?*

Have you ever awakened from a nightmare and, with a wave of relief, wondered why you had such a crazy dream? *How often, and why, do we dream?*

Have you ever wondered what leads to school and work success? Are some people just born smarter? *Does sheer intelligence explain why some people get richer, think more creatively, or relate more sensitively?*

Have you ever gotten depressed or anxious and wondered whether you'll ever feel "normal"? *What triggers our bad moods—and our good ones?*

Have you ever worried about how to act among people of a different culture, race, or gender? *In what ways are we alike as members of the human family? How do we differ?*

Such questions provide grist for psychology's mill because psychology is a science that seeks to answer all sorts of questions about us all: how we think, feel, and act.

Psychology's Roots

Once upon a time, on a planet in your neighborhood of the universe, there came to be people. Soon thereafter, these creatures became intensely interested in themselves and in one another. They wondered, *"Who are we? From where come our thoughts? Our feelings? Our actions? And how are we to understand—and to master or manage—those around us?"* Psychology's answers to these wonderings


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A smile is a smile the world around
Throughout this book, you will see examples 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, but a smile *means* the same thing anywhere in the world.

have developed from international roots in philosophy and biology into a science that aims to describe and explain how we think, feel, and act. Understanding the roots of today's psychology helps us appreciate psychologists' varied perspectives.

Prescientific Psychology

Preview: Since early recorded history, humans have pondered and debated human nature. How do body and mind relate? Does much of what we know come built in, or do we start as "blank slates" upon which experience writes? In the 1600s, modern science was born, laying a foundation for the future science of psychology.

Presumed answers to such questions can be found in ancient writings. In India, Buddha pondered how sensations and perceptions combine to form ideas. In China, Confucius stressed the powers of ideas and of an educated mind. In ancient Israel, the Hebrew Scriptures anticipated today's psychology by linking mind and emotion to the body. People were said to think with their hearts and feel with their bowels.

The Greek philosopher-teacher, Socrates (469–399 B.C.) offered a very different idea about mind and body, as recorded by his student Plato. Socrates, a part-time stonecutter and statue carver, took no fees for his teaching, wrote nothing, and talked with anyone who wanted to engage ideas. "He wore one simple shabby robe all year and went barefoot," reports Morton Hunt (1993, p. 21). "Once, looking about in the marketplace, he exclaimed with pleasure, 'How many things there are that I do not want!'" Instead, he luxuriated in ideas. Unlike the early Hebrews (and today's psychologists), Socrates and Plato viewed mind as separable from body and continuing after death. But like those of today's psychologists who emphasize our built-in genetic predispositions and our intuitive grammar, they viewed knowledge as built within us.

Information sources are cited in parentheses, with name and date, then provided fully in the References section at the book's end.

Shortly after Socrates accepted his impending death, which he believed would liberate his mind from its bodily prison, an affluent couple in northern Greece gave birth to his intellectual grandson—Plato's future student, Aristotle. Aristotle was kindly and warm, but also plainspoken. When one long-winded fellow asked him, "Have I bored you to death with my chatter?" Aristotle replied, "No, indeed—I wasn't paying attention to you" (Hunt, 1993, p. 28). Denied the presidency of Plato's Academy after Plato's death, Aristotle founded a rival school, the Lyceum, and—like today's university professors—doubled his scholarly output by farming out research to his students.

Aristotle's love of data distinguished him from Socrates and Plato, who derived principles by logic. As an ancestor of today's scientists, he derived principles from careful observations. His observations told him that "the soul is not separable from the body, and the same holds good of particular parts of the soul" (*De Anima*). Moreover, Aristotle said, knowledge is *not* preexisting (sorry again, Socrates and Plato);

instead, it grows from the experiences stored in our memories. (In saying this, Aristotle foreshadowed later thinkers who believed "nurture" shapes us more than "nature.") Aristotle got some things badly wrong (he thought that a meal makes us sleepy by causing gas and heat to collect around the source of our personality, the heart). But he also got some things right. Events experienced under strong emotion (where were you on 9/11?) *are* better recalled than unemotional happenings. And we *do*, as Aristotle supposed, recall memories through a network of associations among our stored experiences.

After this flourishing of prescientific psychology in ancient Greece, the next 2000 years failed to offer many enduring new insights into human nature. It wasn't for lack of wondering. Augustine (354–430 A.D.) became fascinated with human beings. "I am not now investigating the tracts of the heavens, or measuring the distance of the stars, or trying to discover how the earth hangs in space. I am investigating myself, my memory, my mind" (*Confessions*). Like today's health psychologists, Augustine wrote about how the condition of the body influences the mind, and how the mind influences the body. Too much bile can make you irritable, he thought, but irritating situations can also stimulate too much bile.

Bettmann/Corbis

A seventeenth-century view of nerves
In his *Treatise of Man*, Descartes proposed the hydraulics of a simple reflex.

Some 1200 years later, modern science finally began to flourish, and with it came new theories of human behavior. A frail but brilliant Frenchman named René Descartes (1595–1650) agreed with Socrates and Plato about the existence of innate ideas and the mind's being "entirely distinct from the body" and able to survive its death (Table 1). Descartes' concept of mind forced him to conjecture, 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 accumulated knowledge 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's chapters—has been written in but the last historical eye blink of human time.

Meanwhile, across the English channel in Britain, science was taking a more down-to-earth form, centered on experiment, experience, and common-sense 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 Organuum*). He also foresaw research on our eagerness to selectively notice and

TABLE 1

DEBATES AMONG PSYCHOLOGY'S PREDECESSORS

Mind and body are connected	vs.	Mind and body are distinct	Some ideas are inborn	vs.	The mind is a blank slate
The Hebrews		Socrates	Socrates		Aristotle
Aristotle		Plato	Plato		Locke
Augustine		Descartes			

empiricism the view that (a) knowledge comes from experience via the senses, and (b) science flourishes through observation and experiment.

structuralism an early school of psychology that used introspection to explore the elemental structure of the human mind.

functionalism a school of psychology that focused on how mental and behavioral processes function—how they enable the organism to adapt, survive, and flourish.

Throughout this book, important concepts are **bold faced.** As you study, you can find these terms with their definitions in a nearby margin and in the Glossary at the end of the book.

remember events that confirm our beliefs: "All superstition is much the same whether it be that of astrology, dreams, omens, retributive judgments, or the like, in all of which the deluded believers observe events which are fulfilled, but neglect and pass over their failure, though it be much more common."

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. Twenty years and hundreds of pages later, Locke finally completed the essay (*Essay Concerning Human Understanding*) in which he famously argued that the mind at birth is a blank slate—a "white paper"—upon which experience writes. Forget Plato and Descartes' presumption of inborn knowledge. The mind acts only on what has come in through the senses. This idea, adding to Bacon's legacy, helped form modern **empiricism,** the view that knowledge originates in experience and that science should, therefore, rely on observation and experimentation. Moreover, if we're all equal at birth, that (as the U.S. Declaration of Independence suggests) is a rationale for democracy.

Psychological Science Is Born

Preview: Philosophers' thinking about thinking continued until the birth of psychology as we know it. Psychologists' initial focus on the mind's structure was later displaced by the study of its functions.

Monika Suteski

Wilhelm Wundt (left)
Established the first psychology laboratory at the University of Leipzig, Germany.

On a December day in 1879, in a small room on the third floor of a shabby building at Germany's University of Leipzig, two young men were helping a long-faced, austere, middle-aged professor, Wilhelm Wundt, create an experimental apparatus. Their machine measured the time lag between people's hearing a ball hit a platform and their pressing a telegraph key (Hunt, 1993). Later, the researchers compared this lag to the time required for slightly more complex tasks. 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 aware of perceiving the sound. Wundt was seeking to measure "atoms of the mind"—the fastest and simplest mental processes. Thus began what many consider psychology's first experiment, launching the first psychological laboratory, staffed by Wundt and psychology's first graduate students.

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* and *functionalism*, described here, and Gestalt psychology, behaviorism, and psychoanalysis, described in later chapters.

Thinking About the Mind's Structure

Soon after receiving his Ph.D. in 1892, Wundt's student Edward Bradford Titchener joined the Cornell University faculty and introduced **structuralism**. As physicists and chemists discerned the structure of matter, so Titchener aimed to discover the elements of mind. His method was to engage 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 these relate to one another? Titchener shared with the English essayist C. S. Lewis (1960, pp. 18–19) the view that "there is one thing, and only one in

"You don't know your own mind."

Jonathan Swift,
Polite Conversation, 1738

the whole universe which we know more about than we could learn f external observation." That one thing, Lewis said, is ourselves. "We have, so to speak, inside information."

Alas, structuralism waned as introspection waned. Introspection required smart, verbal people. It also proved somewhat unreliable, varying from person to person and experience to experience. And just as the very act of measuring an atomic particle can alter what is measured, so the act of reflecting on an experience can alter the memory of it. Dating couples' happiness with their relationship normally predicts whether they will still be dating several months later. But if, before rating their happiness, they first introspect and analyze the relationship by listing what's good and bad about it, their analyzed feelings are much less predictive (Wilson & others, 1989). Sometimes, said poet Theodore Roethke (1975), "self-contemplation is a curse, that makes an old confusion worse." Moreover, recent studies indicate that people's recollections often err, as do their self-reports about what has caused them to help or hurt another (Myers, 2002). Often we just don't know why we feel what we feel and do what we do.

Edward Bradford Titchener
Used introspection to search for the mind's structural elements.

Thinking About the Mind's Functions

Unlike those hoping to assemble the structure of mind from simple elements—which was rather like trying to understand a car by examining its disconnected parts—philosopher-psychologist William James thought it 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 do the nose and brain do these things? Under the i ence of evolutionary theorist Charles Darwin, James assumed that thinking, like sm ling, developed because it was adaptive—it contributed to our ancestors' survival. Consciousness serves a purpose. It enables us to consider our past, adjust to our present circumstances, and plan our future.

James developed a kindred philosophy of *pragmatism*, which tested truth by its practical consequences. Believing in free will has practical value; it gives you reason to plan, to take initiative, and to discipline yourself to form new habits of action. As a **functionalist** and pragmatist, James also encouraged explorations of down-to-earth emotions, memories, willpower, habits, and moment-to-moment streams of consciousness. His psychology was "full-bodied" and "warm-hearted," wrote another famed psychologist, Ernest Hilgard (1987, p. 50).

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 impish, outgoing, and joyous man, who once recalled that "the first lecture on psychology I ever heard 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 was reportedly one of the first American professors to solicit end-of-course student evaluations of his teaching. He loved his students, his family, and the world of ideas, but tired of painstaking chores such as proofreading. "Send me no proofs!" he once told an editor. "I will return them unopened and never speak to you again" (Hunt, 1993, p. 145).

William James and Mary Whiton Calkins
James, legendary teacher-writer, mentored Calkins, who became a pioneering memory researcher and American Psychological Association president.

James displayed the same spunk in 1890, when—over the objections of Harvard's president—he admitted Mary Calkins into his graduate seminar (Scarborough & Furumoto, 1987). When Calkins joined, all the other students dropped. (In those years women lacked even the right to vote.) So James tutored her alone. Later she finished all the requirements for a Harvard Ph.D., outscoring all the male students on


Monika Suteski

Margaret Floy Washburn
The first woman to receive a psychology Ph.D.; she synthesized animal behavior research in *The Animal Mind.*

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. More than a century later, psychologists and psychology students are lobbying Harvard to posthumously award the Ph.D. she earned (*Feminist Psychologist*, 2002). Calkins nevertheless became a distinguished memory researcher and the American Psychological Association's (APA's) first female president in 1905. What a different world from the recent past—1996 to 2002—when women claimed two-thirds or more of new psychology Ph.D.s and were five of the seven elected presidents of the science-oriented American Psychological Society. In Canada and Europe, too, most recent psychology doctorates have been earned by women.

When Harvard denied Calkins psychology's first female psychology Ph.D., that left the honor to Margaret Floy Washburn, who later wrote an influential book, *The Animal Mind*, and became the second female APA president in 1921. Although Washburn's thesis was the first foreign study Wundt published in his journal, her gender meant she was barred from joining the organization of experimental psychologists founded by Titchener, her own graduate adviser (Johnson, 1997).

James' influence reached even further through his dozens of well-received articles, which moved the publisher Henry Holt to offer a contract for a textbook of the new science of psychology. James agreed and began work in 1878, with an apology for requesting two years to finish his writing. The work proved an unexpected chore and actually took him 12 years. (Why am I not surprised?) But the resulting *Principles of Psychology* was another late, great work that far exceeded its publisher's hopes and, at 1400 pages, its expected length. So two years later, he turned out an abbreviated version suited for student use. (Students called the long version "James" and the shorter version "Jimmy.") More than a century later, people still read *Principles* and marvel at the brilliance and elegance with which James introduced psychology to the educated public.

Psychological Science Develops

Preview: Modern psychology first focused on mental life, then on behaviors. Now psychologists scientifically study both thought processes *and* behaviors, as psychology's reach spreads across the globe.

This 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. Ivan Pavlov, who pioneered the study of learning, was a Russian physiologist. Sigmund Freud, controversial personality theorist, was an Austrian physician. Jean Piaget, the last century's most influential observer of children, was a Swiss biologist. This list of pioneering psychologists—"Magellans of the mind," as Morton Hunt (1993) called them—illustrates psychology's origins in many disciplines and countries.

Like its pioneers, today's psychologists are citizens of many lands. The International Union of Psychological Science has 69 member nations, from Albania to Zimbabwe. Nearly everywhere, membership in psychological societies is mushrooming—from 4183 American Psychological Association members and affiliates in 1945 to more than 160,000 today, with similarly rapid growth in Britain (**FIGURE 1**). In China, five universities had psychology departments in 1985; by the century's end, there were 50 (Jing, 1999). Worldwide, some 500,000 people have been trained as psychologists, and 130,000 of them belong to European psychological organizations (Tikkanen, 2001). Moreover, thanks to international publications, joint meetings,

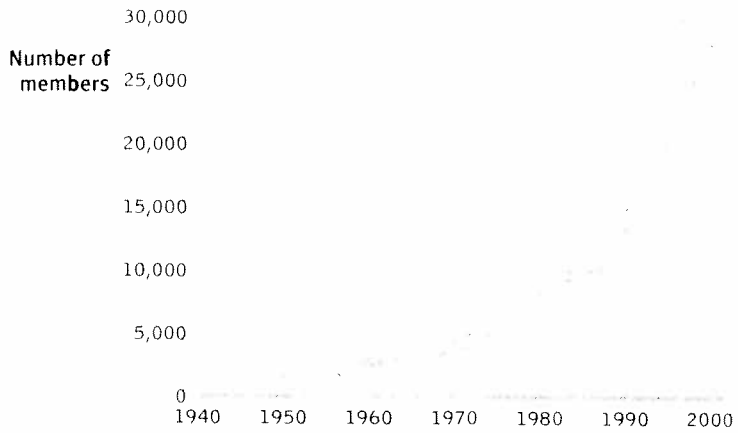


FIGURE 1
British Psychological Society membership

and the Internet, collaboration and communication cross borders more now than ever: "We are moving rapidly towards a single world of psychological science," reports Robert Bjork (2000). Psychology is *growing* and it is *globalizing*.

So what has psychology become? The rest of the story of psychology—the subject of this book—develops along many lines. With activities ranging from psychotherapy to the study of nerve cell activity, *psychology* is not easily defined. Wundt and Titchener focused on *inner* sensations, images, and feelings. James, too, engaged in introspective examination of the stream of consciousness and of emotion. Thus, until the 1920s, *psychology* was defined as "the science of mental life."

From the 1920s into the 1960s, American psychologists, initially led by flamboyant and provocative John B. Watson and later by the equally provocative B. F. Skinner, dismissed introspection and redefined *psychology* as "the science of observable behavior." After all, said these "behaviorists," science is rooted in observation.

ohn B. Watson and Rosalie Rayner
Vor[illegible]with Rayner, Watson championed psychology as he s[illegible]ce of behavior and demonstrated conditional esponses on "Little Albert."

Monika Suteski

B. F. Skinner
A leading "behaviorist," who rejected introspection and studied how consequences shape behavior.

Courtesy Nancy S. Breland

Psychology's scope and history
In her quilt, "Crazy About Psychology," Nancy S. Breland, a psychology professor at the College of New Jersey, captures images and people from psychology's first century.

You cannot observe a sensation, a feeling, or a thought, but you *can* observe and record people's *behavior* as they respond to different situations.

In the 1960s, psychology began to recapture its initial interest in mental processes through studies of how our minds process and retain information. To encompass psychology's concern with observable behavior *and* with inner thoughts and feelings, today we 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.

For many psychologists, the key word in psychology's definition is *science*. Psychology, as I will emphasize in Chapter 1 and throughout this book, is less a set of findings than a way of asking and answering questions. As a science, psychology attempts to sift opinions and evaluate ideas with careful observation and rigorous analysis. In its attempt to describe and explain human nature, psychological science welcomes hunches and plausible-sounding theories. And it puts them to the test. If a theory works—if the data support its predictions—so much the better for that theory. If the predictions fail, the theory will be revised or rejected.

My aim in this text, 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 smarter when describing and explaining the events of our lives.

psychology the science of behavior and mental processes.

REVIEW AND REFLECT

Psychology's Roots

Psychology traces its roots back through recorded history to the writings of many scholars who spent their lives wondering about people—in India, China, the Middle East, and Europe. In their attempt to understand human nature, they looked carefully at how our minds work and how our bodies relate to our minds.

Prescientific Psychology

More than 2000 years ago, Buddha and Confucius focused on the powers and origin of ideas. In other parts of the world, the ancient Hebrews, Socrates, his student Plato, and Plato's student Aristotle pondered whether mind and body are connected or distinct, and whether human ideas are innate or result from experience. In the 1600s, René Descartes and John Locke reengaged aspects of those ancient debates, and Locke coined his famous description of the mind as a "white paper."

Psychological Science Is Born

Psychology as we know it today was born in a laboratory in Germany in the late 1800s, when Wilhelm Wundt ran the first true experiments in psychology's first lab. Soon, the new

discipline formed branches: structuralism, which searched for the basic elements of the mind, and functionalism, which tried to explain why we do what we do. William James, a pragmatist and functionalist, wrote the first text for the new discipline.

Psychological Science Develops

After beginning as a "science of mental life," psychology evolved in the 1920s into a "science of observable behavior." After rediscovering the mind in the 1960s, psychology now views itself as a "science of behavior and mental processes." Psychology is growing and globalizing, as psychologists in 69 countries around the world work, teach, and do research.

CHECK YOURSELF: What events defined the founding of scientific psychology?

ASK YOURSELF: How do you think psychology might change as people from non-Western countries contribute their ideas to the field?

Answers to the Check Yourself questions can be found in the yellow appendix at the end of the book.

Each Review and Reflect section will end with two important questions. The Check Yourself question offers you a handy self-test on the material you have just read. Answers are provided in an Appendix at the end of the book. The Ask Yourself question will help you reflect on the key ideas and connect them to your own life. Making these ideas personally meaningful will make them *memorable*.

Contemporary Psychology

Today's psychologists debate some enduring issues and view behavior from differing perspectives. They also teach, work, and do research in many different subfields.

Psychology's Big Issues

Preview: Several issues cut across modern psychology, the most persistent of which concerns the relative impact of biological nature and experienced nurture.

During its short history, psychology has wrestled with some issues that will reappear throughout this book. One such issue concerns *stability versus change*. Do our individual traits persist as we age? Do we become older versions of our younger selves? Does a reactive infant become a volatile adult? Or do people change? Can shy preschoolers become teenage class clowns? Can troubled teens become mature executives? Do our personalities change in different situations?

Another issue concerns human *rationality versus irrationality*. How deserving are we of our name *homo sapiens*—wise humans? We will see that in some ways—recognizing patterns, handling language, processing abstract ideas—we outstrip the smartest computers. The simple act of perceiving this book involves disassembling visual stimuli into millions of nerve impulses, distributing them for processing in different brain regions, and then instantly reassembling the information into a colorful image. We also make certain snap judgments with amazing efficiency and sufficient rationality. "How noble in reason!" declared Shakespeare's Hamlet.

But we are prone to err. We sometimes squeeze reality into our preconceptions. We misremember. We overestimate our judgments. We credit compelling anecdotes and discount statistical reality. We "see" causes and associations that don't exist. We treat others in ways that lead them to confirm our mistaken ideas about them. These limits to human rationality—also spelled out in the pages to come—caused philosopher Bertrand Russell to lament that "most people would sooner die than think; in fact, they do so."

Monika Suteski

arles Darwin
rgued that natural selection shapes behaviors as well as bodies.

The biggest and most persistent issue, however (and the focus of Chapter 3), concerns *the relative contributions of biology and experience.* As we have seen, the origins of this **nature-nurture** debate are ancient. Do our human traits develop through experience, or do we come equipped with them? Recall that the ancient Greeks debated this, with Plato assuming that character and intelligence are largely inherited and that certain ideas are also inborn, 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 inborn ideas, offering his notion that the mind is a blank sheet on which experience writes. Descartes disagreed, believing that some ideas are innate.

Two centuries later, Descartes' views gained support from a curious naturalist. In 1831, an indifferent student but ardent collector of beetles, mollusks, and shells set sail on what was to prove an historic round-the-world journey. The 22-year-old voyager was Charles Darwin, and for some time afterward, he pondered the incredible species variation he had encountered, including tortoises on one island that differed from those on other islands of the region. Darwin's 1859 *Origin of Species* explained this diversity of life by proposing an evolutionary process. From among chance variations in organisms, he believed, nature selects those that best enable an organism to survive and reproduce in a particular environment. Darwin's big idea—"the single best idea anyone has ever had," says philosopher Daniel Dennett (1996)—is called **natural selection**, and it is still with us nearly 150 years later as an organizing principle of biology. Evolution also has become an important principle for twenty-first century psychology. This would surely have pleased Darwin, for he believed his theory explained not only animal structures (such as why polar bear coats are white) but also animal behaviors (such as the emotional expressions associated with lust and rage).

Like peas in a pod
Because identical twins have the same genes, they are ideal participants in studies designed to shed light on hereditary and environmental influences on temperament, intelligence, and other traits. Studies of identical and fraternal twins provide a rich array of findings—described in later chapters—that underscore the importance of both nature and nurture.


Rob Nelson/

The nature-nurture debate weaves a thread from the distant past to our time. Today's psychologists have continued the debate by asking these and other questions:

- How are differences in intelligence, personality, and psychological disorders influenced by heredity and by environment?
- Is children's grammar innate or formed by experience?
- Are sexual behaviors more "pushed" by inner biology or "pulled" by external incentives?
- Should we treat depression as a disorder of the brain or a disorder of thought—or both?
- How are humans alike (because of their common biology) and different (because of their differing environments)?
- Are gender differences biologically predisposed or socially constructed?

The debate continues. Yet over and over again we will see that in contemporary science the nature-nurture tension dissolves: *Nurture works on what nature endows.* 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 thought disorder and a brain disorder.

nature-nurture issue the longstanding controversy over the relative contributions that genes and experience make to the development of psychological traits and behaviors.

natural selection the principle that, among the range of inherited trait variations, those contributing to reproduction and survival will most likely be passed on to succeeding generations.

Psychology's Perspectives

Preview: Although debates arise among psychologists working from differing perspectives, each point of view addresses important questions.

This book looks at behavior, thought, and emotion from differing perspectives. Consider, for example, how the complementary perspectives described in Table 2 can shed light on anger.

- Someone working from a *neuroscience perspective* might study the brain circuits that produce the physical state of being "red in the face" and "hot under the collar."
- Someone working from an *evolutionary perspective* might analyze how anger facilitated the survival of our ancestors' genes.
- Someone working from a *behavior genetics perspective* might study how heredity and experience influence our individual differences in temperament.
- Someone working from a *psychodynamic perspective* might view an outburst as an outlet for unconscious hostility.
- Someone working from a *behavioral perspective* might study the facial expressions and body gestures that accompany anger, or might attempt to determine which external stimuli result in angry responses or aggressive acts.

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

TABLE 2

PSYCHOLOGY'S CURRENT PERSPECTIVES

Perspective	Focus	Sample Questions
Neuroscience	How the body and brain enable emotions, memories, and sensory experiences	How are messages transmitted within the body? How is blood chemistry linked with moods and motives?
Evolutionary	How the natural selection of traits promotes the perpetuation of one's genes	How does evolution influence behavior tendencies?
Behavior genetics	How much our genes and our environment influence our individual differences	To what extent are psychological traits such as intelligence, personality, sexual orientation, and vulnerability to depression attributable to our genes? To our environment?
Psychodynamic	How behavior springs from unconscious drives and conflicts	How can someone's personality traits and disorders be explained in terms of sexual and aggressive drives or as the disguised effects of unfulfilled wishes and childhood traumas?
Behavioral	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, say, to lose weight or stop smoking?
Cognitive	How we encode, process, store, and retrieve information	How do we use information in remembering? Reasoning? Solving problems?
Social-cultural	How behavior and thinking vary across situations and cultures	How are we—as Africans, Asians, Australians, or North Americans—alike as members of one human family? As products of different environmental contexts, how do we differ?

- Someone working from a *cognitive perspective* might study how our interpretation of a situation affects our anger and how our anger affects our thinking.
- Someone working from a *social-cultural perspective* might explore which situations produce the most anger, and how expressions of anger vary across cultural contexts.

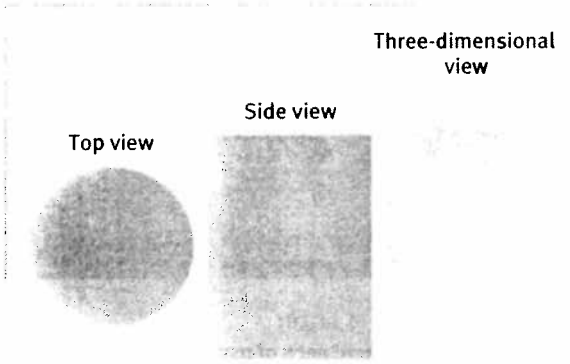
Such perspectives needn't contradict one another. Rather, they are complementary outlooks on the same biological state. It's like explaining why grizzly bears hibernate. Is it because hibernation enhanced their ancestors' survival and reproduction? Because their inner physiology drives them to do so? Because cold environments hinder food gathering during winter? Such perspectives are complementary, because "everything is related to everything else" (Brewer, 1996).

This important point—that different perspectives can complement one another—is also true of the different academic disciplines. Each provides a particular perspective on nature and our place in it. The basic sciences investigate nature's building blocks, seeking principles based on objective observation. The humanities (including literature and philosophy) address questions of life's meaning and value, using intuition and reasoning. As a behavioral science, psychology lies near the middle of this continuum; it uses scientific methods to explore our thoughts, feelings, and actions.

Each perspective has its questions and its limits. Differing perspectives are like different two-dimensional views of a three-dimensional object (**FIGURE 2**). Each two-dimensional perspective is helpful, but by itself fails to reveal the whole picture.

So bear in mind psychology's limits. Don't expect it to answer the ultimate questions 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?" Instead, expect that psychology will help you understand why people think, feel, and act as they do. Then you should find the study of psychology fascinating and useful.

FIGURE 2
Complementary perspectives
What is this object? One person, looking down from the top, sees a disk. Another, looking at it from the side, sees a rectangle. Their differing perspectives seem contradictory. In fact, they are complementary, for we can assemble these images into a three-dimensional view of the object, a cylinder. The insights offered by psychology's different perspectives are often like this: A lot depends on your point of view.



Psychology's Subfields

Preview: Psychology is a collection of diverse subfields. Some psychologists do basic research, some do applied research, and some provide professional services.

Picturing a chemist at work, you probably envision a white-coated scientist surrounded by glassware 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 becomes bored with (looks away from) a familiar picture.
- an executive evaluating a new "healthy life-styles" training program for employees.
- someone at a computer keyboard analyzing data on whether adopted teens' temperaments more closely resemble those of their adoptive parents or those of their biological parents.
- a therapist listening carefully to a client's depressed thoughts.
- a traveler en route to another culture to collect data on variations in human values and behaviors.
- a teacher or writer sharing the joy of psychology with others.

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

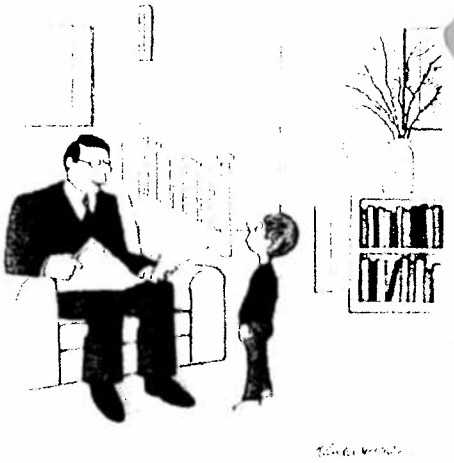
applied research scientific study that aims to solve practical problems.

The cluster of subfields that we call psychology has less unity than most other sciences. But there is a payoff: Psychology is a meeting ground for different disciplines and is thus a perfect home for those with wide-ranging interests. In their diverse activities, from biological experimentation to cultural comparisons, a common quest unites the tribe of psychology: to describe and explain behavior and the mind underlying it.

Some psychologists conduct **basic research** that builds psychology's knowledge base. In the pages to follow we will meet a wide variety of such researchers:

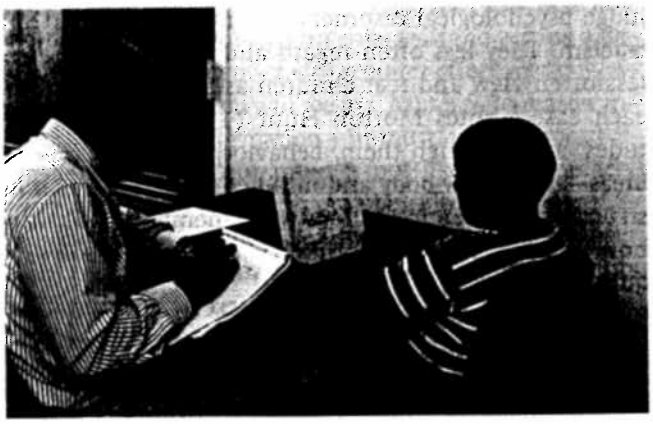
- *Biological psychologists* exploring the links between brain and mind
- *Developmental psychologists* studying our changing abilities from womb to tomb
- *Cognitive psychologists* experimenting with how we perceive, think, and solve problems
- *Personality psychologists* investigating our persistent traits
- *Social psychologists* exploring how we view and affect one another

These psychologists also may conduct **applied research** that tackles practical problems. So do other psychologists, such as *industrial/organizational psychologists* as they study and advise on behavior in the workplace. They use psychology's concepts and methods to help organizations and companies select and train employees more effectively, to boost morale and productivity, to design products, and to implement systems.



"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."

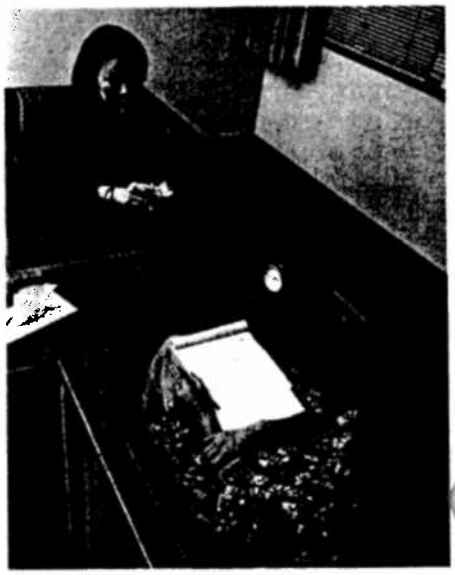
Jeff Greenberg/PhotoEdit



Laura Dwight/PhotoEdit

Psychology: A science and a profession

Psychologists experiment with, observe, test, and treat behavior. Here we see psychologists recording children's behavior, testing a child, and doing face-to-face therapy.



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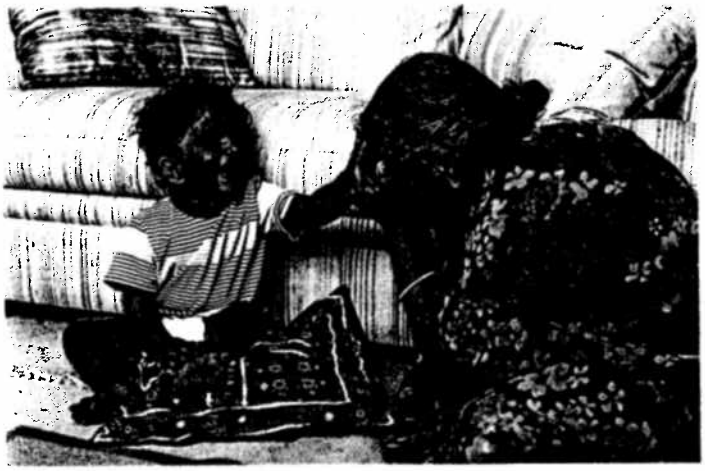

Laura Dwight

I see you!
A biological psychologist might view this child's delighted response as evidence for brain maturation. A cognitive psychologist might see it as a demonstration of the baby's growing knowledge of his surroundings. For a cross-cultural psychologist, the role of grandparents in different societies might be the issue of interest. As you will see throughout this book, these and other perspectives offer complementary views of behavior.

- **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 sometimes provide medical (for example, drug) treatments as well as psychological therapy.

Although most psychology textbooks focus on psychological science, psychology is also a helping profession devoted to such practical issues as how to have a happy marriage, how to overcome anxiety or depression, and how to raise thriving children. **Clinical psychologists** study, assess, and treat troubled people. After graduate school training, they administer and interpret tests, provide psychotherapy, manage mental health programs, and conduct basic and applied research. By contrast, **psychiatrists**, who also often provide psychotherapy, are medical doctors licensed to prescribe drugs and otherwise treat physical causes of psychological disorders. (Some clinical psychologists are lobbying for a similar right to prescribe mental health–related drugs, and in 2002 the state of New Mexico granted that right to specially trained and licensed psychologists.)

With perspectives ranging from the biological to the social, and with settings from the laboratory to the clinic, psychology relates to many disciplines. More and more, psychology connects with fields ranging from mathematics to biology to sociology to philosophy. And more and more, psychology's methods and findings aid other disciplines. Psychologists teach in medical schools, law schools, and theological seminaries, and they work in hospitals, factories, and corporate offices. They engage in interdisciplinary studies, such as psychohistory (the psychological analysis of historical characters), 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 psychology's findings also changes people: They less often judge psychological disorders as a moral failing, treatable by punishment and ostracism. They less often regard and treat women as men's mental inferiors. They less often view and rear children as ignorant willful beasts in need of taming. "In each case," notes 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 remember (and misremember) our experiences, how people across the world differ (and are alike)—your mind may never again be quite the same.

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

Oliver Wendell Holmes, 1809–1894

[1]Confession time: I wrote the last part of this sentence on April Fools' Day.

REVIEW AND REFLECT

Contemporary Psychology

Psychology's Big Issues

Psychologists wrestle with several recurring issues. One of these is stability and change over our lifetimes. Another is whether we are consistently rational or sporadically irrational. But the biggest and most enduring issue continues the debate of the early philosophers: the relative influences of nature (genes) and nurture (all other influences, from conception to death). In most cases, the debate is no debate: Every psychological event is simultaneously a biological event.

Psychology's Perspectives

Psychologists view behavior and mental processes from various perspectives. These viewpoints are complementary, not contradictory, and each offers useful insights in the study of behavior and mental processes.

Psychology's Subfields

Psychology's subfields encompass basic research (often done by biological, developmental, cognitive, personality, and social psychologists), applied research (sometimes conducted by industrial/organizational psychologists), and clinical applications. Psychology's methods and findings aid other disciplines, and they contribute to the growing knowledge base we apply in our everyday lives.

CHECK YOURSELF: What are psychology's major perspectives?

ASK YOURSELF: When you signed up for this course, what did you think psychology would be all about?

Answers to the Check Yourself questions can be found in the yellow appendix at the end of the book.

CLOSE-UP:

Your Study of Psychology

The investment you are making in studying psychology should enrich your life and enlarge your vision. 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, depression and joy, dreams and memories. Even the unanswered questions can enrich us, by renewing our sense of mystery about "things too wonderful" for us yet to understand. What is more, your study of psychology can help teach you *how to ask and answer important questions*—how to think critically as you evaluate competing ideas and claims.

Having your life enriched and your vision enlarged (and getting a decent grade) requires effective study. As you will see in Chapter 9, to master information you must *actively process* it. Your mind is not like your stomach, something to be filled passively; it is more like a muscle that grows stronger with exercise. Countless experiments reveal that people learn and remember material best when they put it in their own words, rehearse it, and then review and rehearse it again.

A simple study method incorporates these principles. You can remember it as PRTR: Preview, Read, Think critically, and Review.

First, *preview* what you're about to read. Note its organization (as hinted in the Preview paragraph that begins most main sections). This provides a framework on which you can hang the information to come. We tend to remember organized information and to forget disorganized facts.

Second, *read* the section you have previewed. Usually a single main chapter section will be as much as you can absorb without tiring.

Treat each main chapter section as if it were a whole chapter.

Third, *think actively and critically.* Ask questions. Make notes. Reflect on implications: How does what you've read support or challenge your assumptions? How convincing is the evidence? How does it relate to your own life? (The Check Yourself and Ask Yourself questions at each section's end should help to stimulate your active thinking.)

Fourth, *review.* To root a section's organization more deeply into your memory, rescan the section and the marginal definitions of key terms, or read its Review paragraphs. Glance over your notes or highlighting. Then stop and let it all sink in. Better yet, summarize the material for a friend or lecture about it to an imaginary audience.

Preview, read, think, review. I have organized the chapters to facilitate your using the PRTR study method. Each chapter begins with an outline that helps you preview what is upcoming, and each main section begins with a two- or three-sentence Preview. I have divided chapters into three to five main sections of readable length. To assist your reviewing, each main section ends with a summary; a "Check Yourself" question that assesses your understanding of the main, take-home message from the section (answers can be found at the end of the book); and an "Ask Yourself" question that will help you apply what you've learned to your own life to make the material more meaningful and memorable. Then the whole chapter ends with an organized reminder of key terms. Preview, read, think, review.

Four additional study hints may further boost your learning:

1. **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 long study blitz. Spacing your study sessions requires a disciplined approach to managing your time. (Richard O. Straub explains time management in *Discovering Psychology*, the study guide that accompanies this text.) For example, rather than trying to read a whole chapter in a single sitting, read just one of the chapter's main sections and then turn to something else.
2. **In class, listen actively.** As psychologist William James urged some 100 years ago, *"No reception without reaction, no impression without . . . expression."* Listen for the main idea and subideas in lectures. *Write them down.* Ask questions during and after class. In class, as in your private study, process the information actively and you will understand and retain it better.
3. **Overlearn.** Psychology tells us that "overlearning improves retention." The more often students read a chapter and the fewer classes they miss, the better their exam scores are (Woehr & Cavell, 1993). Students frequently stop short of overlearning and overestimate how much they know. Really *learning* something requires more than momentarily understanding it. You may understand a chapter as you read it, but if you devote extra study time to rereading, to testing yourself, and to reviewing what you think you know, you will actually *learn* the material and retain your new knowledge longer.
4. **Be a smart test-taker.** If a test contains both multiple-choice questions and an essay question, turn first to the essay. Read the question carefully, noting exactly what the instructor is asking. On the back of a page, pencil in a list of points you'd like to make, and then organize them. Before writing, put the essay aside and work through the multiple-choice questions. (As you do so, you may continue to mull over the essay question. Sometimes the objective questions will bring pertinent thoughts to mind.) Then reread the essay question, rethink your answer, and start writing. When you finish, proofread your work to eliminate spelling and grammatical errors that make you look less competent than you are.

   When reading multiple-choice questions, don't confuse yourself by trying to imagine how each choice might be the right one. Try instead to answer the question as if it were a fill-in-the-blank. First, cover the answers, recall what you know, and complete the sentence in your mind. Then read the answers on the test and find the alternative that best matches your own answer.

As you read psychology, you will learn much more than effective study techniques. Psychology teaches us how to ask important questions—how to think critically as we evaluate competing ideas and popular claims. It deepens our appreciation for how we humans perceive, think, feel, and act. By so doing, it informs our living and enlarges our compassion. Through this book I 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."

TERMS AND CONCEPTS TO REMEMBER

empiricism, p. 4
structuralism, p. 4
functionalism, p. 5
psychology, p. 8
nature-nurture issue, p. 10
natural selection, p. 10
basic research, p. 13
applied research, p. 13
clinical psychology, p. 14
psychiatry, p. 14

To continue your study and review of Psychology, visit this book's Web site at www.worthpublishers.com/myers. You will find practice tests, review activities, and many interesting articles and Web links for more information on topics related to Psychology.