



Psychology

TWELFTH EDITION

CAROLE WADE • CAROL TAVRIS

Psychology

Twelfth Edition

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PEARSON

To Howard, whose support has made it all possible.

Carole Wade

For Ronan, in loving memory.

Carol Tavis

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From the Authors

From the very first edition of our book, our primary goal has been the integration of critical and scientific thinking into the fabric of our writing, a goal that we believe is more important now than ever. A textbook is not a laundry list of items, and its writers are not simply reporters. For us, the most important job of an introductory textbook in psychology is to help students learn to think like a psychologist, and to understand why scientific and critical thinking is so important to the decisions they make in their own lives. Today, for example, the public in general, and students in particular, need to learn about the astonishing new developments in neuroscience, but they also need to learn to think intelligently about them. Not all of these developments are as dramatic or applicable as they are often made to appear in the popular press. Not all of the findings that are reported are based on good science, no matter how fancy the tools that produced them.

Changes in the 12th Edition

In this 12th edition of *Psychology*, we have retained the core concepts that characterized previous editions—an emphasis on critical thinking, applications to culture and human diversity, insights from research in biology and neuroscience—and added opportunities for students to test themselves on the material as they’re learning it. In contrast to the usual “read and cram before tests” approach that students often rely on, we prompt students to read the material and challenge themselves to demonstrate their mastery of a section to make sure they understood it correctly.

At the end of Chapter 1, “Taking Psychology with You” is devoted to **The Nine Secrets of Learning**, a special feature directed to helping students understand and apply effective techniques for studying and mastering the material throughout the textbook. In this feature, we reassure students that they need not worry about their particular “learning style,” whether visual or auditory; visualizing material helps everybody, and so does plain old active listening.

As always, in every chapter, we have updated the research to reflect progress in the field and cutting-edge discoveries. Here are a few highlights:

- Emerging techniques for mapping the brain, such as transcranial direct current stimulation (tDCS) and event-related potentials (ERP).
- New findings from the exciting field of epigenetics and genetic research in general.
- Revised sleep guidelines from the American Academy of Sleep Medicine.

- The new movement in psychological research to incorporate confidence intervals and Bayesian statistics to improve judgments about a finding’s strength, reliability, and importance.
- Integration of DSM-5 terminology and classification systems.
- New findings on how self-confidence and grit contribute to achievement motivation.
- New chapter-opening vignettes that draw on recent real-world events to illustrate psychological principles and spark students’ curiosity.

In addition, all chapter content is mapped to revised **learning objectives**, which highlight the major concepts throughout each chapter. The complete list of learning objectives for each chapter can be found in the *Instructor’s Resource Manual*. The Test Bank items are also keyed to these learning objectives.

Goals and Principles

From the first edition of this book, five goals and principles have guided our writing. Here they are.

1. Thinking Critically about Critical Thinking

In a textbook, true critical thinking cannot be reduced to a set of rhetorical questions, a short boxed feature, or a formula for analyzing studies; it is a process that must be woven seamlessly into the narrative. The primary way we “do” critical and creative thinking is by applying a three-pronged approach: We *define* it, we *model* it, and we give students a chance to *practice* it.

The first step is to define what critical thinking is and what it is not. Chapter 1 introduces **Eight Guidelines to Critical Thinking**, which we draw on throughout the text as we evaluate research and popular ideas.

The second step is to model these guidelines in our evaluations of research and popular ideas. Throughout the textbook you’ll find discussions of these critical thinking guidelines as we challenge the reader to evaluate what the evidence reveals—and importantly, does not reveal—about a particular phenomenon. Photo captions, writing prompts, and of course the narrative itself offer opportunities for students to sharpen their critical thinking skills to become active readers (and active learners) of psychology.

The third step is to give students opportunities to practice what we’ve preached. We have changed the Quick Quiz feature that was in previous editions to incorporate new end of module and end of chapter assessment. These tests require more than memorization of definitions; they help students check their progress, measure

their understanding of the material, and encourage them to go back and review what they don't recall or comprehend. Many quiz questions include critical-thinking items that invite the students to reflect on the implications of findings and consider how psychological principles might illuminate real-life issues.

2. Exploring New Research in Biology and Neuroscience

Findings from the Human Genome Project, studies of behavioral genetics and epigenetics, discoveries about the brain, technologies such as fMRI, and the proliferation of medications for psychological disorders—all have had a profound influence on our understanding of human behavior and on interventions to help people with chronic problems. This work cannot be confined to a single chapter. Accordingly, we report new findings from biology and neuroscience wherever they are relevant throughout the book: in discussions of neurogenesis in the brain, memory, emotion, stress, child development, aging, mental illness, personality, and many other topics.

To further emphasize the integration of biology with other areas of research in understanding human problems, many chapters also have a feature called **Biology and . . .**—for example, “Biology and Hypnosis,” “Biology and Beliefs,” “Biology and Economic Choice,” and “Biology and the Adolescent Brain.” Although we caution students about the dangers of ignoring biological research, we also caution them about the dangers of reducing complex behaviors solely to biology by overgeneralizing from limited data, failing to consider other explanations, and oversimplifying solutions. Our goal is to provide students with a structure for interpreting research they will hear or read about in the future.

3. Mainstreaming Culture and Gender

At the time of our first edition, some considered our goal of incorporating research on gender and culture into introductory psychology to be quite radical, either a sop to political correctness or a fluffy and superficial fad. Today, the issue is no longer whether to include these topics, but how best to do it. From the beginning, our own answer has been to include studies of gender and culture in the main body of the text, wherever they are relevant to the larger discussion, rather than relegating these studies to an intellectual ghetto of separate chapters or boxed features. We discuss gender differences—and similarities—in many areas, from the brain, emotion, and motivation to heroism, sexuality, love, and eating disorders.

Over the years, most psychologists have come to appreciate the influence of culture on all aspects of life, from nonverbal behavior to the deepest attitudes about how the world should be. We present empirical findings about culture and ethnicity as topics warrant throughout the book. In addition, Chapter 8 highlights the sociocultural perspective in psychology and includes extended discussions of ethnocentrism, prejudice, and cross-cultural relations. However, the scientific study of cultural diversity is not synonymous with the popular movement

called multiculturalism. The study of culture, in our view, should increase students' understanding of what culture means, how and why ethnic and national groups differ, and why no group is inherently better, kinder, or more moral than another. Thus, we try to apply critical thinking to our own coverage of culture, avoiding the twin temptations of ethnocentrism and stereotyping.

To highlight the importance of culture, many chapters contain a feature (comparable to “Biology and . . .”) called **Culture and . . .**—for example, “Culture and the Brain,” “Culture and Psychotherapy,” “Culture and the Ideal Body,” and “Culture and Mental Disorder.”

4. Facing the Controversies

Psychology has always been full of lively, sometimes angry, debates, and we feel that students should not be sheltered from them. They are what make psychology so interesting! In this book, we candidly address controversies in the field of psychology, try to show why they are occurring, and suggest the kinds of questions that might lead to useful answers in each case. For example, we discuss the controversies about evolutionary psychology's explanations of human dating and mating practices (Chapter 3); limitations and the oversimplification of brain-scan technology (Chapter 4); the disease versus learning models of addiction (Chapter 15); the extent of parents' influence on their children's personality development (Chapters 13 and 14); conflicts of interest in research on medication for psychological disorders (Chapter 16); and the scientist-practitioner gap in psychotherapy (Chapter 16).

5. Applications and Active Learning

Finally, throughout this book, we have kept in mind one of the soundest findings about learning: It requires the active encoding of material. Several pedagogical features in particular encourage students to become actively involved in what they are reading.

You Are about to Learn . . . consists of a set of learning objectives that cover each major section within a chapter.

Other pedagogical features designed to help students study and learn better include **review tables**; a **running glossary** that defines boldfaced technical terms on the pages where they occur for handy reference and study; a **cumulative glossary** at the back of the book; a list of **key terms** at the end of each chapter that includes page numbers so that students can find the sections where the terms are covered; **chapter outlines**; and **chapter summaries** in paragraph form to help students review.

Taking Psychology with You, a feature that concludes each chapter, illustrates the practical implications of psychological research for individuals, groups, institutions, and society. This feature tackles topics of personal interest and relevance to many students: Does watching media violence or playing violent video games increase violence? How much control do we have over our emotions and our health? How can we motivate ourselves to reach our goals? How can we avoid being suckered by the “Barnum Effect”?

At the very end of the book, an epilogue called “Taking This Book with You” wraps up the text’s major themes and suggests ways that students can apply what they have learned to ongoing concerns in their lives.

The Importance of Testing Yourself on What You’ve Studied

In our years of teaching, we have found that certain study strategies can greatly improve learning, and so we’d like to offer you, our reader, the following suggestions. Do not try to read this textbook the way you might read a novel, taking in large chunks at a sitting. If you are like most students, your favorite strategy is to read the textbook and your notes, and then simply read them again, but this is not really the best way to learn.

If you could do just one thing that would improve your learning and improve your grades it is this: Test yourself on what you’ve studied early, often, and repeatedly. Ask yourself questions, answer them, and then go back and restudy what you didn’t know. Test yourself again and again until you learn the material. Even when you have learned it, you need to keep testing yourself regularly over the semester so that what you’ve learned stays learned. At the end of Chapter 1, we provide you with some other proven techniques to help you learn.

To get the most from your studying we recommend that you read only a part of each chapter at a time. Instead of simply reading silently, nodding along saying “hmmmm” to yourself, try to restate what you have read in your own words at the end of each section. As specific points in each chapter, you will find several **Journal Writing Prompts** that challenge you to not just recall what you’ve learned, but actively develop your understanding of the material. These exercises will help you to discover what you know or still don’t understand.

We have never gotten over our own initial excitement about psychology, and we have done everything we can think of to make the field as lively and absorbing for you as it is for us. However, what you bring to your studies is as important as what we have written. This text will remain only a collection of pages unless you choose to read actively, using the many active-learning and critical-thinking features we have provided.

Psychology can make a real difference in your own life, and we hope you will enjoy studying about it in this book. Welcome to psychology!

Carole Wade

Carol Tavriss

Overview of Critical Thinking

One of the greatest benefits of studying psychology is that you learn not only about the findings of the field but also how to think critically. The following eight guidelines, which are emphasized throughout this book, will help you separate good psychology from pseudoscience. (For a full description, see Chapter 1.)

Eight Essential Guidelines to Critical and Creative Thinking

1 Ask questions; be willing to wonder.

- Why has obesity reached epidemic proportions all over the world? (Chapter 12)
- Do most adolescents really go through adolescent turmoil? (Chapter 13)

2 Define your terms.

- How should we define “prejudice”? Is feeling uncomfortable around unfamiliar members of another group the same as being prejudiced toward them? Is having an unconscious negative association with a stereotyped group the same as being overtly bigoted? (Chapter 8)
- In general, it’s good to feel “in control” of your life, but what does control mean, exactly? Is it good to believe that you can control everything? (Chapter 11)

3 Examine the evidence.

- After disasters such as hurricanes and acts of terrorism, survivors are often offered “posttraumatic therapy” sessions. Do these interventions help, make no difference, or sometimes make matters worse? (Chapter 16)
- Under hypnosis, Jim remembers that he was a fourteenth-century French prince in a former life. Does the evidence support his memory? Can Jim speak fourteenth-century French and report accurate details of a life in a Parisian palace? (Chapter 5)

4 Analyze assumptions and biases.

- How do psychological scientists and psychotherapists differ in their assumptions about the relevance of research to clinical practice? (Chapter 16)
- Many people assume that women are the more “emotional” sex. Are they right? (Chapter 11)

5 Avoid emotional reasoning.

- Most people have strong beliefs about religious and political issues. How might their emotions and differing values affect their ability to assess the evidence for or against those beliefs? (Chapter 8)
- Many people are emotionally committed to their beliefs in psychic powers and ESP. Are they kidding themselves? (Chapter 6)

6 Don’t oversimplify.

- Many people are enthusiastic about using brain scans as windows into the brain’s workings. But if a scan shows

that a brain area is active when a person is doodling, does that mean we've found the brain's "doodling center"? (Chapter 4)

- What's wrong with asking "Do children always lie (or always tell the truth) about sexual abuse?" (Chapter 10)

7 Consider other interpretations.

- Many people believe that brain abnormalities cause alcoholism. But might excessive alcohol cause brain abnormalities? (Chapter 15)

- Does watching TV make kids aggressive, or do aggressive kids watch more TV? Or could a third factor be involved? (Chapters 2 and 7)

8 Tolerate uncertainty.

- What do dreams mean? Do they have deep hidden meanings or are they random signals of a sleeping brain? At present, science doesn't have an answer everyone agrees on. (Chapter 5)
- If you think you remember your fourth birthday party perfectly, can you ever really be sure your memory is right? (Chapter 10)

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Psychobabble and Biobunk: Using psychological science to think critically about popular psychology, 3rd edition (ISBN 978-0-205-01591-7)

By Carol Tavris: This updated collection of book reviews and essays is tailored to the critical-thinking guidelines described in the 12th edition.

About the Authors

Carole Wade earned her Ph.D. in cognitive psychology at Stanford University. She began her academic career at the University of New Mexico, where she taught courses in psycholinguistics and developed the first course at the university on the psychology of gender. She was professor of psychology for 10 years at San Diego Mesa College and then taught at College of Marin and Dominican University of California. Dr. Wade has written and lectured widely on critical thinking and the enhancement of psychology education. In addition to this text, she and Carol Tavriss have written *Psychology*; *Psychology in Perspective*; and *The Longest War: Sex Differences in Perspective*.

Carol Tavriss earned her Ph.D. in the interdisciplinary program in social psychology at the University of Michigan. She writes and lectures extensively on diverse topics in psychological

science and critical thinking. In addition to working with Carole Wade, Dr. Tavriss is coauthor with Elliot Aronson of *Mistakes Were Made (But Not by Me): Why We Justify Foolish Beliefs, Bad Decisions, and Hurtful Acts*. She is also author of *The Mismeasure of Woman* and *Anger: The Misunderstood Emotion*. Many of her book reviews and opinion essays have been collected in *Psychobabble and Biobunk: Using Psychology to Think Critically About Issues in the News*.

Contributor Alan Swinkels is Professor and Chair of Psychology at St. Edward's University in Austin, Texas. He has received numerous research, advising, and teaching awards throughout his career, including being recognized as a Texas State Professor of the Year by the Carnegie Foundation and the Council for the Advancement and Support of Education.

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Chapter 1

What Is Psychology?

◀ Listen to the Audio



Learning Objectives

- LO 1.1.A** Define psychology, and describe how it addresses topics from a scientific perspective.
- LO 1.1.B** Provide examples of pseudoscience, psychobabble, popular opinion, and “plain old common sense” related to psychological topics, and describe how scientific psychology would address such claims.
- LO 1.2.A** Explain why critical thinking applies to all scientific pursuits, and also why it should guide everyday judgments and decision making.
- LO 1.2.B** List eight important critical-thinking guidelines and give an example of how each applies to the science of psychology.
- LO 1.3.A** Discuss some of the pre-psychological approaches to explaining psychological topics, from ancient times through the early 1800s.
- LO 1.3.B** Explain Wilhelm Wundt’s contributions to the birth of modern psychology.
- LO 1.3.C** Compare the three early psychologies of structuralism, functionalism, and psychoanalysis, and identify the major thinkers who promoted each of these schools of thought.
- LO 1.4.A** List and describe the four major perspectives in psychology.

LO 1.4.B Describe how feminism influenced psychology.

LO 1.5.A Distinguish basic psychology and applied psychology, and summarize the kinds of research that various psychologists might conduct.

LO 1.5.B Compare the training and work settings of different psychological practitioners,

such as counselors, clinical psychologists, psychotherapists, psychoanalysts, and psychiatrists.

LO 1.5.C Give examples of three ways in which psychologists contribute to their communities.

Ask questions . . . be willing to wonder

How does “pop psych” on the Internet and TV differ from the psychology in this book?

If you want to think critically, must you always be critical?

If you call yourself a psychotherapist, will you be breaking the law?

What’s the difference between a psychologist, a clinical psychologist, and a psychiatrist?

Every April Fools’ Day, the James Randi Educational Foundation announces its “Pigasus” Awards for the year’s worst “charlatans, swindlers, psychics, pseudo-scientists, and faith healers.” James Randi is a professional magician who, years ago, became outraged to see charlatans and scammers use plain old magic tricks as evidence of their “psychic powers” and to prey on unsuspecting victims to make money. Randi made it his cause to educate the public by exposing their fraudulent methods. (The awards are named for the mythical flying horse Pegasus and for Randi’s habit of saying, “such and such a belief will come true when pigs fly.”) The awards and some recent “winners” include:

- **The Funder Pigasus Award:** The Pumpkin Hollow Retreat Center, for offering workshops and training on therapeutic touch (TT) as a method of healing. Practitioners of TT (which involves no touching and has shown no evidence of therapeutic powers) move their hands over a patient’s body to realign the “human energy field” and redirect “healing energy” to afflicted areas. Interestingly, 9-year-old Emily Rosa executed a simple but elegant experiment for her fourth-grade science fair project demonstrating that TT therapists could not detect energy fields at levels better than chance, which suggests they’d have a hard time using that energy for any kind of

healing. Her publication in the *Journal of the American Medical Association* was by the youngest contributor ever (L. Rosa et al., 1998). By the way, Emily Rosa graduated from college with a degree in psychology.

- **The Refusal to Face Reality Award:** Mehmet Oz, a cardiac surgeon who has also promoted over the years faith healing, psychic communication with the dead, homeopathic medicines, and questionable weight loss schemes. “Dr. Oz,” as he is known to fans of Oprah Winfrey (and from his own television and radio shows), holds an appointment at Columbia University and received his undergraduate degree from Harvard, yet he was recognized by the Randi Foundation for “his continued promotion of quack medical practices, paranormal belief, and pseudoscience.” Dr. Oz also has the dubious distinction of winning the Pigasus Award more times than anyone else over the years.

How can you protect yourself from false claims and scammers? How can you tell the difference between treatments that work and save lives (such as vaccines) and those that are useless (such as therapeutic touch)? How are you supposed to distinguish useful information on the Internet from worthless opinions, marketing ploys, and downright rubbish?

Psychology, Pseudoscience, and Popular Opinion

Fortunately for you, you are taking an introductory psychology course, and by the time you finish it, you will have some good answers about how you can sift through the onslaught of claims competing for your attention, and decide what to ignore and what’s important. To get a clear picture of this field, you need to know about its methods, its findings, and its ways of interpreting information. But first, let’s look more closely at what psychology is, and equally importantly, what it is *not*.

What Psychology Is

LO 1.1.A Define psychology, and describe how it addresses topics from a scientific perspective.

In recent decades, the public's appetite for psychological and medical information has created a huge market for the kind of outlandish advice and products we just described to you: pseudoscience and quackery covered by a veneer of scientific-sounding language. Pseudoscience promises easy fixes to life's problems and challenges, such as resolving your unhappiness as an adult by "reliving" the supposed trauma of your birth, or becoming more creative on the job by "reprogramming" your brain. It often plays on the appeal of technology. All sorts of gizmos have been marketed with the promise that they will get both halves of your brain working at their peak: the Graham Potentializer, the Tranquilite, the Floatarium, the Transcutaneous Electro-Neural Stimulator, the Brain Supercharger, and the Whole Brain Wave Form Synchro-Energizer. (We are not making these up.)

The psychology you are about to study—*real* psychology—bears little relation to the popular psychology ("pop psych") and its pseudoscientific relatives (jokingly called "psychobabble") found on the Internet, on television, and in thousands of self-help books. **Psychology** can be defined generally as the discipline concerned with behavior and mental processes and how they are affected by an organism's physical state, mental state, and external environment. Unlike pop psychology, scientific psychology is based on research and **empirical** evidence, which is gathered by careful observation, experimentation, and measurement. It is therefore more complex, more informative, and far more helpful in its explanations than is popular psychology. Learn more about the many ways psychology impacts our daily lives in the video *Asking the Tough Questions 1*.

psychology

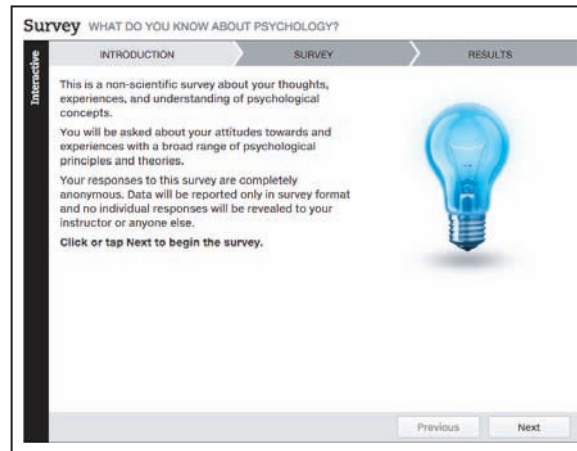
The discipline concerned with behavior and mental processes and how they are affected by an organism's physical state, mental state, and external environment; the term is often represented by Ψ , the Greek letter psi (usually pronounced "sy").

empirical

Relying on or derived from observation, experimentation, or measurement.



Psychologists use scientific methods to study many aspects of human behavior.



Scientific psychology also addresses a far broader range of issues than does popular psychology. When people think of psychology, they usually think of mental and emotional disorders, personal problems, and psychotherapy. But psychologists take as their subject the entire spectrum of brave and cowardly, intelligent and foolish, beautiful and brutish things that people do. They want to know how ordinary human beings (and other animals as well) learn, remember, solve problems, perceive, feel, and get along or fail to get along with others. They are therefore as likely to study commonplace experiences—rearing children, gossiping, remembering a shopping list, daydreaming, making love, and making a living—as exceptional ones.

What Psychology Is Not

LO 1.1.B Provide examples of pseudoscience, psychobabble, popular opinion, and “plain old common sense” related to psychological topics, and describe how scientific psychology would address such claims.

Because so many pop-psych ideas have filtered into the media, education, and even the law, we all need to develop an ability to distinguish between psychobabble and serious psychology, and between unsupported *popular opinion* and findings based on *research evidence*. Are unhappy memories “repressed” and then accurately recalled years later, as if they had been recorded in perfect detail in the brain? Do most women suffer from emotional symptoms of premenstrual syndrome (PMS)? Do policies of abstinence from alcohol reduce rates of alcoholism? If you play Beethoven to your infant, will your child become smarter? These beliefs are widely held, but as you will learn, they are wrong. Watch *Debunking Myths 1* to see some other common beliefs that people mistakenly hold.



At the start of an introductory psychology course, many students hold beliefs that have been promoted in the popular culture, or are based on personal experience or “common sense,” but that are not scientifically supported. When two instructors gave their 90 introductory psychology students a true/false “Psychological Information” questionnaire on the first day of class—a questionnaire consisting entirely of false statements—the students were accurate only 38.5 percent of the time, which is actually worse than chance (Taylor & Kowalski, 2004). By the last week of class, however, when the students took a test containing all of the earlier items, their overall accuracy was much better: 66.3 percent (see Figure 1.1). Although there was still room for improvement, the students had lost confidence in their remaining misconceptions, suggesting that they were on the way to giving them up. If so, they had learned one of the most important lessons in science: Uncertainty about untested assumptions and beliefs can be a good thing.

Some people are influenced by psychology’s many nonscientific competitors: palm-reading, graphology, fortune-telling, numerology, and the most popular, astrology. Like psychologists, promoters of these systems try to explain people’s problems and predict their behavior. If you are having romantic difficulties, an astrologer may advise you to choose an Aries instead of an Aquarius as your next love, and a “past-lives channeler” may say it’s because you were jilted in a former life. Belief in these unscientific approaches is widespread, even in scientifically advanced countries.

Yet, whenever the claims of psychics and astrologers are put to the test, those claims turn out to be so vague as to be meaningless (“Spirituality will increase next year”) or just plain wrong—as in the case of all the doomsday predictions that have occurred for centuries, especially during times of great social change and anxiety (Radford, 2010; Shaffer & Jadwiszczok, 2010). Moreover, contrary to what you might think from watching TV shows that feature lead characters with psychic abilities or from reading claims on psychic websites, no psychic has ever found a missing child, identified a serial killer, or helped police solve any other crime by using “psychic powers” (Radford, 2011). Their “help” merely adds to the heartbreak the victim’s family feels.

So why does belief in psychic abilities and other forms of pseudoscience persist? For one thing, it gives people a sense of control and predictability in a confusing world; indeed, our brains are probably wired to look for patterns in events, even when no patterns exist (Hood, 2009). Pseudoscience also confirms our existing beliefs and prejudices, whereas scientific psychology often challenges them. You do not have to be a psychologist to know that people do not always take kindly to having their beliefs challenged. You rarely hear someone cheerfully say, “Oh, thank you for explaining to me why my irrational beliefs are mistaken!” The person is more likely to say, “Oh, buzz off, and take your stupid ideas with you.”

Psychological findings need not be surprising or counterintuitive, however, to be important. Sometimes they validate common beliefs and then explain or extend them. Like scientists in other fields, psychological researchers strive not only to discover new phenomena and correct mistaken ideas but also to deepen our understanding of an already familiar world—for example, by identifying the varieties of love, the origins of violence, or the reasons that a great song can lift our hearts. Fully understanding basic human processes that most people take for granted often involves examining them in a new light; turning common wisdom on its head for a different perspective, or shaking up cherished beliefs to see why and when they hold true. This kind of critical and creative thinking takes practice, and in the next section we’ll suggest some guidelines that will allow you to adopt this same approach to understanding the psychological world around you.

JOURNAL PROMPT 1.1

Thinking Critically—Don’t Oversimplify: Recall the last time you heard a claim that sounded too good to be true. Perhaps it had something to do with psychology (“Improve your memory in just 20 minutes”), health and fitness (“Get all the benefits of a complete workout in only 8 minutes a day”), or even a product promising to make your life easier (“One drop of Whizzo cleans your entire house!”). Describe the pseudoscience underlying the claim, and distinguish it from the real science that would be necessary to legitimately support the assertions. For example, the toned people shown exercising for 8 minutes a day can probably get away with it because they’re already in shape to begin with. Hard data showing that sedentary people can achieve that same look in the same amount of time would be much more scientifically convincing.

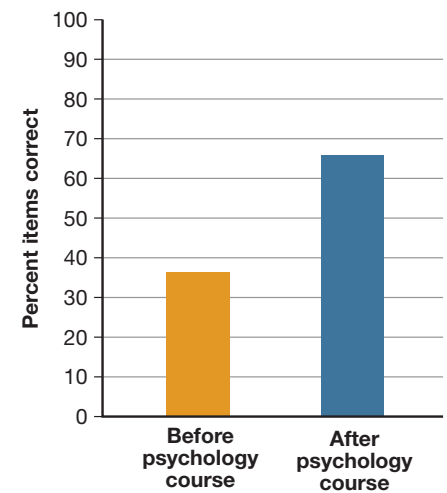


Figure 1.1 Psychology: It’s Not Just “Common Sense”

On the first day of class, students in an introductory psychology course actually did worse than chance on a true–false psychological information questionnaire. But by the end of the semester, after they had learned to examine the scientific evidence for their beliefs, their performance had greatly improved.

Quiz for Module 1.1

1. Psychology is defined as an area of study concerned with:
 - a. The factors that lead to flawed decision making in a social context
 - b. Behavior and mental processes, and how these are affected by physical, mental, and environmental states
 - c. The development, structure, and functioning of human society
 - d. The biological bases of mental disorders and the interpersonal problems of adjustment faced by people who have poor coping skills
2. Empirical evidence refers to:
 - a. Information that was gathered or derived from observation, experimentation, or measurement.
 - b. The majority opinion adopted by most people when considering an issue.
 - c. The opinions of experts that are believed by nonexperts for a given issue.
 - d. The most straightforward explanation that can be offered for a particular phenomenon
3. “Getting poor grades in college is a result of students being lazy” is an example of _____. “Students who participated in a 6-week study skills course improved their grades by 15% by the end of the term” is an example of _____.
 - a. Empirical evidence / empirical bias
 - b. An opinion / research bias
 - c. Research evidence / an opinion
 - d. An opinion / empirical evidence
4. In one study you read about, a group of introductory psychology students completed a test of “psychological information” on the first day of class. What was the general result of that initial survey?
 - a. Students were quite accurate in distinguishing factual statements about psychology from incorrect ones.
 - b. Students believed that many false statements regarding psychology were actually true.
 - c. Students performed better than chance at identifying correct findings from the psychological research literature.
 - d. Students showed a bias to believe that all statements on the survey were false.
5. One reason why beliefs in pseudoscience and psychic abilities persist is that:
 - a. They give people a sense of predictability in a confusing world
 - b. Pseudoscience is still a type of science, and science is based on facts
 - c. Psychic predictions have been shown to be accurate the majority of the time
 - d. They challenge our existing beliefs, and humans like uncertainty

Thinking Critically and Creatively About Psychology

Throughout this book, you will gain practice in distinguishing scientific psychology from pseudoscience by thinking critically. As an approach to science, critical thinking forms the basis for all research methodologies. It can also serve as an excellent starting point for the way you approach the world in general. Separating fact from fiction, knowing what to believe and what to discard, and understanding how to evaluate evidence are important skills to have handy in your mental toolkit. But what does it mean to think critically, and how can you become skilled at it?

What Is Critical Thinking?

LO 1.2.A Explain why critical thinking applies to all scientific pursuits, and also why it should guide everyday judgments and decision making.

Critical thinking is the ability and willingness to assess claims and make objective judgments on the basis of well-supported reasons and evidence rather than emotion or anecdote. Critical thinkers are able to look for flaws in arguments and to resist claims that have no support. They realize that criticizing an argument is not the same as criticizing the person making it. Critical thinking, however, is not merely negative thinking. It includes the ability to be creative and constructive—the ability to come up with alternative explanations for events,

critical thinking

The ability and willingness to assess claims and make judgments on the basis of well-supported reasons and evidence rather than emotion or anecdote.

think of implications of research findings, and apply new knowledge to social and personal problems. Critical thinking is indispensable in ordinary life. Without it, people cannot formulate a rational argument or see through misleading ads that play on their emotions. They may have trouble assessing a political proposal or candidate, deciding whether or when to have children, or making medical decisions.

Most people know that you have to exercise the body to keep it in shape, but they may not realize that clear thinking also requires effort and practice. All around us, we can see examples of flabby thinking. Sometimes people justify their mental laziness by proudly telling you they are open-minded. Many scientists have observed that it's good to be open-minded, but open-mindedness does not mean that all opinions are created equal and that everybody's beliefs are as good as anyone else's (Hare, 2009). On matters of personal preference, that is true; if you prefer the look of a Chevy truck to the look of a Honda Accord, no one can argue with you. But if you say, "The Chevy truck is more reliable than a Honda and gets better mileage besides," you have uttered more than mere opinion. Now you have to support your belief with evidence of the car's reliability, mileage, and safety record (Ruggiero, 2011). And if you say, "Chevy trucks are the best in the world and Hondas do not exist; they are a conspiracy of the Japanese government," you forfeit the right to have your opinion taken seriously. Your opinion, if it ignores reality, is *not* equal to any other.

Critical thinking is fundamental to all science, including psychological science. It will also improve your life in countless ways, including helping you learn better: In the study of introductory students' misconceptions described earlier (Figure 1.1), students who did well on a critical-thinking test early in the course showed the greatest improvement over the semester. It will help you use the Internet better, too. You may pride yourself on being skilled at getting info with your favorite search engine, but a team of researchers found that most college students are easily tricked (Pan et al., 2007; Thompson, 2011). They tend to rely on the material that comes up at the top of the results list, without assessing its credibility: Was that profile of Martin Luther King, Jr. written by a scholar or by white supremacists? Is that article really a paid advertisement for some product? The researchers found that the average high school and college student is unable to detect hidden agendas in what they read; they need, in the words of Internet pioneer and critic Howard Rheingold, a course in "crap detection 101."

Guidelines for Critical Thinking

LO 1.2.B List eight important critical-thinking guidelines, and give an example of how each applies to the science of psychology.

Critical thinking requires logical skills, but other skills and dispositions are also important (Anderson, 2005; Halpern, 2014; Levy, 2010; Stanovich, 2010). Here are eight essential critical-thinking guidelines that we will emphasize throughout this book.

ASK QUESTIONS; BE WILLING TO WONDER What is one kind of question that parents of young children often hear? "Why" questions: "Why is the sky blue, Mommy?" "Why doesn't the plane fall?" "Why don't pigs have wings?" Unfortunately, as children grow up, they tend to stop asking "why" questions. (Why do you think this is?)

"The trigger mechanism for creative thinking is the disposition to be curious, to wonder, to inquire," observed Vincent Ruggiero (1988). "Asking 'What's wrong here?' and/or 'Why is this the way it is, and how did it come to be that way?' leads to the identification of problems and challenges." This educational program isn't working; why not? I want to stop smoking and improve my grades; why can't I seem to do it? Is my way of doing things the best way, or just the most familiar way? Critical thinkers are willing to question received wisdom—"We do it this way because this is the way we have always done things around here"—and ask, in essence, "Oh, yeah? Why?"

In psychological science, knowledge advances by asking questions. What is the biological basis of consciousness? How are memories stored and retrieved? Why do we sleep and dream? What causes schizophrenia? Critical thinkers are not discouraged by the fact that questions like these have not yet been fully answered; they see them as an exciting challenge. And they even enjoy thinking critically about poorly phrased questions, which can lead us



Will a baby become smarter by listening to classical music? Critical thinkers would insist on empirical evidence to answer this question.

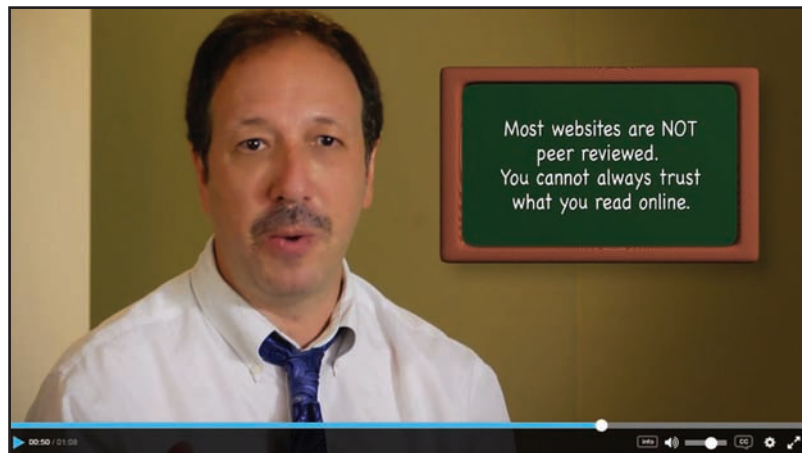
to wrong answers. Consider the matter of homework. The questions have usually been: “Are American children doing too much homework or too little?” But as one observer wrote, “The question should be ‘how effectively do children’s after-school assignments advance learning?’” (Paul, 2011). As you probably know from experience, spending hours studying won’t help you learn if you are not studying effectively—as you will see at the end of this chapter.

DEFINE YOUR TERMS After you have raised a general question, the next step is to frame it in clear and concrete terms. “What makes people happy?” is a fine question for midnight reveries, but it will not lead to answers until you have defined what you mean by “happy.” Do you mean being in a state of euphoria most of the time? Do you mean feeling pleasantly contented with life? Do you mean being free of serious problems or pain?

Vague or poorly defined terms in a question can lead to misleading or incomplete answers, or cause misunderstandings. For example, are people becoming less prejudiced against other groups? The answer may depend in part on how you define “prejudice.” Everyone might agree that a conscious dislike of another group qualifies as a prejudice. But what if a person feels uncomfortable with another group because he or she is unfamiliar with its rules and beliefs; is that person bigoted or just uninformed? What if a person blurts out an insulting remark while drunk; is that person prejudiced or just drunk? What if a person is unaware of having any prejudiced beliefs or feelings, yet a test suggests that he or she has an unconscious prejudice; what does that mean? Psychologists have defined and measured this phenomenon, and they have obtained different results depending on how they define prejudice.

EXAMINE THE EVIDENCE Have you ever heard someone in the heat of an argument exclaim, “I just know it’s true, no matter what you say”? Have you ever made such a statement yourself? Accepting a claim or conclusion without evidence is a sure sign of lazy thinking. A critical thinker asks, “What evidence supports or refutes this argument and its opposition? How reliable is the evidence?” Have you ever received some dire warning or funny “I swear it’s true!” story from a friend, and then posted it on your Facebook page, only to learn later that it was a hoax or an urban legend? A critical thinker would ask, “Is this story something I’d better check out on *snopes.com* before I tell my closest 90,000 friends?”

Sometimes, of course, checking the reliability of the evidence for a claim is not practical. In those cases, critical thinkers consider whether the evidence comes from a reliable source (Lipps, 2004). Sources who are reliable exercise critical thinking themselves. They have education or experience in the field in which they claim expertise. They do not pressure people to agree with them. They are trusted by other experts in the field. They share their evidence openly. In psychology, they draw on research conducted according to certain rules and procedures. For more tips on distinguishing reliable from less-reliable information, watch the video *Debunking Myths 2*.



ANALYZE ASSUMPTIONS AND BIASES *Assumptions* are beliefs that are taken for granted. Critical thinkers try to identify and evaluate the unspoken assumptions on which claims and arguments may rest—in the books they read, the political speeches they hear, and the ads that bombard them daily. The assumption might be “All Democrats (or Republicans) are idiots,”

or “You need the product we are selling,” or “People have free will and are entirely responsible for any crimes they commit” (or, conversely, “People’s criminal behavior is a result of their biology or horrible childhood, so they aren’t responsible for their acts”). Everyone, of course, makes assumptions about how the world works; we could not function otherwise. But if we do not recognize our own assumptions and those of other people, our ability to judge an argument’s merits may be impaired.

When an assumption or belief keeps us from considering the evidence fairly, it becomes a *bias*. A bias often remains hidden until someone challenges our belief and we get defensive and angry. For instance, most people, psychologists included, believe that parents are the most important influence in shaping a child’s personality. It’s obvious, isn’t it? In her book *The Nurture Assumption*, Judith Rich Harris (2009) dared to question that assumption. Genes and peers, she argued, are more important influences on a child’s personality and behavior than how the parents raise the child. Because this idea challenged a widespread bias, it immediately provoked a storm of disbelief, outrage, and scorn. Some critics focused on Harris’s lack of credentials instead of her facts or her logic (although she wrote a successful developmental psychology text, she does not have a PhD), and many attacked the book without even bothering to read it. That is the nature of a bias: It creates intellectual blinders.

AVOID EMOTIONAL REASONING Emotion has a place in critical thinking. Passionate commitment to a belief motivates people to think boldly, defend unpopular ideas, and seek evidence for creative new theories. But when gut feelings replace clear thinking, the results can be dangerous. “Persecutions and wars and lynchings,” observed Edward de Bono (1985), “are all a result of gut feeling.”

Because our emotional reactions and cherished beliefs feel so *right*, so natural, we may not realize that people who hold an opposing viewpoint feel just as strongly as we do. But they usually do, which means that emotional conviction alone cannot settle arguments; in fact, it often makes them worse. The fact that you *really, really* feel strongly that something is true—or want it to be—doesn’t make it so.

All of us are apt to feel threatened and get defensive whenever our most cherished beliefs, or commitment to a course of action, are challenged by empirical evidence (Tavris & Aronson, 2007). At such times, it is especially important to separate the data from emotional reasoning. In a 2011 judicial ruling that vaccines do not cause autism, one of the judges expressed sympathy for parents coping with their children’s disorder, but added, “I must decide this case not on sentiment, but by analyzing the evidence.” You probably hold strong feelings about many topics of psychological interest, such as drug use, racism, sexual orientation, the origins of intelligence, and what makes people fat or thin. As you read this book, you may find yourself quarreling with findings that you dislike. Disagreement is fine; it means that you are reading actively and are engaged with the material. All we ask is that you think about why you are disagreeing: Is it because the evidence is unpersuasive or because the results make you feel anxious or annoyed?

DON’T OVERSIMPLIFY Critical thinkers look beyond the obvious, resist easy generalizations, and reject either–or thinking. For instance, is it better to feel you have control over everything that happens to you or to accept with tranquility whatever life serves up? Either position oversimplifies. A sense of control has many important benefits, but sometimes it is best to go with the flow.

A common form of oversimplification is *argument by anecdote*—generalizing from a personal experience or from a few examples to everyone: One crime committed by a paroled ex-convict means that parole should be abolished; one friend who hates her school means that everybody who goes there hates it. Anecdotes are often the source of stereotyping as well: One dishonest mother on public assistance means everyone on welfare is dishonest; one encounter with an unconventional Californian means they are all flaky. Critical thinkers want more evidence than one or two stories before drawing such sweeping conclusions. Sharpen your critical thinking skills by watching the video *Debunking Myths 3*.



Although parents can contribute in many ways to a child’s development, is their influence of the greatest importance in a child’s life? By analyzing assumptions and practicing critical thinking we can address such questions.