Psychology

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Psychology

Thirteenth Edition

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About This Course

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From the very first edition of this text, our primary goal has been to weave critical and scientific thinking into the fabric of our writing, and today, in this era of fake news and "alternative facts," this goal is more important than ever. Students must negotiate the Internet and social media, which contain vast amounts of information but which are also full of conspiracy theories and nonsense. Psychological science can offer students the tools they need to separate fact from fiction and pseudoscience—and to distinguish wishful thinking from thinking wisely. Therefore, a good text should not be a laundry list of definitions and studies, and its writers cannot simply be reporters. For us, the most important job of any text is to help students learn to think like psychologists and to motivate them to enjoy the process.

That is why we could not be happier to welcome Sam Sommers and Lisa Shin to this book. They are consummate scientists; their particular areas of expertise (social, cognitive, and applied psychology for him; neuroscience, emotion, and clinical psychology for her) provide a perfect balance across the spectrum of psychological research, and they are gifted teachers and writers who know how to inspire and connect with students. We are grateful to them for bringing our vision of psychology forward, along with incorporating new teaching methods and learning dynamics for today's classrooms. They have retained what loyal users have cared about for so many editions while spearheading the text's evolution into the future. We hope you will enjoy this new and exciting incarnation of our text.

From Sam Sommers and Lisa Shin

In our department, Introduction to Psychology is a team-taught course. Given that psychology is such a diverse field, a team-based approach is an ideal way to introduce students to a wide range of perspectives with expertise as well as balance. In fact, the two of us have taught this course together on several occasions. And now we are so very excited to be joining a new team, the authoring team that Carole Wade and Carol Tavris have created. The Carol(e)s have written a text long known for making science accessible. Its hallmarks have always been to maintain a solid research base and promote critical thinking, all the while offering engaging prose and analysis of contemporary events. This text is designed to be accessible to students learning psychology at any institution. It is a text intended to reveal to readers that psychology is the scientific study of their daily lives. These, too, have been our objectives in our years as a teaching team.

For those of you who have used the Wade and Tavris text in the past, we trust that you will find its calling cards still intact: detailed reviews of study design and findings, an emphasis on critical thinking and active learning, the willingness to confront controversial topics, and themes of culture and gender infused throughout. We're confident that returning as well as new users will also find benefit in our additional strategies for making science accessible. Each chapter in our interactive Revel text opens with a survey question that prompts students to explore the applicability of the topic at hand to their own lives. We've punched up the popular culture analyses, enabling readers to consider the ways in which broader cultural forces both shape and reflect individual cognitive and behavioral tendencies. We've created a new video series—embedded directly into the Revel text—in which we try to bring the details of research to life through study reenactments, clinical interviews, and engaging demonstrations. Also available in the Revel text is a new chapter-ending feature called Critical Thinking Illustrated, in which we make use of animation and interactive questions to guide readers through the steps of critical thinking necessary to interrogate provocative claims related to a topic from each chapter. And throughout the text, we've tried to capitalize on the expertise born of our mutual decades of active research in the field—it has always been our belief that teaching makes us better researchers and research makes us better teachers. We're thrilled to be on board, and we look forward to sharing the coming semester with you.

Goals and Principles

Five goals and principles have guided the writing of this text from the first edition. Here they are:

1. Thinking Critically About Critical Thinking

True critical thinking cannot be reduced to a set of rhetorical questions 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 specific **Critical Thinking Steps**, 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 text, 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, interactives, 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 in the form of end-of-module and end-of-chapter assessments. 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 functional magnetic resonance imaging (fMRI), and the proliferation of medications for psychological disorders—all of these developments have had a profound influence on our understanding of human behavior and on interventions to help people with chronic problems. 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.

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 to an even increasing degree in the future.

3. Focus on Culture and Gender

At the time of this text's first edition, some considered the goal of incorporating research on gender and culture into introductory psychology to be quite radical, either a bow to political correctness or a passing 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 throughout the text. 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 throughout the book. In addition, Chapter 13 highlights the sociocultural perspective in psychology and includes extended discussions of intergroup conflict, prejudice, and cross-cultural relations.

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 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 (Chapter 12), and conflicts of interest in research on medication for psychological disorders (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, including **chapter opening survey questions** that allow students to compare their own perceptions about psychological topics with those of other students taking the course; a **Taking Psychology with You** feature in each chapter that illustrates the practical implications of psychological research for individuals, groups, institutions, and society; **interactive review tables**; a **running glossary** that defines boldfaced technical terms where they occur for handy reference and study; carefully selected **videos** in each chapter, including a *new* interactive animated series created by the authors called **Critical Thinking Illustrated** that comes at the end of each chapter; **chapter outlines**; and **chapter summaries** in paragraph form to help students review.

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 text 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 text 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. Within 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 "hmmmmm" to yourself, try to restate what you have read in your own words at the end of each section. At specific points in each chapter, you will find

Journal Writing Prompts that challenge you to not just recall what you've learned, but to 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 paragraphs 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 it in this text. Welcome to psychology!

Carole Wade
Carol Tavris
Sam Sommers
Lisa Shin

Content Highlights

Changes in the 13th Edition

In the 13th 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 ranging from the biological and neuroscientific to the more clinically and social science oriented—and added opportunities for students to test themselves on the material as they're learning it. At the end of each chapter, we have added a new feature called Critical Thinking Illustrated that uses the steps of critical thinking to analyze a claim related to a topic from each chapter using short animated video clips and interactive activities. Each chapter also includes a Taking Psychology with You section devoted to various lessons that we hope readers will be able to apply to their own lives, whether in terms of how to improve critical thinking skills, how to get better (and more) sleep, how to become a more conscientiously engaged member of social groups, or how to think more clearly about mental disorders. We've also taken care to present each chapter in such a way that they can be easily reordered in Revel or however you teach your course.

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:

- Discussion of psychology as a "hub science."
- Research regarding the cognitive effects of taking notes by hand rather than with a laptop, as well as the consequences of multitasking in the classroom.
- Emerging techniques for manipulating brain function, such as transcranial direct current stimulation (tDCS), transcranial magnetic stimulation (TMS), and deep brain stimulation (DBS).
- New data on the use of speed dating to study the science of relationships, as well as the nature and impacts of "sexting" among young people.
- New discussion of sexual orientation and the experiences (and popular culture depictions) of transgender individuals.
- Research on multiracial identity, including its relationship to cognitive outcomes.
- New coverage of potential diagnostic inaccuracy of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) and the shift to study psychopathology dimensionally.
- Expanded focus on recent real-world events and popular culture to illustrate psychological principles and spark students' curiosity.

In addition, all 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.

Teaching and Learning Resources

As valuable as a good textbook is, it is one element of a comprehensive learning package. We have made every effort to provide high-quality instructor and student supplements that will save you preparation time and will enhance the classroom experience.

Revel: Educational Technology Designed for the Way Today's Students Read, Think, and Learn

When students are engaged deeply, they learn more effectively and perform better in their courses. This simple fact inspired the creation of Revel: an immersive learning experience designed for the way today's students read, think, and learn. Built in collaboration with educators and students nationwide, Revel is the newest, fully digital way to deliver respected Pearson content.

Revel enlivens course content with media interactives and assessments—integrated directly within the authors' narrative —that provide opportunities for students to read about and practice course material in tandem. This immersive educational technology boosts student engagement, which leads to better understanding of concepts and improved performance throughout the course.

Learn more about Revel
www.pearsonhighered.com/revel/

Revel Combo Card

The Revel Combo Card (ISBN 9780135464830) provides an all-in-one access code and loose-leaf print reference (delivered by mail).

Student Print Reference Edition Within Revel (ISBN 9780135199381). Students have the option to purchase a Print Reference Edition, which is a convenient, three-hole punched, loose-leaf text. This print edition is designed to be a helpful supplement for students; it contains the entire narrative, figures, images, and photographs. However, to experience all of the interactive and assessment components of the program, students must access the Revel program.

Foster Critical Thinking Through Writing

Essays in Revel enable educators to integrate writing—among the best ways to foster and assess critical thinking—into the course without significantly impacting their grading burden. Powered by Pearson's Intelligent Essay Assessor (IEA), this powerful tool uses

scores assigned by human raters to several hundred representative student essays, all written in response to a particular essay prompt or question. By using computational modeling, IEA mimics the way in which human readers score. In study after study comparing the performance of IEA to that of skilled human graders, the quality of IEA's assessment equals or surpasses that of the humans.

Supplements

The following instructor supplements can be downloaded from the Instructor's Resource Center website (**www.pearsonhighered. com/irc**) as well as accessed from the Resources tab in the Revel course.

Test Bank (ISBN 9780135198803)

This test bank contains over 3,000 multiple-choice, true/false, short-answer, and essay questions. An additional feature for the test bank is the inclusion of *rationales for the multiple-choice questions*. The rationales help instructors to evaluate the questions they are choosing for their tests and give instructors the option to use the rationales as an answer key for their students.

A Total Assessment Guide chapter overview makes creating tests easier by listing all of the test items in an easy-to-reference grid. All questions are categorized at the skill levels of remember the facts, understand the concepts, apply what you know, and analyze it, assigned a difficulty level, are correlated to each of the chapter's learning objectives and to the American Psychological Association (APA) learning objectives.

Pearson MyTest (ISBN 9780135198827)

The 13th edition test bank is also available through Pearson MyTest (**www.pearsonmytest.com**), a powerful assessment-generation program that helps instructors easily create and print quizzes and exams. Instructors can write questions and tests online, allowing them flexibility and the ability to efficiently manage assessments at any time, anywhere. Instructors can easily access existing questions and edit, create, and store using simple drag-and-drop and Word-like controls. Data on each question provide answers and question types, mapped to the appropriate learning objective.

Instructor's Resource Manual (ISBN 9780135198766)

The *Instructor's Resource Manual* includes a chapter summary, a detailed Chapter Lecture Outline, Lecture Launcher suggestions that draw on classic and current research findings, classroom-tested Student Activities, learning objectives for each chapter, and more resources to improve your classroom presentations.

Interactive PowerPoint Slides (ISBN 9780135199817)

Bring design into the classroom, drawing students into the lecture and providing appealing interactive activities, visuals, and videos. The slides are built around the text's learning objectives and offer direct links to interactive exercises, simulations, and activities.

Standard Lecture PowerPoint Slides (ISBN 9780135199343)

These accessible, standard Lecture PowerPoint slides provide an active format for presenting concepts from each chapter and feature relevant figures and tables from the text.

Art PowerPoint Slides (ISBN 9780135199879)

These slides contain only the photos, figures, and line art from the text.

Psychobabble and Biobunk Using Psychological Science to Think Critically About Popular Psychology, 3rd edition (ISBN 9780205015917)

By Carol Tavris: This updated collection of book reviews and essays is tailored to the critical thinking guidelines described in the 13th 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 Tavris have written *Psychology; Psychology in Perspective*; and *The Longest War: Sex Differences in Perspective*.

Carol Tavris 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. Dr. Tavris 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*.

Samuel R. Sommers earned his Ph.D. in psychology at the University of Michigan and has been a professor of psychology at Tufts University since 2003. He is a social psychologist whose research examines issues related to intergroup relations, group composition and diversity, stereotyping and bias, and the intersection of psychology and law. Dr. Sommers teaches courses in Experimental Psychology, Social Psychology, and Psychology and Law and team-teaches Introduction to Psychology with Dr. Shin. In addition to this text, he is a co-author of the Aronson et al. *Social Psychology* textbook and has written two general audience books, *Situations Matter: Understanding How Context Transforms Your World,* and *This Is Your Brain on Sports: The Science of Underdogs, the Value of Rivalry, and What We Can Learn from the T-Shirt Cannon*.

Lisa M. Shin earned her Ph.D. in psychology at Harvard University, and completed a postdoctoral fellowship in the Department of Psychiatry at The Massachusetts General Hospital/Harvard Medical School. She has been on the faculty at Tufts University since 1998, where she is currently Chair of the Psychology Department. Dr. Shin's research involves examining brain function and cognitive processing in patients with anxiety disorders, particularly postraumatic stress disorder (PTSD). Dr. Shin teaches courses in Research Methods in Clinical Psychology, Biological Bases of Psychopathology, and Emotion and Memory and team-teaches Introduction to Psychology with Dr. Sommers.

Authors' Acknowledgments

Like any cooperative effort, writing a book requires a support system. We are indebted to the reviewers of this and previous editions of this text for their many insightful and substantive suggestions and for their work on supplements.

We are also grateful to the members of our superb editorial and production teams at Pearson, who have unfailingly come through for us on every edition of this complex project. With regard to this edition, from our first meeting in Hoboken to everything that has followed since, this new collaboration has been a distinct pleasure and one that we look forward to for many years to come. We recognize and appreciate how lucky we are to be part of such a nonpareil team; thank you for that.

Thank you to our editors: Erin Mitchell, for bringing together this configuration of authors and always giving us what we needed to produce a great book; and Julie Kelly, who kept things running smoothly, helped shaped the content and all of the text's features, and never drowned in our email barrage. Consider this: It's been terrific working with you and the entire Pearson family, including (but not limited to) Chris Brown, Debi Henion, Margaret McConnell, Lisa Mafrici, Stephanie Laird, Jennifer Stevenson, Jane Kaddu, Amy Gibbons, Connie Wong, and Lindsay Verge.

We would also like to thank all those individuals whose contributions to this endeavor were more personal than professional. They know who they are, but they should still be reminded of our appreciation in print. From all four of us, the deepest of thanks and appreciation to the following motley crew: Abigail, Dee, Gianna, Howard, Jeff, Lou, Luisa, Lynn, Marilyn, Pat, Ronan, and Sophia. Thanks to our colleagues for their support, stimulation, and welcomed diversions (yes, we're talking to you, Heather and Keith). And last but not least, we recognize several decades of students, for making it fun for us to come to work each day and for teaching us just as much as we teach them.

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Learning Outcomes and Assessment

Goals and Standards

In recent years, many psychology departments have been focusing on core competencies and how methods of assessment can better enhance students' learning. In response to this need, in 2008, the American Psychological Association (APA) established 10 recommended goals for the undergraduate psychology major. These goals were revised in 2013 and currently cover five goals. Specific learning outcomes have been established for each goal, and suggestions are provided on how best to tie assessment practices to these goals. In writing this text, we have used the APA goals and assessment recommendations as guidelines for structuring content and integrating the teaching and homework materials. For details on the APA learning goals and assessment guidelines, please see **www.apa.org/**.

Based on APA recommendations, each chapter is structured around detailed learning objectives. All of the instructor and student resources are also organized around these objectives, making the text and resources a fully integrated system of study. The flexibility of these resources allows instructors to choose which learning objectives are important in their courses as well as which content they want their students to focus on.

APA Correlation for Wade Tavris Sommers Shin 13e

The APA Guidelines for the Undergraduate Psychology Major, Version 2.0

APA LEARNING OUTCOMES AND OBJECTIVES	TEXT LEARNING OBJECTIVES AND FEATURES
Goal 1: Knowledge Base in Psychology	
1.1	*Learning Objectives: 1.1a, 1.1b, 1.1c, 1.2a, 1.2b, 1.3b, 1.4a, 1.4b, 1.5b, 2.1a, 2.1c, 2.2a, 2.2b, 2.2c, 2.2d, 2.2e, 2.2f, 2.3a, 2.3b, 2.4a, 2.4b, 2.4c, 2.5a, 2.5b, 2.5c, 2.6a, 2.6b, 3.1a, 3.1b, 3.1c, 3.2a, 3.2b, 3.3a, 3.3b, 3.4a, 3.4b, 3.5a, 3.5b, 3.5c, 3.5d, 4.1a, 4.1b, 4.2a, 4.2b, 4.2c, 4.2d, 4.2e, 4.3a, 4.3b, 4.4a, 4.4b, 4.4c, 4.4d, 4.4e, 4.4f, 4.4g, 4.5a, 4.5b, 4.6a, 4.6b, 4.6c, 5.1a, 5.1b, 5.1c, 5.1d, 5.2a, 5.2b, 5.2c, 5.2d, 5.2e, 5.3a, 5.3b, 5.3c, 5.4a, 5.4b, 5.4c, 5.4d, 6.1a, 6.1b, 6.2a, 6.2b, 6.3a, 6.3b, 6.4a, 6.4b, 6.5a, 6.5b, 6.5c, 7.1a, 7.1b, 7.1c, 7.3a, 7.3b, 7.4a, 7.4b, 7.5a, 7.5b, 7.6a, 7.6b, 8.1a, 8.1b, 8.2a, 8.2b, 8.2c, 8.3a, 8.3b, 8.4a, 8.5a, 8.5b, 8.5c, 8.6a, 8.6b, 8.6c, 9.1a, 9.1b, 9.1c, 9.1d, 9.2a, 9.2b, 9.2c, 9.2d, 9.3a, 9.3b, 9.3c, 9.3d, 9.4a, 9.4b, 9.4c, 10.1a, 10.1b, 10.1c, 10.1d, 10.2a, 10.2b, 10.2c, 10.3a, 10.3b, 10.3c, 10.3d, 10.4a, 10.4c, 11.1a, 11.1b, 11.1c, 11.2a, 11.2b, 11.2c, 11.3a, 11.3b, 11.4a, 11.4b, 11.4c, 11.5a, 11.5b, 11.5c, 12.1a, 12.1b, 12.1c, 12.2a, 12.2b, 12.3a, 12.3b, 12.4a, 12.4b, 12.5a, 12.5b, 12.6a, 12.6b, 12.6c, 13.1a, 13.1b, 13.1c, 13.1d, 13.2a, 13.2b, 13.2c, 13.2d, 13.3a, 13.3b, 13.3c, 13.3d, 13.4a, 13.4b, 13.4c, 13.4d, 13.5a, 13.5c, 14.1a, 14.1b, 14.1c, 14.2a, 14.2b, 14.3a, 14.3b, 14.4a, 14.4b, 14.4c, 14.5a, 14.5b, 14.6a, 14.6b, 14.6c, 15.1a, 15.1b, 15.1cc, 15.2a, 15.2b, 15.2c, 15.3a, 15.3b, 15.4a, 15.4b, 15.5a, 15.5b, 15.5c, 15.6a, 15.6b, 15.7a, 15.7b, 15.8a, 15.8b, 16.1a, 16.1b, 16.2a, 16.2b, 16.2c, 16.2d, 16.3a, 16.3b, 16.3c, 16.3d*
1.2	*Learning Objectives: 1.1a, 1.1b, 1.2b, 1.3a, 1.3b, 1.4a, 1.4b, 1.5c, 1.6b, 2.1d, 2.2a, 2.2b, 2.2c, 2.2d, 2.2e, 2.2f, 2.3a, 2.3b, 2.4a, 2.4b, 2.4c, 2.5a, 2.5b, 2.5c, 2.6a, 2.6b, 3.1a, 3.1b, 3.2a, 3.2b, 3.3a, 3.3b, 3.4a, 3.4b, 3.5a, 3.5b, 3.5c, 3.5d, 4.1a, 4.1b, 4.2e, 4.3a, 4.3b, 4.5a, 4.6b, 5.1a, 5.1b, 5.1c, 5.1d, 5.2a, 5.2b, 5.2c, 5.2d, 5.2e, 5.3a, 5.3b, 5.3c, 5.4a, 5.4b, 5.4c, 5.4d, 6.1a, 6.2a, 6.2b, 6.3a, 6.3b, 6.4a, 6.4b, 6.5a, 6.5b, 6.5c, 7.1a, 7.1b, 7.1c, 7.3a, 7.3b, 7.4a, 7.4b, 7.5a, 7.5b, 7.6a, 7.6b, 8.1a, 8.1b, 8.2a, 8.2b, 8.2c, 8.3a, 8.3b, 8.4a, 8.5a, 8.5b, 8.5c, 8.6a, 8.6b, 9.1a, 9.1b, 9.1c, 9.1d, 9.2a, 9.2b, 9.2c, 9.2d, 9.3a, 9.3b, 9.3c, 9.3d, 9.4a, 9.4b, 9.4c, 10.1a, 10.1d, 10.2c, 10.3a, 10.3b, 10.3c, 10.3d, 11.1a, 11.1b, 11.1c, 11.2a, 11.2b, 11.2c, 11.3a, 11.3b, 11.4a, 11.4b, 11.4c, 11.5a, 11.5b, 11.5c, 12.1a, 12.1b, 12.1c, 12.2a, 12.2b, 12.3a, 12.3b, 12.4a, 12.4b, 12.5a, 12.5b, 12.6a, 12.6b, 12.6c, 13.1a, 13.1b, 13.1c, 13.1d, 13.2a, 13.2b, 13.2c, 13.3a, 13.3b, 13.3c, 13.3d, 13.4a, 13.4b, 13.4c, 13.5a, 13.5c, 14.1a, 14.1b, 14.1c, 14.2a, 14.2b, 14.3a, 14.3b, 14.4a, 14.4b, 14.4c, 14.5a, 14.5b, 14.6a, 14.6b, 14.6c, 15.2a, 15.2b, 15.2c, 15.3a, 15.3b, 15.4a, 15.4b, 15.5a, 15.5b, 15.5c, 15.6a, 15.6b, 15.7a, 15.7b, 15.8a, 15.8b, 16.1a, 16.1b, 16.2a, 16.2b, 16.2c, 16.2d, 16.3a, 16.3b, 16.3c, 16.3d*

1.3	*Learning Objectives: 1.1b, 1.2a, 1.2b, 2.1a, 2.1b, 2.1c, 2.1d, 3.5a, 3.5b, 3.5c, 4.6a, 5.1b, 5.1c, 5.2a, 5.2b, 5.2c, 5.4d, 6.2a, 6.2b, 6.3b, 6.4a, 6.4b, 6.5a, 6.5b, 6.5c, 6.5c, 7.1a, 7.2a, 7.2b, 7.2c, 7.2d, 7.3b, 7.5a, 7.5b, 7.6a, 7.6b, 8.3a, 8.3b, 8.3c, 8.5c, 8.6b, 8.6c, 9.1c, 9.1d, 9.2a, 9.2b, 9.2c, 9.2d, 9.3b, 9.3c, 10.1b, 10.1c, 10.1d, 10.2a, 10.2b, 10.2c, 10.3a, 10.3b, 10.3d, 10.4a, 10.4b, 10.4c, 11.1a, 11.1b, 11.2a, 11.2b, 11.2c, 11.3a, 11.3b, 11.3c, 11.4a, 11.4b, 11.4c, 11.5a, 11.5b, 11.5c, 12.1a, 12.2b, 12.3a, 12.4a, 12.5a, 12.5b, 12.6c, 13.1a, 13.1d, 13.2b, 13.2c, 13.2d, 13.3c, 13.3d, 13.5c, 14.1c, 14.6c, 15.1b, 15.6a, 15.6b, 15.7b, 16.1a, 16.2a, 16.2b, 16.2c, 16.2d, 16.3b, 16.3c, 16.3d*

Goal 2: Scientific Inquiry and Critical Thinking

2.1	*Learning Objectives: 1.2a, 1.2b, 1.3a, 1.4a, 1.4b, 1.5a, 2.1a, 2.1b, 2.1c, 2.1d, 2.5b, 2.5c, 3.1a, 3.1b, 3.2a, 3.2c, 3.3a, 3.3b, 4.6b, 4.6c, 5.2c, 6.3a, 6.3b, 6.4b, 7.1c, 7.5a, 8.2b, 8.3a, 8.6a, 9.2a, 9.2b, 9.2c, 9.2d, 9.3b, 9.4a, 9.4b, 9.4c, 10.1b, 10.1c, 10.2a, 10.3b, 11.1a, 11.1b, 11.1c, 11.2a, 11.2b, 12.2a, 12.4a, 13.1d, 13.2a, 13.2d, 13.3d, 14.1a, 14.1b, 14.1c, 14.3b, 14.4b, 14.4c, 15.2a, 15.3a, 15.3b, 15.4a, 15.5a, 15.5b, 15.6a, 15.6b, 15.7a, 15.7b, 15.8b, 16.3a, 16.3c*
2.2	*Learning Objectives: 1.1b, 2.5a, 2.5b*
2.3	*Learning Objectives: 1.2a, 1.2b, 7.2a, 7.2b, 7.2c, 7.2d*
2.4	*Learning Objectives: 1.1b, 1.5a, 2.1a, 2.1d, 2.2a, 2.2b, 2.2c, 2.2d, 2.2e, 2.2f, 2.3a, 2.3b, 2.4a, 2.4b, 2.4c, 2.5a, 2.5b, 2.5c, 3.4b, 4.3a, 4.3b, 5.1b, 9.3b, 12.2a, 14.1c, 14.6c, 16.3a, 16.3c*
2.5	*Learning Objectives: 1.3a, 1.3b, 1.4a, 1.4b, 2.1b, 2.1c, 2.1d, 2.5b, 2.5c, 3.3a, 3.3b, 4.6b, 7.4b, 8.5c, 9.3b, 10.2b, 10.3a, 10.3b, 11.2a, 11.2b, 11.2c, 12.1b, 12.2a, 12.3a, 12.6a, 13.1b, 13.1c, 14.1c, 14.5a, 14.5b, 15.7a, 16.2a, 16.3d*

Goal 3: Ethical and Social Responsibility

3.1	*Learning Objectives: 2.6a, 2.6b, 8.5c, 13.1b, 13.1c, 16.3c*
3.2	*Learning Objectives: 11.4a, 11.4b, 13.4a, 16.3c, 16.3d*
3.3	*Learning Objectives: 1.5a, 6.5a, 6.5b, 6.5c, 8.6c, 9.3b, 10.1d, 10.3b, 10.4a, 11.2a, 11.2b, 11.3a, 11.3b, 12.6c, 13.4a, 13.4b, 13.4c, 13.5a, 13.5b, 13.5c, 14.5a, 15.1a, 15.1b, 16.3a, 16.3b, 16.3d*

Goal 4: Communication

4.1	*Learning Objectives: 2.5a, 2.5b*
4.2	
4.3	

Goal 5: Professional Development

5.1	*Learning Objectives: 1.1b, 1.2a, 1.2b, 1.5a, 1.5b, 2.1b, 2.1c, 2.1d, 3.3a, 3.3b, 4.2c, 4.6a, 5.4d, 6.5a, 6.5b, 6.5c, 7.2a, 7.2b, 7.2c,7.2d, 8.4a, 8.5a, 8.6c, 9.1c, 9.1d, 9.3a, 9.3b, 9.3c, 10.1b, 10.1c, 10.1d, 10.3b, 11.3b, 11.4a, 11.4b, 11.4c, 11.5a, 11.5b, 11.5c, 13.4a, 13.4b, 15.1a, 15.1b, 16.1a, 16.3a, 16.3b*
5.2	*Learning Objectives: 10.4a*
5.3	*Learning Objectives: 13.3a, 13.3b*
5.4	*Learning Objectives: 13.3a, 13.3b*
5.5	

APA Goals are reinforced throughout the program with Learning Tools: Journal Prompts, Shared Writing, Essays to Assign, Experiment Simulations, Video Quizzes, and the instructor's teaching and assessment package.

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Chapter 1
What Is Psychology?

⌄ Learning Objectives

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

LO 1.1.B Explain what separates psychological science from pseudoscience, pop psychology, and other sources of dubious claims regarding psychological issues.

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

LO 1.2.B Identify important steps to critical thinking, and give an example of how each applies to the science of psychology.

LO 1.3.A Discuss some of the early approaches to explaining psychological topics, from ancient times through the early 1800s.

LO 1.3.B Discuss some of the influential perspectives and individuals in the early years of modern psychology.

LO 1.4.A List and describe four major perspectives in psychology.

LO 1.4.B Review the lack of diversity in early psychology and its consequences, and explain how feminist psychology illustrates the benefits of including a range of perspectives in scientific inquiry.

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.

What About You?

Psychology is the scientific study of how we think, feel, and act on a daily basis. As we begin this chapter, we have a question for you about your own life. When you submit your answer, you will see the data from others who have read this chapter. We hope that this will be just the first of several times you think about your own life experiences when reading this chapter.

Ask Questions... Be Willing to Wonder

Interactive

Do you consider yourself good at predicting how people around you will behave and react under different circumstances?

☐ YES
☐ NO

Every day, the world witnesses tales of cowardice and heroism, triumph and failure, playfulness and terror, creativity and folly, love and hate. Human nature runs a broad continuum, from the terrific to the horrific. And the scientific study of why we think, feel, and act the way we do?

That's psychology.

When your authors tell people that we are psychologists, the first response is usually a variation on, "Ooh, are you analyzing me right now?" (We always say yes.) Sometimes this is followed by, "Are you reading my mind?" (Again, just for fun, we always say yes.) While it is true that some psychologists see patients (and only a fraction of these professionals make use of psychoanalysis), many of us do not. And when we're being honest, we ultimately have to admit that we can't read minds either.

Even though people often associate psychology with mental disorders, personal problems, and psychotherapy, psychologists take as their subject the entire spectrum of beautiful and brutish things that human beings do—the kinds of things you see and read and hear about every day. Psychologists want to know why some people seem to be outgoing extraverts, whereas others prefer to blend in quietly. They ask why some people cheat and lie in the pursuit of success, and how those who do so rationalize their dishonesty to themselves and others. They explore the reasons that nations and ethnic groups so often see the world in terms of "us versus them" and resort to armed conflict to settle their differences. They investigate the mysteries of human memory, from people who can learn in mere minutes the sequence of an entire deck of playing cards to why it is that some of us can't remember the four things we need to buy at the grocery store.

In short: Psychologists are interested in how ordinary human beings learn, remember, solve problems, sense and interpret the world, feel emotion, and get along (or fail to get along) with friends and family members. They are therefore as likely to study commonplace experiences—rearing children, gossiping, the stress of rush hour traffic, daydreaming, making love, and making a living—as exceptional ones.

If you have ever wondered what makes people tick, or if you want to gain insight into your own behavior, then you are in the right course. We will begin every chapter of this text with a survey question to prompt you to think about your own life and how it relates to the topics we are about to explore. In this chapter, we asked if you are good at predicting how people around you will behave. In the past, even at the start of the semester, a majority of our students have said yes to this question. That's great! But we promise that after taking this course, you'll be even better at this. And we also promise that by the end of this text, at least one—and probably more!—assumptions about human nature that you've previously relied upon will be proven to be more myth than truth.

1.1 Psychology, Pseudoscience, and the Perils of Common Sense

To get a clear picture of this field, you need to know about its methods, its findings, and its ways of interpreting information. We will get to all this; we promise. But first, let's look more closely at what psychology is, and equally importantly, what it is *not*.

1.1.A What Psychology Is

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

Psychology can be defined generally as the scientific discipline concerned with behavior and mental processes and how they are affected by an organism's physical state, mental state, and external environment. In many respects, psychology is the exploration of daily life experiences, preferences, and tendencies—psychologists investigate many of the same issues regarding human nature that you and your friends might discuss over coffee or while out to dinner. But unlike these informal conversations, psychological science is inquiry based on research and **empirical** evidence, which is gathered by precise observation, experimentation, and measurement.

Accordingly, psychology is not just another name for common sense. Often, psychological research produces findings that directly contradict prevailing beliefs, and throughout the chapters that follow, you will discover many of them. Are unhappy memories really repressed and then accurately recalled years later, as if they had been recorded in perfect detail in the brain? Do policies of abstinence from alcohol reduce rates of alcoholism? If you play Beethoven to your infant, will your child become smarter? Can hypnosis help you accurately remember your third birthday or allow you to perform feats that would otherwise be impossible? Many people would answer these questions with a "yes," but they would be wrong. Watch the video *Debunking Myths, Part 1* to see other common but mistaken beliefs.

Watch   Debunking Myths, Part 1

▶ 00:00 / 00:42   info 🔊 ─●──── Speed ──●── CC ⚙ ↗

Indeed, at the start of an introductory psychology course, many students hold beliefs that have been promoted in the popular culture, or are based on "common sense," but that are not scientifically supported. When two instructors gave their introductory psychology students a list of such misconceptions in a true/false questionnaire on the first day of class—a questionnaire consisting entirely of false statements—the students accurately detected the false statements only 38.5 percent of the time, which is actually worse than chance

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The Greek letter psi (pronounced like the word *sigh*) is often used to represent the discipline of psychology.

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.

empirical

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

Figure 1.1 Psychology: It's Not Just "Common Sense"
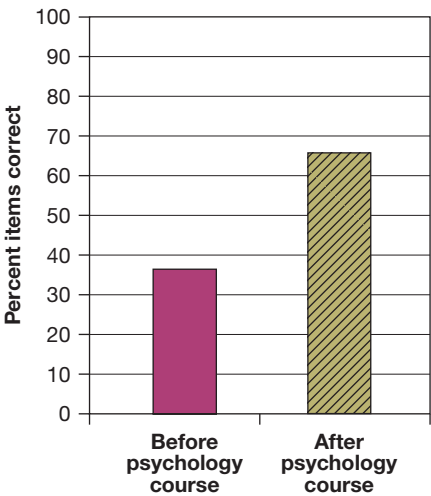
On the first day of class, students in an introductory psychology course actually did worse than chance on a true/false psychological information questionnaire. But by the end of the semester, after they had learned to examine the scientific evidence for their beliefs, their performance had improved (Taylor & Kowalski, 2004).

Source: Adapted from Taylor & Kowalski, 2004

(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 also lost confidence in their remaining misconceptions, suggesting that they had learned one of the most important lessons in science: Uncertainty about untested assumptions and beliefs is a good thing.

Psychological findings need not be surprising to be important. Sometimes they validate common beliefs and then explain or extend them. Like all scientists, 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, the reasons different people can hear the same recorded sound in different ways, and why it is that a catchy musical rhythm 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. In fact, psychology has this potential not only to shape how ordinary people view human nature, but also to influence the thinking of researchers in other fields. We learn from analyses of how often scientists in one discipline cite the work of scientists in other disciplines, that psychology is a "hub science," in that it serves as central link to surrounding research in many other fields (Cacioppo, 2013).

If you don't want to take our word for the importance and potential influence of psychology—after all, we're psychologists ourselves, so we might be just a tad biased here—maybe you'll be more persuaded by former U.S. president Barack Obama, who wrote in an executive order in 2015 that "research findings from fields such as behavioral economics and psychology... can be used to design government policies to better serve the American people." You can learn more about the many ways psychology impacts daily lives in the following video, *Asking the Tough Questions*.

Watch   Asking the Tough Questions

1.1.B What Psychology Is Not

LO 1.1.B   **Explain what separates psychological science from pseudoscience, pop psychology, and other sources of dubious claims regarding psychological issues.**

Perhaps just as informatively, let's consider what psychology is *not*. First, the psychological science that you are about to study bears little relation to the popular psychology ("pop psych") often found in self-help books or on talk shows. In recent decades, the public's appetite for psychological information has created a huge market for "psychobabble": pseudoscience covered by a veneer of psychological language. Pseudoscience (*pseudo* means "false") promises quick fixes to life's problems, 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. Once again, the psychology about which you will learn in this text is based on the scientific method and empirical observation.

Furthermore, psychological science differs radically from nonscientific competitors such as fortune-telling, numerology, and astrology. Yes, promoters of these systems—like psychologists—try to explain people's problems and predict or guide their behavior: If you are having romantic problems, a "past-lives channeler" may say it's because you were jilted in a former life, and an astrologer may advise you to choose an Aries instead of an Aquarius as your next love. Yet whenever the predictions of psychics, astrologers, and the like are put to the test, they turn out to be so vague as to be meaningless (e.g., "Your 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 (Shaffer & Jadwiszczok, 2010). Contrary to what one might think from watching TV shows or going to psychic websites, psychics don't regularly find missing children, identify serial killers, or help police solve any other crime by using "psychic powers" (Radford, 2011). Usually, their "help" merely adds to the heartbreak felt by a victim's family.

So why does belief in psychic abilities and other forms of pseudoscience persist, even in scientifically advanced societies? 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 can also confirm 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, get out of here, and take your stupid ideas with you."

Because so many pop-psych ideas have filtered into the media, education, the law, and politics, it is important to develop an ability to distinguish between psychobabble and serious psychology, and between unsubstantiated popular opinion and scientific findings based on research evidence. Such skills will serve you well in your introductory psychology class, but also in other courses and in your efforts to become a more informed citizen and consumer in an era teeming with infomercials, self-proclaimed experts on YouTube, "fake news," and a variety of other dubious sources of information. Indeed, we will focus on the importance of critical thinking in psychology throughout this text, starting with the journal prompt that you will find at the end of each section of each chapter.

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Tarot cards, horoscopes, psychic readings, and other nonscientific ways of predicting future outcomes remain popular today. Why? Because they often tell us what we want to hear and offer predictions for an otherwise unpredictable world. Scientific data are often messier, telling more complicated stories that can challenge our assumptions.

JOURNAL 1.1 THINKING CRITICALLY—DEFINE YOUR TERMS

Your friend Casey is a Chemistry major who likes to give you a hard time for enrolling in a Psychology course. "Psychology isn't a science," he claims. "It's all just common sense anyway." Why is Casey wrong about Psychology? What does it mean for a field to be scientific? Can you think of a specific example of a so-called common sense assumption that you would like to see tested by psychological research?

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 true/false questionnaire about psychological issues 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 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.

1.2 Thinking Critically about Psychology

The primary goal of this text is to introduce you to the basic methods, theories, and findings of psychology. But our hope (and, we are confident, the hope of your course instructor as well) is that your introduction to psychology will also provide you with thinking and analytical skills that transcend a particular academic discipline. Throughout this text, 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, including your efforts to be the best student you can be. 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. So let us now ask: What does it mean to think critically, and how can you become skilled at it?

1.2.A What Is Critical Thinking?

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

One of the greatest benefits of studying psychology is that you learn not only how the brain works in general but also how to use yours in particular—by thinking critically. **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 look for flaws in arguments and resist claims that have no support. They realize that criticizing an argument is not the same as criticizing the person making it, and they are willing to engage in vigorous debate. Critical thinking, however, is not negative thinking. It includes the ability to be creative and constructive—the ability to

critical thinking

Assessing claims and making objective judgments on the basis of well-supported reasons and evidence rather than emotion or anecdote.

come up with alternative explanations for events, think of implications of research findings, and apply new knowledge to social and personal problems (Halpern, 2014; Levy, 2010; Stanovich, 2010).

Most people know that keeping your body in shape requires exercise, 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. It's good to be open-minded, but open-mindedness does not mean that all opinions are created equal and that one person's beliefs are as good as everyone 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 too," you have uttered more than mere opinion. Now you have to support your belief with evidence of the vehicle'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 artifacts of government conspiracy," you forfeit the right to have your opinion taken seriously. Your opinion, if it ignores reality, is *not* equal to any other.

In 2018, Mark Zuckerberg, CEO and co-founder of Facebook, testified before a joint Senate commission on the spread of fake news via social media, particularly during the 2016 U.S. presidential election. According to some analyses, fake news stories about the election and its two leading candidates were shared more than 37 million times—in the final three months of the campaign alone (Allcott & Gentzkow, 2017).

Critical thinking can also help you use the Internet better. You may pride yourself on being able to find things quickly online, but a team of researchers found that most college students are less skilled than they think at distinguishing credible material from unreliable or biased information (Pan et al., 2007; Thompson, 2011). Instead, many students tend to rely on whatever comes up first at the top of the search results list or social media news feed. But students aren't alone! In the past few years, there has been a rapid spike in concern surrounding "fake news"—fabricated or uncorroborated information that takes the form of more traditional and reliable sources of content. Millions of adults have read or reposted this sort of misleading information about politics, crime, vaccination, nutrition, and other topics. Indeed, scientists have begun calling for more research to study how, when, and why such misinformation spreads (Lazer et al., 2018).

Of course, critical thinking is not only indispensable in ordinary life, it is fundamental to all science. When the American Psychological Association (APA) published its guidelines for how best to educate undergraduate psychology majors, the second major goal identified—right after building a knowledge base in psychology—focused on critical thinking and scientific inquiry (APA Board, 2012). Specific objectives in this report include asking relevant questions to gather more information about claims, describing common fallacies that impair accurate conclusions, and using psychological concepts to explain personal experiences. You will get ample practice developing these and related skills as you read this text.

1.2.B Critical Thinking Steps

LO 1.2.B   **Identify important steps to critical thinking, and give an example of how each applies to the science of psychology.**

Let's take a look at five essential critical thinking steps that we will emphasize in this text.

ASK QUESTIONS, BE WILLING TO WONDER   What is one kind of question that most exasperates parents of young children? "Why" questions: "Why is the sky blue?" "Why doesn't the plane fall?" "Why is ice cold?" "Why is a cactus prickly?" Unfortunately, as children grow up, they tend to stop asking "why" questions. (Why do you think this is?) But critical and creative thinking begins with wondering why. This crime prevention program isn't working; why not? I want to stop smoking or lose weight or improve my grades; why can't seem to do it? Is my way of doing things the best way, or just the most

Unfortunately, we often stop asking "why" questions as we get older. If you remember only one critical thinking tip from this chapter, make it be that we should all ask "why?" more often.

familiar way? Critical thinkers are willing to question received wisdom—"We do it this way because this is the way we have always done it around here"—and ask, in essence, "Oh, yeah? Why?"

In psychological science, knowledge begins with asking a question. What is the biological basis of consciousness? How are memories stored and retrieved? Why do we sleep and dream? How do children learn complex rules of grammar? Why do people seem to behave differently when they're on their own versus in a crowd? What causes schizophrenia? What are the cultural influences on addiction? Critical thinkers are not discouraged by the fact that questions like these have not yet been fully answered and, indeed, don't lend themselves to easy answers; they see them as exciting challenges.

DEFINE YOUR TERMS Once 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 a late-night conversation with friends, 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. For example, are people becoming less prejudiced against other groups? The answer depends in part on how you define "prejudice." Everyone might agree that a conscious dislike of another group qualifies as a prejudice. But what about someone who feels uncomfortable with another group because he or she is unfamiliar with its rules and beliefs; is that person bigoted or just uninformed? What about someone who blurts out an offensive and insulting remark while drunk; is that person prejudiced or just inebriated? What if someone is unaware of having any prejudiced beliefs or feelings, yet a test suggests that he or she harbors unconscious prejudice; what does that mean? Many psychologists have studied this phenomenon of prejudice, and they have obtained different results depending on how they define it.

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. In science, some of the greatest scientific advances have been made by those who dared to doubt widespread assumptions: that the sun revolves around the earth, that illness can be cured by applying leeches to the skin, that madness is a sign of demonic possession. 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 (Tavris & Aronson, 2007). Indeed, another important guideline for critical thinking is to avoid relying too much on emotional reasoning. The fact that you *really, really* feel strongly that something is true—or that you want it to be true—doesn't make it so. Critical thinkers separate emotion from the data. You probably hold strong feelings about many topics of psychological interest, such as drug use, racism, sexual orientation, the origins of intelligence, gender differences, what makes people fat or thin, and what the most effective way is to study for an exam. As you read this text, you may find yourself quarreling with findings that you dislike. Disagreement is great! 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, threatened, or defensive? Bias—and the emotional responses often associated with it—creates intellectual blinders.

EXAMINE THE EVIDENCE   A critical thinker bases conclusions on evidence, avoiding oversimplification, resisting easy generalizations, and rejecting either/or thinking. Think about it: Just because one politician is dishonest, does that mean everyone running for office is corrupt? Just because one individual of a particular racial, ethnic, or religious background commits a crime, should all members of that group be viewed through the same lens of suspicion? Critical thinkers want more evidence than one or two anecdotes before drawing such sweeping conclusions.

For that matter, sometimes people make up their mind without any evidence at all! Have you ever heard someone in the heat of an argument exclaim, "I just know it's true, no matter what you say"? 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?" For example, have you ever received some dire warning or funny "I swear it's true!" story from a friend that you immediately posted on social media, 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 90,000 of my friends, co-workers, and neighbors (and *their* friends, co-workers, and neighbors)?"

Sometimes, of course, checking the reliability of the evidence for a claim is difficult. In those cases, critical thinkers consider whether the evidence comes from a reliable source. Sources who are reliable exercise critical thinking themselves. They have education or experience in the field, and they responsibly draw on this expertise in making their claims. They do not pressure people to agree with them. They are trusted by other experts in the field and 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, Part 2*.

Watch Debunking Myths, Part 2

WEIGH CONCLUSIONS   Critical thinkers ask questions, define terms, check for biases, and examine the evidence—then, and only then, are they ready to entertain the possibility of drawing conclusions. This means that one of the hardest lessons of learning to think critically is how to live with uncertainty. Sometimes there is little or no evidence available to examine. Sometimes the evidence permits only tentative conclusions. Sometimes the evidence seems strong enough to permit conclusions until, exasperatingly, new evidence throws our beliefs into disarray. Critical thinkers must be willing to accept this state of uncertainty; they cannot be afraid to say, "I don't know." Critical thinkers know that the more important the question, the less likely it is to have a single

simple answer; they must be willing to change their minds when the evidence dictates they should.

For that matter, critical thinkers consider alternative explanations, generating as many reasonable interpretations of the evidence as they can before settling on the most likely one. Suppose a news magazine reports that people with chronic depression are more likely than nondepressed people to develop cancer. Before concluding that depression causes cancer, you would need to consider other possibilities. Perhaps depressed people are more likely to smoke and to drink, and those unhealthful habits increase their cancer risk. Or perhaps early, as yet undetected cancers produce biochemical changes that create the physical and emotional symptoms of depression. Alternative explanations such as these must be ruled out by further investigation before we can conclude that depression is a direct cause of cancer. (It's not, by the way.) For more on why it is so important to sharpen your critical thinking skills in this manner, watch the video *Debunking Myths, Part 3.*

Watch   Debunking Myths, Part 3

In weighing conclusions, it is important for critical thinkers to *tolerate uncertainty* and *consider other interpretations*. From the perspective of psychological science, this means that researchers must avoid drawing firm conclusions until other researchers have tried to repeat, or replicate, their studies and verify their findings. Secrecy is a big no-no in science; you must be willing to tell others where you got your ideas and how you tested them so that others can replicate and/or challenge them if they think your findings are wrong. Replication is an essential part of the scientific process because sometimes what seems to be a major discovery turns out to be only a fluke (Open Science Collaboration, 2015; Shrout & Rodgers, 2018; Spellman, 2015).

In short, critical thinking is a process, not an accomplishment. No one ever becomes a perfect critical thinker, entirely unaffected by emotional reasoning and wishful thinking. We are all less open-minded than we think; it is always easier to poke holes in another person's argument than to critically examine our own position. Yet we think the journey is well worth the mental effort because the ability to think critically can help people in countless ways, from saving them money to improving their relationships. As you read this text, keep in mind the steps we have described here, which are illustrated in the following photo gallery and summarized in Table 1.1. You can get practice applying these critical thinking guidelines by completing the journal writing prompts you'll find throughout this text, as well as in the Critical Thinking Illustrated feature associated with each chapter topic that will ask you to critically evaluate a specific claim.

Interactive

Thinking Critically about Psychological Issues

These critical thinking steps will help you evaluate psychological findings, media claims, and controversies that you encounter in your own life.

Fayaz Aziz/Reuters

Tom Williams/CQ Roll Call/Newscom

Janine Wiedel Photolibrary/Alamy Stock Photo

ASK QUESTIONS, BE WILLING TO WONDER
Why do some people bravely come to the aid of their fellow human beings, even when it's not their official job? And, on the other hand, why do people often behave in ways that are selfish, cruel, or violent? Asking "why" questions like these is often the first step in designing research to advance scientific knowledge.

DEFINE YOUR TERMS
People refer to intelligence all the time, but what is it exactly? Does the musical genius of a world-class cellist like Yo-Yo Ma count as intelligence? Is intelligence captured by an IQ score, or does it also include wisdom and practical "smarts"? Scientists and critical thinkers must be precise in how they define their terms.

ANALYZE ASSUMPTIONS AND BIASES
Many Americans share a cultural bias that all psychoactive drugs are inevitably harmful. The Rastafarian church, however, regards marijuana as a "wisdom weed." Will Rastafarians who have used the drug with family, during religious ceremonies, and from a young age, react to it in the same way as an adult who buys it on the street for the first time or who smokes it alone? Critical thinkers must always check their assumptions and watch out for biases and the emotional reasoning they often produce.

Sergey Mironov/Alamy

Stanislav Fridkin/Shutterstock

EXAMINE THE EVIDENCE
When demonstrating supposedly magical phenomena, fortune tellers such as this one exploit people's tendency to not engage in a full examination of evidence. Critical thinkers avoid oversimplifying and overgeneralizing, and they realize that accepting a claim without evidence is a symptom of lazy thinking.

WEIGH CONCLUSIONS
Many parents, because they want so badly for their children to turn out well, have trouble accepting uncertainty about how to raise them or considering other interpretations for research conclusions that they read about online or in the news. For example, should a parent co-sleep with children, or will that make them too dependent and clingy? Should they allow their baby to "cry it out" sometimes to learn how to get themselves to sleep, or will that leave emotional scars in the developing little one? Critical thinkers draw the best conclusions they can given the evidence at hand and recognize that important questions rarely have simple answers.

Table 1.1 Guidelines for Thinking Critically About Psychological Issues

Guideline	Example
Ask questions, be willing to wonder	"Can I recall events from my childhood accurately?"
Define your terms	"By 'childhood,' I mean ages 3 to 12; by 'events,' I mean things that happened to me personally, like a trip to the zoo or a stay in the hospital; by 'accurately,' I mean the event basically happened the way I think it did."
Analyze assumptions and biases	"I've always assumed that memory is like a video recorder—perfectly accurate for every moment of my life—but maybe this is just a bias because it's so reassuring."
Examine the evidence	"I *feel* like I recall my fifth birthday party perfectly, but studies show that people often reconstruct past events inaccurately."
Weigh conclusions	"I may never know for sure whether some of my childhood memories are real or whether some of them are combinations of accurate and inaccurate information; I'd like to see more research studies that help identify the characteristics associated with reliable versus unreliable memories."

JOURNAL 1.2 THINKING CRITICALLY—ANALYZE ASSUMPTIONS AND BIASES

Whether you've consciously recognized it or not, chances are you've already practiced some of the critical thinking guidelines discussed in this section. Any time you've watched an infomercial and exclaimed, "That's too good to be true!" you've called out for an examination of the evidence. When your roommate claims to be smarter than you, you've probably insisted on defining terms such as "smarter." Think about the critical thinking steps described above. Which ones do you have the most trouble applying in your daily life? Which ones come more naturally to you?

Quiz for Module 1.2

1. Reggie tells his parents, "I read online that fast-food cooks make more money than college graduates. I'm dropping out and getting an apron!" Which of the following would be the best question for Reggie's parents to ask to get him to use his critical thinking skills to reassess his plan?
   a. "Will you be making dinner tonight?
   b. "How many nuggets does an average chicken yield?"
   c. "What's the salary breakdown per fiscal quarter?"
   d. "What was the source of the information?"

2. Luisa listened in amazement as she overheard her psychology professors design a new experiment. "We should be sure to measure this factor, to rule out a competing explanation for the results," said Professor LeBaron. "Yes, and also allow for idiosyncratic responses in case anyone doesn't speak English as a first language," added Professor DeLorean. "Let's not forget to have the results double-checked and interpreted by a qualified colleague," Professor DeDemonico chimed in. Although Luisa was amazed, to the professors this was second nature. Why?
   a. The professors were well versed in critical thinking and were simply applying those principles to the scientific task at hand.
   b. The professors knew Luisa was listening, so they were showing off a little in order to impress her.
   c. The professors had already collected the data and were covering their tracks in case any of the results didn't precisely confirm their preconceptions.
   d. The professors knew that science often results from luck and guessing, so they simply repeated phrases people expect scientists to say.

3. Sujin asked her psychology professor, "Why is the brain located in the head?" Her professor replied, "That's a really good question. Although there are lots of reasons, I'm not sure of the one best answer. Let's find out together this semester." Which principle of critical thinking was Sujin practicing?
   a. Examining the evidence
   b. Defining her terms
   c. Being willing to wonder
   d. Avoiding bias

4. Conducting the same study that another researcher has previously conducted is:
   a. Usually a waste of time.
   b. A poor use of one's critical thinking skills.
   c. Referred to as replication.
   d. Something that used to happen a lot in psychology, but rarely does anymore.

5. Lori told her friend Gina about an amazing video she saw on YouTube. "It was incredible. This guy levitated a miniature poodle for 25 seconds using psychic energy. He channels a star-force through a time continuum, and that allows him to unleash the hidden powers of his mind. It's totally legit; he's got a website and everything." Gina replied, "Maybe he's just making it up." Which principle of critical thinking is Gina practicing?
   a. Gina is weighing conclusions by tolerating uncertainty.
   b. Gina is defining her terms.
   c. Gina is refining her biases.
   d. Gina is weighing conclusions by considering other interpretations.

1.3 A History of Psychology: From the Armchair to the Laboratory

Now that you know what psychology is and what it isn't, and why studying it requires critical thinking, let's see how psychology developed into a modern science. We will begin this historical review by examining some of our field's ancestors and distant relatives.

1.3.A The Forerunners of Modern Psychology

LO 1.3.A **Discuss some of the early approaches to explaining psychological topics, from ancient times through the early 1800s.**

Until the 19th century, psychology was not a formal discipline. Of course, many of the great thinkers of history, from Aristotle to Zoroaster, raised questions that today would be called psychological. They wanted to know how people take in information through their senses, use information to solve problems, and become motivated to act in brave or villainous ways. They wondered about the elusive nature of emotion, and whether it controls us or is something we can control. Like today's psychologists, they wanted to *describe, predict, understand*, and *modify* behavior in order to add to human knowledge and maximize human happiness. But unlike modern psychologists, scholars of the past did not rely heavily on empirical evidence. Often their observations were based simply on anecdotes or descriptions of individual cases.

This does not mean that psychology's forerunners were always wrong. Hippocrates (c. 460–377 B.C.E.), the Greek physician known as the founder of modern medicine, observed patients with head injuries and inferred that the brain must be the ultimate source of "our pleasures, joys, laughter, and jests as well as our sorrows, pains, griefs, and tears." Indeed, it is. In the 17th century, the English philosopher John Locke (1643–1704) argued that the mind works by associating ideas arising from experience, and this notion continues to influence many psychologists today.

But without empirical methods, the forerunners of psychology also committed terrible blunders. One was the theory of **phrenology** (Greek for "study of the mind"), which became wildly popular in Europe and the United States in the early 1800s. Phrenologists argued that different brain areas accounted for specific character and personality traits, such as stinginess and religiosity. Moreover, they said, such traits could be "read" from bumps on the skull. Thieves supposedly had large bumps above the ears. So how would they account for people who had these "stealing bumps" but who were not thieves? Phrenologists explained this away by saying that the person's thieving impulses were being held in check by *other* bumps representing positive traits. In this manner, the so-called data could be used to support any conclusion.

Despite this, all sorts of people eagerly sought the services of phrenologists. Parents used them to make decisions about childrearing; schools used them to decide which teachers to hire; businesses used them to find out which employees were likely to be loyal and honest. Some phrenologists offered classes or self-study programs for people who wanted to overcome their deficiencies—these were the forerunners of today's self-improvement programs and seminars. Enthusiasm for phrenology did not disappear until well into the 20th century, even though phrenology was a classic pseudoscience—sheer nonsense.

1.3.B The Birth of Modern Psychology

LO 1.3.B **Discuss some of the influential perspectives and individuals in the early years of modern psychology.**

At about the time that phrenology was peaking in popularity, several pioneering men and women in Europe and the United States were starting to study psychological issues using

robertharding/Alamy Stock Photo

Psychology is a relatively young discipline, with the first psychology lab having been founded just 140 years ago. But for centuries before that, many a writer, artist, scientist, and politician debated questions and thought through issues related to the human condition. William Shakespeare, for example, was born almost 300 years before that first psychology lab came into existence. But he was, in many respects, an astute psychologist, writing about love and jealousy, lapses in morality, unconscious drives, and the limitations of humans' self-insight.

North Wind Picture Archives/Alamy Stock Photo

What stands out to you about this 19th-century phrenology "map"? Are you surprised by any of the aptitudes, emotions, and characteristics included here? Surprised by anything major that seems to be missing? Does there seem to be any rhyme or reason to which labels are assigned to which regions of the skull? Sure, phrenology has long since been debunked, but as you read the rest of this chapter, consider whether there might be any ways in which the same motivations and assumptions that can be seen in this diagram continue to influence contemporary ways of thinking about human nature.

phrenology

The now-discredited theory that different brain areas account for specific character and personality traits, which can be "read" from bumps on the skull.

Wilhelm Wundt (1832–1920)

structuralism

An early psychological approach that emphasized the analysis of immediate experience into basic elements.
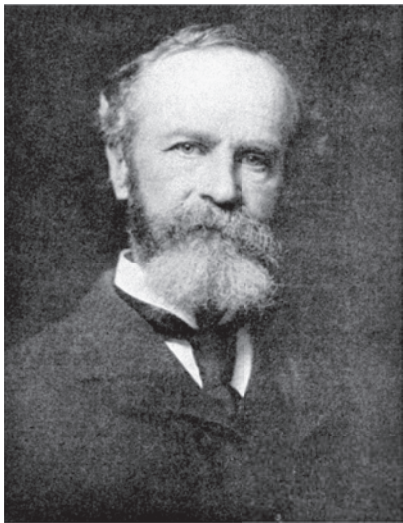
William James (1842–1910)

functionalism

An early psychological approach that emphasized the function or purpose of behavior and consciousness.

scientific methods. In 1879, Wilhelm Wundt (VIL-helm Voont) officially established the first psychological laboratory in Leipzig, Germany. Wundt (1832–1920), who was trained in medicine and philosophy, wrote many volumes on physiology, natural history, ethics, and logic. But psychologists especially revere him because he was the first person to announce (in 1873) that he intended to make psychology a science and because his laboratory was the first to have its results published in a scholarly journal. Although it started out as just a few rooms in an old building, the Leipzig laboratory soon became the go-to place for anyone who wanted to become a psychologist.

One of Wundt's favorite research methods was called *trained introspection*, in which volunteers were taught to carefully observe, analyze, and describe their own sensations and emotional reactions. This was not as easy as it sounds. Wundt's volunteers had to make 10,000 practice observations before they were allowed to participate in an actual study. Once trained, they might take as long as 20 minutes to report their inner experiences during a 1.5-second experiment. The goal was to reduce behavior into its most basic elements, much as a chemist might break down water into hydrogen plus oxygen. Most psychologists eventually rejected trained introspection as being too subjective, but Wundt is usually credited with formally initiating the movement to make psychology a science. Following his lead, three schools of thought became popular during the early decades of psychology's existence as a formal discipline: *structuralism*, *functionalism*, and *psychoanalysis*.

STRUCTURALISM   In the United States, Wundt's ideas were popularized in somewhat modified form by one of his students, E. B. Titchener (1867–1927), who gave Wundt's approach the name **structuralism**. Like Wundt, structuralists hoped to analyze sensations, images, and feelings into basic elements. A person might be asked to listen to a clicking metronome and to report exactly what he or she heard. Most people said they perceived a pattern (such as CLICK click click CLICK click click), even though the clicks of a metronome are actually all the same. Or a person might be asked to break down all the different components of taste when biting into an orange (sweet, tart, wet, and so on).

However, after you have discovered the building blocks of a particular sensation or image, then what? The structuralists did not have an answer. And their reliance on introspection also got them into trouble because despite their training, introspectors often produced conflicting reports. When asked what image came to mind when they heard the word *triangle*, most respondents said they imagined a visual image of a form with three sides and three corners. But one person might report a flashing red form with equal angles, whereas another reported a revolving colorless form with one angle larger than the other two. Some people even claimed they could think about a triangle without forming any visual image at all (Boring, 1953). It was hard, therefore, to know what mental attributes of a triangle were basic.

And so, despite its ability to generate an intensive program of research, structuralism soon lost favor. Years after its demise, Wolfgang Köhler (1959) recalled how he and his colleagues had responded to it as students: "What had disturbed us was... the implication that human life, apparently so colorful and so intensely dynamic, is actually a frightful bore."

FUNCTIONALISM Another early approach to scientific psychology, called **functionalism**, emphasized the purpose (or function) of behavior, as opposed to its analysis and description. One of functionalism's leaders was William James (1842–1910), an American philosopher, physician, and psychologist, who argued that searching for building blocks of experience, as Wundt and Titchener tried to do, was a waste of time because the brain and the mind are constantly changing. Attempting to grasp the nature of the mind through introspection, wrote James (1890/1950), is "like seizing a spinning top to catch its motion, or trying to turn up the gas quickly enough to see how the darkness looks." (In addition to being a keen psychological mind, James was quite the writer!)

Whereas the structuralists asked *what* happens when an organism does something, the functionalists asked *how* and *why*. They were inspired in part by the evolutionary theories

of British naturalist Charles Darwin (1809–1882). Darwin had argued that a biologist's job is not merely to describe, say, the puffed-out chest of a pigeon or the drab markings of a lizard, but also to figure out how these attributes enhance survival. Do they help the animal attract a mate or hide from its enemies? Similarly, the functionalists wanted to know how specific behaviors and mental processes help a person adapt to the environment, so they looked for underlying causes and practical consequences of these behaviors and processes. Unlike the structuralists, they felt free to pick and choose among many methods, and they broadened the field of psychology to include the study of children, animals, religious experiences, and what James called the "stream of consciousness"—a term still used because it so beautifully describes the way thoughts flow like a river, tumbling over each other like the rushing current, sometimes placid, sometimes turbulent.

As a school of psychology, functionalism, like structuralism, was short-lived. Yet the functionalists' emphasis on the causes and consequences of behavior was to set the course of psychological science.

PSYCHOANALYSIS   The 19th century also saw the development of psychological therapies. In the United States, the wildly popular Mind Cure movement lasted from 1830 to 1900; "mind cures" were efforts to correct the false ideas that were said to make people anxious, depressed, and unhappy. The Mind Cure movement was the forerunner of modern cognitive therapies.

However, the form of therapy that would have the greatest worldwide impact for much of the 20th century had its roots in Vienna, Austria. While researchers were working in their laboratories, struggling to establish psychology as a science, Sigmund Freud (1856–1939) was in his office, listening to his patients' reports of depression, nervousness, and obsessive habits. Freud became convinced that many of his patients' symptoms had mental, not physical, causes. Their distress, he concluded, was due to conflicts and emotional traumas that had occurred in early childhood and that were too threatening to be remembered consciously, such as forbidden sexual feelings for a parent.

Freud argued that conscious awareness is merely the tip of a mental iceberg. Beneath the visible tip, he said, lies the unconscious part of the mind, containing unrevealed wishes, passions, guilty secrets, unspeakable yearnings, and conflicts between desire and duty. Many of these urges and thoughts are sexual or aggressive in nature. We are not aware of them as we go blithely about our daily business, yet they make themselves known in dreams, slips of the tongue, apparent accidents, and even jokes. Freud (1905a) wrote, "No mortal can keep a secret. If the lips are silent, he chatters with his fingertips; betrayal oozes out of him at every pore."

Freud's ideas were not exactly an overnight sensation. His first book, *The Interpretation of Dreams* (1900/1953), sold only 600 copies in the eight years following its publication. Eventually, however, his ideas evolved into a broad theory of personality and a method of psychotherapy, both of which became known as **psychoanalysis**. Most Freudian concepts were, and still are, rejected by a majority of empirically oriented psychologists, but they had a profound influence on the philosophy, literature, and art of the 20th century, and Freud's name is now as much a household word as Einstein's. Today, some schools of psychotherapy draw on psychoanalytic ideas, and even a variety of contemporary research areas continue to emphasize unconscious forces and conflicts within individuals.

From these early beginnings in philosophy, natural science, and medicine, psychology has grown into a complex discipline encompassing many specialties, perspectives, and methods. Today the field is like a large, sprawling family. The members of this family share common great-grandparents, and many of the cousins have remained close. But like any family, some members quarrel regularly, and a few barely speak to one another.

Sigmund Freud (1856–1939)

psychoanalysis

A theory of personality and a method of psychotherapy, originally formulated by Sigmund Freud, that emphasizes unconscious motives and conflicts.

JOURNAL 1.3 THINKING CRITICALLY—ANALYZE ASSUMPTIONS AND BIASES

When you think about psychoanalysis or hear the name Sigmund Freud, what comes to mind? Analyzing dreams? Slips of the tongue? Theories about latent sexual desires? After documenting your own assumptions about Freud, describe one criticism of Freud's perspective and then one way in which Freud's theories continue to be influential in contemporary psychological research.

Quiz for Module 1.3

1. "The study of bumps on the head," a discredited approach to psychology, is also known as:
   a. Psychoanalysis.
   b. Bumpology.
   c. The theory of humors.
   d. Phrenology.

2. Trained introspection is a methodology that asks research participants to:
   a. Demonstrate the utility of their thoughts and feelings in observable behaviors.
   b. Carefully observe and describe their own sensations, mental images, and emotional states.
   c. Revisit earlier stages of their conscious development using hypnosis.
   d. Respond quickly and accurately to changing external stimuli.

3. With which school of thought is William James most closely associated?
   a. Functionalism
   b. Structuralism
   c. Psychoanalysis
   d. Behaviorism

4. Two psychologists, Eddie and Bill, walk into a bar, and each orders a beer. Eddie says, "Look at that golden nectar... the bubbles, the foam, the slight fruit notes on my tongue, the amber color; man, that's a beer!" Bill says, "This'll get me drunk." Eddie most likely endorses _____, whereas Bill most likely favors _____.
   a. structuralism/psychoanalysis
   b. structuralism/functionalism
   c. functionalism/structuralism
   d. structuralism/behaviorism

5. The idea that emotional problems spring from unconscious conflicts originated with:
   a. Psychoanalysis.
   b. The mind cure.
   c. Structuralism.
   d. Functionalism.

1.4 Psychological Science Perspectives

If you had a noisy and rude neighbor, and you asked a group of psychologists to explain why he was such a miserable jerk, you would likely get different answers: It's because of his biological makeup, his belligerent attitude toward the world, the way he has learned to use his nasty temper to get his way, an unhappy family situation, or the customs of his culture. Modern psychological scientists typically approach their investigations from one of four different, although overlapping, approaches: *biological, learning, cognitive*, and *sociocultural*. Each perspective reflects different questions about human behavior, different assumptions about how the mind works, and, most important, different ways of explaining why people do what they do. You can learn more about these approaches in the video *Diverse Perspectives*.

Watch   Diverse Perspectives

1.4.A Major Perspectives in Psychology

LO 1.4.A   **List and describe four major perspectives in psychology.**

THE BIOLOGICAL PERSPECTIVE   The **biological perspective** focuses on how bodily events affect behavior, feelings, and thoughts. Electrical impulses shoot along the intricate pathways of the nervous system. Hormones course through the bloodstream, telling internal organs to slow down or speed up. Chemical substances flow across the tiny gaps that separate one microscopic brain cell from another. Psychologists who take a biological perspective study how these physical events interact with events in the external environment to produce perceptions, memories, emotions, and vulnerability to mental disorder. They also study how the mind and body interact in illness and health and investigate the contributions of genes in the development of abilities and personality traits. One popular specialty, **evolutionary psychology**, follows in the footsteps of functionalism by focusing on how genetically influenced behavior that was functional or adaptive during our evolutionary past may be reflected in many of our present behaviors, mental processes, and traits. The message of the biological approach is that we cannot really know ourselves if we do not know our bodies.

THE LEARNING PERSPECTIVE   The **learning perspective** is concerned with how the environment and experience affect the behavior of human beings (and other animals). Within this perspective, *behaviorists* focus on the environmental rewards and punishments that encourage or discourage specific behaviors. Behaviorists do not invoke the mind or mental states to explain behavior. They prefer to stick to what they can observe and measure directly: acts and events taking place in the environment. For example, do you have trouble sticking to a schedule when studying? A behaviorist would identify the environmental factors that might account for this common problem, such as the pleasure you get from hanging out with your friends instead of hitting the books. Behaviorism was the dominant school of scientific psychology in North America for nearly 50 years, through the 1960s.

Today, *social-cognitive learning theorists* combine elements of behaviorism with research on thoughts, values, expectations, and intentions. They believe that people learn not only by adapting their behavior to the environment, but also by observing and imitating others and by thinking about the events happening around them. As we will see, the learning perspective has many practical applications. Historically, the behaviorists' insistence on precision and objectivity has done much to advance psychology as a science, and learning research in general has given psychology some of its most reliable findings.

THE COGNITIVE PERSPECTIVE   The **cognitive perspective** emphasizes what goes on in people's heads—how people reason, remember, understand language, solve problems, explain experiences, and acquire moral standards. (The word *cognitive* comes from the Latin for "to know.") Using clever methods to infer mental processes from observable behavior, cognitive researchers have been able to study phenomena that were once only the stuff of speculation, such as emotions, motivations, insight, and the kind of "thinking" that goes on without awareness. They design computer programs that model how humans perform complex tasks, discover what goes on in the mind of an infant, and identify types of intelligence not measured by conventional IQ tests. The cognitive approach has inspired an explosion of research on the intricate workings of the mind.

THE SOCIOCULTURAL PERSPECTIVE   The **sociocultural perspective** focuses on social and cultural forces outside the individual, forces that shape every aspect of behavior. Most of us underestimate the impact of other people, the social context, and cultural rules on nearly everything we do: how we perceive the world, express joy or grief, think through problems, and treat our friends and enemies. We are like fish that are unaware they live in water, so obvious is water in their lives. Sociocultural psychologists study the water—the social and cultural environment that people "swim" in every day.

biological perspective

A psychological approach that emphasizes bodily events and changes associated with actions, feelings, and thoughts.

evolutionary psychology

A psychological approach emphasizing evolutionary mechanisms that may help explain human commonalities in cognition, development, emotion, social practices, and other areas of behavior.

learning perspective

A psychological approach that includes *behaviorism* and *social-cognitive learning theories* and emphasizes how the environment and experience affect actions.

cognitive perspective

A psychological approach that emphasizes mental processes in perception, memory, language, problem solving, and other areas of behavior.

sociocultural perspective

A psychological approach that emphasizes social and cultural influences on behavior.
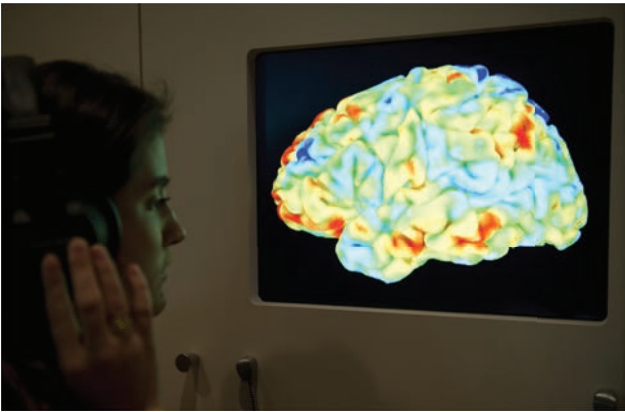
Psychologists increasingly adopt a biological perspective in understanding behavior, drawing on tools that provide a glimpse into the human body.

Childrearing looks very different in different parts of the world. Cultures vary with regard to how much time young children spend in close physical contact with a caregiver, whether they sleep alone or in a family bed, how many family members they tend to live with, and a wide range of other factors. Psychologists seeking to study the influence of early childhood experiences would want to take into consideration such cultural differences in devising and answering their research questions. Indeed, culture provides an important lens for almost any psychological investigation.

Within this perspective, *social psychologists* focus on social rules and roles, how groups affect attitudes and behavior, why people obey authority, and how each of us is affected by other people—lovers, friends, bosses, parents, strangers, and everyone else. *Cultural psychologists* examine how cultural rules and values, both explicit and unspoken, affect people's development, behavior, and feelings. They might study how culture predicts people's willingness to help a stranger in distress or what they do when they are angry. American researchers still focus mainly on Americans, who comprise less than 5 percent of the world's population (Arnett, 2008). However, in this text we have made a concerted effort to cite studies that include other nationalities and cultural backgrounds as well. Because human beings are social animals who are profoundly affected by their different cultural worlds, the sociocultural perspective is making psychology a more representative and rigorous discipline.

Table 1.2 summarizes the four major perspectives we reviewed and shows how they might be applied to a concrete issue, the problem of violence.

Table 1.2 Four Major Perspectives in Psychological Science

Perspective	Major Topics of Study	Sample Finding on Violence
Biological	The nervous system, hormones, brain chemistry, heredity, evolutionary influences	Brain damage caused by birth complications or child abuse might incline some people toward violence.
Learning *Behavioral* *Social-cognitive*	Environment and experience Environmental determinants of observable behavior Environmental influences, observation and imitation, beliefs and values	Violence increases when it pays off. Violent role models can influence some children to behave aggressively.
Cognitive	Thinking, memory, language, problem solving, perceptions	Violent people are often quick to perceive provocation and insult.
Sociocultural *Social psychology* *Cultural psychology*	Social and cultural contexts Social rules and roles, groups, relationships Cultural norms, values, and expectations	People are often more aggressive in a crowd than they would be on their own. Cultures based on herding rather than agriculture tend to train boys to be aggressive.

Of course, not all psychologists feel they must swear allegiance to one approach or another; many draw on what they take to be the best features of diverse schools of thought, crossing the borders that have traditionally divided one specialty from another. This trend has been fueled by two developments. The first is a revolution in our understanding of biology's influence on behavior. Neuropsychologists are now studying the workings of the brain and its influence on emotions and behavior. Cognitive psychologists are looking at the neurological aspects of thinking, decision-making, and problem-solving. Social psychologists have taken an interest in the brain and have developed a new specialty called "social-cognitive neuroscience." Clinical scientists are examining exactly how medication and psychotherapy change brain function in the treatment of psychological disorders. Behavioral geneticists are documenting the contributions of genetics to everything from the origins of personality to the origins of mental illness, and they are even studying how the function of genes can be changed by the environment. Researchers who study almost any important phenomenon—aggression, anger, love, sexuality, child development, aging, prejudice, war—often now do so by combining psychological findings and biological ones.

The second major development is that psychologists are increasingly looking outward to culture as well as inward to biology. They are documenting the many ways in which culture and ethnicity shape and influence much of what we do. Developmental psychologists are looking at culture's impact on mental, social, and linguistic development. Cognitive psychologists are studying cultural influences on achievement, problem-solving, and test performance. Social psychologists are looking at how a culture's norms and history affect rates of aggression and cooperation and even at how

culture shapes the brain. Clinical researchers are exploring how the cultural backgrounds of therapists and clients affect the bond between them and the ultimate success of psychotherapy. Psychologists studying sensation are discovering how culture affects which tastes and smells delight or disgust us. You will see this increased attention that today's psychologists pay to culture infused throughout the chapters of this text, reflected in nearly every topic we examine.

Despite the diversity of psychological approaches, most psychological scientists agree on basic guidelines about what is and what is not acceptable in their discipline. Nearly all reject supernatural explanations of events—evil spirits, psychic forces, miracles, and so forth. Most believe in the importance of gathering empirical evidence and not relying on hunches or personal belief. As we discussed earlier, this insistence on rigorous standards of proof is what sets psychology apart from nonscientific explanations of human experience, and it unifies research psychologists across specialty and disciplinary perspectives.

Perspectives on Human Nature

(1) Psychologists study many puzzles of human behavior and mental processes. What could motivate ordinary individuals to torture and humiliate prisoners, as soldiers did at the notorious Abu Ghraib prison in Iraq?

Courtesy Wikepedia/ZUMA Press/Newscom

(2) Why do some people bravely come to the aid of their fellow human beings, even when it's not their official duty?

Greg Vote/Vstock/Getty Images

(3) How do some people become champion athletes despite having physical disabilities?

Martin Hunter/ Getty Images Sport/Getty Images

(4) What causes someone to become anorexic, willing even to starve to death? Psychologists approach these and other questions from four major perspectives: biological, learning, cognitive, and sociocultural.

LYDIE/SIPA/Newscom

Interactive

1.4.B Gender, Race, and Diversity in Psychology

LO 1.4.B **Review the lack of diversity in early psychology and its consequences, and explain how feminist psychology illustrates the benefits of including a range of perspectives in scientific inquiry.**

To this point, this chapter has included several photographs of famous and influential early psychologists. When we look at these photos, what can we learn? For one, it is apparent that in the late 19th century—much as is the case again today—beards were "in." Far more importantly, we also should note that these photos of pioneering psychologists are all of men—and more specifically, White men. Any review of the history of psychological science would be incomplete without considering the ramifications of this early period dominated by individuals from just one segment of society.

What are the implications of this lack of diversity for the development of psychology? And what were some of the obstacles that prevented women and people of color from full access and entry to the field? One consequence—and perhaps also cause—of this lack of representativeness is that some early psychology research was actually used to justify and perpetuate bias. Abramson and Lack (2014) documented a variety of such findings in their book, *Psychology Gone Astray: A Selection of Racist and Sexist Literature from Early Psychological Research*, including studies that purported to demonstrate reliable sex and race differences in intelligence, memory, personality, psychological disorders, physical coordination, and moral development. Usually, these data were offered to bolster claims regarding the superior performance and capabilities of men and Whites. And when the data didn't cooperate? They were conveniently reinterpreted, as with a study in which Black and American Indian participants showed faster reaction times than did Whites, leading the researchers to assert that such "automatic excellence" must come at the expense of more important forms of general "intellectuality," presumably possessed in ample amounts by White people (Abramson & Lack, 2014; Bache, 1895).

Progress would come to psychology, as it did to other scientific fields, albeit slowly and incompletely. Throughout this text, you will learn about women and people of color who made important contributions as psychological scientists and clinicians. For example, consider Eleanor Gibson, who in the late 1950s developed an innovative paradigm known as the visual cliff, a glass-topped surface with a visible drop-off underneath that allowed developmental psychologists to study depth perception among newly mobile infants. Or Mamie Phipps Clark, the second Black student to receive a psychology Ph.D. from Columbia University (her husband, Kenneth, was the first), who went on to become the driving force behind the "doll studies," a series of experiments that investigated internalized racism among Black children and was cited by the U.S. Supreme Court's historic *Brown v. Board of Education* decision in 1954 that ruled school segregation unconstitutional.

It is encouraging to celebrate the successes and contributions of psychologists such as Gibson and Clark, but it is also important to keep in mind the serious obstacles they had to overcome throughout their careers and in achieving their accomplishments. Imagine Gibson's excitement as a young woman in her 20s, arriving on campus at Yale University, recently having been accepted into a prestigious Ph.D. program. Imagine her working up the nerve to approach a well-known faculty member, Robert Yerkes, to ask him if she could work in his comparative psychology lab, conducting experiments with chimpanzees. And then imagine how it must have felt to have been told by Yerkes, thanks but no thanks; "I have no women in my laboratory" (Rodkey, 2011). Clark's career path as a Black woman was even more daunting. As she once explained in her own words, "Although my husband had earlier secured a teaching position at the City College of New York, following my graduation it soon became apparent to me that a Black female with a Ph.D. in psychology was an unwanted anomaly in New York City in the early 1940s" (Clark, 1983).

Eleanor Gibson (1910–2002)

Courtesy of Dr. James Maas, Cornell University

Mamie Phipps Clark (1917–1983)

Arty Pomerantz/New York Post Archives /© NYP Holdings, Inc./Getty Images

A few decades later, as women began to enter psychology in even greater numbers in the 1970s, they also began to document evidence of a pervasive bias in the research methods used and in the very questions that researchers had been asking for decades (Crawford & Marecek, 1989; Eagly et al., 2012; Shields & Dicicco, 2011). They noted that many studies had used only men as subjects—and usually only young, White, middle-class men at that—and they showed why it was inappropriate to generalize to everyone else from such a narrow research base. This newly emerging **feminist psychology** spurred the growth of research on topics that had long been ignored in the field, including menstruation, motherhood, rape and domestic violence, the dynamics of power and sexuality in relationships, definitions of masculinity and femininity, gender roles, and sexist attitudes. Feminist psychologists critically examined the male bias in psychotherapy, starting with Freud's own case studies. Feminist psychology even influenced the study of men, inspiring research on such diverse topics as men's health, emotions, and the ways that culture shapes notions of "masculinity" (Vandello & Bosson, 2013). Feminist psychology has greatly advanced efforts to make psychology the study of all human beings, of all cultures, ethnicities, and sexualities. It also serves as an illustration of the potential for any type of scientific inquiry to benefit from the inclusion of multiple perspectives.

feminist psychology
A psychological approach that analyzes the influence of social inequities on gender relations and on the behavior of the two sexes.

Where does the field of psychology stand today when it comes to diversity? In 1985, only 22 percent of psychology faculty at graduate-degree granting institutions were women. Three decades later, that number was up to 46 percent (American Psychological Association, 2014). Looking at newly hired assistant professors of psychology across *all* types of academic institutions, 58 percent are now women and 44 percent identify as racial minorities (American Psychological Association, 2017). Alas, these numbers continue to be less representative at more senior faculty ranks. And while the field of psychology has made a great deal of progress with regard to diversity and representativeness, when one educational website published its list of the "50 Most Influential Living Psychologists" in 2018, only 13 out of 50 were women and none—zero!—were people of color. In response, some psychologists used their critical thinking skills to recognize such omissions and to create their own, more representative lists in the effort to celebrate the accomplishments of those colleagues whose work too often goes unrecognized.

In sum, like many disciplines, the early track record of psychology was bleak when it came to diversity. In fact, for several decades, psychological research was even used to advance sexist and racist conclusions about human nature. Our field has come a long way since then, with contemporary psychological science representing a wide range of perspectives, identities, and demographics, and with careers in psychology open to all individuals regardless of background. And yet, more work remains to be done.

Taking Psychology with You

Using Psychology to Study Psychology

Speaking of diversity, psychologists focus their research on a diverse range of issues, and much of this work has useful applications for being more effective and efficient in daily life. In each chapter, we will highlight in a box like this at least one way in which you can take the lessons of psychology with you beyond this text. And we can think of no better way to begin than by exploring how you can use psychology research findings to more successfully study psychology. Specifically, we'd like to share four winning study strategies that have been tested in scientific laboratories and schools from junior high to the university level (Dunlosky et al., 2013; McDaniel, Roediger, & McDermott, 2007; Roediger, Putnam, & Smith, 2011):

1. **Pay undivided attention.** You can't be at the top of your cognitive game while texting, playing online, or otherwise multitasking. Focus instead on taking good notes during class, capturing important points rather than transcribing every word you hear. In fact, research also suggests that there are advantages to taking notes by hand because it leads students to process information more deeply and reframe it in their own words (Mueller & Oppenheimer, 2014).

2. **Use the 3R technique: read, recite, review**. Reading and re-reading isn't enough (Karpicke, Butler, & Roediger, 2009). What's essential is that you test yourself on what you've studied: Ask yourself questions, retrieve the answers, and restudy what you didn't know—again and again until you learn the material (Karpicke & Aue, 2015; Karpicke & Roediger, 2007). Recite aloud what you recall about the major

concepts you just read about before taking each section-ending quiz. Then review again to correct anything you got wrong or overlooked.

3. **Dig deep**. The mind is not a container or a sponge; you can't just pour information in and assume it will stay there. You have to *process* it until you get it. An excellent way to do this is to connect new information to information you already know. These associations will organize material in your memory, creating new mental pathways that help you retrieve it later.

4. **Forget about cramming**. Staying up all night to study might give you the feeling that you know the material, but if you haven't really *understood* what you've read, it's hardly effective. Rather than cramming all your attempts to test yourself into one giant (and awful) block of time, test yourself regularly throughout the semester, say once a week (Bjork & Bjork, 2011). That way, once you've learned something, it will stay learned. This will also help avoid sleep deprivation, which also undermines studying efforts (Huang et al., 2016).

We are confident that these techniques will help you, especially if you remember the ultimate strategy for success: No matter how good they are, no course and no textbook can do your work for you. Now onward!

RF Pictures/Corbis/Getty Images

Binge watching TV can be fun, even if exhausting. But binge studying for class is far less effective, and just as exhausting! Research conclusions are clear: You should space out your studying and practice testing to achieve maximum benefits.

JOURNAL 1.4 THINKING CRITICALLY—ASK QUESTIONS, BE WILLING TO WONDER

What makes us who we are? Psychological scientists often approach this question differently, depending on whether they take a biological, learning, cognitive, or sociocultural perspective. How do these influences interact to make us who we are?

Quiz for Module 1.4

1. Which of the following is *not* a major current perspective on psychological science?
   a. Biological perspective
   b. Learning perspective
   c. Symbolic-interactionist perspective
   d. Sociocultural perspective

2. The dominant school of scientific psychology most closely associated with the learning perspective is:
   a. Feminist psychology.
   b. Evolutionary psychology.
   c. Behaviorism.
   d. Socialism.

3. Tavishi wants help dealing with her lack of motivation in school, so she enlists her roommate Misha, who's taking an introductory psychology course, to offer advice. "The problem is all in your brain," Misha suggests. "You've got an imbalance of chemicals and hormones, which is causing you to feel lackluster and unfocused." Which perspective on psychological science is Misha adopting?
   a. Learning perspective
   b. Biological perspective
   c. Psychoanalytic perspective
   d. Cognitive perspective

4. Which of the following conclusions about diversity in early psychology is most accurate?
   a. Unlike most scientific fields, early psychology was quite diverse along gender, racial, and ethnic lines.
   b. While psychology was not a particularly diverse field in its early years, today the field is perfectly representative of society and no longer has to worry about addressing issues related to representation.
   c. The success stories of individual women and people of color who became influential researchers in the field demonstrates that there were not any barriers to advancement in psychology based on gender, race, and other demographics.
   d. Some research in early psychology was actually used to advance sexist and racist conclusions about human nature.

5. Which statement is true about feminist psychology?
   a. It is only concerned with the experiences and tendencies of women.
   b. It emerged as an influential perspective in the late 19th century.
   c. It has promoted a diversity of viewpoints, research topics, and explanations for behavior.
   d. It is a political viewpoint that is not concerned with the scientific method.

1.5 What Psychologists Do

Ask Questions... Be Willing to Wonder

When you hear the word psychologist, do you first think of someone who sees patients?

☐ YES
☐ NO

Now you know the main viewpoints and perspectives that guide psychologists in their work. But how do psychologists actually spend their time each day?

If we asked people on the street the preceding survey question, the majority would answer yes. To most people, the word *psychologist* conjures up an image of a therapist listening intently while clients pour forth their troubles. Many psychologists do in fact fit this image, but others do not. The professional activities of psychologists generally fall into three broad categories: (1) teaching and doing research in colleges and universities; (2) providing health or mental health services, often referred to as *psychological practice*; and (3) conducting research or applying its findings in nonacademic settings, such as business, sports, government, law, and the military (see Table 1.3). Some psychologists move flexibly across these areas. A researcher might also provide counseling services in a mental health setting, such as a clinic or a hospital; a university professor might teach, do research, and serve as a consultant in legal cases.

1.5.A Psychological Research

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

Most psychologists who do research have a doctoral degree (Ph.D.) or doctorate in education (Ed.D.). Some, seeking knowledge for its own sake, work in **basic psychology**. Others, concerned with the practical uses of knowledge, work in **applied psychology**. A psychologist doing basic research might ask, "How does peer pressure influence people's attitudes and behavior?" An applied psychologist might ask, "How can knowledge about peer pressure be used to get college students to quit binge drinking?" The two approaches are complementary, and a researcher or research program can have both basic and applied objectives. Indeed, most basic psychology has the potential for application, and applied research is most effective when grounded in basic psychological principles. Psychologists doing basic and

basic psychology

The study of psychological issues for the sake of knowledge rather than for its practical application.

applied psychology

The study and application of psychological issues that have direct practical significance.

Table 1.3 What Is a Psychologist?

Not all psychologists do clinical work. Many do research, teach, work in business, or consult. The professional activities of psychologists with doctorates fall into three general categories:

Academic/Research Psychologists	Clinical Psychologists	Psychologists in Industry, Law, or Other Settings
Specialize in areas of pure or applied research, such as: • Human development • Psychometrics (testing) • Health • Education • Industrial/organizational psychology • Physiological psychology • Sensation and perception • Design and use of technology	Do psychotherapy and sometimes research; may work in any of these settings: • Private practice • Mental health clinics • General hospitals • Mental hospitals • Research laboratories • Colleges and universities	Do research or serve as consultants to institutions on such issues as: • Sports • Consumer issues • Advertising • Organizational problems • Environmental issues • Public policy • Opinion polls • Military training • Animal behavior • Legal issues

Educational psychologists investigate ways to improve the educational system, such as incorporating technology in the learning process.

applied research have made important scientific contributions in areas as diverse as health, education, child development, criminal justice, conflict resolution, marketing, industrial design, and urban planning.

Research psychology is the aspect of psychology least understood by the public. Bemoaning this fact, Ludy Benjamin (2003) argued that the public "has minimal understanding of psychology as a science and even less appreciation for what psychological scientists do" or how psychological research contributes to human welfare. We hope that by the time you finish this text, you will have a greater appreciation for what research psychologists do and their scientific contributions. Here are just a few of the major research specialties in psychology:

- *Experimental psychologists* conduct studies (often in a laboratory) of processes including motivation, memory, emotion, sensation and perception, physiology, and cognition. As this diverse list implies, the specific focus of an experimental psychologist can range from how the brain works (neuroscience) to how people change and grow over time (developmental psychology) or across situations (social psychology). Experimental psychologists also study clinical populations and ask questions that help us better understand psychological disorders and their treatment.

- *Educational psychologists* study psychological principles that explain learning and search for ways to improve educational systems. Their interests range from the application of findings on memory and thinking to the use of rewards to encourage achievement.

- *Industrial/organizational psychologists* study behavior in the workplace. They are concerned with group decision-making, employee morale, work motivation, productivity, job stress, personnel selection, marketing strategies, equipment and software design, and many other issues.

- *Psychometric psychologists* design and evaluate tests of mental abilities, aptitudes, interests, and personality. Nearly all of us have had firsthand experience with one or more of these tests in school, at work, or in the military.

1.5.B Psychological Practice

LO 1.5.B Compare the training and work settings of different psychological practitioners, such as counselors, clinical psychologists, psychotherapists, psychoanalysts, and psychiatrists.

Psychological practitioners, whose goal is to understand and improve people's physical and mental health, work in mental hospitals, general hospitals, clinics, schools, counseling centers, the criminal justice system, and private practice. Since the late 1970s, the proportion of psychologists who are practitioners has steadily increased; practitioners now account for more than two-thirds of new psychology doctorates and members of the American Psychological Association. (The APA, despite its name, is international.)

Some practitioners are *counseling psychologists*, who generally help people deal with problems of everyday life, such as test anxiety, family conflicts, or low job motivation. Others are *school psychologists*, who work with parents, teachers, and students to enhance students' performance and resolve emotional difficulties. The majority, however, are *clinical psychologists*, who diagnose, treat, and study mental or emotional problems. Clinical psychologists are trained to do psychotherapy with severely disturbed people, as well as with those who are troubled or unhappy or who want to learn to handle their problems better.

In almost all states, a license to practice clinical psychology requires a doctorate. Most clinical psychologists have a Ph.D., but some have an Ed.D. or a Psy.D. (doctorate in professional psychology, pronounced *sigh-dee*). Clinical psychologists typically do four or five years of graduate work in psychology, plus at least a year's internship under the direction of

a licensed psychologist. Clinical programs leading to a Ph.D. or Ed.D. are usually designed to prepare a person both as a scientist and as a practitioner; they require a dissertation, a major research project that contributes to knowledge in the field. Programs leading to a Psy.D. do not usually require a dissertation, although they typically require the student to complete an extensive theoretical paper or literature review.

People often confuse *clinical psychologist* with three other terms: *psychotherapist, psychoanalyst*, and *psychiatrist*. But these terms mean different things:

- A *psychotherapist* is someone who does any kind of psychotherapy. The term is not legally regulated. In fact, believe it or not, in most states, anyone can say that he or she is a therapist without having any training at all.

- A *psychoanalyst* is a person who practices one particular form of therapy, psychoanalysis. To call yourself a psychoanalyst, you must have an advanced degree, get specialized training at a psychoanalytic institute, and undergo extensive psychoanalysis yourself.

- A *psychiatrist* is a medical doctor (M.D.) trained to diagnose and treat mental disorders. Like some clinical psychologists, some psychiatrists conduct research on mental problems, such as depression or schizophrenia, instead of, or in addition to, working with patients. Psychiatrists and clinical psychologists do similar work, but psychiatrists are more likely to focus on possible biological causes of mental disorders and to treat these problems with medication. (Unlike psychiatrists, most clinical psychologists at present cannot write prescriptions.)

Other mental health professionals include licensed clinical social workers (LCSWs) and marriage, family, and child counselors (MFCCs). These professionals ordinarily treat general problems in adjustment and family conflicts rather than severe mental disturbance, although their work may also bring them into contact with people who have serious problems, such as victims of domestic violence or those with drug addictions. Licensing requirements vary from state to state but usually include a master's degree in psychology or social work and supervised experience. (For a summary of the various types of psychotherapists and the training they receive, see Table 1.4.) As if this weren't complicated enough, thousands of people claim to be specialists in treating all kinds of problems, from sexual abuse to

Wavebreakmedia/ Shutterstock

Psychological practitioners typically work closely with an individual to address physical or mental health needs.

Table 1.4 Types of Psychotherapists

Interactive	Just as not all psychologists are psychotherapists, not all psychotherapists are clinical psychologists. Here are the major terms used to refer to mental health professionals:	
	Psychotherapist	A person who does psychotherapy; may have anything from no degree to an advanced professional degree; the term is unregulated
	Clinical psychologist	Diagnoses, treats, and/or studies mental and emotional problems, both mild and severe; has a Ph.D., an Ed.D., or a Psy.D.
	Psychoanalyst	Practices psychoanalysis; has specific training in this approach after an advanced degree (usually, but not always, an M.D. or a Ph.D.); may treat any kind of emotional disorder or pathology
	Psychiatrist	Does work similar to that of a clinical psychologist, but is likely to take a more biological approach; has a medical degree (M.D.) with a specialty in psychiatry
	Licensed clinical social worker (LCSW); marriage, family, and child counselor (MFCC)	Typically treats common individual and family problems, but may also deal with more serious problems such as addiction or abuse; licensing requirements vary, but generally has at least an M.A. in psychology or social work

alcoholism, but no uniform set of standards regulates their training. Some may have taken nothing more than a brief "certification" course.

Many research psychologists, and some practitioners, are worried about the increase in the number of counselors and psychotherapists who are unschooled in research methods and the empirical findings of psychology, and who use untested or ineffective therapy techniques (Baker, McFall, & Shoham, 2008; Lilienfeld, Lynn, & Lohr, 2015; Peterson, 2003). Some practitioners, for their part, argue that psychotherapy is just as much art as it is science. There are differences in training and attitudes between scientists and many therapists. These differences contributed to the founding in 1988 of yet another major international professional society in the field, the Association for Psychological Science (APS), which focuses on supporting and publicizing psychological research. The gap between scientists and practitioners, along with increased demands by insurers for evidence that psychotherapy is demonstrably effective, has motivated several prominent clinical psychologists to call for evidence-based treatment and increased collaboration between researchers and clinicians, in hopes of improving patient care (Kazdin, 2008).

Psychologists also contribute to their communities in a variety of ways. They advise utility companies on ways to get customers to conserve energy. They consult with companies to improve worker satisfaction and productivity. They do basic and applied research on ways of reducing conflict and prejudice, locally and internationally. They strive to understand and prevent acts of terrorism. They advise commissions on how pollution and noise affect mental health. They do rehabilitation training for people with physical or mental disabilities. They educate judges and juries about eyewitness testimony and false confessions. They assist the police in emergencies involving hostages or disturbed people. They conduct public opinion surveys. They run suicide-prevention hotlines. They advise zoos on the care and training of animals. They help coaches improve the athletic performance of their teams. And those are just for starters. Is it any wonder that people are a little fuzzy about what a psychologist is?

The modern field of psychology is like a giant mosaic made up of many fragments, yielding a rich, multicolored, psychological portrait. Psychologists may argue about which part of the portrait is most important, but they also have a great deal in common. All psychological scientists, whatever their specialization, believe in the importance of gathering empirical evidence instead of relying on hunches. And one thing will always unite psychologists: a fascination with the unending mysteries of human behavior and the human mind. If you too have wondered what makes people tick; if you love a mystery and want to know not only who did it but also why they did it; if you are willing to reconsider what you think you think... then you are in the right course.

bowdenimages/iStock/Getty Images

Psychologists work in all sorts of settings with all sorts of clients.

We invite you now to step into the world of psychology, the discipline that dares to explore the most complex topic on earth: *you*.

JOURNAL 1.5 THINKING CRITICALLY—ASK QUESTIONS, BE WILLING TO WONDER

Now that you've read about the great variety of work that psychologists do, engage in a little introspection: If you chose a career in psychology, what type of work would interest you? Research? If so, what topic area or what type of specialization? Psychological practice? Would you prefer the emphases of a clinical psychologist, a psychiatrist, or some other kind of practitioner? Think about how and where you might see yourself in this field someday—it will be interesting to see whether and how your answers to these questions change as you go through this course.

Quiz for Module 1.5

1. Dr. Lifeson has taken a job consulting with Omega Inc. The managers at Omega want to know why employee morale is so low in their manufacturing division, and they want Dr. Lifeson to design the appropriate studies and collect the necessary data to answer that question. Dr. Lifeson most likely is a specialist in:

   a. Industrial/organizational psychology.

   b. Experimental psychology.

   c. Human development.

   d. Educational psychology.

2. Which of the following academic psychologists would most likely be involved in constructing a personality test to measure introversion?

   a. Educational psychologist

   b. Experimental psychologist

   c. Health psychologist

   d. Psychometric psychologist

3. Which of the following specialists was specifically trained in a therapeutic approach started by Sigmund Freud?

   a. Psychiatrist

   b. Psychoanalyst

   c. Clinical psychologist

   d. Psychiatric social worker

4. Which of the following specialists has an M.D. and tends to take a medical approach to mental health problems?

   a. Clinical psychologist

   b. Psychoanalyst

   c. Psychiatrist

   d. Counseling psychologist

5. Which of the following conclusions is most accurate regarding the relationship between researchers and practitioners of psychology?

   a. Some psychologists have argued that increased collaboration between researchers and clinicians will have the effect of improving patient care.

   b. Unlike psychologists who conduct research, psychologists who see and treat patients are completely unfamiliar with research methods basics.

   c. When seeing patients, all psychotherapists use only techniques that have been tested by research and proven to be effective.

   d. All clinicians are also researchers and all researchers are also clinicians.

Shared Writing: What Is Psychology?

Think about what will be your most challenging course during this academic term (it might even be introductory psychology). You've probably already received a syllabus, reviewed the course requirements, and maybe been to a lecture or two. Now think about that course in terms of the learning and studying strategies you read about earlier this chapter. Construct a brief essay outlining how you could effectively apply at least two of those principles to the course you have in mind. What you should have when you're finished is a preliminary plan that you can build on for successfully navigating the course.

Critical Thinking Illustrated

Claim: *That's Just Fake News!*

STEP 1. Criticize This Claim

A primary objective of any psychology course is to develop critical thinking. And so each chapter of our text ends with a feature like this one, in which we, your authors, collaborate with you to carefully evaluate a specific claim.

Across a series of steps, you'll hear from us (literally) as we combine animation and interactive questions into a learning experience called Critical Thinking Illustrated. The goal is to strengthen your critical thinking skills by putting psychological claims under the microscope, so to speak. In this chapter we'll examine a claim that we hear a lot about these days, on the news and on social media. Let's evaluate the claim: *"That's Just Fake News!"*
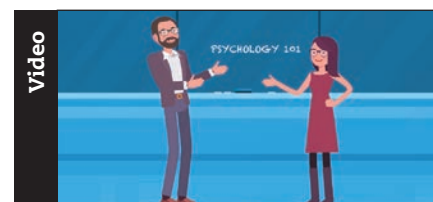
STEP 2. Define Your Terms

We can't rigorously evaluate a claim without first carefully defining what the claim actually is. So, our next step is to *Define Your Terms*.

In this case, we have to ask, just what is *fake news* anyway? Some researchers define fake news as fabricated or erroneous information that imitates news content in appearance. Fake news *looks* like real news in sneaky ways, but it doesn't go through the same processes of editorial review and fact-checking. What does *not* qualify as fake news? This is an important question that brings us to our next step...

STEP 3. Analyze Assumptions and Biases

Just because we don't like news doesn't make it fake. Just because a media outlet shines a negative light on our preferred policy position, miracle diet, or parenting style doesn't mean it's fake news!

Critical thinkers must check their assumptions and be on the lookout for biases. It's easy to see how our own preferences might make us quick to label as fake any news story that doesn't fit our own worldview. Critical thinkers learn to avoid traps like this and to identify the characteristics that separate reliable news from fake news.

Likely to Be Reliable News	Likely to Be Fake News
• Author has a verifiable track record of publishing in well-known outlets • Article appears in a publication with a history of fact-checking • Multiple primary sources cited • For controversial issues, multiple perspectives included • The publication clearly distinguishes news stories from opinion pieces	• Article written in highly emotional tone • Primary sources are anonymous (or absent altogether) • Author would benefit financially or politically from conclusions offered • No contact information provided for author (or no author listed at all) • Research study conclusions presented as absolute, with no limitations

STEP 4. Examine the Evidence

Critical thinkers base conclusions on evidence, not on gut feelings, ideology, or emotion. The same goes for psychological scientists: we draw conclusions based on data. Examining evidence also comes in handy outside of psychology class! It can save us from the embarrassment of posting a story on social media only to learn later that we fell for false rumors or fake news.

What makes fake news seem true to people?

One factor that makes us more likely to believe fake news is prior exposure. In a recent study, Pennycook, Cannon, and Rand (2018) showed participants news headlines, some real news and some fake news, the way they would appear on Facebook. Later, when participants were shown another series of headlines, they rated as more accurate those that they had previously seen, even the fake news ones. The more familiar we become with an idea, the more accurate we believe it to be.

Can *any* type of fake news be persuasive?

No, there are limits. In the same research, Pennycook et al. (2018) found that entirely implausible arguments like *the earth is square* do not become more believable the more people hear them. That said, they also found that as long as a story has even a small degree of plausibility, it starts to seem more accurate with prior exposure—even when it is inconsistent with a reader's political ideology.

How can we stop the spread of fake news?

This remains an important question for future study. Lazer et al. (2018) suggest various possibilities in need of research assessment, including: more publicly accessible resources to help individuals conduct their own fact-checking; increased critical thinking training throughout the educational system; developing algorithms to allow social media platforms to flag content as potentially problematic or unreliable.

Evaluating evidence can make us smarter consumers, helping us to avoid wasting money on products that aren't nearly as effective as advertisements make them out to be. And it can make us more informed voters, enabling us to reach our own informed conclusions about policies and candidates.

STEP 5. Ask Questions, Be Willing to Wonder

Critical thinkers ask questions and are willing to wonder. So now that we have a definition of fake news, we've thought about potential biases, and we've considered the importance of evidence, what psychological research questions about fake news might we want to ask?

STEP 6. Weigh Conclusions

At the end of each of these features, we'll weigh our conclusions. Some claims we put under our microscope will hold up pretty well. Some will fall apart quickly once we turn to the evidence. Others will lie in that middle ground—reasonable under some definitions, assumptions, and evidence, but questionable under others. Don't let this ambiguity frustrate you! Remember, part of critical thinking is tolerating uncertainty, as well as recognizing that there are always more questions to ask and additional studies to run.

As for fake news? Each case has to be evaluated on its own. But the next time you hear someone talking about fake news, we hope you'll think about the steps we've just taken together and will try to apply the principles of critical thinking.
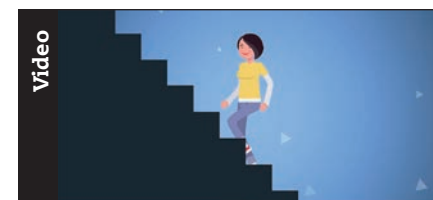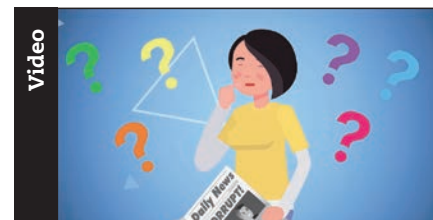
Summary: What Is Psychology?

1.1 Psychology, Pseudoscience, and the Perils of Common Sense

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

Psychology is the discipline concerned with behavior and mental processes and how they are affected by an organism's external and internal environment. An introductory psychology course can correct many misconceptions about human behavior.

LO 1.1.B   **Explain what separates psychological science from pseudoscience, pop psychology, and other sources of dubious claims regarding psychological issues.**

Psychologists have many pseudoscientific competitors, such as astrologers and psychics. Psychology's methods and reliance on *empirical evidence* distinguish it from pseudoscience and pop psychology. These latter sources of information are often appealing because they confirm our beliefs and prejudices; in contrast, psychological science often challenges them.

1.2 Thinking Critically About Psychology

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

One benefit of studying psychology is the development of *critical thinking* skills and attitudes. Critical thinking helps people evaluate competing findings on psychological issues that are personally and socially important.

LO 1.2.B   **Identify important steps to critical thinking, and give an example of how each applies to the science of psychology.**

Critical thinkers ask questions, define terms clearly, analyze assumptions and biases, examine the evidence, and weigh conclusions. Critical thinking is an evolving process rather than a once-and-for-all accomplishment.

1.3 A History of Psychology: From the Armchair to the Laboratory

LO 1.3.A   **Discuss some of the early approaches to explaining psychological topics, from ancient times through the early 1800s.**

Psychology's forerunners made some valid observations and had useful insights, but without rigorous empirical methods, they also made serious errors in the description and explanation of behavior, as in the case of *phrenology*.

LO 1.3.B   **Discuss some of the influential perspectives and individuals in the early years of modern psychology.**

Wilhelm Wundt formally established the first psychological laboratory in 1879, in Leipzig, Germany, in which he conducted studies using the technique of trained introspection.

Structuralism emphasized the analysis of immediate experience into basic elements. *Functionalism* was inspired in part by the evolutionary theories of Charles Darwin and emphasized the purpose of behavior; one of its leading proponents was William James. Sigmund Freud's theory of *psychoanalysis* emphasized unconscious causes of mental and emotional problems.

1.4 Psychological Science Perspectives

LO 1.4.A **List and describe four major perspectives in psychology.**

Four points of view predominate today in psychological science. The *biological perspective* emphasizes bodily events associated with actions, thoughts, and feelings, as well as genetic contributions to behavior. Within this perspective, a popular specialty, *evolutionary psychology*, is following in the footsteps of functionalism. The *learning perspective* emphasizes how the environment and a person's history affect behavior; within this perspective, *behaviorists* reject mentalistic explanations and *social-cognitive learning theorists* combine elements of behaviorism with the study of thoughts, values, and intentions. The *cognitive perspective* emphasizes mental processes in perception, problem solving, belief formation, and other human activities. The *sociocultural perspective* explores how social contexts and cultural rules affect an individual's beliefs and behavior.

LO 1.4.B **Review the lack of diversity in early psychology and its consequences, and explain how feminist psychology illustrates the benefits of including a range of perspectives in scientific inquiry.**

As with many scientific fields, the early years of psychology were dominated by White males. Unfortunately, some early psychology research was used to advance sexist and racist conclusions regarding human nature. Over time, an increasing number of women and people of color have entered the field and become influential psychologists. *Feminist psychology* has influenced the questions researchers ask, the methods they use, and their awareness of biases in the field—all developments that have made psychology more representative of humanity. Nonetheless, psychology continues to have work to do to address issues of diversity and representativeness within the field.

1.5 What Psychologists Do

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

Many psychologists conduct research and teach in colleges and universities, where they investigate a broad range of topics. Among the many psychological specialties are experimental, educational, developmental, industrial/organizational, psychometric, counseling, school, and clinical psychology.

LO 1.5.B **Compare the training and work settings of different psychological practitioners, such as counselors, clinical psychologists, psychotherapists, psychoanalysts, and psychiatrists.**

Other psychologists provide mental health services (*psychological practice*). *Psychotherapist* is an unregulated term for anyone who does therapy, including people who have no credentials or training at all. Licensed therapists differ according to their training and approach. *Clinical psychologists* have a Ph.D., an Ed.D., or a Psy.D. *psychiatrists* have an M.D.; *psychoanalysts* are trained in psychoanalytic institutes; and licensed clinical social workers (LCSWs) and marriage, family, and child counselors (MFCCs) may have various postgraduate degrees. Psychologists conduct research and apply findings in a variety of nonacademic settings, working to make their communities a better place to live and to contribute to the mental, social, and physical health of people in those communities.

Chapter 1 Quiz

1. What distinguishes scientific psychology from pseudoscience and popular opinion?
   a. Popular ideas always take time to filter into the scientific literature, whereas scientific findings are immediately embraced by the scientific community.
   b. Scientific psychology relies on empirical evidence for its conclusions.
   c. Scientific psychology only studies topics that can't be explained through common sense.
   d. Evidence from a carefully controlled experiment isn't as compelling as people's long-held beliefs.

2. Which of the following statements is true regarding how scientific psychology differs from the popular psychology found on television shows, the Internet, or in self-help books?
   a. Scientific psychology addresses a much broader range of issues and topics than popular psychology typically does.
   b. Scientific psychology is only conducted in laboratories, whereas popular psychology is studied in a variety of settings.
   c. Popular psychology offers experience-based explanations for behavior, whereas scientific psychology detaches itself from personal experience and relies instead on testable predictions.
   d. Popular psychology produces testable predictions, whereas scientific psychology deals only with theories.

3. Daniela and her friend visit a psychic who tells her "you will experience great change in the coming year" and "you'll need to act fast to seize a new opportunity that awaits you." As they leave the session, Daniela chuckles quietly while

her friend seems shocked and amazed. "That was awesome; that psychic really predicted some heavy stuff for you!" "Oh, it's just for laughs," replied Daniela. "I don't believe a word of it." Why is Daniela correct to be skeptical?

a. Daniela experienced great change and seized a new opportunity during the previous year, so she knew those predictions couldn't come true again.

b. Daniela thought the psychic was actually making predictions about her friend.

c. Psychics practice a type of science that most people can't understand.

d. Psychic predictions are typically so vague that they're essentially meaningless.

4. What's the most appropriate way to characterize critical thinking?

a. Critical thinking is a process, rather than a once-and-for-all accomplishment.

b. Critical thinking should be practiced by scientists, but not necessarily ordinary people.

c. Critical thinking always starts with rejecting some commonsense explanation.

d. Critical thinking skills are something you're born with, rather than something you learn.

5. Which of the following is *not* one of the critical thinking guidelines discussed in this chapter?

a. Analyze assumptions and biases

b. Avoid evidentiary confirmation

c. Define your terms

d. Examine the evidence

6. Beliefs that are taken for granted are called _____.

a. attitudes.

b. assumptions.

c. hypotheses.

d. opinions.

7. What characterized the thinking of early approaches to psychology from ancient times through the early 1800s?

a. Early approaches all focused on explaining human actions as the result of spiritual forces; "religion" and "psychology" were seen as interchangeable terms.

b. Conclusions were based on the opinions of medical doctors because they were the closest practitioners to "psychologists"; these conclusions were all biologically based.

c. Without an empirical methodology, conclusions were based on opinion and casual observations; sometimes these conclusions were right, but many times they were wrong.

d. Before it became a science, psychology was viewed as a type of witchcraft; therefore, any conclusions reached were contaminated by bias and prejudice.

8. Where was the first psychological laboratory officially established?

a. Leipzig, Germany.

b. Boston, Massachusetts.

c. Paris, France.

d. London, England.

9. Psychoanalysis, a type of early psychology, was originated by:

a. John Watson.

b. Wilhelm Wundt.

c. William James.

d. Sigmund Freud.

10. Humans can accurately recognize facial expression of anger from a distance. One explanation for this is that being able to predict, accurately and quickly, that an approaching stranger has bad intentions helps individuals detect and avoid threat. Upon which perspective on psychological science is this explanation based?

a. Evolutionary psychology

b. Social-cognitive learning

c. Behaviorism

d. Structuralism

11. Little Arnold screams and throws a fit whenever he doesn't get what he wants. When this happens, his parents rush to his side and soothe him, often fulfilling whatever wants or demands he has at the moment. Which perspective on psychological science would argue that Arnold has been rewarded for his behavior?

a. The cognitive perspective

b. The biological perspective

c. The sociocultural perspective

d. The learning perspective

12. Which cross-cutting influence helped to focus psychology on the study of *all* humans, rather than just culturally dominant or readily available humans?

a. Feminism

b. Humanism

c. Inclusionism

d. The "new spirituality" movement

13. Dr. Gupta studies mood awareness, individual differences in how people monitor and label their mood states. Her interest is in knowing how the process works, what its limits are, and the mechanisms that cause it to happen. Dr. McBride wants to know whether people who are higher in mood awareness are better able to control and regulate their mood states, and therefore might experience better outcomes during therapy. Dr. Gupta's interests are in _____, whereas Dr. McBride's interests are in _____.

a. biological psychology/psychometrics
b. learning theory/sociocultural psychology
c. basic psychology/applied psychology
d. counseling psychology/clinical psychology

14. Guillermo decides he wants to "help people," so he rents an office, advertises his services, and has business cards printed. Which mental health term would Guillermo be allowed to use, despite not having any of psychological training?

a. Psychiatrist
b. Psychoanalyst
c. Marriage, family, and child counselor
d. Psychotherapist

15. Which of the following is *not* a research-based strategy for more effective study habits?

a. Avoid cramming.
b. Relate new information to old information.
c. Try to write down every word your instructor says during lecture.
d. Read, recite, review, repeat.

Chapter 2
How Psychologists Do Research

Bill Greene/The Boston Globe via Getty Images

⌄ Learning Objectives

LO 2.1.A Distinguish among a theory, a hypothesis, and an operational definition.

LO 2.1.B Explain why skepticism in science involves more than just disbelief.

LO 2.1.C Explain why falsifiability is an important component of scientific research.

LO 2.1.D Describe why openness and replication are important qualities of the scientific enterprise.

LO 2.2.A Describe the ways participants are selected for psychological studies and how the method of selection can influence interpretations of a study's outcomes.

LO 2.2.B Discuss the advantages and disadvantages of using case studies as a means of data collection.

LO 2.2.C Discuss the advantages and disadvantages of using observational methods as a means of data collection.

LO 2.2.D Explain why norms, reliability, and validity are the three key hallmarks of any standardized psychological test.

LO 2.2.E Describe the advantages and limitations of using surveys in data collection.

LO 2.2.F Describe the importance and challenges of conducting cross-cultural research.

LO 2.3.A Illustrate with an example how a correlation coefficient gives both the size and direction of the relationship between two variables.

LO 2.3.B Explain why a correlation between two variables does not establish a causal relationship between those variables.

LO 2.4.A Distinguish an independent variable from a dependent variable, and give an example of each.

LO 2.4.B Explain how random assignment helps create conditions in an experiment, and explain the difference between an experimental group and a control group.

LO 2.4.C Discuss the methodological advantages and limitations of experimental research design.

LO 2.5.A Explain how descriptive statistics can be used to compare the performance of two groups of research participants.

LO 2.5.B Explain what a statistically significant research result does and does not indicate, and identify ways in which statistics can be misused or misrepresented.

LO 2.5.C Compare cross-sectional and longitudinal studies, and discuss how effect size, meta-analysis, and Bayesian statistics allow us to judge the importance of a research outcome.

LO 2.6.A Discuss why the principles of informed consent and debriefing are two key characteristics of a researcher's code of ethics.

LO 2.6.B Discuss the advantages and ethical considerations of using animals in research.

What About You?

Psychology is the scientific study of how we think, feel, and act on a daily basis. As we begin this chapter, we have a question for you about your own life. When you submit your answer, you will see the data from others who have read this chapter. We hope that this will be just the first of several times you think about your own life experiences when reading this chapter.

Ask Questions... Be Willing to Wonder

> Interactive
>
> You hear a news story describing the following research finding: The more fast food children eat, the lower their scores on reading, math, and science tests. Even though this study was with kids, does it make you want to cut down on the amount of fast food you eat?
>
> ☐ YES
> ☐ NO

Research suggests... According to a recent study... Scientists have discovered... New findings indicate...

Do these phrases sound familiar? We encounter them daily in the news, on radio and television, in social media posts, in informal conversations, and in courses like this one. Claims that are backed by scientific data seem to carry an added weight of credibility. The average person might think, *Who am I to argue with the science; don't the scientists know more than I do?* But not all scientific claims are created equal. Sometimes the data one study reports contradict the data from another study. And remember, you're not an "average person" anymore; you're now a student of psychology, training yourself in how to think critically, design empirical studies, and evaluate the scientific claims of others.

Consider, for example, these claims:

- Scientists have discovered that testosterone, that well-known male hormone, plummets after a man becomes a father. And the more time he spends caring for his children, the lower his testosterone drops (Gettler et al., 2011). Does this mean that men have to choose between manliness and dadliness?

- Recent findings indicate that among a representative sample of Germans, vegetarians exhibited higher rates of depression and anxiety disorders than did nonvegetarians (Michalak, Zhang, & Jacobi, 2012). Does this mean that non-meat-eaters are more vulnerable to depression?