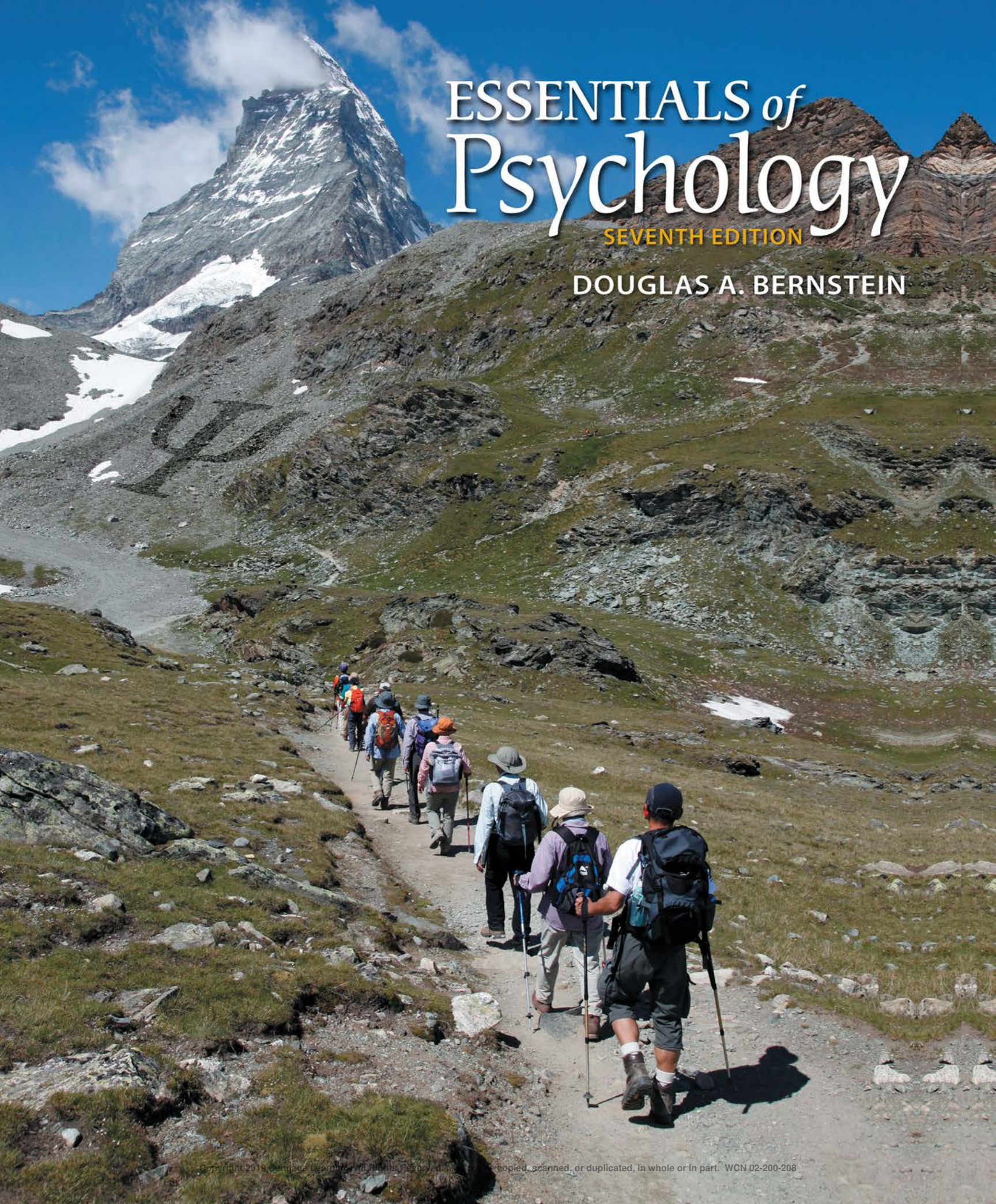


ESSENTIALS OF PSYCHOLOGY

SEVENTH EDITION

Douglas A. Bernstein
University of South Florida
University of Southampton

CENGAGE

Australia • Brazil • Mexico • Singapore • United Kingdom • United States

CENGAGE

***Essentials of Psychology,* Seventh Edition**
Douglas Bernstein

Product Director: Marta Lee-Perriard

Product Manager: Timothy Matray

Content Developer: Stefanie Chase

Product Assistant: Leah Jenson

Digital Content Spcialist: Allison Marion

Content Project Manager: Ruth Sakata Corley

Production Service and Composition: MPS Limited

Intellectual Property Analyst: Deanna Ettinger

Intellectual Property Project Manager: Nick Barrows

Art Director: Vernon Boes

Text Designer: Lisa Buckley

Cover Designer: Terri Wright

Cover Image: Robertharding/Masterfile

Library of Congress Control Number: 2017941272

Student Edition:
ISBN: 978-1-337-61239-5

Loose-leaf Edition:
ISBN: 978-1-337-61388-0

Cengage
20 Channel Center Street
Boston, MA 02210
USA

Cengage is a leading provider of customized learning solutions with employees residing in nearly 40 different countries and sales in more than 125 countries around the world. Find your local representative at **www.cengage.com.**

Cengage products are represented in Canada by
Nelson Education, Ltd.

To learn more about Cengage platforms and services, visit **www.cengage.com.**

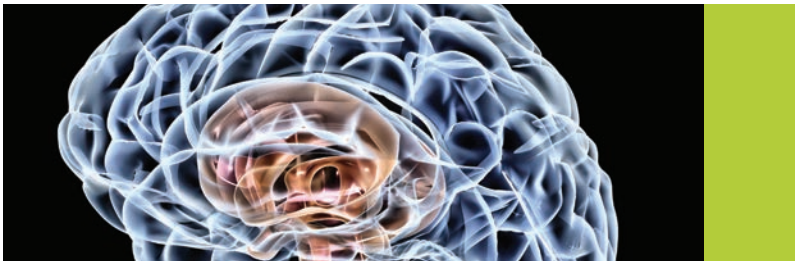
To register or access your online learning solution or purchase materials for your course, visit **www.cengagebrain.com.**

Printed in the United States of America
Print Number: 01 Print Year: 2017

For Doris

Brief Contents

Contents

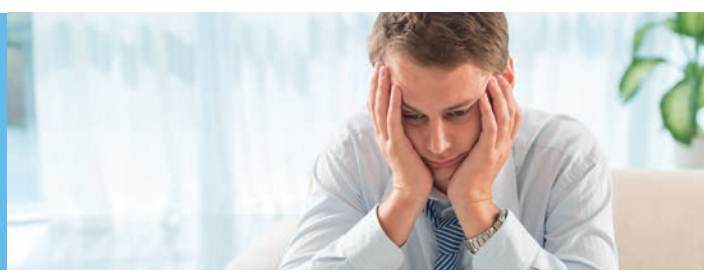


7 Thought, Language, and Intelligence 237

8 Motivation and Emotion 287

11 Personality 415

12 Psychological Disorders 447



13 Treatment of Psychological Disorders 495

14 Social Psychology 533

15 Industrial and Organizational Psychology 581

Features

LINKAGES

FOCUS ON RESEARCH

THINKINGCRITICALLY

Preface

Psychology is a rich and varied science, covering the breadth and depth of human behavior—everything from fleeting reflexes to enduring memories, from falling asleep to falling in love. In my experience, most students enter the introductory course thinking that psychology concerns itself mainly with personality, psychological testing, mental disorders, psychotherapy, and other aspects of clinical psychology. Many of these students are surprised to find themselves reading about such topics as the structure of the brain, optical illusions, effect of jet lag on athletic performance, AIDS and the immune system, and prenatal risk factors, to name just a few. Yet all these topics can be found under the umbrella of psychology.

For all its diversity, psychology is also a remarkably integrated discipline whose subfields are linked through common interests and related research questions. As a psychologist and scholar, I wrote this book to portray the wide range of topics that make up the science of psychology. As a teacher, I focused on the essentials of the discipline—the core concepts in psychology that I hope will be especially accessible and interesting to students. I also tried to present these topics through an integrated, active pedagogical system designed to help students get the most out of the text.

In creating the seventh edition of *Essentials of Psychology,* I remained dedicated to presenting a textbook that not only is clear and enjoyable to read but also provides features to support the learning process in all students, regardless of their academic background. Specifically, I set these goals:

- To focus on topics that represent the full range of psychology, from cell to society, without overwhelming the reader with details.
- To provide many active learning exercises that invite students to work with the book's material in ways that can help them understand and remember it.
- To help students develop their ability to think critically and scientifically by examining the ways that psychological scientists have solved (or tried to solve) fascinating puzzles of behavior and mental processes.
- To explain the content of psychology with an emphasis on the doing of psychology, grounding all discussions in current and classic research studies. (I help students appreciate the importance of research by exploring one study in detail in a special feature in each chapter.)

My discussion of research in psychology is also designed to remind students that although, in some ways, "people are people wherever you go," sociocultural factors—including gender, ethnicity, cultural background, and geography—often shape human behavior and mental processes. I repeatedly point out, therefore, that psychological research on the thinking styles, perceptual habits, psychological disorders, social pressures, and other phenomena seen in North America or Europe, for example, may or may not apply to other cultures, or even to subcultures within Western countries.

Rather than isolating discussion of sociocultural material in boxed features, I have woven it into every chapter so that students will encounter it repeatedly as they read. I introduce the importance of sociocultural factors in Chapter 1 and continue to reinforce it through coverage of such topics as the impact of culture and experience on perception (Chapter 3); classrooms across cultures (Chapter 5); ethnic differences in IQ (Chapter 7); social and cultural factors in sexuality (Chapter 8); gender differences in stress responses (Chapter 10); personality, culture, and human development (Chapter 11); gender and cultural differences in depression and suicide (Chapter 12); and cultural factors in aggression (Chapter 14), to cite just a few examples.

What's New in This Edition?

Feedback from faculty colleagues and students suggests that the changes made in the sixth edition of *Essentials* were well received. Accordingly, in creating the seventh edition, I have sought to update and upgrade all the book's best features rather than change them for the sake of change. I hope that the result of my effort is a book that offers even more of what faculty and students want and need.

Organization

Designed for presentation in a single academic term, the book's chapter organization has been retained, and the chapters appear in the same sequence as before. The order of the chapters reflects the way I have taught my introductory course, but I know that your preference for chapter sequencing may not match mine. Accordingly I have again ensured that each of the sixteen chapters works as a freestanding unit so that you may assign the chapters in whatever order you wish. For example, many instructors prefer to teach the material on human development relatively late in the course, which is why it appears as Chapter 9. However, the chapter can be just as comfortably assigned earlier in the course.

A Continued Emphasis on Active Learning

TRY THIS The added emphasis on active learning in the third edition was so popular with faculty and students that I have continued to emphasize it ever since. Previously called Learn by Doing, I now invite students to Try This! Three kinds of "Try This" features appear throughout the book.

- First, dozens of new or revised figure and photo captions help students understand and remember a psychological principle or phenomenon by suggesting ways they can demonstrate it for themselves. In the memory chapter, for example, a photo caption suggests that students show the photo to a friend and then ask questions about it to illustrate the operation of constructive memory. These captions are all identified with a Try This logo.
- Second, I have placed Try This logos in page margins at even more places where active learning opportunities occur in the narrative. At these points, I ask students to stop reading and try doing something to illustrate or highlight the psychological principle or phenomenon under discussion. For example, in the sensation and perception chapter, I ask students to focus attention on various targets as a way of appreciating the difference between overt and covert attention shifts.

Active Review

The Try This elements are just part of my effort to incorporate active learning throughout the book. In addition, I have provided the following:

- A "Linkages" diagram to help students understand and appreciate the ways the chapter they have just read relates to other subfields of psychology.
- Twenty-item multiple-choice self-tests at the end of each chapter to help students plan their study strategies by recognizing what they have learned, and what they have not yet learned, from their reading of the chapter. As in the sixth edition, these self-tests are focused on the applications as well as the definitions of principles, concepts, and phenomena.

Updated Content

My goal in preparing this new edition of *Essentials* was to present the latest as well as the most established results of basic and applied research on topics that are both important to psychology and of high interest to students. Following is a chapter-by-chapter summary of new and updated material included in the seventh edition:

Chapter 1:

- Latest figures on employment settings for psychologists
- Latest figures on graduate degrees in psychology earned by men, women, and members of minority groups
- Latest research methods used to evaluate claims for the effectiveness of eye movement desensitization and reprocessing (EMDR) therapy
- New information on epigenetic influences in understanding the interacting roles of heredity and environment

Chapter 2:

- Updated research on stem cells and nerve growth factors and their uses in repairing brain damage
- Latest information on techniques for studying the brain, including commercial and forensic uses
- Latest information on electrical synapses
- Latest information on the use of electrical stimulation as therapy for brain damage
- Information about how experience can change the structure of the brain
- Latest information about adolescent brain development and behavior
- Latest information on optogenetics

Chapter 3:

- New information about age-related decreases in visual acuity
- New Try This exercise to help illustrate the trichromatic theory of color vision
- New information about loss of olfaction as an early indicator of neurological disorder
- Latest information about research on pheromones in humans
- Latest information about research on acupuncture
- New information about benign paroxysmal positional vertigo
- New information about the sense of equilibrium and astronautics
- Expanded information about the effects of motivation on top-down processing
- Updated and expanded information about the effects of cell phones, texting, personal music players, and laptop computer use on attention—especially in drivers and pedestrians
- New Try This exercise on touch sensations

Chapter 4:

- Revised information on the number and labels for stages of sleep
- Updated information about nonconscious and unconscious mental processes
- Updated information about sleep disorders and treating sleep disorders
- New information about the functions of REM sleep and its effect on creativity
- New information about effects of sleep deprivation to reduce impact of trauma
- Latest information about chronotypes, and the "clock genes" that seem to drive them

- Updated information about applications of hypnosis and effects of meditation
- Updated information about neural effects of drugs, including epigenetic effects
- Latest information about the long-term effects of caffeine, nicotine, and opiates
- Latest information on the debate over medical uses of marijuana

Chapter 5:

- Latest information about the mechanisms of classical conditioning
- Latest information about the effects of reinforcers in the brain
- Updated information on applications of operant conditioning
- Updated information on the biological basis of observational learning
- Latest research on the impact of violent and prosocial television and video games
- Updated information on active learning methods in the classroom
- Latest research about e-media for delivery of college class materials
- Updated information on classrooms across cultures

Chapter 6:

- New information about hypermnesia
- Updated information about scents as memory cues
- Updated information about false memories and eyewitness testimony
- Latest research on the biological basis of memory

Chapter 7:

- Updated information on judge and jury decision making
- New section on building effective problem-solving skills
- Latest information on advances in artificial intelligence
- Latest information about creativity and its biological roots
- New information about the effects of the physical environment on creative thinking
- Latest information on decision making in risky situations
- Updated information on group problem solving and decision making
- Latest information about bilingualism and long-term effects on cognition
- Updated information on extraneous influences on intelligence test results
- New research on stereotype threat
- Updated information on the interaction of environmental and genetic factors in intelligence, and on group differences in IQ

Chapter 8:

- New information about how eating habits have changed over centuries
- New Try This exercise to illustrate the facial feedback hypothesis
- Latest information on lie detection
- New section on intrinsic and extrinsic sources of motivation
- Updated information about hormonal influences on eating behavior
- Updated information about neurotransmitters and eating behavior
- Latest figures on obesity and new material on its causes and on prevention efforts
- Updated material on anorexia nervosa and bulimia
- Updated information about gender differences in sexuality
- Latest information about well-being and its relation to achievement
- New coverage of the conceptual act model of emotion
- New research on situational factors in reading facial expressions

Chapter 9:

- Updated information about behavioral genetics, genetic influences on development, and the influence of environmental factors on genetic expression
- Updated information on the effects of electronic and social media on infant, child, and adolescent development
- Updated information about midlife transition and the "sandwich generation"
- New and updated information about intellectual abilities in late adulthood, including risk factors and protective or mediating influences
- Updated information about the impact of alcohol, nicotine, and other toxins on infant development
- Latest information about infant thinking and behavior during the sensorimotor stage
- Latest information about influences of nature and the environment on children's brain development
- Updated information about culture and cognitive development
- Updated information about poverty as a developmental danger
- Updated information on long-term effects of early attachment styles
- Updated information about parenting styles and their effects on child development
- Updated information on the development of infants' theory of mind
- Updated statistics on adolescent sexuality and teenage pregnancy
- Updated information about emotional development during emerging adulthood
- New and updated information about longevity

Chapter 10:

- New information about the long-term effects of stressors early in life
- New statistics on worldwide deaths due to health-damaging behaviors

- Updated information about the cognitive effects of stressors on decision making and problem solving
- Updated information about posttraumatic stress disorder
- New information about the relationship among socioeconomic status, lack of control, and premature death in lower socioeconomic groups
- Updated information about associations between social networks and happiness
- Updated information about personality and resistance to stress
- Updated information about identifying people at elevated risk for health problems
- Updated information about health beliefs and efforts to change them

Chapter 11:

- New information about empirical research on psychodynamic theory
- Updated information about applications and biological basis of the Five-Factor Theory of personality
- New research on Gray's reinforcement sensitivity theory
- Updated information on personality research in nonhumans
- Updated information about the influence of genetics and epigenetics on personality traits
- Updated information about situational factors and the expression of personality traits
- Updated information about the possible impact of early attachment style in childhood and adulthood
- Updated information about the behavioral correlates of internal versus external locus of control
- Updated information about the effects of self-efficacy on achievement and well-being
- New information about the impact of positive psychology in personality
- Updated information about culture and personality
- Updated information about the latest edition of the Minnesota Multiphasic Personality Inventory (MMPI-2 RF)

Chapter 12:

- Updated information on the incidence of psychological disorders
- Presentation of the new *DSM-5* and the forthcoming *ICD-11*, and information about debates surrounding the changes made in *DSM-5*
- Updated information on diagnostic reliability and validity
- Updated information about bias in psychological diagnosis
- Updated coverage of causes of psychological disorders, including epigenetics
- New information about the effects of media-driven attitudes on people's understanding and response to psychological disorders
- Updated information about culture-specific disorders
- Coverage of cyberchondria, a term similar to "medical students' syndrome"
- Updated information about somatic symptom and dissociative disorders
- Updated statistics about the incidence of, and risk factors for, suicide
- Updated information about hallucinations in schizophrenia
- Updated statistics about the incidence of autistic spectrum disorders
- Updated information about psychological disorders and the law

Chapter 13:

- Updated information about the prevalence of psychological treatments in adults and children in the United States
- Updated information about research on the effectiveness of psychotherapy
- New and updated information about the evolution of evidence-based practice and empirically supported therapies
- Updated information about cultural diversity training for therapists
- Updated information about therapeutic effects of repetitive transcranial magnetic stimulation (rTMS) therapy, deep brain stimulation, and optogenic stimulation
- Updated information about effectiveness, side effects, and costs and benefits of antidepressant drugs
- Updated information about human diversity and drug treatments
- Updated information about the effectiveness of psychoactive medications for mental disorders and their value in combination with psychotherapy
- Updated information about community psychology
- New and updated information about self-help and Internet-based therapy efforts

Chapter 14:

- New Try This exercises on attitude similarity and helping behavior
- New information about factors contributing to, or mediating, feelings of empathy
- New information about how social media affect feelings of attraction
- Updated information about terror management theory
- Updated information about the speed, strength, and accuracy of first impressions and factors that influence them
- Updated information about prejudice and its possible causes
- Updated information on the contact hypothesis and the mere-exposure effect in reducing prejudice
- Updated information on factors that contribute to attraction
- Updated information on gender and conformity
- Updated statistics about aggressive behavior in the United States

- Updated information about the possible biological and social factors affecting aggression
- New information about the possible effects of prosocial media on helping behavior
- New information on neuroimaging studies in social psychology

Chapter 15:

- Expanded history of industrial and organizational psychology
- Updated employment statistics for industrial and organizational psychologists
- Updated information about factors that influence job satisfaction
- Updated statistics about workplace violence
- Updated information about leader and follower behaviors
- Updated information about leader-member exchange (LMX) theory

Chapter 16:

- Updated information about how the interconnections of modules in the brain contribute to specific abilities and behaviors
- Updated information about the effects of strokes and the latest rehabilitation approaches
- Updated information about traumatic brain injuries and memory loss
- New information about traumatic brain injuries in sports
- Updated information about consciousness disturbances
- Updated information about brain activity and prosopagnosia
- Updated information about language disorders and frontotemporal degeneration
- Updated statistics about dementia
- New and updated information about the causes and symptoms of Alzheimer's disease
- Latest information about treatments for Alzheimer's disease

Special Features

The seventh edition of *Essentials of Psychology* contains improved versions of a number of special features found in its predecessor. Designed to promote efficient learning and mastery of the material, these include, in each chapter, an integrated pedagogical system as well as Thinking Critically, Focus on Research, Linkages, and Summary sections.

An Integrated Pedagogical System

The integrated pedagogical system is designed to help students get the most out of their reading. Based on the PQ4R study system (discussed in Chapter 6, "Memory"), learning aids in each chapter include the following elements.

Preview Section To help students survey and question the material, each chapter opens with an outline and a brief preview statement. A question related to the key topic of each main section of the chapter appears at the beginning of each of those main sections, and these questions appear again in the summary, where they help to organize the chapter's material.

Marginal Glossary Key terms are defined in the margin of the page where they appear, reinforcing core concepts without interrupting the flow of reading. All key terms have been revised to match those in the American Psychological Association's *Thesaurus of Psychological Index Terms* (11th ed.) and in the *APA Dictionary of Psychology*. Using key terms from these sources will help students do their own research by making it easier for them to use key-term searches in the field's most popular databases (PsycINFO & PsycARTICLES). Using these key terms will also improve students' abilities to transfer terms learned in the introductory course to their work in advanced courses. (For the seventh edition, I have continued to revise many of the phonetic guides to make it even easier for students to correctly pronounce unfamiliar key terms as well as other terms whose pronunciations are not immediately obvious.)

Instructional Captions Captions for all figures, tables, photographs, and cartoons reiterate core concepts and help students learn to interpret visual information. And, as mentioned earlier, many of these captions prompt students to engage in various kinds of active learning experiences.

In Review Charts In Review study charts summarize information in a convenient tabular format. I have placed two or three In Review charts strategically in each chapter to help students synthesize and assimilate large chunks of information—for example, on drug effects, key elements in personality theories, and stress responses and mediators. Three fill-in-the-blank self-testing items at the bottom of each In Review chart further aid student learning and review of the chapter material. The answer key for these items can be found at the back of the book.

Summary At the end of each chapter, the student will find the following:

- A chapter summary organized around major topic headings and the related preview questions. The summary is presented in short, easy-to-read paragraphs that focus on the topics introduced by chapter subheadings.
- A twenty-item multiple-choice self-test designed to help students assess their understanding of the chapter's key points prior to taking quizzes and exams. As before, I provide an answer key at the back of the book that identifies and briefly explains each correct answer.

Thinking Critically

A special Thinking Critically section in each chapter helps students hone this vital skill. My approach centers on describing

research on psychological phenomena in a way that reveals the logic of the scientific method, identifies possible flaws in design or interpretation, and leaves room for more questions and further research. In other words, as an author-teacher, I try to model critical thinking processes for my readers. The Thinking Critically sections are designed to make these processes more explicit and accessible by providing readers with a framework for analyzing evidence before drawing conclusions. The framework is built around five questions that the reader should find useful in analyzing not only psychological research studies but other forms of communication as well, including political speeches, advertising claims, and appeals for contributions. These five questions first appear in Chapter 1, where I introduce the importance of critical thinking, and they are repeated in every chapter's Thinking Critically section:

1. What am I being asked to believe or accept?
2. What evidence is available to support the assertion?
3. Are there alternative ways of interpreting the evidence?
4. What additional evidence would help evaluate the alternatives?
5. What conclusions are most reasonable?

Using this simple yet powerful framework, I explore issues such as subliminal persuasion, recovered memories, and the origins of sexual orientation, to name just a few. Page xvii includes a complete list of the Thinking Critically features.

Focus on Research

Psychological scientists have helped us better understand behavior and mental processes through their commitment to empirical research. They have posed vital questions about psychological phenomena and have designed research that can answer (or at least illuminate) those questions. In Chapter 1, I introduce readers to the methods of scientific research and to basic research designs in psychology. Every subsequent chapter features a Focus on Research section that highlights a particular research study to help students appreciate the value of research and the creativity with which psychologists have conducted it. Like the Thinking Critically sections, the Focus on Research features are organized around five questions designed to help readers organize their thinking about research questions and research results.

1. What was the researcher's question?
2. How did the researcher answer the question?
3. What did the researcher find?
4. What do the results mean?
5. What do we still need to know?

These Focus on Research sections help students see how psychological scientists have used experiments, correlational studies, surveys, observations, and other designs to explore phenomena such as learned helplessness, infant cognition, evolutionary theories of helping, and human sexual behavior. A full list of the Focus on Research features appears on page xvii.

Linkages

In my experience, introductory psychology students are better able to appreciate the scope of our discipline when they look at it not as a laundry list of separate topics but as an interrelated set of subfields, each of which contributes to—and benefits from—the work being done in all the others. To help students see these relationships, I have built into the book an integrating tool called Linkages. There are three elements in the Linkages program:

- ***Linkages diagrams*** At the end of every chapter is a Linkages diagram, which presents a set of questions that illustrate three of the ways that material in the chapter is related to other chapters in the book. For example, the Linkages diagram in Chapter 2, "Biological Aspects of Psychology," contains questions that show how biological psychology is related to consciousness ("Does the brain shut down when we sleep?"), human development ("How do our brains change over a lifetime?"), and treatment of psychological disorders ("How do drugs help people diagnosed with schizophrenia?"). These diagrams are designed to help students keep in mind how the content of each chapter fits into psychology as a whole. To introduce the concept of Linkages, the diagram in Chapter 1 appears within the body of the chapter.
- ***Linkages sections*** One of the questions in each chapter's Linkages diagram reminds the student of the chapter's discussion of that question in a special section titled, appropriately enough, Linkages (see page xvii for a complete list of Linkages sections).
- ***Marginal linkages reminders*** There are many places throughout the book at which discussion of one topic, such as the functioning of the brain's cerebral cortex, is related to psychological skills, such as language. To help students recognize these links, a linkages question appears in the margin next to the discussion. In the example given here, the question is "Where are the brain's language centers? (a link to thought, language, and intelligence)."

These three elements combine with the text narrative to highlight the network of relationships among psychology's subfields. This Linkages program is designed to help students see the "big picture" that is psychology, no matter how many chapters their instructor assigns or in what sequence.

Teaching and Learning Support Package

Many useful instructional and pedagogical materials have been developed to support the *Essentials of Psychology* textbook and the introductory course. These are designed to enhance and maximize the teaching and learning experience. This seventh edition focuses on greater integration of the supplemental package components with the text itself. New

features of several supplements reflect the text's emphasis on active learning and writing across the curriculum.

Instructor's Companion Website

Find everything you need for your course in one place. This collection of book-specific lecture and class tools is available online via www.cengage.com/login. Access and download PowerPoint® presentations, instructor's manual, and more.

MindTap

MindTap for *Essentials of Psychology* creates a unique learning path that fosters increased comprehension and efficiency. It engages students and empowers them to produce their best work—consistently. In MindTap, course material is seamlessly integrated with videos, activities, apps, and more.

For students:

- MindTap delivers real-world relevance with activities and assignments designed to help students build critical thinking and analytical skills that can be applied to other courses and to their professional lives.
- MindTap serves as a single destination for all course materials so that students can stay organized and efficient and have the necessary tools to master the content.
- MindTap shows students where they stand at all times—both individually and compared to the highest performers in the class. This information helps to motivate and empower performance.

In MindTap, instructors can do the following:

- Control the content. Instructors select what students see and when they see it.
- Create a unique learning path. In MindTap, the *Discovering Psychology: The Science of Mind* text is enhanced with multimedia and activities to encourage and motivate learning and retention, moving students up the learning taxonomy. Materials can be used as is or modified to match an instructor's syllabus.
- Integrate their own content. Instructors can modify the MindTap Reader using their own documents or pulling from sources such as RSS feeds, YouTube videos, websites, Google Docs, and more.
- Follow student progress. Powerful analytics and reports provide a snapshot of class progress, time students spend logging into the course, and completion to help instructors assess level of engagement and identify problem areas.

Acknowledgments

Many people provided me with the help, criticism, and encouragement I needed to create *Essentials of Psychology* and to revise it into this seventh edition. I am of course indebted to my colleagues Louis Penner and Ed Roy, who, as co-authors of the original Bernstein, Penner, Clarke-Stewart, and Roy textbook, *Psychology,* provided invaluable assistance in reviewing the revised *Essentials* manuscript as it developed. I also offer sincere thanks to Professor Paul Spector of the University of South Florida, who took the lead in helping to create the chapter on industrial and organizational psychology, and to Joel Shenker, M.D., Ph.D., who took the lead in helping to create the chapter on neuropsychology. I am indebted, too, to a number of other colleagues for their expert help and advice on the revision of various chapters that appear in this seventh edition of *Essentials*. These colleagues include, for Chapter 3, Joel Shenker, M.D., Ph.D., and Angela Hayden, University of Kentucky; for Chapter 5, Doug Williams, University of Winnipeg; for Chapter 6, Lisa Geraci, Texas A&M University; for Chapter 7, Kimberly Renk, University of Central Florida, and Lori Van Wallendael, University of North Carolina, Charlotte; for Chapter 9, Ross Parke, University of California, Riverside; for Chapter 10, Catherine Stoney, National Center for Complementary and Alternative Medicine; for Chapters 12 and 13, Vicki Phares, University of South Florida; for Chapter 15, Michele Gazica, Embry-Riddle Aeronautical University; and for Chapter 16, Joel Shenker, M.D., Ph.D.

I also want to offer heartfelt thanks to my friends and colleagues who did such a wonderful job in creating revised versions of the ancillary materials for *Essentials*. Most of these people have worked with me for years, and many of them had been graduate student instructors in the University of Illinois introductory psychology program out of which this book emerged.

I also extend my deep appreciation to the *Essentials* Board of Consultants, eight dedicated instructors whose involvement in focus groups and surveys, comments on manuscript chapters, and answers to development queries shaped the first edition of this text:

Charles Blair-Broeker, *Cedar Falls High School*

Ken LeSure, *Cuyahoga Community College*

Barbara Lusk, *Collin County Community College*

Malinda Jo Muzi, *Community College of Philadelphia*

Nancy Simpson, *Trident Technical College*

Maggie Sokolik, *University of California, Berkeley*

Fred Whitford, *Montana State University*

Robert Wildblood, *Northern Virginia Community College*

I wish to thank several colleagues who helped me get the seventh edition off to a good start by reviewing and commenting on the strengths and weaknesses of past editions.

Karl Blendell, *Siena College*

Elaine Cassel, *Lord Fairfax Community College*

Robin Eliason, *Piedmont Virginia Community College*

Frank Hammonds, *Troy University*

Rolf Holtz, *Troy University*

Charles J. Huffman, *Piedmont Virginia Community College*

Alishia Huntoon, *Oregon Institute of Technology*

Mary Johannesen-Schmidt, *Oakton Community College*

Sal Massa, *Marist College*

Brian Parry, *Mesa State College*

Imaura Pilotti, *New Mexico Highlands University*

William Price, *North Country Community College*

Brittney Schrick, *Southern Arkansas University*

Paul Schwartz, *Mount St. Mary College*

Albert K. Toh, *University of Arkansas, Pine Bluff*

Shannon Scott, *Texas Woman's University*

I owe an enormous debt as well to the colleagues listed below for their thoughtful reviews of the manuscripts of the first six editions as they were being developed. Their advice and suggestions for improvement were responsible for many of the good qualities you will find in this book. If you have any criticisms, they probably involve areas these reviewers warned me about!

Patricia Abbot, *D'Youville College*

Gary Altmann, *York University, United Kingdom*

Robin A. Anderson, *St. Ambrose University*

Grace Auyang, *University of Cincinnati*

Alan Baxter, *Technical Career Institutes, New York*

James Bean, *Lock Haven University*

Beth Benoit, *University of Massachusetts, Lowell, and Middlesex Community College*

Joseph J. Benz, *University of Nebraska at Kearney*

Doris A. Bitler, *George Mason University*

Winfield Brown, *Florence Darlington Technical College*

J. Peter Burton, *Santa Fe Community College*

James F. Calhoun, *University of Georgia*

Bernardo J. Carducci, *Indiana University Southeast*

Yiwei Chen, *Bowling Green State University*

Saundra Ciccarelli, *Gulf Coast Community College*

Samuel Clay, *Heartland Community College*

Dwaine Cochran, *Stetson University*

Anne M. Cooper, *St. Petersburg Junior College*

Nat DeAnda, *Los Madanos College*

Marcie N. Desrochers, *College of Charleston*

Kenneth C. Elliot, *University of Maine at Augusta*

Matthew Fanetti, *Southwest Missouri State University*

Leticia Y. Flores, *Southwest Texas State University*

John R. Foust, *Parkland College*

Laura Freberg, *California Polytechnic State University, San Luis Obispo*

Grace Galliano, *Kennesaw State University*

Christopher Gilbert, *Bristol Community College*

Craig W. Gruber, *Walt Whitman High School*

Lynn Haller, *Morehead State University*

Wen Harris, *Lane Community College*

Diane Herbert, *Hofstra University*

Debra Hollister, *Valencia Community College*

Gene Indenbaum, *SUNY Farmingdale*

John S. Klein, *Castleton State College*

Ronald Kleinknecht, *Western Washington University*

Janet L. Kottke, *California State University, San Bernardino*

Jennifer M. Lancaster, *St. Francis College*

David S. Malcolm, *Fordham University*

Joseph G. Marrone, *Siena College*

Joseph A. Mayo, *Gordon College*

David Murphy, *Waubonsee College*

Sheila M. Murphy, *Mount Wachusett Community College*

Bonnie J. Nichols, *Missouri County Community College*

Steve A. Nida, *Franklin University*

Sheila O'Brien Quinn, *Salve Regina University*

Christine Offutt Lingenfelter, *Lock Haven University*

Arthur G. Olguin, *Santa Barbara City College*

Randall E. Osborne, *Indiana University East*

Les Parrott, *Seattle Pacific University*

Ralph G. Pifer, *Sauk Valley Community College*

James S. Previte, *Victor Valley College*

Wayne J. Robinson, *Monroe Community College*

John L. Romanek, *Jefferson Community College*

Kenneth M. Rosenberg, *State University of New York, Oswego*

Elisabeth D. Sherwin, *University of Arkansas at Little Rock*

Cynthia J. Smith, *Wheeling Jesuit University*

Jane A. Smith, *Concordia University*

Mitchell Speaks, *Keene State College*

Holly Straub, *University of South Dakota*

Linda K. Swindell, *Anderson University*

Parsram S. Thakur, *Community College of Rhode Island*

Inger Thompson, *Glendale Community College*

M. Lisa Valentino, *Seminole Community College*

Mary A. Waterstreet, *St. Ambrose University*

Michael J. Wenger, *University of Notre Dame*

Gordon Whitman, *Sandhills Community College*

Jean M. Wynn, *Manchester Community College*

C. Van Youngman, *Art Institute of Philadelphia*

The process of creating *Essentials of Psychology* was greatly facilitated by the work of many dedicated people at Cengage Learning. From the sales representatives and sales managers who originally conveyed my colleagues' requests for the text to the marketing staff who worked to tell my colleagues what *Essentials* has to offer, it seems everyone at Cengage had a hand in shaping this book and now in revising it into its seventh edition. Several people in the editorial and production areas at Cengage deserve special mention, however, because they did an outstanding job in helping me to develop and revise the *Essentials* manuscript: Tim Matray, Stefanie Chase, and Ruth Sakata Corley. Without these people, and those who worked with them, the seventh edition of *Essentials of Psychology* would not have happened.

Finally, I want to thank my wife Doris for the loving support that sustains me in my work and in my life. *Je vous aime beaucoup, ma chérie.*

Doug Bernstein

©agsandrew/Shutterstock.com

1

Introduction to the Science of Psychology

PREVIEW

TRY THIS All of the following people hold truly interesting jobs. What do you think they studied to qualify for those jobs? See if you can correctly match each person in the left column with their field of study from the right column.

People	Fields of Study
Anne Marie Apanovitch works for a major drug company and determines which of their marketing strategies are most effective in promoting sales.	Engineering
Rebecca Snyder studies the giant pandas at Zoo Atlanta in an effort to promote captive breeding and ultimately increase the wild population of this endangered species.	Criminal Justice
Michael Moon's job at a software company is to find new ways to make websites easier for consumers to use.	Advertising
Sharon Lundgren, founder of Lundgren Trial Consulting, Inc., helps prepare witnesses to testify in court and teaches attorneys how to present their evidence in the most convincing way.	Psychology
Evan Byrne investigates the role of memory lapses, fatigue, disorientation, errors, and other human factors in causing airplane crashes for the U.S. National Transportation Safety Board.	Computer Science
Renee Timmers studies what musicians do when performing, including by recording performances under varying conditions and measuring listeners' responses.	Zoology
Captain Karen Orts, chief of mental health services at a U.S. Air Force base, provides psychotherapy to military personnel suffering combat-related stress disorders and teaches leadership courses to commissioned and noncommissioned officers.	Music

Because Captain Orts offers psychotherapy, you probably guessed that she's a psychologist, but what academic field did you associate with Rebecca Snyder, who studies giant pandas? It would have been perfectly reasonable to assume that she's a zoologist, but she, too, is a psychologist. So is Michael Moon, whose work on website design might suggest that he was a computer science major. And although Sharon Lundgren spends her time working with witnesses and conducting mock trials, she's a psychologist, not a lawyer. The fact is that all of these people are psychologists! They may not all fit your idea of what psychologists do, but as you'll see in this chapter (and throughout this book), psychology is much broader and more diverse than you might have expected. I hope that reading this book will give you a fuller understanding of psychology and that you will find the field to be as fascinating as I do.

This chapter begins our exploration of psychology with a brief look at some of its interrelated specialty areas, or *subfields*. I will also tell the story of how psychology came to be and review several theories and approaches that guide psychologists in their work.

You will also see that the activities of psychologists in virtually every subfield are affected by human diversity, especially by age, gender, race, ethnicity, and other individual characteristics encountered in today's multicultural societies. Finally, I will invite you to consider how critical thinking, scientific methods, and ethical standards guide psychologists as they conduct research and evaluate the evidence they collect. ■

The World of Psychology: An Overview

What is psychology, and how did it grow?

Psychology is the science that studies behavior and mental processes and seeks to apply that study in the service of human welfare. So although the seven people I've just described are engaged in many different kinds of work, they are all psychologists because they are all involved in studying, predicting, improving, or explaining some aspect of behavior and mental processes. But even this wide variety of jobs fails to capture the full scope of psychologists' interests. As a group, psychologists around the world are interested in the behaviors and mental processes that make people who they are in every culture. Many psychologists focus on what can go wrong in behavior and mental processes, such as psychological disorders, problems in childhood development, or stress-related illnesses. Others explore the factors that lead people to be happy and satisfied with their lives, to achieve at a high level, to be creative, to help others, and to develop their full potential as human beings. This focus on the things that make life most worth living is known as **positive psychology** (e.g., Donaldson & Rao, 2017; Lopez, Pedrotti, & Snyder, 2014).

Subfields of Psychology

TRY THIS

To appreciate how many things come under the umbrella of *behavior and mental processes,* think for a moment about how you would answer the question, Who are you? Would you answer by describing your personality, the sharpness of your vision or hearing, your interests and goals, your job skills and accomplishments, your IQ, your cultural background, or your social skills? Perhaps you would describe a physical or psychological problem that bothers you. You could list these and dozens of other things about yourself, and every one of them would reflect some aspect of what psychologists mean by behavior and mental processes. When psychologists focus their work on particular aspects of behavior and mental processes, they enter one of psychology's many subfields. Let's take a quick look at the typical interests and activities of psychologists in these subfields; we will focus on many of them in more detail in later chapters.

- **Cognitive psychologists** study basic mental processes such as sensation and perception (see Figure 1.1), learning and memory, judgment, decision making, and

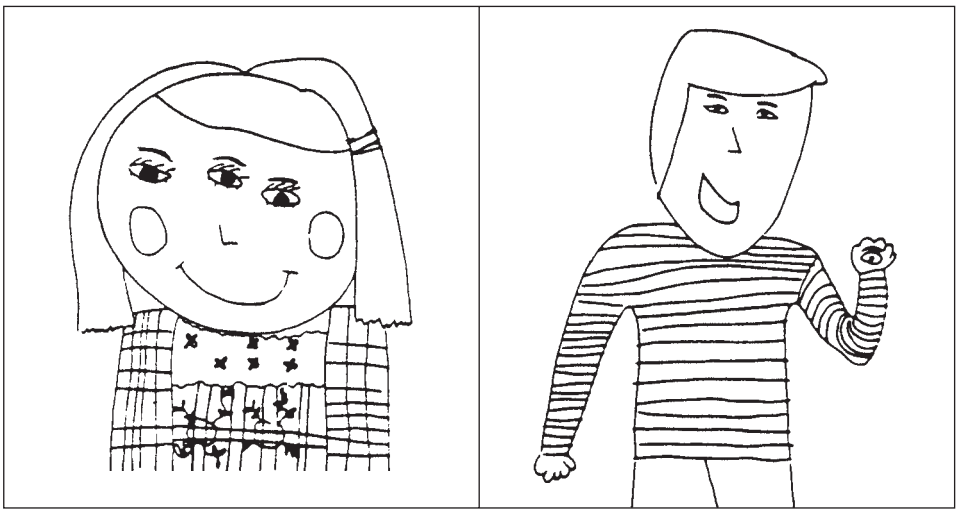
FIGURE 1.1 **Husband and Father-in-Law**
This figure is called "Husband and Father-in-Law" (Botwinick, 1961) because you can see an old man or a young man, depending on how you mentally organize its features. The elderly father-in-law faces to your right and is turned slightly toward you. He has a large nose, and the dark areas represent his coat pulled up to his protruding chin. However, the tip of his nose can also be seen as the tip of a younger man's chin; the younger man is in profile, also looking to your right, but away from you. The old man's mouth is the young man's neckband. Both men are wearing a broad-brimmed hat.

Source: J. Botwinick, "Husband and Father-In-Law: A reversible figure," from *American Journal of Psychology* 74 (pp. 312–313). Copyright © 1961 by the Board and Trustees of the University of Illinois. Used with permission of the University of Illinois Press.

psychology The science that seeks to understand behavior and mental processes and to apply that understanding in the service of human welfare.

positive psychology A field of research that focuses on people's positive experiences and characteristics, such as happiness, optimism, and resilience.

cognitive psychologists Psychologists whose research focuses on analysis of the mental processes underlying judgment, decision making, problem solving, imagining, and other aspects of human thought or cognition.



Drawing by a nine-year-old (A)

Drawing by an eleven-year-old (B)

FIGURE 1.2 Where Would You Put a Third Eye?
In a study of how thinking develops, children were asked to show where they would place a third eye if they could have one. Nine-year-old children, who were still in an early stage of mental development, drew the extra eye between their existing eyes, "as a spare." Having developed more advanced thinking abilities, eleven-year-olds drew the third eye in more creative places, such as the palm of their hand "so I can see around corners."

problem solving. Included in the wide range of fascinating topics they explore are such questions as whether people can forget (and then suddenly recover) traumatic memories, whether we can learn while asleep, and what role intuition and other unconscious processes play in guiding our thoughts and actions.

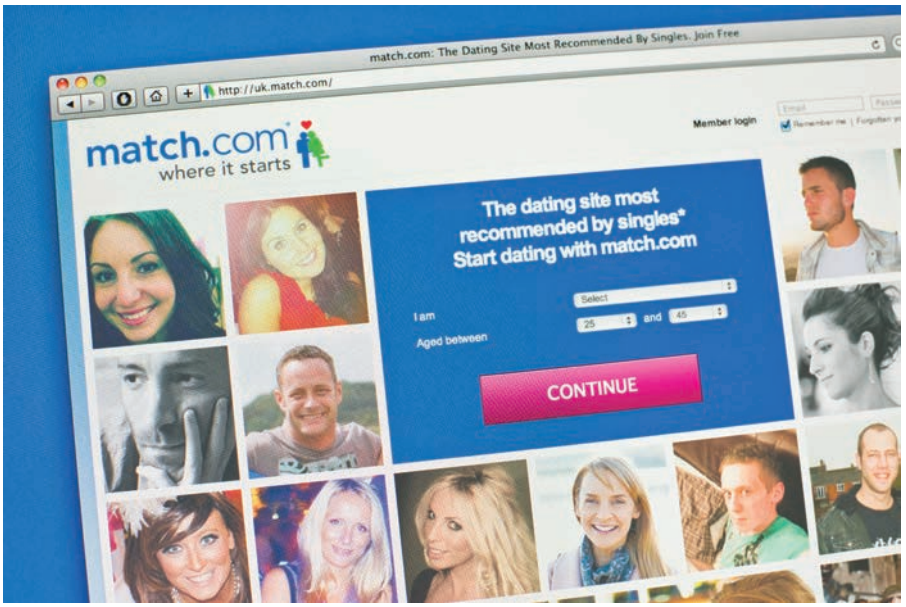
- **Biological psychologists**, also called *physiological psychologists* or *neuroscientists,* study topics such as the relationship of genes and brain chemistry to mental disorders, how brain cells communicate with each other in forming memories, whether certain patterns of brain activity can reveal that a person is lying, and how hormones released during stress affect the body's immune system. Have you ever had the odd feeling that a new experience, such as entering an unfamiliar house, has actually happened to you before? Biological psychologists who study this experience of *déjà vu* (French for "already seen") suggest that it may be due to a temporary malfunction in the brain's ability to combine incoming information from the senses, creating the impression of two "copies" of a single event (Brown, 2004).
- **Personality psychologists** study individuality—the unique features of each person. Your personality traits, like your fingerprints, are different from those of any other person. Some personality psychologists use tests to describe how one individual compares with others in terms of openness to experience, emotionality, reliability, agreeableness, and sociability. Others study combinations of personality traits that may predict particular patterns of behavior. For instance, personality psychologists interested in positive psychology are identifying the characteristics of people who can remain optimistic even in the face of stress or tragedy and find happiness in life (Infurna & Luthar, 2016).
- **Developmental psychologists** study and describe how behavior and mental processes change over the life span in order to understand their causes and effects (see Figure 1.2). They explore areas such as the development of thought, friendship patterns, parenting styles, and whether everyone must face a midlife crisis. Some of their research has been used by judges and attorneys in deciding on the age at which a child can be considered as a reliable witness in court or as capable of choosing responsibly which parent to live with following a divorce.
- **Quantitative psychologists** develop and use statistical tools to analyze vast amounts of information generated by research results from all of psychology's subfields. Later in this chapter you will see how quantitative psychologists use correlation coefficients and other statistical tools to evaluate psychological tests and to estimate the relative contributions of heredity and environment in determining our intelligence. To what extent are people born smart—or not so smart—and to what extent are

biological psychologists
Psychologists who analyze the biological factors influencing behavior and mental processes.

personality psychologists
Psychologists who focus on people's unique characteristics.

developmental psychologists
Psychologists who seek to understand, describe, and explore how behavior and mental processes change over the course of a lifetime.

quantitative psychologists
Psychologists who develop statistical methods for evaluating and analyzing data from psychological research.



©agsandrew/Shutterstock.com

Got a Match?
Some commercial matchmaking services apply social psychologists' research on interpersonal attraction in an effort to pair up people whose characteristics are most likely to be compatible.

their mental abilities affected by their environments? The work of quantitative psychologists is vital to research on this important topic.

- **Clinical, counseling, and community psychologists** study the causes of behavior disorders and offer services to help troubled people overcome these disorders. Generally, clinical psychologists have Ph.D. degrees in psychology; most provide therapy services, and many conduct research as well. A counseling psychologist might work as a mental health counselor and have either a Ph.D. or a master's degree in psychology. Community psychologists offer psychological services to the homeless and others who need help but who tend not to seek it. By working for changes in schools and other social systems, they also try to prevent poverty and other stressful conditions that so often lead to psychological disorder. All of these psychologists differ from *psychiatrists,* who are medical doctors who specialize in abnormal behavior.
- **Educational psychologists** conduct research and develop theories about teaching and learning. The results of their work are applied in programs designed to improve teacher training, refine school curricula, reduce dropout rates, and help students learn more efficiently. For example, educational psychologists support using the "jigsaw" technique, a cooperative classroom activity in which children from various racial or ethnic groups must work together to complete a task or solve a problem. Such experiences appear to promote learning, generate mutual respect, and reduce intergroup prejudice (Aronson & Patnoe, 2011).
- **School psychologists** originally specialized in intelligence testing, diagnosing learning disabilities and other academic problems, and setting up programs to improve students' achievement and satisfaction in school. Today, they also engage in preventing bullying, in early detection of students' mental health problems, and in crisis intervention following school violence (e.g., Crepeau-Hobson & Bianco, 2011; Golmaryami et al., 2016; Klein, Cornell, & Konold, 2012).
- **Social psychologists** study the ways that people influence one another. For example, their research on social-influence strategies has been applied in safe-sex advertising campaigns designed to halt the spread of AIDS (Friedman et al., 2016). They also explore how peer pressure affects us, what determines whom we like (or even love), and why and how prejudice forms. They have found, for example, that although we may pride ourselves on not being prejudiced, we may actually hold unconscious beliefs about certain groups that negatively affect the

clinical, counseling, and community psychologists Psychologists who seek to assess, understand, modify, and prevent behavior disorders.

educational psychologists Psychologists who study methods by which instructors teach and students learn and who apply their results to improve those methods.

school psychologists Psychologists who test cognitive abilities, diagnose students' academic problems, and set up programs to improve students' achievement.

social psychologists Psychologists who study how people influence one another's behavior and attitudes, especially in groups.

Getting Ready for Surgery
Health psychologists have learned that when patients are mentally prepared for a surgical procedure, they are less stressed by it and recover more rapidly. Their research is now routinely applied in hospitals through programs in which children and adults are given helpful information about what to expect before, during, and after their operations.

Dorothy Littell Greco/The Image Works

way we relate to people from those groups (Jacoby-Senghor, Sinclair, & Shelton, 2016; Vanman et al., 2004).

- **Industrial and organizational psychologists** study leadership, stress, competition, pay, and other factors that affect the efficiency, productivity, and satisfaction of workers and the organizations that employ them. They explore ways to increase employee motivation and help companies select the best new workers. They also look at the ways in which businesses and industrial organizations work—or fail to work—and they make recommendations to help these organizations work better. Companies all over the world apply research by industrial and organizational psychologists to foster *positive organizational behavior* through the development of employee training programs, effective goal-setting procedures, fair and reasonable evaluation methods, and systems for motivating and rewarding outstanding employee performance.

industrial and organizational psychologists Psychologists who examine factors that influence people's performance in the workplace.

health psychologists Psychologists who study the effects of behavior on health and the impact of illness on behavior and emotion.

sport psychologists Psychologists whose research is aimed at maximizing athletic performance.

forensic psychologists Psychologists who are involved in many aspects of psychology and law.

engineering psychologists Psychologists who study and try to improve the relationships between human beings and the computers and other machines they use.

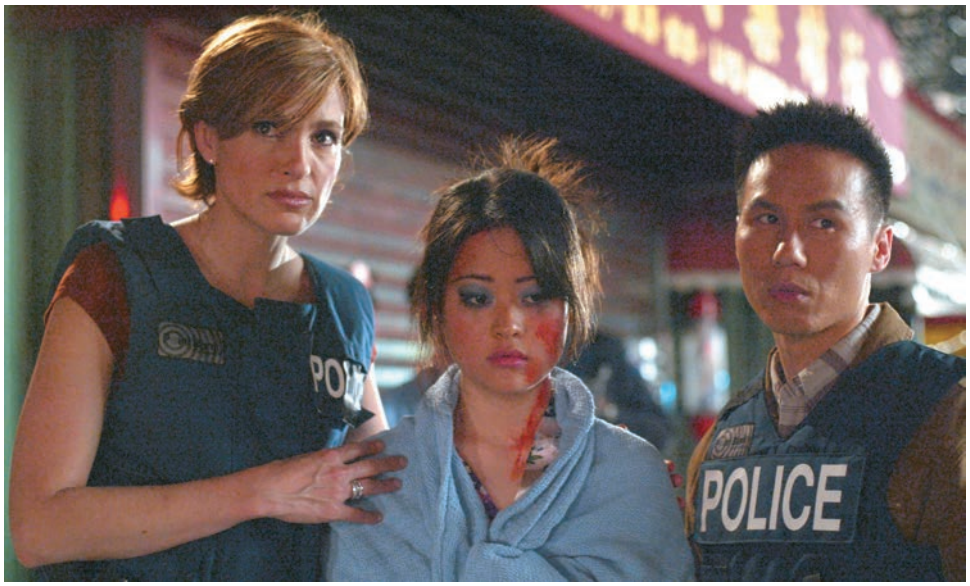
environmental psychologists Psychologists who study the relationship between people's physical environment and their behavior.

Our list of psychology's subfields is still not complete. For example, **health psychologists** study the effects of behavior on health and the impact of illness on behavior and emotion; **sport psychologists** search for the keys to maximum athletic performance; and **forensic psychologists** assist in jury selection, evaluate defendants' sanity and mental competence to stand trial, and deal with other matters involving psychology and the law. **Engineering psychologists**, also known as *human factors psychologists*, study interactions between human beings and the computers, telephones, and other machines they use. Their research has been applied in the design of computer keyboards, Internet websites, aircraft instrument panels, controls for hospital beds and nuclear power plants, and even on-screen programming and navigation systems for automobiles and mobile phones that make them more logical, easier to use, and less likely to cause errors.

Environmental psychologists study the effects of the environment on people's behavior and mental processes (e.g., Graham, Gosling, & Travis, 2015). The results of their research are applied by architects and interior designers as they plan or remodel residence halls, shopping malls, auditoriums, hospitals, prisons, offices, and other spaces to make them more comfortable and functional for the people who will occupy them. (See Table 1.1 for a summary of the typical activities and work settings of psychologists in the United States.)

Linkages within Psychology and Beyond

Psychology's subfields are listed here as though they were separate, but they often overlap, and so do the activities of the psychologists working in them. When developmental



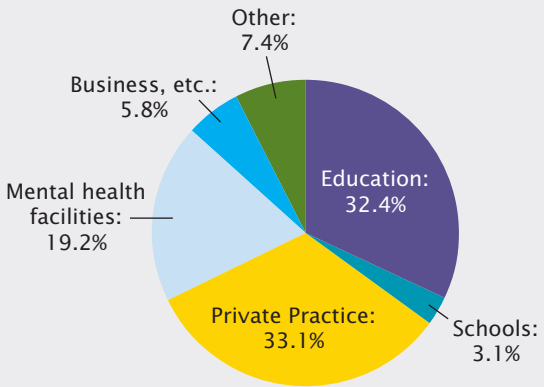
Will Hart/NBC/Photofest

Forensic Psychology
Forensic psychologists may assist police and other law enforcement agencies as well as courts in profiling criminals, evaluating the mental competence of defendants, participating in jury selection, and performing many other tasks related to psychology and the law. Actor B. D. Wong's performance as forensic psychiatrist Dr. George Huang on *Law and Order: SVU* was so accurate that the Media Psychology division of the American Psychological Association gave the show its award for excellence in the fictional portrayal of mental health professionals.

psychologists study the growth of children's thinking skills, for example, their research is linked to that of colleagues in cognitive psychology. Similarly, biological psychologists have one foot in clinical psychology when they look at how chemicals in the brain affect the risk of depression. And when social psychologists apply research on cooperation to promote group learning activities in classrooms, they link up with educational

TABLE 1.1 Typical Activities and Work Settings for Psychologists

The fact that psychologists can work in such a wide variety of settings and do so many interesting—and often well-paying—jobs helps account for the popularity of psychology as an undergraduate major (National Center for Education Statistics, 2017). Psychology courses also provide excellent background for students planning to enter medicine, law, business, and many other fields.

Percentage of Psychologists	Work Setting	Typical Activities
	Colleges, universities, and professional schools	Teaching, research, and writing, often in collaboration with colleagues from other disciplines
	Mental health facilities (e.g., hospitals, clinics, counseling centers)	Testing and treatment of children and adults
	Private practice (alone or in a group of psychologists)	Testing and treatment of children and adults
	Business, government, and organizations	Testing potential employees; assessing employee satisfaction; identifying and resolving conflicts; improving leadership skills; offering stress management and other employee assistance programs; improving equipment design to maximize productivity and prevent accidents
	Schools (including those for intellectually disabled and emotionally disturbed children)	Testing mental abilities and other characteristics; identifying problem children; consulting with parents; designing and implementing programs to improve academic performance
	Other	Teaching prison inmates; research in private institutes; advising legislators on educational, research, or public policy; administering research funds; research effectiveness of military personnel; etc.

Source: Employment characteristics of APA members by membership status, 2015.

psychology. Even when psychologists work mainly in one subfield, they're still likely to draw on—and contribute to—the knowledge in other subfields.

So to understand psychology as a whole, you must understand the linkages among its subfields. In this book, to help you recognize these linkages, I highlight three of them in a diagram, similar to the one in Figure 1.3, near the end of every chapter. Each linkage is represented by a question that connects two subfields, and the chapter named is where you can read more about each question (look for "Linkages" symbols in those chapters).

There are so many linkages throughout the book that I could not include them all in the diagrams, but I hope these diagrams will remind you to look for linkages that I didn't mention. This kind of detective work can actually help you to do better on exams and quizzes, because it is often easier to remember material in one chapter by relating it to linked material in other chapters.

Psychology itself is linked to other disciplines. Some of these connections occur because psychologists share interests with researchers in other fields. For example, cognitive psychologists work with computer scientists to create artificial intelligence systems that can recognize voices, solve problems, and make decisions in ways that equal or exceed human capabilities. Other links occur when research in one discipline is applied in another. For example, physicians and economists are using research by psychologists to better understand the thought processes that influence (good and bad) decisions about caring for patients and choosing investments. In fact, psychologist Daniel Kahneman won a Nobel Prize in economics for his work in this area. Other psychologists' research on memory has influenced how lineups are displayed to eyewitnesses attempting to identify criminals, how attorneys question eyewitnesses in court, and how judges instruct juries. And psychological studies of the effects of brain disorders on elderly patients' mental abilities are shaping doctors' recommendations about when those patients should stop driving cars.

This book is filled with examples of other ways that psychological theories and research have been applied to fields as diverse as health care, law, business, engineering, architecture, aviation, and sports.

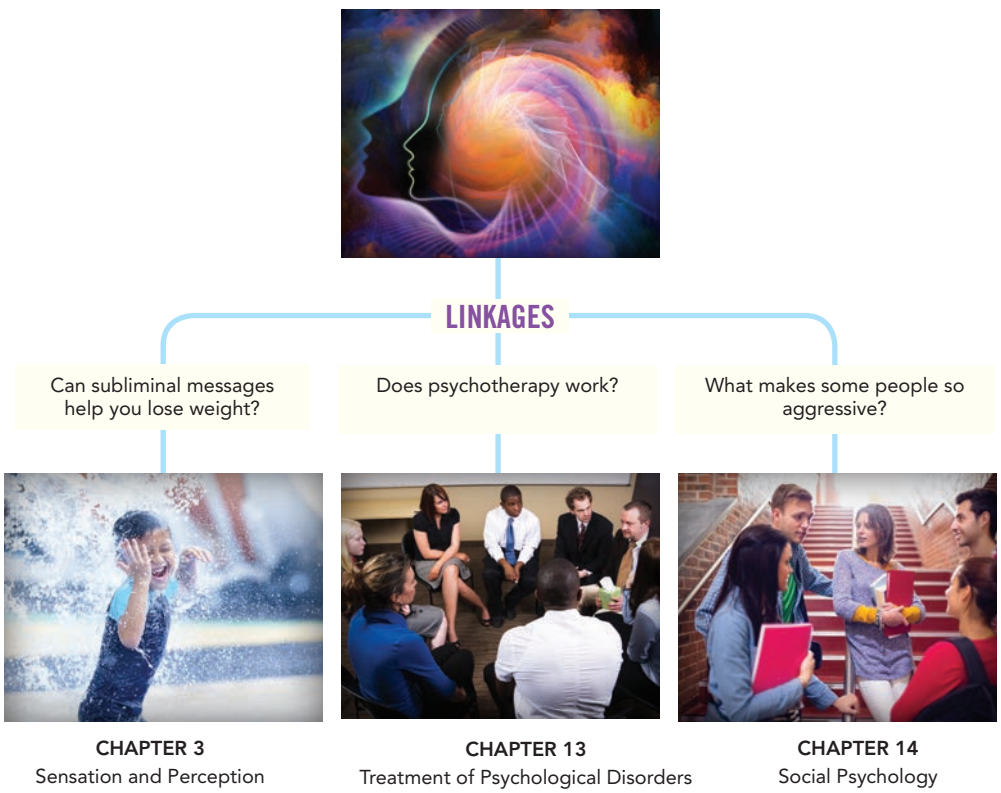


FIGURE 1.3 Linkages
The questions listed in this diagram highlight just three of the many ways in which psychology's subfields are linked to one another. Three additional linking questions appear in the Linkages diagram included in every chapter to come. Each chapter also contains a special Linkages feature that examines linked research in more detail. If you stay alert to the many linkages among psychology's subfields, you'll come away from your reading not only with threads of knowledge about each subfield but also with an appreciation of the fabric of psychology as a whole.

Creativa Images/Shutterstock.com; iStock.com/Alina555; ©wavebreakmedia/ Shutterstock.com

Linking Psychology and Law
Cognitive psychologists' research on the quirks of human memory has led to revised guidelines for police and prosecutors when dealing with crime witnesses (U.S. Department of Justice, 1999; Wixted & Wells, 2017). These guidelines warn that asking witnesses leading questions (e.g., "Do you remember seeing a gun?") can distort their memories and that false accusations are less likely if witnesses are told that the real criminal might not be in a lineup or in a group of photos.

A Brief History of Psychology

Psychology is a relatively new science, but its origins can be traced through centuries. Since at least the time of Socrates, Plato, and Aristotle in ancient Greece, philosophers have debated such psychological topics as where human knowledge comes from, the nature of mind and soul, the relationship of the mind to the body, and even the possibility of scientifically studying these matters.

So scientific psychology has its roots in philosophy, and especially in a philosophical view called **empiricism** (pronounced "em-PEER-ih-sihz-em"). In the 1600s, empiricists such as John Locke, George Berkeley, and David Hume challenged the long-accepted claim that we are born with knowledge about our world. Instead, empiricists argued that our minds are more like a blank slate (*tabula rasa,* in Latin) on which our experiences write a lifelong story. In other words, according to empiricism, knowledge comes to us only through our experiences and observations. Empiricism has guided psychologists in seeking knowledge about behavior and mental processes through observations governed by the rules of science, rather than speculation, for almost 140 years.

Wundt and the Structuralism of Titchener The birth date of modern scientific psychology is usually said to be 1879, the year in which Wilhelm Wundt (pronounced "voont") established the first formal psychology research laboratory at the University of Leipzig in Germany (Benjamin, 2000). Wundt was a physiologist, and like other physiologists of his day, he had been studying vision, hearing, and other sensory-perceptual systems. However, Wundt's ambitious goal was to use the methods of laboratory science to study **consciousness**—the mental experience that arises from these systems. In doing so, Wundt began psychology's transformation from the *philosophy* of mental processes to the *science* of mental processes.

Wundt wanted to describe the basic elements of consciousness, including how they are organized and how they relate to one another (Schultz & Schultz, 2002). In an attempt to study conscious experience, Wundt used *introspection,* which means "looking inward." Edward Titchener, an Englishman who studied under Wundt, later used introspection in his own laboratory at Cornell University in the United States to study sensations, feelings, and images associated with conscious experience. To understand introspection, look at the object in Figure 1.4. Try to describe not what it is but only how intensely and clearly you

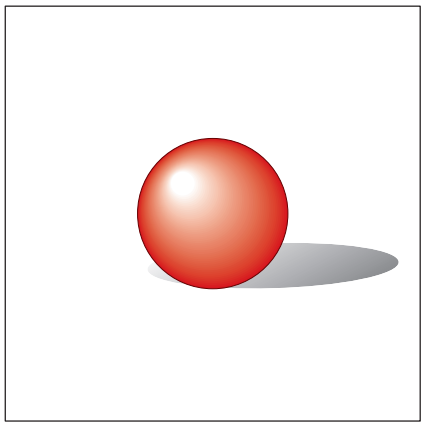
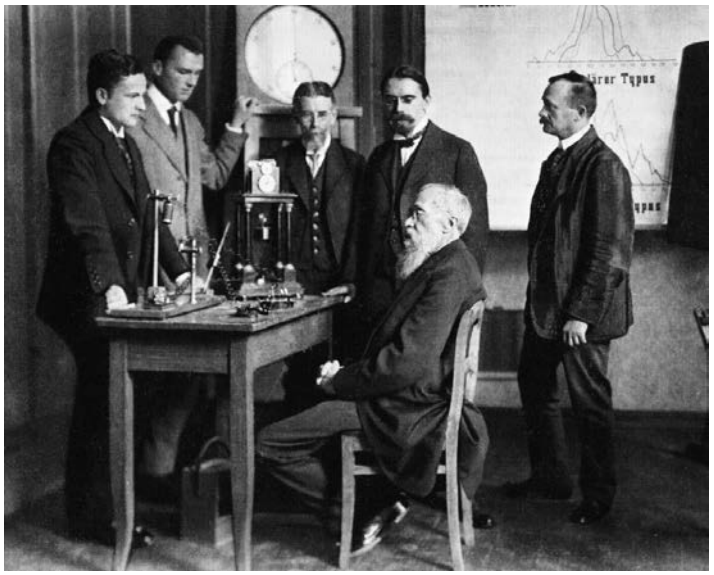


FIGURE 1.4 A Stimulus for Introspection
TRY THIS Look at this object, and try to ignore what it is. Instead, try to describe only your conscious experience, such as redness, brightness, and roundness, and how intense and clear the sensations and images are. If you can do this, you would have been an excellent research assistant in Titchener's laboratory.

empiricism The philosophical view that knowledge comes from experience and observation.

consciousness The awareness of external stimuli and our own mental activity.



INTERFOTO/Alamy Stock Photo

Wilhelm Wundt (1832–1920)
In an early experiment on the speed of mental processes, Wundt (seated) first measured how quickly people could respond to a light by releasing a button they had been holding down. He then measured how much longer the response took when they held down one button with each hand and had to decide, based on the color of the light, which one to release. Wundt reasoned that the additional response time reflected how long it took to perceive the color and decide which hand to move. As noted in the chapter on thought, language, and intelligence, the logic behind this experiment remains a part of research on cognitive processes today.

experience its sensations and images (such as redness, brightness, and roundness). This was the difficult task that Wundt and Titchener set for carefully trained "introspectors" in their search for the building blocks of consciousness. Titchener called his approach *structuralism* because he was trying to define the structure of consciousness. Wundt and Titchener were not the only scientific researchers in psychology, and their work was not universally accepted. Other scientific psychologists in Europe were studying the limits of sensory abilities and the capability for learning and memory. They saw the structuralists' work as too simplistic. However, introspection has taken on new life in some contemporary psychologists' research on such topics as how we solve problems and the sequence in which the brain processes information (Jacobs & Silvanto, 2016).

Gestalt Psychology Around 1912, another group of German psychologists, led by Max Wertheimer, Kurt Koffka, and Wolfgang Köhler, argued against the value of trying to break down human experience or consciousness into its component parts. They were called *Gestalt psychologists* because they pointed out that the whole shape (or *Gestalt*, in German) of conscious experience is not the same as the sum of its parts. Wertheimer noted, for example, that when two lights are placed near each other in a dark room and go on and off in just the right sequence, we experience not two lights but a single light "jumping" back and forth. This is called the *phi phenomenon,* and you've probably seen it in signs that create the impression of a series of lights racing around a display. Video provides another example. Imagine how boring it would be to browse one at a time through the thousands of still images in a video recording. Yet when those same images are shown on a screen at just the right rate, they combine to create a rich visual experience. In other words, said the Gestaltists, consciousness should be studied as a whole, not piece by piece.

Freud and Psychoanalysis While Wundt was conducting scientific research on consciousness in Germany, Sigmund Freud, a physician in Vienna, Austria, was exploring the unconscious. In the late 1880s, Freud began to question the assumption that biological factors were behind all behavior and mental processes, including illnesses. After interviewing his patients using hypnosis and other methods, Freud concluded that the causes of some people's physical ailments were not physical. The real causes, he said, were deep-seated problems that the patients had pushed out of consciousness. He eventually came to believe that all behavior—from everyday slips of the tongue to severe forms of mental disorder—could be traced to *psychological processes,* especially to internal conflicts that he said take place without our being aware of them. He believed that many of these unconscious *psychodynamic* conflicts are created when our sexual and aggressive instincts clash with the rules set for us by society. For nearly fifty years, Freud revised and expanded his ideas into a body of work known as *psychoanalysis*. His theory included explanations of how personality and mental disorder develop, as well as a set of treatment methods. Freud's ideas have never been universally accepted, but he was a groundbreaker whose psychodynamic theories had a significant influence on psychology and many other fields.

William James and Functionalism Psychology took root in North America not long after Wundt began his work in Germany. In the late 1870s, William James set up the first psychology laboratory in the United States, which he used mainly to conduct demonstrations for his students at Harvard University (Schultz & Schultz, 2002). The first psychology research laboratory in the United States was established in 1883, by G. Stanley Hall at Johns Hopkins University. James Mark Baldwin, Canada's first modern psychologist and a pioneer in child development research, established the first Canadian psychology research laboratory at the University of Toronto in 1889.

William James rejected both Wundt's approach and Titchener's structuralism. Influenced by Darwin's theory of evolution, James wanted to understand how sensations, memories, and all the other mental events that make up our ever-flowing "stream of consciousness" help us adapt to our changing environments (James, 1890, 1892). This idea was consistent with an approach to psychology called *functionalism,* which focused on the function of consciousness in guiding our ability to make decisions, solve problems, and the like. James's emphasis on the functions of mental processes encouraged other North American psychologists to look at how those processes work to our advantage and how they differ from person to person. Some of these psychologists began to measure individual differences in learning, memory, and other aspects of intelligence and to make recommendations for improving educational practices in the schools. A few even began to work with teachers on programs for children in need of special help (Kramer, Bernstein, & Phares, 2014).

John B. Watson and Behaviorism Besides fueling James's interest in the functions of consciousness, Darwin's theory of evolution led other psychologists, especially in North America after 1900, to study animals as well as humans. If all species evolved in adaptive ways, perhaps their behavior and mental processes would follow the same, or similar, laws. Psychologists observed animal behavior in mazes and other experimental situations. From these observations, they made inferences about the animals' conscious experiences and about the general laws of learning, memory, problem solving, and other mental processes that might apply to people, too.

John B. Watson, a psychology professor at Johns Hopkins University, agreed that the behavior of animals and humans was the most important source of scientific information for psychology. In his article, "Psychology as the Behaviorist Views It," Watson argued that psychologists should ignore mental events and concern themselves only with *observable* behavior (Watson, 1913, 1919). His approach, known as *behaviorism*, did not address consciousness, as structuralism and functionalism did, let alone consider the unconscious, as the Freudian view did. Focusing on consciousness, said Watson, would prevent psychology from ever being a true science. He argued that learning is the most important cause of behavior and famously claimed that if he had enough control over the environment, he could create learning experiences that would turn any infant into a doctor, a lawyer, or even a criminal.

American psychologist B. F. Skinner was another early champion of behaviorism. From the 1930s until his death in 1990, Skinner studied *operant conditioning,* a learning process through which rewards and punishments shape, maintain, and change behavior. Using what he called *functional analysis of behavior,* Skinner would explain, for example, how parents and teachers might unknowingly encourage children's temper tantrums by rewarding them with attention. He noted, too, that a virtual addiction to gambling can develop through the occasional and unpredictable rewards it brings. Skinner said that functional analysis not only reveals the learned foundations of behavior but also suggests what rewards and punishments should be changed in order to alter that behavior.

Many psychologists were drawn to Watson's and Skinner's vision of psychology as the learning-based science of observable behavior. As such, behaviorism dominated psychological research in North America from the 1920s through the 1960s. ("In Review: The Development of Psychology" summarizes behaviorism and the other schools of thought that have influenced psychologists over the years.)

Psychology Today By end of the 1960s, however, more and more psychologists saw the behaviorists' lack of attention to mental processes as a serious limitation. As the computer age dawned, psychologists began to think about mental activity in a new way—as information processing. At the same time, progress in biotechnology began to offer psychologists new ways to study the biological bases of mental processes. Armed with ever-more-sophisticated research tools, many psychologists today are trying to do what Watson thought was impossible: to study mental processes and even watch the brain perform them. Psychology has come full circle, once again accepting consciousness, in the form of cognitive processes, as a legitimate topic for research.

The Development of Psychology

IN REVIEW

School of Thought	Founders	Goals	Methods
Structuralism	Edward Titchener, trained by Wilhelm Wundt	To study conscious experience and its structure	Experiments; introspection
Gestalt psychology	Max Wertheimer	To describe the organization of mental processes ("the whole is different from the sum of its parts")	Observation of sensory/perceptual phenomena
Psychoanalysis	Sigmund Freud	To explain personality and behavior; to develop techniques for treating mental disorders	Study of individual cases
Functionalism	William James	To study how the mind works in allowing an organism to adapt to the environment	Naturalistic observation of animal and human behavior
Behaviorism	John B. Watson; B. F. Skinner	To study only observable behavior and explain behavior via learning principles	Observation of the relationship between environmental stimuli and overt responses

IN REVIEW QUESTIONS

1. Darwin's theory of evolution had an especially strong influence on _____ ism and _____ ism.
2. Which school of psychological thought was founded by a European medical doctor?
3. In the history of psychology, _____ was the first school of thought to appear.

Approaches to the Science of Psychology

Why don't all psychologists explain behavior in the same way?

You have seen that the history of psychology is, in part, the history of the differing ways in which psychologists have thought about, or "approached," behavior and mental processes. Today, psychologists no longer refer to themselves as structuralists or functionalists but the psychodynamic and behavioral approaches remain, along with some newer ones known as the *biological, evolutionary, cognitive,* and *humanistic approaches.* Some psychologists adopt just one of these approaches, but most are eclectic. This means that

University of California Berkeley

The Biology of Emotion
Robert Levenson, a psychologist at the University of California at Berkeley, takes a biological approach to the study of social interactions. He measures heart rate, muscle tension, and other physical reactions as couples discuss problems in their relationships. He then looks for patterns of physiological activity in each of the partners (such as overreactions to criticism) that might be related to success or failure in resolving their problems.

they blend aspects of two or more approaches in an effort to understand more fully the behavior and mental processes in their subfield. Some approaches to psychology are more influential than others these days, but let's review the main features of all of them so you can more easily understand why different psychologists may explain the same behavior or mental process in different ways.

The Biological Approach

As its name implies, the **biological approach** assumes that behavior and mental processes are largely shaped by biological processes. Psychologists who take this approach study the psychological effects of hormones and genes and the activity of the nervous system, especially the brain. When studying memory, for example, these researchers try to identify changes taking place in the brain as information is stored there. (Figure 6.14, in the chapter on memory, shows an example of these changes.) And when studying thinking, they might look for patterns of brain activity associated with, say, making quick decisions or reading a foreign language. Research discussed in nearly every chapter of this book reflects the enormous influence of the biological approach on psychology today.

The Evolutionary Approach

Biological processes are also highlighted in an approach to psychology that is based on Charles Darwin's 1859 book *On the Origin of Species.* Darwin argued that the forms of life we see today are the result of *evolution*—of changes in life forms that occur over many generations. He said that evolution occurs through *natural selection,* which promotes the survival of the fittest individuals. Those whose behavior and appearance allow them to withstand the elements, avoid predators, and mate are able to survive and produce offspring who may have similar characteristics. Those less able to adjust (or *adapt*) to changing conditions are less likely to survive and reproduce. Most evolutionists today see natural selection operating at the level of genes, but the process is the same. Genes that result in characteristics and behaviors that are adaptive and useful in a certain environment will enable the creatures that inherited them to survive and reproduce, thereby passing those genes on to the next generation. According to evolutionary theory, many (but not all) of the genes that animals and humans possess today are the result of natural selection.

The **evolutionary approach** to psychology assumes that the *behavior and mental processes* of animals and humans today are also affected by evolution through natural selection. Evolutionary psychologists see aggression, for example, as a form of territory protection, and they see gender differences in mate selection preferences as reflecting different ways of helping genes survive in future generations. The evolutionary approach has resulted in a growing body of research (e.g., Conroy-Beam & Buss, 2016; Lewis et al., 2017); in later chapters, you will see how it is applied in relation to topics such as mental disorders, temperament, interpersonal attraction, and helping.

The Psychodynamic Approach

The **psychodynamic approach** to psychology is rooted in Freud's theory of psychoanalysis. It assumes that our behavior and mental processes reflect the constant, and mostly unconscious, psychodynamic conflicts that are said to rage within us (see Figure 1.5). According to Freud, these conflicts occur when the impulse to instantly satisfy our instinctive needs—such as for food, sex, or aggression—are opposed by our learned need to follow society's rules about fairness and consideration for others. Psychologists taking a psychodynamic approach might see aggression as the triumph of raw impulses over self-control. At the same time, they consider anxiety, depression, and other psychological disorders as the outward evidence of inner conflict.

Freud's original theories are not as influential today as they once were (Mischel, 2004), but in other chapters you will see that modern versions of the psychodynamic approach still appear in various theories of personality, psychological disorders, and psychotherapy.

biological approach The view that behavior is the result of physical processes, especially those relating to the brain, to hormones, and to other chemicals.

evolutionary approach A view that emphasizes the inherited, adaptive aspects of behavior and mental processes.

psychodynamic approach A view developed by Freud that emphasizes unconscious mental processes in explaining human thought, feelings, and behavior.

FIGURE 1.5 What Do You See?

TRY THIS Take a moment to jot down what you see in these clouds. According to the psychodynamic approach to psychology, what we see in cloud formations and other vague patterns reflects unconscious wishes, impulses, fears, and other mental processes. As you will see in the personality chapter, some personality tests are based on this assumption.

Jack Hollingsworth/Getty Images

The Behavioral Approach

The **behavioral approach** to psychology contrasts sharply with the biological, evolutionary, and psychodynamic approaches. This approach is rooted in the behaviorism of Watson and Skinner. As mentioned earlier, classical behaviorism focused entirely on observable behavior and on how it is learned. So strict behaviorists concentrate on analyzing how life's rewards, punishments, and other learning experiences act on the "raw materials" provided by genes and evolution to shape behavior into what it is today. Whether they're trying to understand a person's aggressiveness, fear of spiders, parenting methods, or tendency to abuse drugs, behaviorists look mainly at that person's learning history. And because they believe that behavior problems develop through learning, behaviorists seek to eliminate those problems by helping people learn new and more adaptive responses.

behavioral approach A view based on the assumption that human behavior is determined mainly by what a person has learned in life, especially through rewards and punishments.

Strict behaviorism was criticized, though, precisely because it ignored everything but observable behavior. For that reason, many behaviorists now apply their learning-based

Why Is He So Aggressive?

Psychologists who take a cognitive behavioral approach suggest that behavior is not shaped by rewards and punishments alone. They say that children's aggressiveness, for example, is learned partly by being rewarded (or at least not punished), but also partly by seeing family and friends acting aggressively. Further, attitudes and beliefs about the value and acceptability of aggressiveness can be learned as children hear others talk about aggression as the only way to deal with threats, disagreements, and other conflict situations.

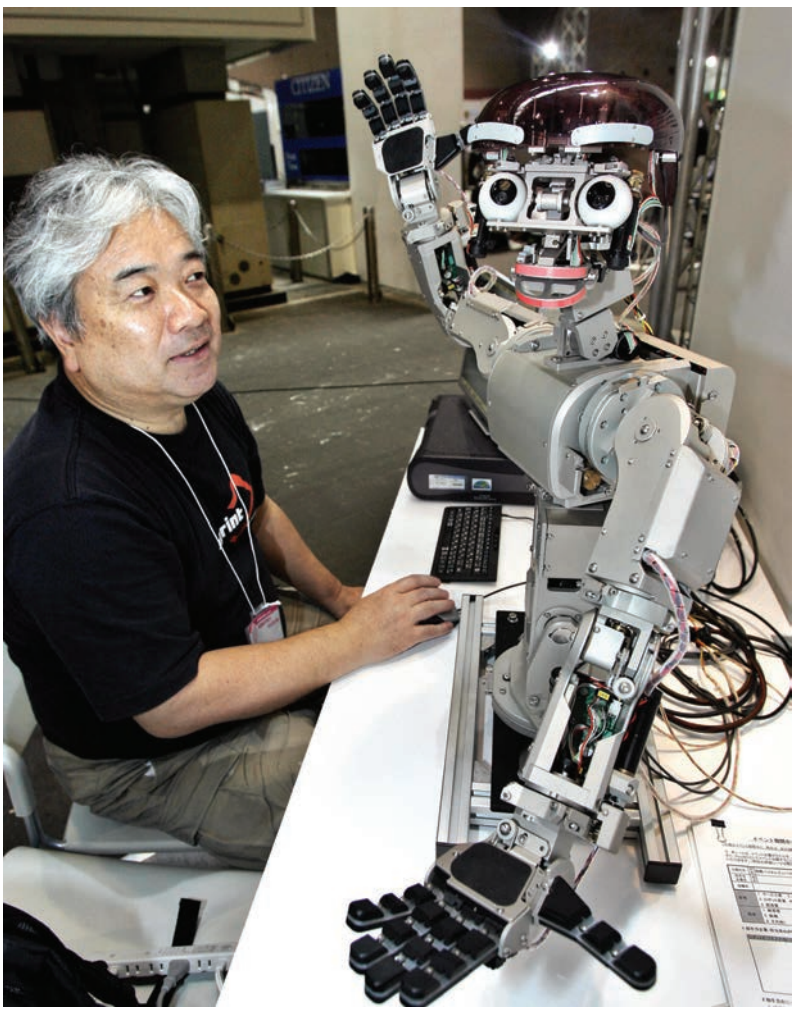
Mary Kate Denny/PhotoEdit

approach in an effort to understand cognitions (thoughts) as well as observable behavior. They use this *cognitive behavioral, or social-cognitive,* approach to explore topics such as how we learn our thoughts, attitudes, and beliefs and, in turn, how these learned cognitive patterns affect observable behavior.

The Cognitive Approach

The appearance of the cognitive behavioral approach was part of a more general emphasis on cognition in psychology. This **cognitive approach** focuses on how our behavior is affected by the ways we take in, mentally represent, process, and store information. Consider how the cognitive approach might guide the analysis of an incident of aggression: A person in line for movie tickets (1) *perceived* that someone had cut into the line, (2) *recalled* information stored in memory to judge that this act was inappropriate, (3) *decided* that the act was due to the other person's rudeness, (4) *labeled* the person as rude and inconsiderate, (5) *considered* several possible responses and their likely consequences, (6) *decided* that punching the other person was the best response, and then (7) *executed* that response. Psychologists who take a cognitive approach suggest that mental processes like these—some of which occur outside of awareness—can help us understand many kinds of individual and social behaviors, from decision making and problem solving to interpersonal attraction and intelligence. In the situation we just described, for example, the person's aggression would be seen as the result of poor problem solving because there were probably several better ways to deal with the problem of line cutting. The cognitive approach is especially important in the field of *cognitive science,* in which researchers

cognitive approach A view that emphasizes research on how the brain takes in information, creates perceptions, forms and retrieves memories, processes information, and generates integrated patterns of action.



Yoshikazu Tsuno/AFP/Getty Images

Cognitive Science at Work
Psychologists and other cognitive scientists are working on "computational theories of the mind" in which they create computer programs and robotic devices that simulate how humans process information. The chapter on thought, language, and intelligence describes some of their progress in creating "artificial intelligence" in computers that can help make medical diagnoses and perform other complex tasks, including the Internet searches you perform using Google and other search engines.

from psychology, computer science, biology, engineering, linguistics, and philosophy study intelligent systems in humans and computers. Some of their progress in creating artificial intelligence in computers is described in the chapter on thought, language, and intelligence.

The Humanistic Approach

Mental processes play a different role in the humanistic approach to psychology (also known as the *phenomenological approach*). Psychologists who favor the **humanistic approach** see behavior as determined primarily by our capacity to choose how to think and act. They don't see these choices being guided by instincts, biological processes, or rewards and punishments, but by each person's view of the world. If you perceive the world as a friendly place, you're likely to be optimistic and secure. If you perceive it as full of hostile people, you'll probably be defensive and anxious or perhaps unfriendly and aggressive. Like their cognitively oriented colleagues, psychologists who take a humanistic approach would agree that in the movie theater incident, the decision to punch the person who cut into line stemmed from a perception that aggression was justified. But unlike cognitive psychologists, humanistic psychologists try to understand how each individual's unique perceptions guided *that* person's thoughts and actions, rather than trying to find general laws governing *all* people's thoughts and actions. In fact, many who prefer the humanistic approach claim that because no two people are exactly alike, the only way to understand behavior and mental processes is to focus on how they operate in each individual. Humanistic psychologists see people as basically good, in control of themselves, and seeking to grow toward their fullest potential.

The humanistic approach first began to attract attention in North America in the 1940s, mainly through the writings of Carl Rogers and Abraham Maslow. As you'll see in later chapters, their views have had a major influence on the way some psychologists think about the development of personality, how to do psychotherapy, and why people are motivated to behave as they do. In fact, some of the roots of today's growing emphasis on positive psychology can be found in the writings of Maslow and Rogers. Overall, however, the humanistic approach is less influential today than the biological, cognitive, behavioral, and evolutionary approaches. Many psychologists find humanistic concepts and predictions too vague to be expressed and tested scientifically (McNulty & Fincham, 2012). (All the approaches described here are summarized in "In Review: Approaches to Psychology.")

humanistic approach A view of behavior as controlled by the decisions that people make about their lives based on their perceptions of the world.

Approaches to Psychology — IN REVIEW

Approach	Characteristics
Biological	Emphasizes activity of the nervous system, especially of the brain; the action of hormones and other chemicals; and genetics
Evolutionary	Emphasizes the ways that behavior and mental processes are adaptive for survival
Psychodynamic	Emphasizes internal conflicts, mostly unconscious, which usually pit sexual or aggressive instincts against environmental obstacles to their expression
Behavioral	Emphasizes learning, especially each person's experience with rewards and punishments
Cognitive	Emphasizes mechanisms through which people receive, store, retrieve, and otherwise process information
Humanistic	Emphasizes individual potential for growth and the role of unique perceptions in guiding behavior and mental processes

IN REVIEW QUESTIONS

1. Teaching people to be less afraid of heights reflects the _____ approach.
2. Charles Darwin was not a psychologist, but his work influenced the _____ approach to psychology.
3. Assuming that people inherit mental disorders suggests a _____ approach.

Human Diversity and Psychology

How does your cultural background influence your behavior?

Today, the diversity seen in psychologists' approaches to their work is matched by the diversity in their own backgrounds. This was not always the case. In the early twentieth century, most psychologists—like most members of other academic disciplines—were white, middle-class men (Walker, 1991). Even so, women and people of color played important roles in psychology almost from the beginning (Schultz & Schultz, 2011). Throughout this book you will find the work of their modern counterparts, whose contributions to research, service, and teaching have all increased as has their growing representation in psychology. In the United States, women now constitute about 68 percent of all psychologists currently working, and about 67 percent of those earning doctoral degrees in psychology (APA Center for Workforce Studies, 2015; National Science Foundation, 2015). Moreover, approximately 25 percent of new doctoral degrees in psychology are being earned by people of color (National Science Foundation, 2015). These numbers reflect continuing efforts by psychological organizations and governmental bodies, especially in the United States and Canada, to promote the recruitment, graduation, and employment of women and members of minority groups in psychology.

Mary Whiton Calkins (1863–1930)
Mary Whiton Calkins studied psychology at Harvard University, where William James described her as "brilliant." Because she was a woman, though, Harvard refused to grant her a doctoral degree unless she received it through Radcliffe, which was then an affiliated school for women. She refused, but went on to do research on memory and in 1905 became the first woman president of the American Psychological Association (APA). Margaret Washburn (1871–1939) encountered similar sex discrimination at Columbia University, so she transferred to Cornell and became the first woman to earn a doctorate in psychology. In 1921, she became the second woman president of the APA.

The Impact of Sociocultural Diversity on Psychology

As diversity among psychologists has increased, so too has their interest in the diversity of the people they study and serve (Rosmarin, 2016). This change is significant, because psychologists once assumed that all humans were essentially alike and that whatever principles emerged from research with one group would apply to people everywhere. They were partly right, because people around the world *are* alike in many ways. They tend to live in groups; have religious beliefs; and create rules, music, dances, and games. The principles of nerve cell activity or reactions to heat or a sour taste are the same in men and women everywhere, as is their recognition of a smile. This is not true of all characteristics, however. Research has shown that people's striving or achievement, their moral values, their styles of communicating, and many other aspects of behavior and mental processes are shaped by a variety of **sociocultural factors**, including gender, race, ethnicity, social class, and the culture in which they grow up (Matsumoto & Luang, 2016).

Culture has been defined as the sum of all the values, rules of behavior, forms of expression, religious beliefs, occupational choices, and the like among a group of people who share a common language and environment (Fiske et al., 1998). Culture is an organizing and stabilizing influence. It encourages or discourages particular behaviors and ways of thinking; it also allows people to understand others in that culture and know what to expect from them. It is a kind of group adaptation that is passed on by tradition and example, rather than by genes, from one generation to the next. Culture determines, for example, whether children's education will focus on hunting or reading, how close people stand when talking to each other, and whether or not they form lines in public places.

Cultures can differ in many ways. They may have strict or loose rules governing social behavior. They might place great value on achievement or on self-awareness. Some seek dominance over nature; others seek harmony with it. Time is of great importance in some cultures but not in others. Psychologists have tended to focus on the differences between cultures that can be described as individualist or collectivist (Miyamoto & Wilken, 2010; see Table 1.2). In *individualist* cultures, such as those typical of North America and Western Europe, people tend to focus on and value personal rather than group goals and achievement. Competitiveness to distinguish oneself from others is common, but so is a sense of isolation. By contrast, in *collectivist* cultures, such as those found in Japan and other parts of Asia, people tend to think of themselves as part of family or work groups. Cooperative effort aimed at advancing the welfare of those groups is highly valued. And although loneliness is rarely a problem, fear of rejection by the group is common. Many

sociocultural factors Social identity and other background factors, such as gender, race, ethnicity, social class, and culture.

culture The accumulation of values, rules of behavior, forms of expression, religious beliefs, and occupational choices for a group of people who share a common language and environment.

Gilbert Haven Jones (1883–1966) When Gilbert Haven Jones graduated from the University of Jena in Germany in 1909, he became one of the first African Americans to earn a doctorate in psychology. Many others were to follow, including J. Henry Alston, who was the first African American to publish research in a major U.S. psychology journal (Alston, 1920).

TABLE 1.2 Some Characteristics of Behavior and Mental Processes Typical of Individualist versus Collectivist Cultures

Psychologists and anthropologists have noticed that cultures can create certain general tendencies in behavior and mental processes among the people living in them. As shown here, individualist cultures tend to support placing one's personal goals before the goals of the extended family or work group, whereas collectivist cultures tend to encourage putting the goals of those groups ahead of personal goals. Remember, however, that these labels represent very rough categories. Cultures cannot be pigeonholed as being either entirely individualist or entirely collectivist, and not everyone raised in a particular culture always thinks or acts in exactly the same way (Na et al., 2010).

Variable	Individualist	Collectivist
Personal identity	Separate from others	Connected to others
Major goals	Self-defined; be unique; realize your personal potential; compete with others	Defined by others; belong; occupy your proper place; meet your obligations to others; be like others
Criteria for self-esteem	Ability to express unique aspects of the self; self-assurance	Ability to restrain the self and be part of a social unit; modesty
Sources of success and failure	Success comes from personal effort; failure is caused by external factors	Success is due to help from others; failure is due to personal faults
Major frame of reference	Personal attitudes, traits, and goals	Family, work group

aspects of mainstream U.S. culture—from self-reliant movie heroes and bonuses for "top" employees to the invitation to "help yourself" at a buffet table—reflect its tendency toward an individualist orientation (see Table 1.3).

We often associate cultures with particular countries, but in reality, most countries are *multicultural*. In other words, they host many cultural groups within their borders. For instance, the United States encompasses African Americans, Hispanic Americans,

TABLE 1.3 Cultural Values in Advertising

TRY THIS The statements listed here appeared in advertisements in Korea and the United States. Those from Korea reflect collectivist values, whereas those from the United States emphasize a more individualist orientation (Han & Shavitt, 1994). See if you can tell which are which; then check the bottom of page 20 for the answers. To follow up on this exercise, identify cultural values in ads you see in newspapers, magazines, billboards, television, and the Internet. By surfing the Internet or scanning international newspapers online, you can compare the values conveyed by ads in your culture with those in ads from other cultures.

1. "She's got a style all her own."
2. "You, only better."
3. "A more exhilarating way to provide for your family."
4. "We have a way of bringing people closer together."
5. "Celebrating a half-century of partnership."
6. "How to protect the most personal part of the environment: Your skin."
7. "Our family agrees with this selection of home furnishings."
8. "A leader among leaders."
9. "Make your way through the crowd."
10. "Your business success: Harmonizing with (company name)."

Source: Brehm, Kassin, & Fein (2005).

Robert F. Bukaty/AP Images

The Impact of Culture
Culture helps shape virtually every aspect of our behavior and mental processes, from how we dress to how we think to what we think is important. Because most people grow up immersed in a particular culture, they may not notice its influence on their thoughts and actions until—like these people who emigrated from Somalia to Lewiston, Maine—they encounter people whose culture has shaped them in different ways.

Asian Americans, and American Indians as well as people from the Middle East and European Americans whose families came from Italy, Germany, Britain, Greece, Poland, Sweden, Ireland, and many other places. In each of these groups, individuals who identify with their cultural heritage tend to share behaviors, values, and beliefs based on their culture of origin, thus forming a *subculture*.

Like fish unaware of the water in which they swim, most of us don't realize how strongly our culture or subculture has shaped our thoughts and actions until we come in contact with people whose culture or subculture has shaped them differently. Consider hand gestures, for example. The "thumbs-up" sign that means "everything is OK" to people in North America and Europe is considered a rude gesture in Australia, Nigeria, and Bangladesh. And although making eye contact during social introductions is usually seen as a sign of interest or sincerity in North America, it is likely to be considered rude in Japan (Axtell, 1998). Even some of the misunderstandings that occur between people in the same culture can be traced to slight, culturally influenced differences in communication (Tannen, 2001). In the United States, for instance, women's efforts to connect with others by talking may be perceived by many men as "pointless" unless the discussion is geared to solving a particular problem. As a result, women often feel frustrated and misunderstood by men, who tend to offer well-meant but unwanted advice instead of conversation (Tannen, 2007).

For decades, the impact of culture on behavior and mental processes was of concern mainly to a relatively small group of researchers working in *cross-cultural* psychology. As you will see in the chapters to come, however, psychologists in almost every subfield are now looking at how race, ethnicity, gender, age, sexual orientation, and many other sociocultural factors can influence the behavior and mental processes of the people they serve and the people they study.

Thinking Critically about Psychology (or Anything Else)

How can critical thinking save you money?

In order to appreciate the effects of sociocultural factors on behavior and mental processes, psychologists had to think about their field in new ways. For one thing, they had to question the assumption that studying people of just one gender, age range, ethnic

Uncritically accepting claims for the value of astrologer's predictions, "get-rich-quick" investments, unproven therapies, or proposed government policies can be embarrassing, expensive, and sometimes dangerous. Critical thinkers carefully evaluate evidence for and *against* such claims before reaching a conclusion about them.

group, or culture can tell us about people in general. Changing their thinking in this way has led to new insights but it took effort and sometimes tended to upset those who hold traditional views. No wonder, then, that some people prefer simply to accept what they are told, especially when it comes from a believable source. Some advertisers, politicians, and social activists hope for this kind of easy acceptance when they go after your money, your vote, or your loyalty. They want you to believe their promises or claims without careful thought on your part. In other words, they don't want you to think critically.

Critical thinking is the process of assessing claims and making judgments based on well-supported evidence (Wade, 1988). Raising tough questions is part of the process of critical thinking, but asking the right questions is not enough; you also have to have a method for answering them. Let's consider some of the questions that arise from thinking critically about psychology (or anything else) and then review the scientific research methods that psychologists use to try to answer those questions.

Five Questions for Critical Thinking

Francine Shapiro, a clinical psychologist in northern California, had an odd experience while taking a walk one day in 1987. She had been thinking about some distressing events when she noticed that her emotional reaction to them was fading away. She realized that she'd been moving her eyes from side to side, but had these eye movements caused the emotion-reducing effect? Perhaps, because when she made these same eye movements more deliberately, the effect was even stronger. Was this a fluke, or would the same thing happen to others? To find out, she tested the eye-movement effect in friends and colleagues and then with clients who had experienced childhood sexual abuse, military combat, rape, or other traumas. She asked the clients to recall these experiences while keeping their eyes focused on her finger as she moved it back and forth in front of their faces. They said that, just as Shapiro had found, their emotional reactions to the memories faded. They also reported that trauma-related problems such as nightmares, fears, and emotional flashbacks had decreased dramatically, often after only one session (Shapiro, 1989a). These successful case studies led Shapiro to develop a new treatment called *eye movement desensitization and reprocessing,* or *EMDR* (Shapiro, 1991). Today, Shapiro and thousands of other therapists in many countries are using EMDR to treat an ever-widening range of problems in children and adults, including phobias, posttraumatic and other stress disorders, eating disorders, alcoholism, drug addiction, pain, marital and family conflicts, personality disorders, and even skin rashes (e.g., Abel & O'Brien, 2015; De Jongh et al., 2016; Hase et al., 2015; Maroufi et al., 2016; Mosquera & Knipe, 2015; Shapiro & Laliotis, 2015; Staring et al., 2016; van den Berg et al., 2015).

Would the phenomenal growth of EMDR be enough to convince you to spend your own money on it? If not, what would you want to know about EMDR before deciding? As a cautious person, you would probably ask some of the same questions that have occurred to many scientists in psychology: Are the effects of EMDR caused by the

critical thinking The process of assessing claims and making judgments based on well-supported evidence.

ANSWER KEY FOR TABLE 1.3: U.S. ads are numbers 1, 2, 6, 8, and 9.

treatment itself or by the faith that clients might have in any new and impressive treatment? And are EMDR's effects faster, stronger, and longer lasting than those of other treatments?

Questioning what we are told is an important part of a more general critical thinking process that can help us make informed decisions about psychotherapy options as well as many other things, such as which pain reliever or Internet service provider to choose, which college to attend, what apartment to rent, which candidate to vote for, whether cell phones can cause cancer, and whether shark cartilage can cure it. One way of applying critical thinking to EMDR or any other topic is to ask the following five questions:

- **What am I being asked to believe or accept?** In this case, you are asked to believe that EMDR reduces or eliminates anxiety-related problems.
- **Is evidence available to support the assertion?** Shapiro began her EMDR research on herself. When she found the same effects in others, coincidence became an unlikely explanation for the observed changes.
- **Are there alternative ways of interpreting the evidence?** The dramatic effects that Shapiro's friends and clients experienced might have been due to their motivation to change or to their desire to please her, not to EMDR. And who knows? They might have eventually improved on their own without any treatment. In other words, even the most remarkable evidence cannot be accepted as confirming an assertion until all reasonable alternative explanations have been ruled out. Doing that leads to the next step in critical thinking: conducting scientific research.
- **What additional evidence would help evaluate the alternatives?** The ideal method for testing the value of EMDR would be to identify three groups of people who are identical in every way except for the anxiety treatment they receive. One group receives EMDR. The second group gets a treatment that is equally impressive and motivating, but has no real treatment value. The third group gets no treatment at all. If the EMDR group improves much more than the other two, then it is less likely that the changes following EMDR can be explained entirely by client motivation or the mere passage of time.
- **What conclusions are most reasonable? T**he evidence available so far has not ruled out alternative explanations for the effects of EMDR (e.g., Devilly, Ono, & Lohr, 2014; Follette, Papa, & Davis, 2015; Lilienfeld, 2011a). Those effects are often no better than other treatments, but they are better than no treatment at all (Bisson, 2007; Cvetek, 2008; Hughes, 2006; Lilienfeld & Arkowitz, 2007; Meysner, Cotter, & Lee, 2016; van den Hout et al., 2011). Other analyses suggest that EMDR may be no better than treatments that are merely impressive (e.g., Albright & Thyer, 2010; Herbert et al., 2000). Accordingly, the only reasonable conclusions to be drawn at this point are that (1) EMDR remains a controversial treatment, (2) it seems to have an impact on some clients with many different kinds of problems, and (3) further research is needed in order to better understand its effects and mechanisms of action.

Does that sound too tentative? Critical thinking sometimes does highlight uncertainty, but that's because scientific conclusions must be guided by the evidence available. When the evidence is not yet conclusive, the critical thinker cannot yet be certain about it. In the long run, though, critical thinking opens the way to understanding. (To help you sharpen your critical thinking skills, every chapter to come contains a feature in which the five critical thinking questions listed here are applied to a particularly interesting topic in psychology.) Let's now consider how psychologists translate critical thinking into scientific research.

Critical Thinking and Scientific Research

Scientific research often begins with questions based on curiosity, such as whether eye movements can reduce anxiety. Like many seemingly simple questions, this one is more complex than it first appears. Are we talking about horizontal, vertical, or diagonal eye movements? How long do they continue, and for how many treatment sessions? Are we

Taking Your Life in Your Hands?
Can microwave radiation from cell phones cause brain tumors? This question generates strong opinions, but the answer will come from research based on critical thinking. Though there is no conclusive evidence that cell phones cause tumors (e.g., Chapman et al., 2016; Inskip, Hoover, & Devesa, 2010; Kaufman, Anderson, & Issaragrisil, 2009), some scientists see danger in short- and long-term exposure (e.g., Hardell & Carlberg, 2015; Khurana et al., 2009; Volkow et al., 2011) and in prenatal and early postnatal exposure (Clinical Digest, 2011; Rosenberg, 2015). Research on this issue continues.

referring to mild or severe anxiety, and how will we measure improvement? In other words, scientists must ask specific questions in order to get meaningful answers.

Like other scientists, psychological scientists clarify their questions about behavior and mental processes by phrasing them in terms of a **hypothesis**—a specific, testable statement or proposition about something they want to study. In the case of EMDR, the hypothesis might be as follows: EMDR treatment causes a significant reduction in anxiety. To make it easier to understand and objectively evaluate their hypotheses, scientists employ **operational definitions**, which are statements describing the exact operations or methods they will use in their research. In other words, in a research study, the researcher has to decide ahead of time exactly how each element will be measured or manipulated. In the hypothesis just proposed, EMDR treatment might be operationally defined as a specific number of back-and-forth eye movements over a particular period of time. "Significant reduction in anxiety" might be operationally defined as a reduction of at least ten points on a test that measures anxiety. The kind of treatment a client is given (say, EMDR versus no treatment) and the results of that treatment (how much anxiety reduction occurred) are examples of research **variables**, the specific factors or characteristics that are altered and measured in research.

In addition to collecting evidence, scientists must also check on how good it is. Usually, the quality of evidence is evaluated in terms of two characteristics: statistical reliability and statistical validity. **Statistical reliability** (usually just called reliability) is the consistency of the evidence that is obtained. **Statistical validity** (usually just called validity) is the degree to which the evidence accurately represents the topic being studied. For example, if Shapiro had not been able to repeat (or *replicate*) the eye movement effects with others or if only a few clients had shown improvement, one would question the reliability of her evidence. If the clients' reports of improvement were not supported by, say, changes in their overt behavior or confirming statements by close relatives, she would doubt their validity.

The Role of Theories After examining data from research, scientists may start to favor certain explanations as to why the results occurred. Sometimes they organize their explanations into a **theory**, which is a set of statements designed to explain certain phenomena. Shapiro's theory about EMDR suggests that eye movements activate parts of the brain in which information about trauma or other unpleasant experiences has been stored but never fully processed. EMDR, she says, promotes the "adaptive information processing" required for the elimination of anxiety-related emotional and behavioral

hypothesis In scientific research, a specific, testable proposition about a phenomenon.

operational definitions Statements that define phenomena or variables by describing the exact research operations or methods used in measuring or manipulating them.

variables Specific factors or characteristics that can take on different numerical values in research.

statistical reliability The degree to which test results or other research evidence occur repeatedly.

statistical validity The degree to which evidence from a test or other research method measures what it is supposed to measure.

theory An integrated set of propositions used to explain certain phenomena, including behavior and mental processes.

problems (Solomon & Shapiro, 2008). Others (e.g., Lee, Taylor, & Drummond, 2006) suggest that EMDR may help troubled people think about stressful material in a more detached, less emotional way, perhaps as in a dream (Elofsson et al., 2008), or that EMDR may work by putting a strain on a person's memory (Onderdonk & van den Hout, 2016; van den Hout et al., 2011). Because theories are tentative explanations, they must be examined scientifically using critical thinking about the evidence for and against them. For example, Shapiro's theory about EMDR has been criticized as vague, not well supported by evidence, and less plausible than other, simpler explanations (e.g., Carpenter, 2004; Devilly, 2002; Gaudiano & Dalrymple, 2005; Herbert et al., 2000; Leeds, 2016; Lilienfeld, Lynn, & Lohr, 2004; Lohr et al., 2003; Zalta, 2015). Although a psychologist's theory may be based on research results, it usually also generates predictions that stimulate additional research. These predictions will be tested by many other psychologists, and the theory will be revised or even abandoned if research does not support it.

The process of creating, evaluating, and revising psychological theories may not always lead to a single "winner." You will discover in the chapters ahead that there are several possible explanations for color vision, mental disorder, prejudice, and many other aspects of behavior and mental processes. As a result, final conclusions about psychology are not as easy to come by as you might wish. That is why the conclusions offered in this book are always based on what is known so far, and the need for further research is almost always highlighted. That's because scientific research usually poses at least as many new questions as it answers. For example, EDMR or some other treatment might work well for mild depression in women, but would it work as well for men or for cases of severe depression? Answering those questions would require more research.

Keep these points in mind the next time you encounter supposedly simple solutions for complex problems such as obesity or anxiety, or easy formulas for a happy marriage and well-behaved children. Many self-proclaimed experts gain notoriety by promoting solutions that oversimplify problems, citing evidence that supports their views without concern for its reliability or validity, and ignoring evidence that contradicts their pet theories. Psychological scientists must be more cautious, delaying judgments about behavior and mental processes until they have collected enough scientific evidence to support those judgments (Fischoff & Davis, 2014). As they evaluate theories and draw conclusions, psychological scientists are guided not only by the research methods described in the next section but also by the *law of parsimony*, summed up less scientifically as KISS (Keep It Simple, Stupid). The law of parsimony is based on lessons from the long history of science. It suggests that when many alternative assertions or several competing theories all offer convincing explanations of something, the simplest explanation is most often correct.

Throughout this book you will see examples of how the law of parsimony has helped psychological scientists sift and refine explanatory theories in search of the ones that offer the simplest yet fullest understanding of behavior and mental processes.

You will also see that research in psychological science has created an enormous body of knowledge that is being put to good use in many ways. That knowledge forms the foundation for future research that will no doubt lead to even deeper understanding. Let's look now at the scientific methods that psychologists use in their research and at some of the pitfalls that lie in their path.

Turbo/Getty Images

Little Reminders
If you asked this man what he needs to use various computer programs efficiently, he might not think to mention the notes on his monitor that list his usernames and passwords. Accordingly, researchers in human factors, social psychology, and industrial and organizational psychology arrange to watch employees at work (sometimes using eye-glass mounted point-of view cameras) to get a clear idea of what they do, how they do it, and how they interact with machines and fellow employees (e.g., Lahlou, 2011).

Research Methods in Psychology

How do psychologists learn about people?

Like other scientists, psychologists try to achieve four main goals in their research: to *describe* a phenomenon, to *make predictions* about it, and to introduce enough *control* in their research to allow them to *explain* the phenomenon with some degree of confidence. Five research methods have proven especially useful for gathering the evidence needed to reach each of these goals. They include *observational methods, case studies, surveys, correlational studies,* and *experiments.*

ZUMA Press, Inc./Alamy Stock Photo

Learning from Rare Cases

We can learn a great deal from studying individual cases such as Dr. Temple Grandin, whose autism has not prevented her from becoming a professor of animal science, a noted advocate for the humane treatment of livestock, a best-selling author, and a champion of the rights of people with autistic spectrum disorders. Other case studies have focused, for example, on people who can correctly identify the day of the week for any date in the past or the future or tell at a glance that, say, exactly 125 paper clips are scattered on the floor. By carefully studying such rare cases, cognitive psychologists are learning more about human mental capacities and how they might be maximized in everyone (e.g., Biever, 2009; Geddes, 2008).

Observational Methods: Watching Behavior

Sometimes, the best way to describe behavior is through **observational methods**, such as **naturalistic observation**, the process of watching without interfering as behavior occurs in the natural environment (Hoyle, Harris, & Judd, 2002). This method is especially valuable when more intrusive methods might alter the behavior you want to study. For example, if you ask people to keep track of how often they exercise, they might begin to exercise more than usual, so their reports would give a false impression of their typical behavior. Much of what we know about, say, gender differences in how children play and communicate with one another has come from psychologists' observations in classrooms and playgrounds. Observations of adults, too, have provided valuable insights into friendships, couple communication patterns, responses to terrorism, and how employee teams work together (e.g., Mehl & Pennebaker, 2003a, 2003b; Phelps et al., 2016).

Observational methods can provide a lot of good information, but they are not without problems. For one thing, people may act differently when they know they're being watched (and research ethics usually require that they do know). To combat this problem, researchers try to observe people long enough so that they get used to the situation and begin to behave more naturally. Still, observations can be incomplete or misleading if the observers are not well trained or if they report what they expect to see rather than what actually occurs. Further, even the best observational methods don't allow researchers to draw conclusions about what is causing the behavior being observed.

Observations are often an important part of **case studies**, which are intensive examinations of behavior or mental processes in a particular individual, group, or situation. Case studies can also include tests, interviews, and the analysis of letters, school transcripts, medical charts, or other written records (Matthews et al., 2016). Case studies are especially useful when studying something that is new, complex, or relatively rare (Sacks, 2002). Francine Shapiro's EMDR treatment, for example, first attracted psychologists' attention through case studies of its remarkable effects on her clients (Shapiro, 1989b).

Case studies have played a special role in neuropsychology, an area of psychological science that focuses on the relationships among brain activity, thinking, and behavior. Consider the case of Dr. P., a patient described by neurologist Oliver Sacks (1985). Dr. P. was a distinguished musician who began to show odd symptoms. He could not recognize familiar people or other objects when he viewed them. For instance, while he and his wife were at the neurologist's office, Dr. P. looked at his foot and mistook it for his shoe. When he rose to leave, he tried to lift off his wife's head as if it were a hat and put it on his own head. He could not name common objects that were in front of him, but he could describe what he saw. When shown a glove, for example, he said, "A continuous surface, infolded on itself. It appears to have … five outpouchings, if this is the word … a container of some sort." Only later, when he put it on his hand, did he exclaim, "My God, it's a glove!" (Sacks, 1985, p. 13). Using case studies such as this one, neuropsychologists have been able to describe the symptoms that commonly occur in association with different kinds of brain damage or disease (Heilman & Valenstein, 2011). Eventually, neuropsychologists were able to tie specific disorders to specific causes (Lezak et al., 2012). In Dr. P.'s case, a large brain tumor caused his symptoms.

Case studies have limitations, though. They may not represent people in general and may contain only the evidence a particular researcher considered important (Loftus & Guyer, 2002). Nonetheless, when conducted and used with care, case studies can give a unique glimpse into new phenomena, and these discoveries provide valuable raw material for innovative research that can address novel ideas more systematically.

observational methods Procedures for systematically watching behavior in order to summarize it for scientific analysis.

naturalistic observation The process of watching without interfering as a phenomenon occurs in the natural environment.

case studies Research involving the intensive examination of some phenomenon in a particular individual, group, or situation.

surveys Research that involves giving people questionnaires or interviews designed to describe their attitudes, beliefs, opinions, and intentions.

Surveys: Looking at the Big Picture

In contrast to the individual close-ups provided by case studies, surveys offer wide-angle views of large groups. In **surveys**, researchers use interviews or questionnaires to ask people about their behavior, attitudes, beliefs, opinions, or intentions. Just as politicians and advertisers rely on opinion polls to test the popularity of policies or products,

Rob Melnychuk/Digital Vision/Getty Images

Designing Survey Research

TRY THIS How do people feel about whether gay and lesbian couples should have the right to legally marry? To appreciate the difficulties of survey research, try writing a question about this issue that you think is clear enough and neutral enough to generate valid data. Then ask some friends whether or not they agree it would be a good survey question and why.

psychologists use surveys to gather descriptive data on all kinds of behavior or mental processes, from parenting practices to sexual behavior. However, the validity of survey data can depend on the questions (Wahl, Svensson, & Hydén, 2010). In one survey study at a health clinic, patients were asked how often they experienced headaches, stomach aches, and other symptoms of illness (Schwarz & Scheuring, 1992). When the wording of the question suggested that most people frequently experience such symptoms, the patients said that they frequently experienced them, too. But when the wording suggested that people rarely experience these symptoms, respondents said that they seldom had such symptoms. A survey's validity also depends on who is surveyed. If the respondents don't represent the views of the population you want to study, the survey results can be misleading (Gosling et al., 2004; Kraut et al., 2004). For example, if you were interested in Americans' views on how common racial prejudice is, you would come to the wrong conclusion if you surveyed only African Americans or only European Americans. To get a complete picture, you would have to survey people from many ethnic groups so that a wide range of opinions could be represented.

Some limitations of the survey method are harder to avoid. For example, a poll conducted for the American Society for Microbiology (ASM) found that 92 percent of the U.S. adults surveyed said that they always wash their hands after using public toilet facilities. However, watching thousands of people in public restrooms across the United States revealed that the figure is closer to 77 percent (Harris Interactive, 2007). In other words, people may be unwilling to admit undesirable or embarrassing things about themselves or they may say what they believe they *should* say about an issue, even online (Fang, Prybutok, & Wen, 2016; Uziel, 2010). These tendencies can create a response bias, meaning that a survey's results are skewed toward socially desirable responses. And by definition, they reflect only the views of people who are willing to take surveys (Hoyle, Harris, & Judd, 2002). Still, surveys are an efficient way to gather large amounts of data about people's attitudes, beliefs, or other characteristics.

Correlational Studies: Looking for Relationships

Data collected using observational methods, case studies, and surveys help describe behavior and mental processes, but they can do more than that. We can examine these data to see what they reveal about the relationships between research variables. For