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# Understanding **Psychology**

TWELFTH EDITION



CHARLES G. MORRIS

ALBERT A. MAISTO

 Pearson

# Understanding Psychology

Twelfth Edition

**Charles G. Morris**

**Albert A. Maisto**



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# Preface

## Continued Focus on Basic Unifying Concepts

In this new edition, we continue to focus on three unifying, basic concepts, which have been woven throughout every edition of our texts:

- 1. Psychology is a science that is rapidly evolving.** From the thousands of articles that have appeared during the past several years, we selected more than 300 new references for this edition, almost all of which are from 2013–2016. Examples of new material include common myths about psychology, the “replication crisis,” the influence of color on psychological functioning, neuroimaging of dreaming, effects of marijuana, binge drinking, increased heroin use, mindful meditation, role of images and concepts in thinking, Kahneman and Tversky’s System 1 and System 2, multitasking and cellphone use while driving, “brain training,” eating disorders, sexual orientation, attachment theory, early- and late-maturers, youth violence, personality change in young adulthood, the changing role of marriage, Holland’s approach to career choice, cognitive-social learning theories, preparing for the impact of climate change, resilience, group walks in nature, the effects of mental health stigma, diagnosis of gender dysphoria, specific phobias, positive and negative symptoms of schizophrenia, basis of systematic desensitization, and combating “fake news.”
- 2. Human behavior and thought are diverse, varied, and affected by culture.** We have continued to give close attention to diversity. Woven throughout the chapters we emphasize the importance of understanding the role culture, gender, and human diversity play in shaping virtually every aspect of human behavior including: cognition, learning, memory, emotion, motivation, stress, mental illness, sexuality, development, perception, and drug effects.
- 3. The study of psychology involves active thinking, questioning, and problem solving.** We retained all of the “Thinking Critically” exercises and now encourage students to actively weigh in through Journal Prompts tied to these features in Revel. The topics encourage the reader to engage in genuine critical thinking by questioning the methods used to gather data, considering possible alternative explanations for findings, and imagining further research that might shed additional light on the phenomenon under study.

## Continuing Attention to Enduring Issues

We believe that an important part of active learning is for students to recognize recurring themes that run through the material they are reading. In Chapter 1, we introduce a set of

five **Enduring Issues** that cut across and unite all subfields of psychology (see pages 7–8):

- **Person–Situation:** To what extent is behavior caused by processes that occur inside the person, such as thoughts, emotions, and genes? In contrast, to what extent is behavior caused or triggered by factors outside the person, such as incentives, cues in the environment, and the presence of other people?
- **Nature–Nurture:** Is the person we become a product of innate, inborn tendencies, or a reflection of experience and upbringing?
- **Stability–Change:** Are the characteristics we develop in childhood more or less permanent and fixed, or do we change in predictable (and unpredictable) ways over the course of our lives?
- **Diversity–Universality:** Because we are all human, each person is like every other person. But in some respects, each person is only like certain other people. And in other respects, each of us is like no other person. Thus, anywhere humans exist there will be both similarity and diversity.
- **Mind–Body:** How are mind and body connected? Many psychologists are fascinated by the relationship between what we experience, such as thoughts and feelings, and biological processes, such as activity in the nervous system.

These five issues represent enduring themes in the history of psychology. Depending on the events and intellectual climate of a given time period, one or another of these issues has assumed special prominence. For example, the role of genetics (heredity) is receiving much greater attention today than it has in the past. Diversity is also an issue of much greater concern, as is the role of biological processes.

Throughout this book, we will highlight the importance of these matters. Each chapter opens with a section highlighting the enduring issues to be encountered in that chapter. Several times in each chapter we will call the reader’s attention to the way in which the topic under consideration—whether it be new discoveries about communication within the nervous system, research into how we learn, or the reason that people abuse drugs—reflects one of these issues. In this way, we will show the surprising unity and coherence of the diverse and exciting science of psychology.

### LEARNING OBJECTIVES

The chapter learning objectives were carefully written to cover the content of each chapter and to ensure that students who master the objectives will indeed have a thorough grasp of the material. The objectives also help to organize the supplementary material, allowing for easy customization by instructors.

### OPENING VIGNETTES

Each chapter of our text begins with an opening vignette. Reviewers have often commented on how useful it is to have the

vignette woven throughout the chapter to help students understand and apply information.

## New to This Edition

With each new edition, we strive to make the text as current as possible. This is always a challenge because psychology is changing so rapidly. We have cited more than 300 new references in this edition in an effort to capture the most important new developments. We have also updated numerous figures with the most recent data available.

We also strive to improve the book based on suggestions from the professors and students who use the current edition. We were especially fortunate to have extremely thoughtful and helpful comments and suggestions from a dozen reviewers. We have taken their input to heart in every chapter with what we believe are significant improvements.

We have added a number of features that we hope will engage students more fully in what they are learning. There are dozens of new surveys, Journal Prompts, videos, and animations as can be seen in the list of new content below. The expanded Revel edition provides even more interactive features designed to increase student involvement.

At the same time, our original goals for this book remain the same. We wanted to present a scientific, accurate, and thorough overview of the essential concepts of psychology; to use engaging language that students can easily comprehend; to be current without being trendy; and to write clearly and accessibly about psychology and its concrete, real-life applications—without being condescending to the introductory-level student.

### CHAPTER 1 The Science of Psychology

- Chapter reorganized and new material added to increase student involvement/interest
- New chapter introduction
- New survey: What Do You Know About Psychology?
- New material on subfields of psychology
- New Explore the Concept: Major Subfields of Psychology
- New section Critical Thinking: Thinking Like a Scientist
- New Social Explorer: Percentage of Women Recipients of PhDs in Psychology 1950–2010
- New Journal Prompt: Thinking Critically About Psychology and Minority Students
- New survey: Participating in a Research Survey
- New video: Independent vs. Dependent Variables
- New section: A Replication Crisis?
- New material on the importance of sampling/diversity
- New Journal Prompt: Thinking Critically About Internet Users
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 5 revised end-of-module quizzes and a new end-of-chapter quiz
- 17 new references

### CHAPTER 2 The Biological Basis of Behavior

- New video: Structure of the Neuron
- New video: Sensory and Motor Neurons
- New Journal Prompt: Thinking Critically About Mirror Neurons
- New video: The Neural Impulse Action Potential
- New video: The Synapse
- New video: Reuptake of Dopamine
- New Explore the Concept: The Divisions of the Brain
- New figure displaying the four lobes of the cerebrum
- New Explore the Concept: The Four Lobes of the Cerebrum
- New figure of the limbic system displaying additional features
- New glossary term: cingulate cortex
- New figure of sympathetic and parasympathetic nervous system
- New Journal Prompt: Thinking Critically About Tools for Studying the Brain
- New video: The Spinal Cord Reflex
- New Explore the Concept: Functions of the Parasympathetic and Sympathetic Divisions of the Nervous System
- New survey: Do You Fight or Fly?
- New figure of the endocrine system
- New Explore the Concept: The Glands of the Endocrine System
- New video: Chromosomes and DNA
- New Journal Prompt: Thinking Critically About Media Accounts of Research
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 5 revised end-of-module quizzes and a new end-of-chapter quiz
- 29 new references

### CHAPTER 3 Sensation and Perception

- New material at the start of the chapter that distinguishes sensation from perception
- New survey: Which Senses Do You Use?
- New Journal Prompt: Thinking Critically About Advertising and Subconscious Messages
- New video: Structure of the Eye
- New Explore the Concept: Interactive Eye Anatomy
- New material on the influence of color on psychological functioning
- New Explore the Concept: Color Vision in Different Species
- New Explore the Concept: Sound
- New Journal Prompt: Thinking Critically About an Ancient Question

- New video: Cochlear Implant
- New Journal Prompt: Thinking Critically About Pheromones
- New video: The Tongue and Taste Buds
- New Explore the Concept: Binocular Cues to Depth Perception
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 5 revised end-of-module quizzes and a new end-of-chapter quiz
- 9 new references

#### **CHAPTER 4 States of Consciousness**

- New survey: What Altered States Have You Experienced?
- New video: Sleep Stages
- Updated terminology revising the stages of sleep
- New Journal Prompt: Thinking Critically About Sleep Deprivation
- New video: Sleep Disorders
- New Journal Prompt: Thinking Critically About Sleep Loss and Illness
- New survey: Are Dreams Meaningful?
- New material on the neuroimaging of dreaming
- New Explore the Concept: Activation and Synthesis Theory of Dreaming
- New material on increased potency of marijuana
- New survey: What Drugs Have You Used?
- New Social Explorer: Teenage Use of Alcohol
- Revised and updated material on Binge Drinking
- New Social Explorer: Persons Killed in Alcohol-Related Traffic Crashes
- New material on increased heroin use in the United States
- New Social Explorer: Teenage Use of Ecstasy
- New Social Explorer: Teenage Use of Marijuana
- New material on the effects of the early use of marijuana
- New Journal Prompt: Teenage Use of Marijuana
- New material on the use of mindful meditation to relieve chronic pain
- New material on the clinical applications of hypnosis
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 4 revised end-of-module quizzes and a new end-of-chapter quiz
- 29 new references

#### **CHAPTER 5 Learning**

- New Explore the Concept: Elements in Classical Conditioning
- New video: Classical Conditioning: An Involuntary Response

- New Explore the Concept: Elements of Operant Conditioning
- New video: Negative Reinforcement
- New Journal Prompt: Thinking Critically About Corporal Punishment
- New Journal Prompt: Biofeedback and Neurofeedback
- New video: Schedules of Reinforcement
- New Explore the Concept: Examples of Reinforcement in Everyday Life
- New Journal Prompt: Thinking Critically About Reinforcement Schedules
- New Social Explorer: Response Acquisition and Extinction in Classical Conditioning
- New Social Explorer: Results of the Tolman and Honzik Study
- New Social Explorer: Results of Bandura's Study
- New survey: What Learning Techniques Do You Use?
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 4 revised end-of-module quizzes and a new end-of-chapter quiz
- 6 new references

#### **CHAPTER 6 Memory**

- New video: Inattentional Blindness
- New video: Improving Your Memory Using Mnemonics
- New Journal Prompt: Thinking Critically About Types of Memory
- New video: The Neuroscience of Memory
- New Explore the Concept: The Biological Basis of Memory
- New video: Reasons for Forgetting
- New material on music as a retrieval cue
- New Journal Prompt: Thinking Critically About Eyewitness Testimony
- New survey: What Do You Remember?
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 6 revised end-of-module quizzes and a new end-of-chapter quiz
- 12 new references

#### **CHAPTER 7 Cognition and Mental Abilities**

- Extensively rewritten and reorganized to reduce length, increase student involvement and interest, and build stronger bridges between sections of the chapter
- New chapter introduction
- New video: Cognitive Advantages of Multilingualism
- New material on the role of images and concepts in thinking

- Additional examples of problem solving to clarify concepts
- New Journal Prompt: Thinking Critically About Solving Problems
- Clearer explanation of compensatory decision making
- New material on Kahneman and Tversky's System 1 and System 2 (thinking fast and slow)
- New material on multitasking and cellphone use while driving
- Explore the Concept: Measuring Intelligence
- New Journal Prompt: Thinking Critically About Multiple Intelligences
- New Social Explorer: IQ Scores and Family Relationships
- New material on "brain training"
- New Journal Prompt: Thinking Critically About the Flynn Effect
- New Journal Prompt: Thinking Critically About International Comparisons of School Achievement
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 7 revised end-of-module quizzes and a new end-of-chapter quiz
- 27 new references

## CHAPTER 8 Motivation and Emotion

- New survey: What Motivates You?
- New Journal Prompt: Thinking Critically About Primary Drives
- New video: Maslow's Hierarchy of Needs
- New Summary Table: Perspectives on Motivation
- New material on eating disorders
- New figure on rising obesity among American youth
- New video: The Human Sexual Response Cycle
- New material on sexual orientation
- New video: Sexual Orientation
- New video: Nature/Nurture of Sexual Orientation
- New video: Factors Influencing Aggression
- New survey: How Do You Deal with Your Emotions?
- New material on how the brain reads the face
- New Summary Table: Theories of Emotion
- New Journal Prompt: Thinking Critically About Nonverbal Communication of Emotion
- New video: Display Rules
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 5 revised end-of-module quizzes and a new end-of-chapter quiz
- 21 new references

## CHAPTER 9 Life-Span Development

- Extensively rewritten and reorganized to reduce length
- New Explore the Concept: Advantages and Disadvantages of Different Types of Developmental Research Methods
- Additional examples of teratogens
- New video: Newborn Reflexes
- New Social Explorer: Synaptic Density in the Human Brain from Infancy to Adulthood
- New Explore the Concept: Piaget's Stages of Cognitive Development
- Expanded coverage of attachment theory
- New video: Attachment
- New Explore the Concept: Erickson's Eight Psychosocial Stages
- New video: Parenting Styles
- New survey: Gender and Sexuality
- New Journal Prompt: Thinking Critically About Television's Effects
- New material on early- and late-maturers
- New Social Explorer: Sex Among High School Students
- New material on youth violence
- New Journal Prompt: Thinking Critically About Kids Who Kill
- New material on personality change in young adulthood
- New material on the ways in which the role of marriage is changing
- New Social Explorer: Marital Satisfaction
- New material on Holland's approach to career choice
- New data on dual-career families
- New Social Explorer: Psychological Well-Being Across the Life-Span
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 7 revised end-of-module quizzes and a new end-of-chapter quiz
- 48 new references

## CHAPTER 10 Motivation and Emotion

- New survey: What Has Shaped Your Personality?
- New material on the Big Five Dimensions of Personality
- New material on cognitive-social learning theories
- New Journal Prompt: Thinking Critically About Cultural Universals
- New Explore the Concept: Theories of Personality
- New video: The Rorschach Test
- New end-of-chapter shared writing assignment
- New flashcards for key terms

- 5 revised end-of-module quizzes and a new end-of-chapter quiz
- 14 new references

### **CHAPTER 11 Stress and Health Psychology**

- New Social Explorer: Sources of Stress in America
- New survey: The Undergraduate Stress Questionnaire
- New material on ways health professionals are preparing for the impact of climate change
- New Journal Prompt: Thinking Critically About Road Rage and You
- New Explore the Concept: Types of Conflict
- New material on learning to be resilient
- New material on the benefits of group walks in nature
- New Journal Prompt: Thinking Critically About Group Walks in Nature
- New Explore the Concept: Coping with Stress
- New Social Explorer: Mental Trauma in Societies at War
- New Journal Prompt: Thinking Critically About Posttraumatic Stress
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 6 revised end-of-module quizzes and a new end-of-chapter quiz
- 30 new references

### **CHAPTER 12 Psychological Disorders**

- New survey: Attitudes Toward and Experiences with Psychological Disorders
- New video: Controversies Surrounding the DSM
- All new section and material: The Effects of Stigma on a Diagnosis of Mental Illness
- New Social Explorer: Gender and Race Differences in the Suicide Rate Across the Life Span
- New table: Some Common Specific Phobias
- New video: Panic Attacks
- New material addressing the diagnosis of gender dysphoria
- New video: Gender Dysphoria
- New Journal Prompt: Thinking Critically About Causation
- New information describing the positive and negative symptoms of schizophrenia
- New video: Schizophrenia
- New Journal Prompt: Thinking Critically About Genius and Mental Disorders
- New end-of-chapter shared writing assignment

- New flashcards for key terms
- 3 revised end-of-module quizzes and a new end-of-chapter quiz
- 32 new references

### **CHAPTER 13 Therapies**

- New interactive using therapy dialogs
- New information on basis of systematic desensitization
- New introduction to cognitive-behavioral therapy
- New Social Explorer: Percent of Adults Participating in Mental Health Treatment
- Updated list of resources for finding mental health professionals
- New Journal Prompt: Thinking Critically About Survey Results
- New Social Explorer: Duration of Therapy and Improvement
- New Journal Prompt: Thinking Critically About Access to Mental Health Care
- New video: Electroconvulsive Therapy
- New Explore the Concept: Major Perspectives on Therapy
- New survey: How Do You Take Care of Your Mental Health?
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 8 revised end-of-module quizzes and 1 new end-of-chapter quiz
- 11 new references

### **CHAPTER 14 Social Psychology**

- New video: Cognitive Dissonance
- New Journal Prompt: Thinking Critically About Attitudes Toward Smoking
- New Applied Psychology box: Combating the Impact of Fake News
- New video: Asch's Experiment on Conformity
- New video: Obedience to Authority
- New video: The Stanford Prison Experiment
- New Journal Prompt: Thinking Critically About Helping Someone in Distress
- New survey: Could You Be a Hero?
- New end-of-chapter shared writing assignment
- New flashcards for key terms
- 4 revised end of chapter quizzes and a new end-of-module quiz
- 31 references

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## About the Authors

**Charles G. Morris** received his B.A. from Yale University (1962) and his M.A. (1964) and Ph.D. (1965) in psychology from the University of Illinois. He joined the University of Michigan in 1965 where he served until his retirement in 2002. From 1972–1977, he served as Associate Dean in the College of Literature, Science and the Arts. From 1980–1990, he served as Associate Chair of the Department of Psychology. Upon his retirement in 2002, he was appointed Emeritus Professor. He is a Fellow of the American Psychological Association and the American Psychological Society.

Morris has written more than two dozen books, numerous articles, and more than 30 papers and presentations. His books include *Psychology: An Introduction, Understanding Psychology, Basic Psychology, Psychology: Concepts and Applications, Psychology: The Core*, and *Contemporary Psychology and Effective Behavior*.

His early research centered on leadership, group interaction, and group problem solving. More recently, his publications and presentations have focused on various aspects of undergraduate education, on contemporary views of leadership, and on the “Big 5” personality traits.

**Albert A. Maisto**, the Carnegie Foundation’s U.S. Professor of the Year for 1997–1998, is the Bonnie E. Cone Distinguished Professor

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His books include *Psychology: An Introduction, Understanding Psychology, Basic Psychology, Psychology: Concepts and Applications*, and *Psychology: The Core*.

Earlier in his career, he served as a visiting Professor to the University of Nottingham in England, and he spent two years on the faculty of the University of Connecticut. Throughout his career, Dr. Maisto has distinguished himself as an exemplary instructor of general psychology, winning the prestigious Bank of America Award for Teaching Excellence.

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*Charles G. Morris*

*Albert A. Maisto*

# Chapter 1

# The Science of Psychology



## Learning Objectives

- LO 1.1** Define *psychology*, and describe some of the major subfields within psychology.
- LO 1.2** Describe the five enduring issues that cut across the subfields of psychology.
- LO 1.3** Explain what psychology has in common with other sciences, how psychologists use the scientific method, and the difference between theories and hypotheses.
- LO 1.4** Characterize critical thinking by its various steps.
- LO 1.5** Describe the emergence of scientific psychology in the late 19th and early 20th centuries.
- LO 1.6** Explain the roles voluntarism, structuralism, functionalism, and psychodynamic theory played in initially defining psychology as “a science of the mind.”
- LO 1.7** Explain how Watson and Skinner redefined the field of psychology.
- LO 1.8** Describe what is meant by “the cognitive revolution” in psychology.
- LO 1.9** Explain how evolutionary psychology and positive psychology are changing the focus of contemporary psychology.
- LO 1.10** Describe the role of women in the history of psychology.

**LO 1.11** Discuss the ways in which knowledge and awareness of human diversity can and does inform and enrich psychological study.

**LO 1.12** Describe the characteristics, strengths, and weaknesses of naturalistic observation, case studies, surveys, and correlational research.

**LO 1.13** Describe the differences between independent and dependent variables and between control groups and experimental groups.

**LO 1.14** Differentiate between random and representative samples, and describe the factors that can influence a research study.

**LO 1.15** Identify key ethical issues in psychological research with humans and nonhumans.

Why are you taking a psychology course? What would you like to learn from it? What questions would you like to have answered? When students like you were asked these questions, they mentioned things like:

- Is multi-tasking effective?
- How much of a person's behavior is inherited?
- How do drugs like marijuana and cocaine work? Why do people get addicted to some drugs?
- How valid are IQ tests? Do IQ tests and tests like the SAT and ACT really tell us how well we are likely to do in school and college?
- What is the best and most effective way to learn?
- Why do we forget things that we want to remember?
- Do online brain-training exercises work?
- Why is talking on a cellphone while driving dangerous?
- What effect does punishment have on children's behavior?
- Is it beneficial to express pent-up anger, to "let it all out"?
- How does the brain function? How does it affect our behavior?
- Does ESP exist?
- Who determines what is classified as "abnormal behavior"? Is any type of behavior truly abnormal?
- How successful is psychotherapy in curing psychological problems?
- Is the polygraph test an accurate detector of lying?
- Why major in psychology? Does it have practical uses?

As you can see, psychology students have a surprising number and variety of interests. Surely you share some of them. It is likely that you have begun to develop your own answers to these kinds of questions. We all like to observe ourselves and others. We exchange our various experiences, philosophies, and advice with friends. We speculate on why people sometimes act as they do and think about how they might act in other situations. And over time, we each begin to develop our own ideas about human psychology. We will explore each of these questions and many others in this text.

## Applying Psychology

### The Benefits of Studying Psychology

Although psychology is the fourth most popular undergraduate major (after business, health professions, social sciences, and history) (National Center for Educational Statistics, 2015), we know that many students take psychology classes in order to fulfill a general requirement for their degree, rather than out of a compelling interest in the subject. Those students, and even some who are keenly interested in psychology, may wonder, "What am I going to gain from taking this course?" There are several benefits that you can gain from studying psychology:

- **Self-understanding.** Almost all of us want to understand ourselves and others better. In our daily lives, we often look for answers by relying on our own experience, knowledge, and assumptions. But, as you will see, that barely scratches the surface. As a psychology student, you will learn to look deeply into human behavior and ask complex and precise questions. In the process, you will not only achieve a better understanding of yourself and your fellow human beings, but also come to realize

that much of what we consider “just plain common sense about people” doesn’t hold up under scrutiny.

- **Critical thinking skills.** In addition to greater understanding of yourself and others, by studying psychology you will also have an opportunity to acquire some specific skills. As we have seen, one of those skills is the ability to think critically about psychological issues. As a result of practicing critical thinking, you will become a more sophisticated consumer of the information available to you in the mass media (Bensley, Crowe, Bernhardt, Buckner, & Allman, 2010; Gray, 2008). You will also become more cautious about too quickly accepting what looks like “common sense.”
- **Skill in the application of the scientific method.** Because psychology uses the scientific method to understand behavior, studying psychology will help you to understand and become proficient in the principles and application of the scientific method. Perhaps this is why increasing numbers of educators use psychology to teach the fundamentals of the scientific method to undergraduates who show little interest in more traditional scientific disciplines like chemistry or physics (Dingfelder, 2007).
- **Study skills.** You will also have the opportunity to acquire better study skills that will serve you well in all your courses. You will find an entire chapter on human memory (Chapter 6) containing excellent information about making the most of your study time. But

you will also find information about the relation between sleep and learning and the effects of drugs on memory (Chapter 4), about the nature of intelligence and its relation to success in school and in later life (Chapter 7), about the effects of motivation and arousal on the ability to learn and to perform (Chapter 8), and about age differences in the ability to learn and remember (Chapter 9).

- **Job skills.** Finally, you may acquire some skills that will help you find a job. This chapter lists many career possibilities for students who earn degrees in psychology. In addition, many careers outside psychology draw on a person’s knowledge of psychology. For example, personnel administrators deal with employee relations, vocational rehabilitation counselors help people with disabilities find employment, and day-care center supervisors oversee the care of preschool children. Indeed, employers in areas such as business and finance seek out psychology majors because of their knowledge of the principles of human behavior and their skills in experimental design and data collection and analysis.

Of course, all of these benefits are much more likely to accrue to students who regularly attend class, study, and try to apply what they learn to their own lives. As with many other opportunities, the benefits you receive are, in large part, up to you.

## What Is Psychology?

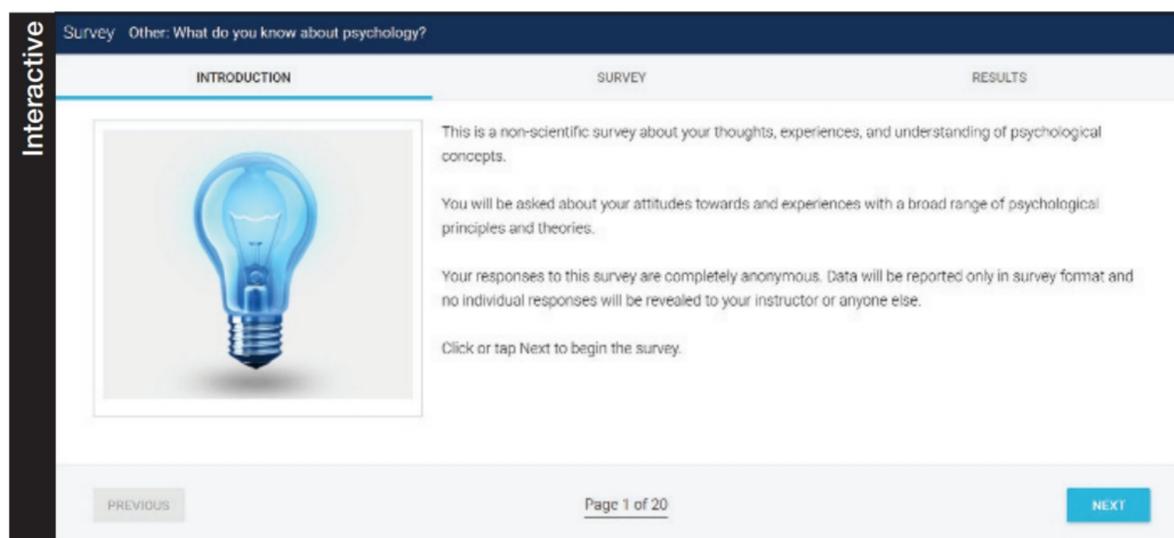
**LO 1.1** Define *psychology*, and describe some of the major subfields within psychology.

“Most psychologists study mental and emotional problems and work as psychotherapists.” Is this statement true or false?

**Psychology** is the scientific study of behavior and mental processes in all their many facets. Thus, psychology is not confined to investigating abnormal behavior, as many people mistakenly assume. One way to get a better understanding of the field of psychology is to look at the kinds of issues that interest and concern contemporary psychologists.

### psychology

The scientific study of behavior and mental processes.



Weigh in on the Survey “What Do You Know About Psychology?”

## The Breadth of Psychology

The American Psychological Association is made up of 54 divisions (see **Table 1.1**), each of which represents an area of special interest to psychologists today. The great diversity of topics in Table 1.1 reflects the richness and variety of issues explored by psychologists. A closer look at several of these specialty areas should give you an even better idea of what psychology is all about.

**Table 1.1** American Psychological Association Divisions (2017)

The two major organizations of psychologists in the United States are the American Psychological Association (APA), founded over 100 years ago, and the Association for Psychological Science (APS), founded in 1988. Members of both groups work in a wide variety of areas. The following list of divisions of the APA reflects the enormous diversity of the field of psychology.

Division*	
1. Society for General Psychology	30. Society of Psychological Hypnosis
2. Society for the Teaching of Psychology	31. State, Provincial, and Territorial Psychological Association Affairs
3. Society for Experimental Psychology and Cognitive Science	32. Society for Humanistic Psychology
5. Division for Quantitative and Qualitative Methods	33. Intellectual and Developmental Disabilities/Autism Spectrum Disorders
6. Society for Behavioral Neuroscience and Comparative Psychology	34. Society for Environmental, Population, and Conservation Psychology
7. Developmental Psychology	35. Society for the Psychology of Women
8. Society for Personality and Social Psychology	36. Society for the Psychology of Religion and Spirituality
9. Society for the Psychological Study of Social Issues (SPSSI)	37. Society for Child and Family Policy and Practice
10. Society for the Psychology of Aesthetics, Creativity, and the Arts	38. Society for Health Psychology
12. Society of Clinical Psychology	39. Psychoanalysis
13. Society of Consulting Psychology	40. Society for Clinical Neuropsychology
14. Society for Industrial and Organizational Psychology	41. American Psychology—Law Society
15. Educational Psychology	42. Psychologists in Independent Practice
16. School Psychology	43. Society for Couple and Family Psychology
17. Society of Counseling Psychology	44. Society for the Psychological Study of Lesbian, Gay, Bisexual, and Transgender Issues
18. Psychologists in Public Service	45. Society for the Psychological Study of Culture, Ethnicity, and Race
19. Society for Military Psychology	46. Society for Media Psychology and Technology
20. Adult Development and Aging	47. Society for Sport, Exercise, and Performance Psychology
21. Applied Experimental and Engineering Psychology	48. Peace Psychology
22. Rehabilitation Psychology	49. Society of Group Psychology and Group Psychotherapy
23. Society for Consumer Psychology	50. Society of Addiction Psychology
24. Society for Theoretical and Philosophical Psychology	51. Society for the Psychological Study of Men and Masculinity
25. Division of Behavior Analysis	52. International Psychology
26. Society for the History of Psychology	53. Society of Clinical Child and Adolescent Psychology
27. Society for Community Research and Action: Division of Community Psychology	54. Society of Pediatric Psychology
28. Psychopharmacology and Substance Abuse	55. American Society for the Advancement of Pharmacotherapy (ASAP)
29. Society for the Advancement of Psychotherapy	56. Trauma Psychology

\*There are no divisions 4 or 11. For information on a division, e-mail the APA at [division@apa.org](mailto:division@apa.org), or locate them on the Internet at [www.apa.org/about/division.html](http://www.apa.org/about/division.html)

**SOURCE:** American Psychological Association (2017). Divisions of the American Psychological Association from [www.apa.org/about/division/index.aspx](http://www.apa.org/about/division/index.aspx).

**DEVELOPMENTAL PSYCHOLOGY** *Developmental psychologists* study all aspects of human growth and change—physical, mental, social, and emotional—from the prenatal period through old age. Most specialize in a particular stage of human development. As we will see in Chapter 9, developmental psychologists are interested in such things as whether babies are born with distinct temperaments, how long it takes before an infant can recognize its parents, and at what age sex differences in behavior emerge. In studying adolescents, they are interested in such things as how puberty affects relationships with peers and parents, the extent to which adolescence is a stressful period, and the search for a personal identity. They are also interested in the challenges and changes of adulthood, from marrying and having children to facing the transitions related to aging and eventual death.

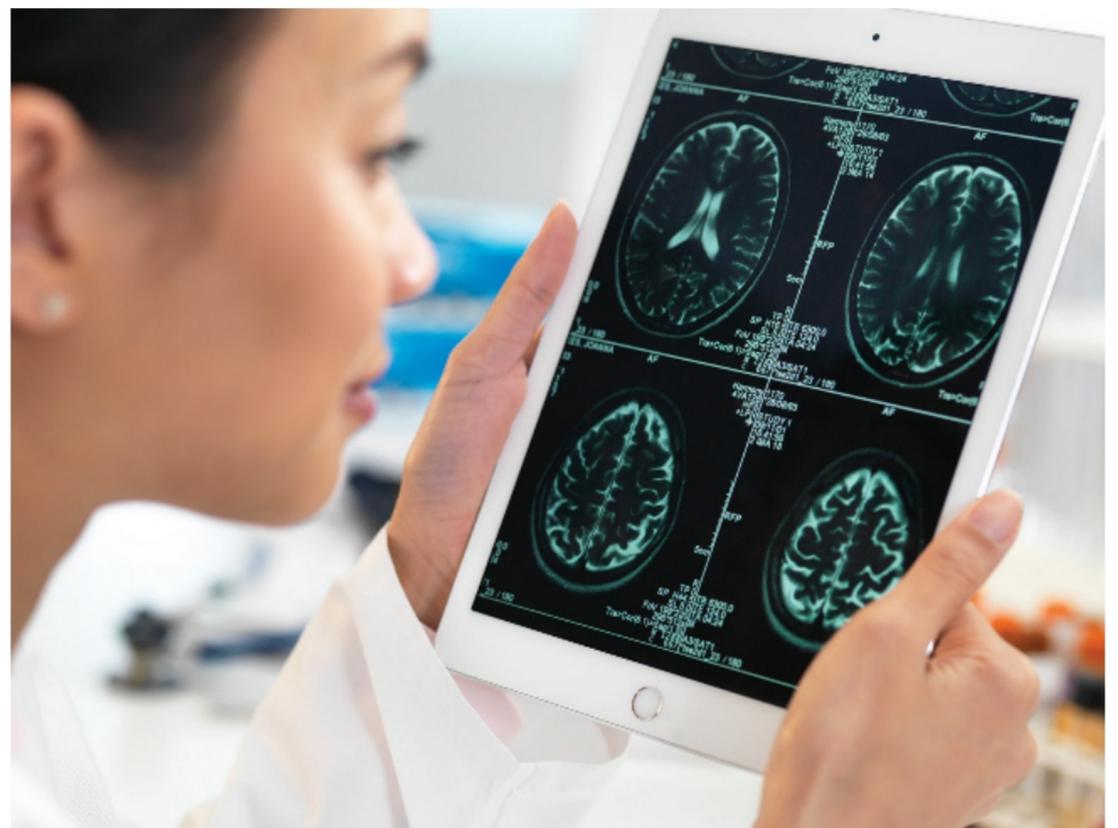
**PHYSIOLOGICAL PSYCHOLOGY** *Physiological psychologists* investigate the biological basis of human behavior, thoughts, and emotions. They concentrate particularly on the brain, the nervous system, and the body's biochemistry. In Chapter 2, we will discuss the biological processes studied by physiological psychologists (or psychobiologists, as

they are sometimes called). In their work, they may study why coffee makes us nervous and alcohol makes us relaxed or why some people who have had a stroke have difficulty speaking whereas others do not. They may study whether some of the differences in behavior between men and women are due to differences in the nervous system or hormones or if heredity plays a role in the development of alcoholism. Some psychologists who are interested in the biological basis of behavior focus exclusively on the brain and central nervous system. They often employ advanced *neuroimaging* techniques and are called *neuropsychologists*.

**EXPERIMENTAL PSYCHOLOGY** *Experimental psychologists* investigate such basic processes as learning, memory, sensation, perception, cognition, motivation, and emotion. We will discuss experimental psychology in the chapters on sensation and perception, learning, memory, cognition, and motivation and emotion. Experimental psychologists are interested in the answers to such questions as: How do people remember and what makes them forget? Does subliminal perception really work? Are there any differences in the way men and women store and retrieve information from memory? Why can't you taste food when you have a stuffy nose? How do people make decisions and solve problems, and do men and women go about solving complex problems in different ways?

**PERSONALITY PSYCHOLOGY** *Personality psychologists* are interested in the differences among people's traits, such as anxiety, sociability, self-esteem, the need for achievement, and aggressiveness. Personality psychology will be the focus of our attention in Chapter 10, where we will examine such issues as: Does personality change much during a person's lifetime, or does it for the most part stay the same? Is shyness a personality trait or simply the response to an unfamiliar social situation? Personality psychologists may also attempt to determine what causes some people to be optimists and others to be pessimists; why some people are outgoing and sociable while others are cold and unfriendly; and if there are consistent differences between men and women on personality characteristics such as extroversion, anxiousness, agreeableness, and conscientiousness.

**CLINICAL AND COUNSELING PSYCHOLOGY** When asked to describe a psychologist, most people think of a therapist who sees troubled people in an office, clinic, or hospital. This popular view is half correct. About 50% of psychologists with advanced degrees specialize in clinical or counseling psychology, both of which seek to help people deal more successfully with their lives (Stamm, Lin, & Christidis, 2016). *Clinical psychologists* are interested primarily in the diagnosis, causes, and treatment of psychological disorders, such as depression or acute anxiety. *Counseling psychologists*, in contrast, are concerned mainly with the everyday problems of adjustment that most of us face at some point in life, such as making a difficult career choice or coping with a troubled relationship. In Chapters 11, 12, and 13, we will see that clinical and counseling psychologists are interested in what causes psychological disorders and how effective psychotherapy or counseling is. They may seek to find answers to questions like: Are men more or less likely than women to experience certain kinds of psychological disorders, and if so, what causes these differences? Are there sex differences in the kinds of day-to-day, personal problems that men and women must face, as well as differences in the ways that they cope with these problems? What can be done to minimize the psychological impact of a community disaster such as an earthquake, tornado, or major flood or fire? What is the psychological impact of growing up in a city or in poverty, and how do people cope with those pressures?



Psychologists are employed in many settings that might surprise you.

**SOCIAL PSYCHOLOGY** *Social psychologists* believe that our thoughts, feelings, and behaviors are all greatly influenced by other people and the social situations in which we find ourselves. As we will see in Chapter 14, social psychologists are interested in answering such questions as: To what extent is a person likely to be influenced by other people? How might one go about changing a person's attitude about something? Do people tend to be attracted to other people who are similar to themselves or to people who are quite different? Do men and women typically play different social roles when in groups? Do men and women differ in the extent to which they are likely to be convinced by a persuasive argument? What causes prejudice, and how can it be reduced or eliminated?

**INDUSTRIAL AND ORGANIZATIONAL (I/O) PSYCHOLOGY** *Industrial and organizational (I/O) psychologists* apply the principles of psychology to the workplace. They are concerned with such practical issues as selecting and training personnel and improving productivity and working conditions. We will address these issues and others in Appendix B.

## Applying Psychology

### Careers in Psychology

What kinds of careers are open to psychology graduates? Community college graduates with associate's degrees in psychology are well qualified for paraprofessional positions in state hospitals, mental health centers, and other human service settings. Job responsibilities may include screening and evaluating new patients, recordkeeping, and assisting in consultation sessions.

Graduates with bachelor's degrees in psychology may find jobs assisting psychologists in mental health centers, vocational rehabilitation facilities, and correctional centers. They may also take positions as research assistants, teach psychology in high school, or find jobs in government or business.

For those who pursue advanced degrees in psychology—a master's degree or a doctorate—career opportunities span a wide range (Sternberg, 2017). Many doctoral psychologists join the faculties of colleges and universities. Others work in applied fields such as school, health, industrial, commercial, and educational psychology. Nearly half of doctoral psychologists are clinicians or counselors who treat people experiencing mental, emotional, or adaptational problems. Master's degree graduates in psychology often work as researchers at universities, in government, or for private companies. Students with a master's degree in industrial/organizational psychology are particularly sought by large corporations to work in personnel and human resource departments, while doctoral graduates in industrial/organizational psychology are hired into management or consulting positions in industry. Other graduates work in health and education.

Many students who major in psychology want to become therapists. For these students, there are five main career paths:

- A *psychiatrist* is a medical doctor who, in addition to 4 years of medical training, has completed 3 years of residency training in psychiatry, most of which is spent in supervised clinical practice. Psychiatrists specialize in the diagnosis and treatment of behavior disorders. In addition to providing psychotherapy, in many states, psychiatrists are the only mental health professionals who are licensed to prescribe medications.

- A *psychoanalyst* is a psychiatrist or psychologist who has received additional specialized training in psychoanalytic theory and practice, usually at a psychoanalytic institute that requires him or her to undergo psychoanalysis before practicing.
- *Clinical psychologists* assess and treat mental, emotional, and behavioral disorders, ranging from short-term crises to chronic disorders such as schizophrenia. They hold advanced degrees in psychology (a PhD or PsyD)—the result of a 4- to 6-year graduate program, plus a 1-year internship in psychological assessment and psychotherapy and at least 1 more year of supervised practice. With additional training, some states also permit clinical psychologists to prescribe medications for the treatment of mental disorders (see Chapter 13).
- *Counseling psychologists* help people cope with situational problems, such as adjusting to college, choosing a vocation, resolving marital problems, or dealing with the death of a loved one.
- *Social workers* may also treat psychological problems. They typically have a master's degree (MSW) or a doctorate (DSW). Social workers often work under the supervision of psychiatrists or clinical psychologists, although in some states they may be licensed to practice independently.

A free booklet, *Psychology: Scientific Problem Solvers, Careers for the Twenty-First Century*, is available online at [www.apa.org/careers/resources/guides/careers.pdf](http://www.apa.org/careers/resources/guides/careers.pdf). Point your browser to [www.apa.org/careers/resources/index.aspx](http://www.apa.org/careers/resources/index.aspx) for more information about careers in psychology.

Two additional resources are well worth reading:

Eric Landrum and Stephen Davis have written an excellent book on *The Psychology Major: Career Options and Strategies for Success* (5th edition).

If you are interested in careers with a bachelor's degree in psychology, in addition to *The Psychology Major* you will find the book *Finding Jobs With a Psychology Bachelor's Degree: Expert Advice for Launching Your Career* by Eric Landrum very informative.

Review the **Summary Table**, and then try matching each subfield with its description.

Interactive Summary Table Major Subfields of Psychology	
Field of Psychology	Description
Developmental psychology	The study of how people grow and change physically, cognitively, emotionally, and socially, from the prenatal period through death. Includes <i>child</i> , <i>adolescent</i> , and <i>life-span</i> psychology.
Physiological psychology	Investigates the biological basis of behavior. Includes <i>neuroscience</i> , <i>biological psychology</i> , and <i>behavior genetics</i> .
Experimental psychology	Investigates basic psychological processes such as sensation and perception, memory, intelligence, learning, and motivation.
Personality psychology	Studies the differences between individuals on such traits as sociability, emotional stability, conscientiousness, and self-esteem.
Clinical and counseling psychology	Applies the principles of psychology to mental health and adjustment. <i>Clinical psychology</i> focuses on the diagnosis and treatment of mental disorders, while <i>counseling psychology</i> is more concerned with “normal” adjustment issues such as making difficult choices or coping with a troubled relationship.
Social psychology	Explores how society influences thoughts, feelings, and behavior.
Industrial and organizational (I/O) psychology	Applies the principles of psychology to the workplace.

 Explore the **Concept** in “Major Subfields of Psychology”

## Enduring Issues

**LO 1.2** Describe the five enduring issues that cut across the subfields of psychology.

**Given the broad range of careers and interests, what holds the subfields of psychology together as a distinct scientific discipline?**

What do psychologists who study organizations, psychological disorders, memory and cognition, behavioral genetics, or changes across the life span have in common? All psychologists share a common interest in five enduring issues that override their areas of specialization and cut to the core of what it means to be human.

**PERSON–SITUATION** To what extent is behavior caused by such internal processes as thoughts, emotions, motives, attitudes, values, personality, and genes? In contrast, to what extent is behavior caused by such external factors as incentives, environmental cues, and the presence of other people? Put another way, are we masters of our fate or victims of circumstances? We will encounter these questions most directly in our consideration of behavior genetics, learning, emotion and motivation, personality, and social psychology.

**NATURE–NURTURE** To what extent are we a product of innate, inborn tendencies, and to what extent are we a reflection of experiences and upbringing? This is the famous “nature versus nurture” debate. For decades, psychologists have argued about the relative influence of heredity (genes) versus environment (experience) on thought and behavior. More recently, psychologists have begun studying the extent to which genetic differences only appear in specific environments and the extent to which certain experiences only affect people with particular genetic predispositions (Champagne, 2009). This complex issue surfaces most clearly in our discussions of behavior genetics, intelligence, development, personality, and abnormal psychology.

**STABILITY–CHANGE** Are the characteristics we develop in childhood more or less permanent and fixed, or do we change significantly over the course of our lives? Developmental psychologists are especially interested in these and other questions, as are psychologists who specialize in personality, adjustment, abnormal psychology, and therapy.



**“My therapy is quite simple: I wag my tail and lick your face until you feel good about yourself again.”**

**DIVERSITY–UNIVERSALITY** Because we are all human, each person is like every other person. But in some respects, each person is only like certain other people. And in other respects, each of us is like no other person. Thus, anywhere humans exist there will be both similarity and diversity. Throughout this text, we will encounter these questions: Does our understanding of human behavior apply equally well to every human being? Does it apply only to men or just to women or only to particular racial or ethnic groups or particular societies (especially our own)? Do we perhaps need “different psychologies” to account for the wide diversity of human behaviors (Arnett, 2008)?

**MIND–BODY** Finally, how are mind and body connected? Many psychologists are fascinated by the relationship between what we experience (such as thoughts and feelings) and what our biological processes are (such as activity in the nervous system). This mind–body issue will

arise most clearly in our discussions of the biological basis of behavior, sensation and perception, altered states of consciousness, emotion and motivation, adjustment and health psychology, and disorders and therapy.

These five issues represent enduring themes in the history of psychology. Depending on the events and intellectual climate of a given time period, one or another of these issues has assumed special prominence in the history of psychology. For example, at the beginning of the 21st century, the role of genetics (heredity) is receiving much greater attention than in the past. Diversity is also an issue of much greater concern, as is the role of biological processes.

Throughout this text, we will highlight the importance of these matters. Several times in each chapter we will call your attention to the way in which the topic under consideration reflects one of these issues. In this way, we will show the surprising unity and coherence within the diverse science of psychology.

## Psychology as Science

**LO 1.3** Explain what psychology has in common with other sciences, how psychologists use the scientific method, and the difference between theories and hypotheses.

### What does psychology have in common with other sciences?

We have seen that psychologists share your interest in behavior and the mental processes that shape behavior. However, they approach these topics in a different way. Earlier we defined psychology as the science of behavior and mental processes. The key word in this definition is *science*. Psychologists rely on the **scientific method** when seeking to answer questions. They collect data through careful, systematic observation; attempt to explain what they have observed by developing theories; make new predictions based on those theories; and then systematically test those predictions through additional observations and experiments to determine whether they are correct. Thus, like all scientists, psychologists use the scientific method to describe, understand, predict, and, eventually, achieve some measure of control over what they study.

Let’s see what this means by looking at how psychologists would approach the question of whether males are more aggressive than females. Some people believe that males are naturally more aggressive than females. Others say that this may be only a stereotype—or at least that it is not always true. Psychologists would want to know first: Do males and females actually differ in aggressive behavior? Hundreds of research studies have addressed this question, and the evidence seems conclusive: Although males and females do not differ significantly in feelings of anger, males are more physically and verbally aggressive than females (Archer, 2009). Males are usually

### scientific method

An approach to knowledge that relies on collecting data, generating a theory to explain the data, producing testable hypotheses based on the theory, and testing those hypotheses empirically.

more physically aggressive than females in nonhuman species as well. Once psychologists have established that there are indeed sex differences in aggression, the next step is to attempt to explain those differences. A number of explanations are possible. For example, if you are a physiological psychologist, you might ascribe these differences to genetics or body chemistry. Developmental psychologists might look at the way children are taught to behave “like a boy” or “like a girl.” Social psychologists might explain the differences in terms of cultural norms, which require males to “stand up for themselves” and hold that physical aggression isn’t “feminine.”

Each of these explanations stands as a **theory** about the causes of sex differences in aggression. And each theory allows you to make new **hypotheses**, or predictions, about the phenomenon in question. For example, if gender differences in aggression arise because males have higher levels of testosterone than females do, you would predict that extremely violent men should have higher levels of testosterone than do men who are generally nonviolent. If the differences reflect the ways in which children are raised, you would predict that there would be few differences between males and females raised in families where the parents avoided gender stereotypes. If sex differences in aggression reflect cultural norms, you would predict that within societies that encourage nonviolence and peaceful coexistence the difference in aggression across the sexes should be small.

Each of these predictions or hypotheses can be tested through research, and the results should indicate whether one theory is better than another at accounting for known facts and predicting new facts. You will learn in Chapter 2 that indeed there is a relationship between testosterone and aggressiveness. In Chapter 9, you will see that parental behavior does have an effect on sex differences in aggression. In Chapter 8, you will also learn that indeed cultural norms do affect sex difference in aggressiveness among humans but that doesn’t explain sex differences in nonhuman species.

## Critical Thinking: Thinking Like a Scientist

**LO 1.4** Characterize critical thinking by its various steps.

### What does it mean to “think critically”?

Do you believe any of the following?

1. Gifted children are less well-adjusted than other children.
2. Opposites attract.
3. Subliminal messages on self-help audiotapes have beneficial effects.

Most of us believe devoutly in the virtue of common sense. If you answered yes to each of these three popular commonsense beliefs, you may be surprised to learn not only that these beliefs are wrong but also that many other common sense beliefs prove false when exposed to critical thinking.

What exactly is critical thinking? It is the process we use to examine the information we have and then, based on this inquiry, make judgments and decisions. When we think critically, we define problems, examine evidence, analyze assumptions—ours as well as those of others—consider alternatives, and ultimately find reasons to support or reject an argument.

To think critically, a person must adopt a certain state of mind, characterized by objectivity, caution, a willingness to challenge the opinions of others, and, perhaps



Males are more physically aggressive than females. Different areas within psychology have different explanations for why this is the case.

### theory

Systematic explanation of a phenomenon; it organizes known facts, allows us to predict new facts, and permits us to exercise a degree of control over the phenomenon.

### hypotheses

Specific, testable predictions derived from a theory.

most difficult of all, a willingness to subject one's deepest beliefs to searching scrutiny. If all this sounds similar to the scientific method used by psychologists and other scientists, it is.

The ability to think critically is a learned behavior. To many people, including quite a few introductory psychology students, psychology seems to be based on nothing more than common sense thinly disguised by fancy jargon. As we have seen, however, psychology is actually based on data that are the result of carefully designed research. As you read about some of that research in this text, your own critical thinking skills may be sharpened. In fact, according to recent research, training in psychology can teach you to think critically, perhaps because psychology itself is often based on studies that subject commonsense beliefs to scientific scrutiny.

In the following video, you will learn that critical thinking doesn't come naturally. It takes practice to develop this skill.



 [Watch the Video](#) "The Challenge of Critical Thinking"

Psychologists use a number of strategies in questioning assumptions and examining data. Here, we use the rules of psychological investigation to judge whether the previously mentioned assertion that "opposites attract" is correct:

- **Define the problem or the question you are investigating.** Do opposites attract each other?
- **Suggest a theory or a reasonable explanation for the problem.** People who are dissimilar balance each other in a relationship.
- **Collect and examine all the available evidence.** Be skeptical of people's self-reports, as they may be subjectively biased. If data conflict, try to find more evidence. Research on attraction yields no support for the idea that opposites attract, whereas many studies confirm that people of similar looks, interests, age, family background, religion, values, and attitudes seek each other.
- **Analyze assumptions.** Because balancing different people's strengths and weaknesses is a good way to form a group, you might assume it is a good basis for personal relationships as well, which would explain why people of opposite temperaments would be attracted to each other. Yet research evidence shows that such an assumption is false. Why should people of similar temperaments attract each other? One important reason is that they often belong to the same social circles. Research suggests proximity is a big factor in attraction.
- **Avoid oversimplifying.** Don't overlook the evidence that people of similar temperaments find living together rather difficult in some ways. For example, living with someone who is as tense as you are may be harder than living with someone of calm temperament—your opposite.

- **Draw conclusions carefully.** It seems safe to conclude that, in general, opposites don't attract, but there are specific exceptions to this general rule.
- **Consider every alternative interpretation.** People may cite cases that conflict with your conclusion. Remember, however, that their arguments are likely to be based on subjective observations and a far narrower database than researchers have used when studying this question.
- **Recognize the relevance of research to events and situations.** Let's say you have been thinking of dating someone whose temperament seems quite different from yours. You may decide, based on what you now know, not to rush into things but to go more slowly, testing your own observations against your knowledge of research findings. But because there are cases where opposites do attract, you may indeed find that person attractive.

## Quiz Questions

- Which of these is the modern, formal definition of psychology?
  - Psychology is the scientific study of behavior and mental processes.
  - Psychology is as much an art as a science.
  - Psychology today studies only cognition and emotion.
  - Psychology is the study of psychological disorders and treatment.
- Which of these is among the five enduring issues of psychology?
  - friends–family
  - opportunity–disenfranchisement
  - youth–age
  - person–situation
- A(n) \_\_\_\_\_ is a specific, testable prediction derived from a theory.
 

a. phenomenon	c. hypothesis
b. experiment	d. scientific method
- You want to answer the question, “Do opposites really attract?” As a critical thinker using the scientific method, it is most important that you do which of the following?
  - If data conflict, go with the largest data set.
  - Be skeptical of self-reports as they may be biased.
  - Collect a large number of self-reports.
  - Try to simplify things as much as possible.
- “The role of the frontal cortex in self-control.” An article such as this would most likely be written by a:
  - counseling psychologist.
  - social psychologist.
  - developmental psychologist.
  - physiological psychologist.

## The Growth of Psychology as a Science

**LO 1.5** Describe the emergence of scientific psychology in the late 19th and early 20th centuries.

### “Psychology has a long past, but a short history.” What does that mean?

Prior to about the 5th century B.C.E., nobody thought much about trying to understand human thoughts and behavior. People regarded their mental processes with awe, assuming that thoughts and emotions were the work of spirits and gods. That all changed when Greek philosophers began to speculate about how the mind works, about where thoughts and feelings come from if not from the gods, and about how the mind might affect behavior. Socrates, Plato, and Aristotle each addressed in different ways such things as the nature of knowledge, reasoning, and emotion.

Jump ahead to the end of the Dark Ages and the beginnings of the scientific revolution, when René Descartes (1596–1650) took the position that the human mind, unlike the physical world, is not subject to laws. Moreover, though the mind is not observable, it controls the body; in turn, the body provides information for the mind. And indeed understanding

the relation between mind and body continues to challenge psychologists today, as we will see. Unlike Descartes, John Locke (1632–1704) believed that even the human mind operates according to laws. Moreover, in sharp contrast to Socrates and Plato, he said the human mind at the moment of birth is a *tabula rasa*, a “blank slate” that contains no innate knowledge. Rather, we gain knowledge through experience. Thomas Hobbes (1588–1679) went even further. He claimed that such things as “soul” and “spirit” and “mind” are meaningless. According to Hobbes, thoughts and experiences are simply by-products of the workings of our brain. In this respect, Hobbes anticipated the position of psychological behaviorists as we shall soon see. Charles Darwin (1809–1882) followed in Hobbes’s path by asserting that while the mind is unobservable (and thus not a proper subject for scientific study), behavior is observable and thus open to scientific examination. Moreover, Darwin took the position that behavior evolves—behavior that contributes to the survival of a species tends to persist, while behavior that is detrimental to survival tends to disappear over time. Evolutionary psychologists today follow in that same tradition.

In the 1800s, a number of scholars began to explore ways in which researchers might begin to study the mind (Schwarz & Pfister, 2016). However, it was not until the late 1800s that the scientific method began to be applied systematically to questions that had puzzled philosophers for centuries. Only then did psychology come into being as a formal, scientific discipline. The history of psychology as a science can be divided into three main stages: the emergence of a science of the mind, the behaviorist decades, and the “cognitive revolution.”

## The “New Psychology”: A Science of the Mind

**LO 1.6** Explain the roles voluntarism, structuralism, functionalism, and psychodynamic theory played in initially defining psychology as “a science of the mind.”

How did Wundt help to define psychology as a science of the mind?

Why did James think that sensation and perception alone couldn’t explain behavior?

Why was Freud’s theory of the unconscious shocking at the turn of the 20th century?

At the beginning of the 20th century, most university psychology programs were located in philosophy departments. But the foundations of the “new psychology”—the science of psychology—had been laid. Initially, psychology was defined as the study of mental processes. The primary method of collecting data was introspection or self-observation, which occurred in a laboratory or on an analyst’s couch.

**WILHELM WUNDT AND EDWARD BRADFORD TITCHENER: VOLUNTARISM AND STRUCTURALISM** Most psychologists agree that psychology as a science was born in 1879, the year that Wilhelm Wundt founded the first psychological laboratory at the University of Leipzig in Germany. In the public eye, a laboratory identified a field of inquiry as “science” (Benjamin, 2000). At the outset, Wundt did not attract much attention; only four students attended his first lecture. By the mid-1890s, however, his classes were filled to capacity. Wundt was primarily interested in memory and *selective attention*—the process by which we determine what we are going to attend to at any given moment. Wundt used the term *voluntarism* to describe his view of psychology. He believed that attention is actively controlled by intentions and motives, and that this sets human attention apart from attention in other organisms. In turn, attention controls such other psychological processes as perceptions, thoughts, and memories. We will examine the role of attention more closely in Chapter 4 and Chapter 6, but for the moment it is sufficient to note that, in establishing a laboratory and insisting on measurement and experimentation, Wundt moved psychology out of the realm of philosophy and into the world of science.

One of Wundt’s students was Edward Bradford Titchener. Titchener’s ideas differed sharply in many respects from those of his mentor (Sundqvist, 2007). Titchener was impressed by recent advances in chemistry and physics, achieved by analyzing complex

compounds (molecules) in terms of their basic elements (atoms). Similarly, Titchener reasoned, psychologists should analyze complex experiences in terms of their simplest components. For example, when people look at a banana they immediately think, “Here is a fruit, something to peel and eat.” But this perception is based on past experience. What we *see* is simply a long, yellow object.

In a search for the most fundamental elements, or “atoms,” of thought, Titchener broke down consciousness into three basic elements: physical sensations (what we see), feelings (such as liking or disliking bananas), and images (memories of other bananas). Even the most complex thoughts and feelings, he argued, can be reduced to these simple elements. Titchener saw psychology’s role as identifying these elements and showing how they can be combined and integrated—an approach known as **structuralism**. Although the structuralist school of psychology was relatively short-lived and has had little long-term effect, the study of perception and sensation continues to be very much a part of contemporary psychology, as you will see in Chapter 3.

**WILLIAM JAMES: FUNCTIONALISM** One of the first academics to challenge structuralism was an American, William James. James argued that Titchener’s “atoms of experience”—pure sensations without meaning—simply do not exist in real-life experience. Our minds are constantly weaving associations, revising experience, starting, stopping, and jumping back and forth in time. Perceptions, emotions, and images cannot be separated, James argued; consciousness flows in a continuous stream. If we could not recognize a banana, we would have to figure out what it was each time we saw one. James developed a **functionalist theory** that focused on how individuals use their perceptual abilities to adapt and function in their environment. This theory raised questions about learning, the complexities of mental life, the impact of experience on the brain, and humankind’s place in the natural world that still seem current today. Although impatient with experiments, James shared Wundt and Titchener’s belief that the goal of psychology was to analyze experience.

**SIGMUND FREUD: PSYCHODYNAMIC PSYCHOLOGY** Of all psychology’s pioneers, Sigmund Freud is by far the best known—and the most controversial. A medical doctor, Freud was fascinated by the central nervous system. He spent many years conducting research in the physiology laboratory of the University of Vienna and only reluctantly became a practicing physician. After a trip to Paris, where he studied with a neurologist who was using hypnosis to treat nervous disorders, Freud established a private practice in Vienna in 1886. His work with patients convinced him that many nervous ailments are psychological, rather than biological, in origin. Freud’s clinical observations led him to develop a comprehensive theory of mental life that differed radically from the views of his predecessors.

Freud held that human beings are not as rational as they imagine and that “free will,” which was so important to Wundt, is largely an illusion. Rather, we are motivated by unconscious instincts and urges that are not available to the rational, conscious part of our mind. Other psychologists had referred to the unconscious, in passing, as a dusty warehouse of old experiences and information we could retrieve as needed. In contrast, Freud saw the unconscious as a dynamic cauldron of primitive sexual and aggressive drives, forbidden desires, nameless fears and wishes, and traumatic childhood memories. Although hidden from awareness, unconscious impulses press on the conscious mind and find expression in disguised or altered form, including dreams, mannerisms, slips of the tongue, and symptoms of mental illness, as well as in socially acceptable pursuits such as art and literature.

Freud’s **psychodynamic theory** was controversial at the turn of the century. Many of Freud’s Victorian contemporaries were shocked, not only by his emphasis on sexuality, but also by his suggestion that we are often unaware of our true motives and thus are not entirely in control of our thoughts and behavior. Conversely, members of the medical community in Vienna at that time generally held Freud’s new theory in high regard, nominating him for the position of Professor Extraordinary at the University of Vienna (Esterson, 2002). Freud’s lectures and writings attracted considerable attention in the United States as well as in Europe; he had a profound impact on the arts and philosophy, as well as on psychology. As expanded and revised by his colleagues and successors, Freud’s theories laid the foundation for the study of personality and psychological disorders, which we will discuss in Chapters 10, 12, and 13.

### **structuralism**

School of psychology that stresses the basic units of experience and the combinations in which they occur.

### **functionalist theory**

Theory of mental life and behavior that is concerned with how an organism uses its perceptual abilities to function in its environment.

### **psychodynamic theories**

Personality theories contending that behavior results from psychological factors that interact within the individual, often outside conscious awareness.