PSYCHOLOGY

PERSPECTIVES AND CONNECTIONS

5TH EDITION

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PSYCHOLOGY: PERSPECTIVES AND CONNECTIONS, FIFTH EDITION

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About the Authors

Photo courtesy of Gregory J. Feist

Gregory J. Feist

Gregory J. Feist is Professor of Psychology in Personality and Adult Development at San Jose State University. He has also taught at the College of William & Mary and the University of California, Davis. He received his PhD from the University of California, Berkeley, and his undergraduate degree from the University of Massachusetts–Amherst.

Dr. Feist is widely published in the psychology of creativity, the psychology of science, personality, and the development of scientific talent. One of his major goals is establishing the psychology of science as a healthy and independent study of science, along the lines of history, philosophy, and sociology of science. Toward this end, Dr. Feist has published a book titled *Psychology of Science and the Origins of the Scientific Mind* (2006, Yale University Press), which was awarded the 2007 William James Book Prize by the Division of General Psychology, American Psychological Association (APA). In addition, he is the founding president of the International Society for the Psychology of Science and Technology.

A second major focus for Dr. Feist is the identification and development of scientific talent, as seen in finalists of the Westinghouse and Intel Science Talent Search. His paper (co-authored with Frank Barron) "Predicting Creativity from Early to Late Adulthood: Intellect, Potential, and Personality" won Article of the Year for 2003 in the *Journal of Research in Personality* and *Psychology of Aesthetics, Creativity and the Arts.* His teaching efforts have been recognized by outstanding teaching awards at both UC Berkeley and UC Davis. Dr. Feist is also co-author with his late father, Jess Feist (and Tomi-Ann Roberts), of the undergraduate text *Theories of Personality.* In his spare time, Dr. Feist enjoys cycling, camping, hiking, and skiing.

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Erika L. Rosenberg

Erika L. Rosenberg is an emotions researcher, health psychologist, and teacher of meditation. Dr. Rosenberg received her PhD in Psychology from the University of California, San Francisco, where she studied with Paul Ekman. Dr. Rosenberg served on the faculties at the University of Delaware and the College of William & Mary. Erika is a Senior Investigator at the Center for Mind and Brain at the University of California, Davis, Senior Teacher at the Center for Compassion and Altruism Research and Education (CCARE) at Stanford University, Faculty at Nyingma Institute of Tibetan Studies, in Berkeley, CA, and Founding Faculty at The Compassion Institute, a new nonprofit devoted to the promotion of compassion education worldwide.

Dr. Rosenberg is a world-renowned expert in facial expression of emotion, who trains and consults on facial measurement using the Facial Action Coding System (FACS). She teaches FACS workshops worldwide and consults on facial expression with academic, corporate, and entertainment industry clients worldwide, including digital effects and animators in major computer game and film production companies. From 2009 to 2011 she served as Scientific Consultant on the Fox TV show *Lie to Me*.

Erika's work with meditation encompasses both teaching and personal practice and spans nearly three decades. As a senior teacher at Stanford University's CCARE, she co-authored the Compassion Cultivation Training (CCT) program with Thupten Jinpa and others in 2009. In 2010, she personally presented the CCT program to His Holiness the Dalai Lama. Erika Rosenberg has taught meditation in diverse international venues such as Google Inc., Lerab Ling Monastery, Upaya Zen Center, Kripalu Yoga Center, The Telluride Institute, and Burning Man.

In addition to McGraw Hill's *Psychology: Perspectives and Connections*, Erika is co-editor of *What the Face Reveals* (with Paul Ekman), now in press in its 3rd edition, and author of numerous scientific articles and chapters on facial expression, emotion, and meditation.

Formerly married, now amicably divorced and forever colleagues, Erika and Greg have two sons, Jerry and Evan, and live in Oakland, California.

To our most precious collaborative work,

Jerry and Evan

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Contents

Preface: Psychology: Perspectives and Connections xvi

1 Introduction to Psychology 2

What Is Psychology? 5

Psychology Defined 5

Psychology in the Real World: Why Psychology Is Important to My Life 6

Why Should You Study Psychology? 6

Subdisciplines of Psychology 8

Scientific Subdisciplines in Psychology 8

Applied Subdisciplines in Psychology 10

The Origins of Psychology 11

A Brief History of the Practice of Clinical Psychology 11

A Brief History of the Origins of Scientific Psychology 14

Psychological Perspectives: Explaining Human Behavior 17

Psychoanalytic-Psychodynamic 17

Behaviorism-Learning 17

Humanistic-Positive 18

Cognitive 18

Sociocultural/Cross-Cultural 18

Neuropsychological-Behavioral Genetic 19

Evolutionary 19

The Nature–Nurture Debate 19

The Evolution of Human Behavior 20

No One Perspective Tells the Whole Story in Psychology 23

Challenging Assumptions and Not Believing Everything You Think—The Art of Critical Thinking 23

Connections within and between Chapters 25

Bringing It All Together: Making Connections by Using Different Methods in Psychology: No One Perspective Tells the Whole Story 26

Chapter Review 28

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2 Scientific Thinking and Research in Psychology 30

Science and Scientific Thinking 33
Common Sense and Logic 33
The Limits of Observation 33
What Is Science? 34
Thinking Scientifically 35
The Scientific Method 37
Research Process 38
What Science Is Not: Pseudoscience 39

Research Designs in Psychology 41
Principles of Research Design 41
Descriptive Studies 42
Correlational Studies 46
Experimental Studies 46
Longitudinal Studies 51
Twin-Adoption Studies 51
Meta-Analysis 53
Big Data 53

Commonly Used Measures of Psychological Research 54
Self-Report Measures 55
Behavioral Measures 56
Physiological Measures 56

Research Ethics 57
Scientific Misconduct 58
Ethical Treatment of Human Participants 58
Ethical Treatment of Animals 60
Bringing It All Together: Making Connections in Research Methods 62

Chapter Review 65

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3 The Biology of Behavior 68

Genes and Behavior 71
Principles of Behavioral Genetics 73

The Nervous System 75
Organization of the Nervous System 76
The Cells of the Nervous System: Glial Cells and Neurons 77
Common Neurotransmitters 83
Summary of the Steps in Neural Transmission 86

The Brain 87
Evolution of the Human Brain 87
Overview of Brain Regions 88

Psychology in the Real World: Teaching the CNS to Communicate with Artificial or Paralyzed Limbs—Neuroprosthetics and Beyond 95

Brain Plasticity and Neurogenesis 98

Challenging Assumptions about Neural Growth in the Adult Brain 101

Early Evidence of Neurogenesis in Adults 101

Key Figures in the Discovery of Neural Growth in Adults 101

Measuring the Brain 103

Electroencephalography 103

Magnetic Resonance Imaging (MRI) and Functional MRI (fMRI) 104

Positron Emission Tomography (PET) 105

Research Process 106

The Endocrine System 107

Bringing It All Together: Making Connections in the Biology of Behavior 109

Chapter Review 111

4 Sensing and Perceiving Our World 114

The Long, Strange Trip from Sensation to Perception 117

Basic Sensory Processes 118

Principles of Perception 118

Vision 121

Sensing Visual Stimuli 121

Perceiving Visual Stimuli 125

Perceiving Color 125

Perceiving Motion 128

Perceiving Depth 129

Perceiving Size and Shape 132

Perceiving Patterns and Wholes 133

Hearing 136

The Physics of Sound and the Psychophysics of Hearing 136

The Ear 137

Psychology in the Real World: Hearing Loss Can Happen in Young People, Too 139

The Bodily Senses 140

Touch 140

Pain 141

The Chemical Senses: Smell and Taste 144

Smell (Olfaction) 144

Taste 145

Synesthesia 146

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fei08060_fm_i-xxviii_1.indd 7 10/6/20 1:45 PM

Bringing It All Together: Making Connections in Sensation and Perception 147
Research Process 150
Chapter Review 151

Cathy Yeulet/stockbroker/123RF

5 Human Development 154

The Developing Fetus 157
Stages of Prenatal Development 157
Brain and Sensory Development before Birth 158
Nature and Nurture Influences on Fetal Development 160
Prenatal Personality Development 162

The Developing Infant and Child 163
Physical Development in Infancy and Childhood 163
Early Cognitive Development 167
Psychology in the Real World: Musical Training Changes the Brain 168
Development of Moral Reasoning 173
Personality Development during Infancy 175
Early Socioemotional Development 175
Research Process 180

The Developing Adolescent 182
Physical Development in Adolescence 182
Cognitive and Brain Development in Adolescence 183
Social Development in Adolescence 185
Personality Development in Adolescence 187

The Developing Adult 188
Early Adulthood 188
Middle Adulthood 194
Late Adulthood 195
Death and Dying 198
Bringing It All Together: Making Connections in Human Development 199

Chapter Review 204

Dmitrii Shironosov/123RF

6 Consciousness 206

What Is Consciousness? 208
Theories of Consciousness 209

Two Dimensions of Consciousness: Wakefulness and Awareness 210
Minimal Consciousness 211
Moderate Consciousness 212
Full Consciousness 213

fei08060_fm_i-xxviii_1.indd 8 10/1/20 9:14 AM

Attention: Focusing Consciousness 213
Selective Attention 214
Sustained Attention 215
Psychology in the Real World: The Hazards of Distracted Driving 216
Multitasking: The Implications of Shifting Attention 218
Research Process 220

Training Consciousness: Meditation 221
Meditation and Conscious Experience 221
Meditation Training and the Brain 223

Sleeping and Dreaming 224
Sleeping 224
Dreaming 233

Hypnosis 234

Altering Consciousness with Drugs 236
Depressants 237
Stimulants 241
Hallucinogens 244
Bringing It All Together: Making Connections in Consciousness 247

Chapter Review 248

7 Memory 250

Forming Memories 253
Four Steps in Forming Memories 253
Aids to Memory Formation 256
Psychology in the Real World: How to Better Remember What You Have Studied 258
Impediments to Memory Formation 260

Types of Memory 261
Three Major Types of Memory 262

Memory and the Brain 268
Neuroplasticity and Memory 269
Challenging Assumptions in Brain Stimulation and Memory 275
Research Process 276

Malleability of Memory 277
Reconsolidation 277
Selective and Divided Attention 277
Eyewitness Testimony 278
False Memories 278
Recovered Memories 279
Suggestibility and Misinformation 279

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fei08060_fm_i-xxviii_1.indd 9 10/1/20 9:15 AM

Forgetting and Memory Loss 281
Forms of Forgetting 281
Memory Loss Caused by Brain Injury and Disease 282
Bringing It All Together: Making Connections in Memory 283
Chapter Review 286

Blend Images-Hill Street Studios/Brand X Pictures/Getty Images

8 Learning 288

Basic Processes of Learning 291
Association 291

Conditioning Models of Learning 291
Classical Conditioning 292
Operant Conditioning 296
Psychology in the Real World: Behavior Modification for the Treatment of Attentional Disorders 303
Challenging Assumptions about Conditioning Models of Learning 306

Social Learning Theory 310

How Nature and Nurture Work Together in Learning 313
Imprinting 314
Imitation, Mirror Neurons, and Learning 315
Synaptic Change during Learning 316
Research Process 317
Experience, Enrichment, and Brain Growth 318
Bringing It All Together: Making Connections in Learning 319

Chapter Review 322

Nora Carol Photography/Getty Images

9 Language and Thought 324

Language 326
The Nature of Language 327
The Evolution of Language in Humans 327
Language Development in Individuals 328
Theories of Language Acquisition 331
Can Other Species Learn Human Language? 336
Language, Culture, and Thought 339
Research Process 341

Thinking, Reasoning, and Decision Making 342
How Do We Represent Thoughts in Our Minds? 342
How Do We Reason about Evidence? 346
Two Forms of Reasoning 346
Critical and Scientific Thinking 347

Psychology in the Real World: Critical Thinking and Detecting Fake News 348

How Do We Make Judgments and Decisions? 350

Bringing It All Together: Making Connections in Language and Thought 355

Chapter Review 358

10 Intelligence, Problem Solving, and Creativity 360

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Intelligence 363

Defining Intelligence 363

Theories of Intelligence 363

Measuring Intelligence 367

Psychology in the Real World: Bringing Multiple Intelligences to School 369

Extremes of Intelligence 374

The Nature and Nurture of Human Intelligence 378

Group Differences in Intelligence Scores 381

Non-Western Views of Intelligence 383

Problem Solving 384

Types of Problems 386

Solution Strategies 386

Obstacles to Solutions 387

Creativity 388

What Is Creativity? 388

Stages of Creative Problem Solving 389

Creativity and the Brain 389

Cognitive Processes in Creative Thinking 391

Research Process 392

The Creative Personality 393

Creativity and Culture 394

Bringing It All Together: Making Connections in Intelligence, Problem Solving, and Creativity 396

Chapter Review 399

11 Motivation and Emotion 402

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Motivation 405

Models of Motivation 405

Hunger: Survival of the Individual 409

Sex: Survival of the Species 417

Research Process 421

The Needs to Belong (Affiliation) and to Excel 425

Motivation in the Workplace 427

fei08060_fm_i-xxviii_1.indd 11 10/1/20 9:15 AM

Emotion 430
What Are Emotions? 431
Emotion as a Process 434
Psychology in the Real World: Botox and Emotion 442
Emotion and the Brain 443
How Culture Impacts Emotion Expression 446
Gender and Emotion 448
Emotional Intelligence 450
Bringing It All Together: Making Connections in Motion and Emotion 451
Chapter Review 454

sportpoint/Getty Images

12 Stress and Health 456
Stress 459
Stress as Stimulus or Response 459
The Physiology of Stress 461
Coping: The Management of Stress 468
Coping Strategies 468
The Positive Psychology of Coping 471
Psychology in the Real World: Does Stress Cause Aging? 473
How Stress Affects Health 474
The Birth of Psychoneuroimmunology 476
Psychological Risk Factors for Heart Disease 479
The Gut–Brain Axis: How the Critters in Our Intestines Affect Health, Mood, and Behavior 481
Research on Health-Relevant Behavior 482
Research Process 486
Bringing It All Together: Making Connections in Stress and Health 488
Chapter Review 489

mediaphotos/Getty Images

13 Personality: The Uniqueness of the Individual 492
Defining Personality 494
Perspectives on Personality 496
Psychoanalytic Theories 497
Humanistic–Positive Psychological Theories 504
Social–Cognitive Learning Theories 506
Trait Theories 507
Evolutionary–Biological Theories 508

fei08060_fm_i-xxviii_1.indd 12 10/1/20 9:15 AM

The Origins of Personality 511
Genetics and Personality 511
Temperament and the Fetal Environment 513
Personality and Culture: Universality and Differences 513
Challenging Assumptions in Animal Personality 515
Research Process 517

How is Personality Measured? 518
Behavioral Observation 518
Interviewing 519
Projective Tests 519
Personality Questionnaires 520
Social Media Measurement of Personality 520
Psychology in the Real World: Personality and Career Interest and Job Performance 521
Bringing It All Together: Making Connections in Personality 525

Chapter Review 528

14 Social Behavior 530

Group Living and Social Influence 533
Conformity 534
Minority Social Influence 536
Obedience 537

Social Perception 540
Attribution 540
Schemas 542
Stereotypes 542
Exclusion and Inclusion 545
Psychology in the Real World: The Social Psychology of Social Networks 546
Prejudice and Discrimination 548
Challenging Assumptions in Social Behavior 550

Attitudes And Behavior 552
The Nature and Nurture of Attitudes 552
Attitude Change 553

Social Relations 556
The Nature and Nurture of Aggression 556
Prosocial Behavior 558
Liking, Attraction, and Love 562
Research Process 563
Bringing It All Together: Making Connections in Social Behavior 568

Chapter Review 570

Thomas Tolstrup/Getty Images

fei08060_fm_i-xxviii_1.indd 13 10/1/20 9:15 AM

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15 Psychological Disorders 572

Defining Psychological Disorders 575

Neurodevelopmental Disorders 580

Types of Neurodevelopmental Disorders 580

Causes of Neurodevelopmental Disorders 582

Schizophrenia 583

Major Symptoms of Schizophrenia 584

Origins of Schizophrenia 585

Depressive Disorders 589

Origins of Depression 591

Research Process 593

Bipolar Disorder 594

Causes of Bipolar Disorder 597

Anxiety Disorders 598

Generalized Anxiety Disorder 599

Panic Disorder 600

Social Phobia (Social Anxiety Disorder) 600

Agoraphobia 601

Specific Phobias 601

Origins of Anxiety Disorders 602

Obsessive-Compulsive Disorder 604

Causes of Obsessive-Compulsive Disorder 604

Posttraumatic Stress Disorder 605

Dissociative Disorders 606

Dissociative Identity Disorder 606

Causes of Dissociative Disorders 607

Personality Disorders 608

Cluster A: Odd-Eccentric Personality Disorders 608

Cluster B: Dramatic-Emotional or Erratic Personality Disorders 610

Cluster C: Anxious-Fearful Personality Disorders 610

Origins of Personality Disorders 611

Psychology in the Real World: Can Internet Use Become an Addiction? 612

Bringing It All Together: Making Connections in Psychological Disorders 613

Chapter Review 616

16 Treatment of Psychological Disorders 620

Treatments for Psychological Disorders 623
- Overview of Treatments for Psychological Disorders 623
- Culture and Treatment of Psychological Disorders 624

Biomedical Treatments for Psychological Disorders 625
- Drug Therapies 625
- Electric and Magnetic Therapies 629

Research Process 630
- Challenging Assumptions in the Treatment of Severe Depression 632
- Effectiveness of Biomedical Treatments 634

Psychological Treatments for Psychological Disorders 636
- Psychoanalytic-Psychodynamic Therapy 636
- Humanistic/Positive Therapy 637
- Behavior Therapies 638
- Cognitive and Cognitive-Behavioral Treatments 639
- Group Therapy 641
- Effectiveness of Psychological Treatments 642

Technology-Based Treatments for Psychological Disorders 644
- Effectiveness of Technology-Based Therapy 645

Combined Approaches 646
- Drugs and Psychotherapy 646
- Integrative Therapy 646
- Mindfulness Training and Psychotherapy 647
- Effectiveness of Combined Approaches 648

Psychology in the Real World: How to Choose a Therapist 650

Emerging Therapies 650
- Genetic Therapies 650
- Psychedelic Medicine: A New Hope 652

Preventing Disorders 656

Bringing It All Together: Making Connections in the Treatment of Psychological Disorders 657

Chapter Review 659

Glossary G-1
References R-1
Name Index NI
Subject Index SI-1

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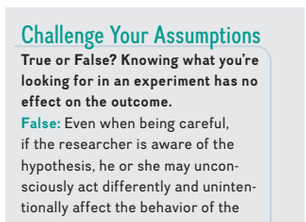
Psychology: Perspectives

Just because we "think" something is true doesn't make it true. *Psychology: Perspectives and Connections* guides students in moving beyond what may seem obvious and motivating them to reevaluate the thoughts and beliefs they bring to the course. Students will learn to challenge their assumptions, understand the elements of scientific research, and recognize that in psychology, *no one perspective tells the whole story.*

CHALLENGING ASSUMPTIONS

Questioning assumptions is the first step in thinking scientifically. While building a foundation in the concepts and principles of psychology, our goal as teachers and authors has always been to encourage students to examine their preconceptions (as well as those held by others) and understand that there is often more than one plausible explanation for a given phenomenon.

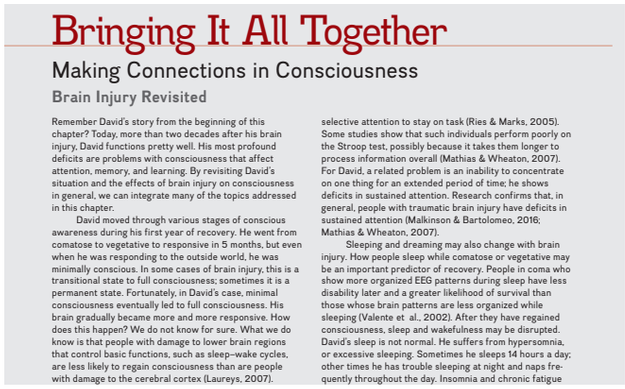


Each chapter opens with **Challenge Your Assumptions**, a list of common assumptions for students to consider.

THINKING SCIENTIFICALLY

Throughout the *Psychology: Perspectives and Connections* program, we model critical thinking and offer multiple opportunities for students to practice this skill. In "Introduction to Psychology," we define the discipline, analyze major ways of thinking about the human experience, and present a framework for analyzing research and testing assumptions against real-world observation. At the end of each chapter, **Bringing It All Together: Making Connections** integrates the major ideas covered in the chapter, shows their application to a common problem, and highlights connections across the various subfields of psychology.

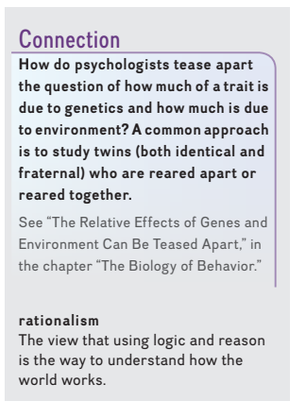
We focus on high-interest topics including obsessive-compulsive disorder (OCD) and anxiety disorders ("Treatment of Psychological Disorders") and how people of different genders and cultures experience



the world ("Sensing and Perceiving Our World"), to emphasize how psychological science uses systematic investigation to address important questions about the human experience.

Another key goal is helping students to understand the theoretical perspectives and learn to apply them in a variety of settings—hence, the presence of the term *perspectives* in the title. We call attention to the influence of theoretical perspectives on advances in psychology, as well as in the different subfields of psychology. For example, we include a section comparing theoretical perspectives on intelligence ("Intelligence, Problem Solving, and Creativity"), and we invite students to explore the influences of nature and nurture on personality development, along with the theoretical perspectives that have inspired personality researchers ("Personality: The Uniqueness of the Individual"). By understanding that it's possible to study behavior through different lenses, students learn to look for underlying points of view.

Psychology: Perspectives and Connections also encourages students to consider the diverse approaches to the study of human thought and behavior. **Connection** annotations appear throughout the text, emphasizing the interrelatedness of subfields of psychology.



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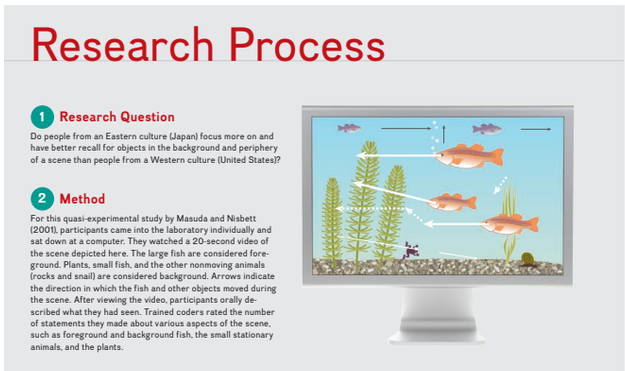
and Connections

MAKING SCIENCE ACCESSIBLE

Psychology: Perspectives and Connections approaches the science of psychology in a straightforward, approachable manner to help students develop scientific literacy. Beginning with the question "What is science?" in the "Introduction to Psychology" chapter, we stress that psychology shares with the natural and physical sciences a way of thinking about the world that separates what we *believe* from what is *real*. A strong focus on research and the scientific method in the "Conducting Research in Psychology" chapter lays the foundation for subsequent science-based chapters on neuroscience and genetics and on sensation and perception, which are challenging topics for many students. Throughout the program, we describe classic and contemporary research in depth to familiarize students with the scientific approach to collecting and analyzing data and sharing the results to advance knowledge. Moreover, this edition reflects the latest thinking, based on current research, in all areas of psychology.



Overcoming preconceptions about the research process may be one of the biggest challenges students face in Introductory Psychology. **Research Process** features, appearing in every chapter except "Introduction to Psychology," demystify research by providing a step-by-step visual approach to the scientific method.

Using the basic structure of a contemporary study to exemplify scientific thinking, we walk through the "story" of how the research was conducted. In the chapter "Sensing and Perceiving Our World," for example, this feature illustrates the methodology chosen by a researcher to answer the question, "Do people from an Eastern culture (Japan) focus more on and have better recall for objects in the background and periphery of a scene than people from a Western culture (United States)?"

Most chapters in the fifth edition feature expanded coverage on technology and social media and how they affect thought and behavior. For example, in the "Social Behavior" chapter, we address the concept of groupthink in social media as well as the rise of "fake news" sites.

APPLYING PSYCHOLOGY TO EVERYDAY LIFE

One of the perennially difficult tasks we face as instructors is to connect course material to students' lives and interests. In *Psychology: Perspectives and Connections*, we demonstrate the relevance of psychology in multiple ways in both the text and digital programs.

Psychology in the Real World features show how psychological research can directly affect people's lives. For instance, we explore how musical training changes the brain ("Human Development"), and whether Internet use can become an addiction ("Psychological Disorders").

Additional examples in the text make psychological principles and concepts more concrete by connecting them to current, real-world experiences; for instance, in the chapter "Consciousness," the limits of *attention* are underscored with the example of how texting during class prevents attention to the lecture, and graphics in the chapter "Learning" use student-relevant examples of classical and operant conditioning to make these difficult concepts accessible.

IMPROVING HOW STUDENTS READ, STUDY, AND WRITE

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- SmartBook helps students study more efficiently by delivering an interactive reading experience through adaptive highlighting and review.
- **New to this edition**, SmartBook has been updated with improved learning objectives to ensure that students gain foundational knowledge, while also learning to make connections to help them formulate a broader understanding of psychology. SmartBook 2.0 personalizes learning to individual student needs, continually adapting to pinpoint knowledge gaps and focus learning on topics that need the most attention. Study time is more productive and, as a result, students are better prepared for class and coursework. For instructors, SmartBook 2.0 tracks student progress and provides insights that can help guide teaching strategies.
- **New to this edition**, McGraw Hill's Writing Assignment Plus tool delivers a learning experience that improves students' written communication skills and conceptual understanding with every assignment. Assign, monitor, and provide feedback on writing more efficiently and grade assignments within McGraw Hill Connect®. Writing Assignment Plus gives you time-saving tools with a just-in-time basic writing and originality checker. Features include: § Grammar/writing checking with McGraw Hill learning resources § Originality checker with McGraw Hill learning resources § Writing stats § Rubric building and scoring § Ability to assign draft and final deadline milestones § Tablet-ready for all learners.

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Whether a class is face-to-face, hybrid, or entirely online, McGraw Hill Connect provides the tools needed to reduce the amount of time and energy instructors spend administering their courses. Easy-to-use course management tools allow instructors to spend less time administering and more time teaching, while reports allow students to monitor their progress and optimize their study time.

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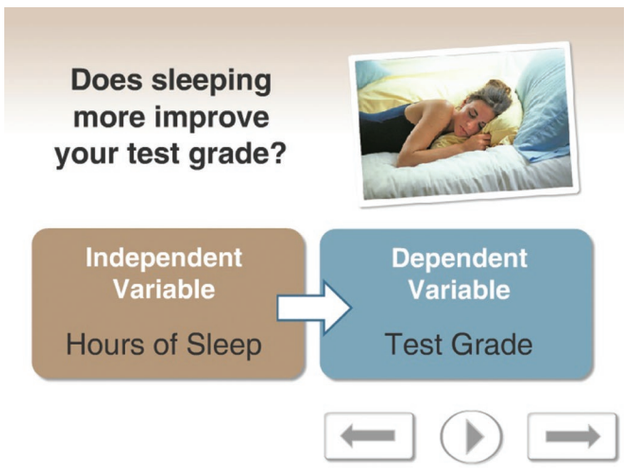
- The **Category Analysis Report** details student performance relative to specific learning objectives and goals, including APA learning goals and outcomes and levels of Bloom's taxonomy
- The **SmartBook Reports** allow instructors and students to easily monitor progress and pinpoint areas of weakness, giving each student a personalized study plan to achieve success.

STUDENT ACTIVE ENGAGEMENT

New to this edition, Application-Based Activities are highly interactive, automatically graded, online learn-by-doing exercises that provide students a safe space to apply their knowledge and problem-solving skills to real-world scenarios. Each scenario addresses key concepts and skills that students must use to work through and solve course-specific problems, resulting in improved critical thinking and development of relevant workplace skills. Topics include types of memory, ethics in research, and research design.

INFORMING AND ENGAGING STUDENTS

At the Remember and Understand levels of Bloom's taxonomy, **Concept Clips** help students break down key themes and difficult concepts in psychology.



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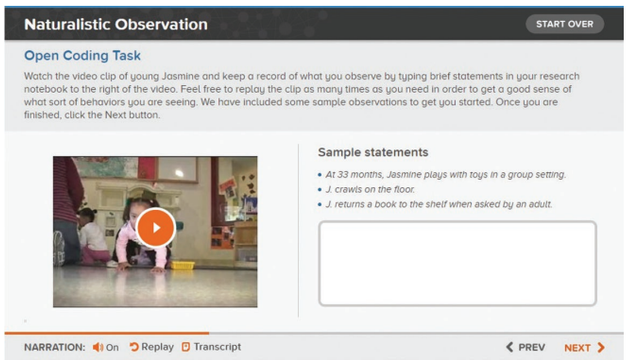
Using easy-to-understand analogies, visual cues, audio, and colorful animation, Concept Clips make psychology meaningful to everyday life. Topics include replication of research, social facilitation, and hypothesis and theories.

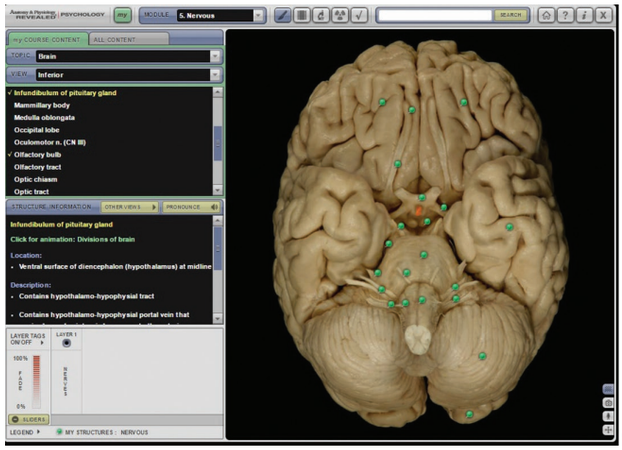
At the Understand and Apply levels of Bloom's taxonomy, **Interactivities**, assignable through Connect, engage students with content through experiential activities. Topics include correlations, neurons, and stereotypes and prejudice.



At the Understand and Apply levels of Bloom's taxonomy, **NewsFlash** exercises, powered by Connect, tie current news stories to key psychological principles and learning objectives. After interacting with a contemporary news story, students are assessed on their ability to make the connection between real life and research findings. Cases are revisited across chapters, encouraging students to consider multiple perspectives.

At the Apply and Analyze levels of Bloom's taxonomy, **Scientific Reasoning Activities** offer in-depth arguments to sharpen students' critical-thinking skills and prepare them to be more discerning consumers of psychology in their everyday lives. For each chapter, there are multiple sets of arguments accompanied by auto-graded assessments requiring students to think critically about claims presented as facts. These exercises can also be used in Connect as group activities or for discussion.

Anatomy and Physiology REVEALED® for Psychology McGraw Hill Education presents an interactive tool that encourages the exploration of biological structures related to psychology. Lab Activity assignments in Connect walk students through virtual nervous system and cell dissection experiences, including views of CT scans, X-ray imaging, and histology, and include illustrated animations that link anatomy to the biology of behavior.



Power of Process, available in McGraw Hill Connect™, guides students through the process of critical reading, analysis, and writing. Faculty can select or upload their own content, such as journal articles, and assign analysis strategies to gain insight into students' application of the scientific method. For students, Power of Process offers a guided visual approach to exercising critical-thinking strategies to apply before, during, and after reading published research.

Psychology at Work videos, assignable and assessable within McGraw Hill Connect™, highlight nine careers in which knowledge of psychology is beneficial. Each video introduces a person at work in his or her job, who specifies how knowledge gained from taking introductory psychology in college is applied to the work environment.

TRUSTED SERVICE AND SUPPORT

Connect offers comprehensive service, support, and training throughout every phase of your implementation. If you're looking for some guidance on how to use Connect, or want to learn tips and tricks from super users, you can find tutorials as you work. Our Digital Faculty Consultants and Student Ambassadors offer insight into how to achieve the results you want with Connect.

Remote Proctoring

New remote proctoring and browser-locking capabilities are seamlessly integrated within Connect to offer more control over the integrity of online assessments. Instructors can enable security options that restrict browser activity, monitor student behavior, and verify

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the identity of each student. Instant and detailed reporting gives instructors an at-a-glance view of potential concerns, thereby avoiding personal bias and supporting evidence-based claims.

Integration with Your Learning Management System

McGraw Hill integrates your digital products from McGraw Hill Education with your school learning management system (LMS) for quick and easy access to best-in-class content and learning tools. Build an effective digital course, enroll students with ease, and discover how powerful digital teaching can be.

Available with Connect, integration is a pairing between an institution's LMS and Connect at the assignment level. It shares assignment information, grades and calendar items from Connect into the LMS automatically, creating an easy to manage course for instructors and simple navigation for students. Our assignment-level integration is available with **Blackboard Learn**, **Canvas by Instructure** and **Brightspace by D2L**, giving you access to registration, attendance, assignments, grades, and course resources in real time, in one location.

INSTRUCTOR SUPPLEMENTS

Instructor's Manual The instructor's manual provides a wide variety of tools and resources for presenting the course, including learning objectives, and ideas for lectures and discussions.

Test Bank and Test Builder Organized by chapter, questions in the bank are designed to test factual, conceptual, and applied understanding. **Test Builder** is a cloud-based tool that enables instructors to format tests that can be printed or administered within an LMS. Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download. Test Builder enables instructors to:

- Access all test bank content from a particular title
- Easily pinpoint the most relevant content through robust filtering options
- Manipulate the order of questions or scramble questions and/or answers
- Pin questions to a specific location within a test
- Determine your preferred treatment of algorithmic questions
- Choose the layout and spacing
- Add instructions and configure default settings

PowerPoint Presentations The PowerPoint presentations, available in a dynamic lecture-ready format and a WCAG-compliant version, highlight the key points of the chapter and include supporting visuals. All of the slides can be modified to meet individual needs.

Image Gallery The Image Gallery features the complete set of downloadable figures and tables from the text. These can be easily embedded by instructors into their own PowerPoint slides.

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CHAPTER-BY-CHAPTER CHANGES

The chapter-by-chapter changes are listed below. New content related to the COVID-19 pandemic appears in "Introduction to Psychology," "Psychological Disorders," and "Treatment of Psychological Disorders." Hundreds of new references from 2018 to 2020 have been added, many including research on multiculturalism and diversity.

Chapter 1: Introduction to Psychology

- Restructured and updated subdisciplines section
- Added community psychology to subdisciplines
- New *Student Perspective* by Sana Ahmed
- Added psychology major ranking as second to business
- Updated many references to 2016+, especially in *Bringing It All Together* (technology)

Chapter 2: Conducting Research in Psychology

- Moved statistics section to Appendix
- Updated fallacies of null hypothesis significance
- Increased coverage of unethical behavior of Zimbardo study
- New section: "Thinking Scientifically"
- Added method on computerized linguistic analysis
- Updated and added references, including big data, nature of science, and thinking scientifically
- Clarified terms: limits of observation, scientific theory, experimental design, and causal inference
- Added section on "Replication" to OPTIC model (now OPTICR) and some discussion of replication crisis in psychology

Chapter 3: The Biology of Behavior

- New opening story on neurotechnology and robotics
- Updated and added new research on epigenetics, including effects of poverty, binge drinking, maternal prenatal stress, spending time in space, and inherited trauma
- New research and one new figure on neuroplasticity, especially in blindness
- New research on how neuroplasticity may stop after adolescence
- New imaging technique at the neural level
- New research on cognitive functions of thalamus
- New research on number of neurons and glial cells
- Updated references throughout, including many from 2019 and 2020

Chapter 4: Sensing and Perceiving Our World

- New chapter opening story about chef Grant Achatz and how he is challenging assumptions of food and culinary sensations and perceptions
- New text in signal detection
- New research on blindness and brain plasticity
- Updated research on tetrachromacy
- Updated research on hearing loss over the lifespan
- New research on touch and pain (especially controlling pain and similarity between physical and emotional pain)

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- Updated research on brain and taste; fattiness taste modality
- Updated research in *Psychology in the Real World* on hearing loss and youth
- Updates and additions on culture and sensation and perception in *Bringing It All Together*

Chapter 5: Human Development

- New section in "Adult Development" on "Parenting Styles" (authoritative, authoritarian, permissive, and uninvolved), outcomes, and culture
- Updated material on sensory development
- New section on maternal stress and fetal, infant, and child development
- New coverage on how hugging in infancy changes our biology (brain and epigenetics)
- New research on teen brain development and technology use
- New research on moral development
- New research on transgender identity and brain activity and peer identification in adolescence
- Extensive updating on technology at each stage of the lifespan in *Bringing It All Together*
- Added coverage of death and dying rituals and culture

Chapter 6: Consciousness

- Revised coverage of two dimensions of consciousness
- Clarified explanation of and updated research on perceptual load model
- Updated research on distracted driving
- New research on compassion meditation
- Updated research on meditation and the brain

Chapter 7: Memory

- New *Bringing It All Together* on memory and culture
- Moved "How to Study" to *Psychology in the Real World* and added a section on laptop interference with learning (now called "How to Better Remember What You Have Studied")
- Added memory and drugs and drinks to text
- Added section on "Tell Me Who I Am" (twins) to opening vignette
- Added dozens of new references throughout chapter, especially on the brain and memory
- Updated research on recreational use of stimulants and memory
- New research on how we are most susceptible to forming false memories about fake news when that news confirms what we already believe

Chapter 8: Learning

- Revised material on mirror neurons
- Updated *Psychology in the Real World* with sections on how behavioral modification treatments for attentional disorders vary by socioeconomic status, with a focus on interventions with African American children from low-income families
- Significantly updated *Bringing It All Together,* include vaping behavior

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Chapter 9: Language and Thought

- Updated *Psychology in the Real World*, including new examples of fake news and research and skills for detecting fake news
- New research on brain function as a limitation of non-human animal language
- New research on spontaneous development of novel gestural language in children in "Evolution of Language" section
- New research on social models of language acquisition
- New research on mental rotation and gender differences (culture and biology)
- New research (and graph) and discussion on sensitivity periods in second-language acquisition in *Bringing It All Together*
- Updated research on second-language learning and brain, and meta-cognition and bilingualism in *Bringing It All Together*

Chapter 10: Intelligence, Problem Solving, and Creativity

- New opening story on musical training and intelligence, focusing on Alma Deutscher, child musical prodigy
- Updated references on effects of prenatal maternal stress and illness on IQ
- Updated references on neuroscience of creativity
- New section in creativity on "Culture and Creativity"
- New research on relationship between intelligence and creativity
- Revised and updated section on test bias in intelligence and cognitive tests (SAT, GRE)
- New section in *Bringing It All Together* on IQ and creativity on music training and intelligence

Chapter 11: Motivation and Emotion

- Motivation
  - Updated Maslow's model of hierarchy of needs not as a pyramid, but as a ladder
  - Updated research on BMI trends, on weight and genetics, and on dieting and ethnicity (plus new figures)
  - Updated research on sexual orientation and gender identity (plus new figures)
  - New research on gender and casual sex
  - Updated references on intrinsic and extrinsic motivation in the workplace
- Emotion
  - Updated "Types of Affect" section
  - New figures related to emotion expressioin
  - Updated *Psychology in the Real World*
  - Updated research and coverage of the brain and emotion
  - New coverage of emojis
  - New text on universality versus cultural differences in emotion expression
  - Updated coverage of gender and emotion
- Updated coverage of life satisfaction and motivation and emotion in *Bringing It All Together*

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Chapter 12: Stress and Health

- Significantly revised coverage of the physiology of stress
- Updated section on psychoneuroimmunology
- New section in "How Stress Affects Health" on infectious diseases, including coverage of COVID-19

Chapter 13: Personality: The Uniqueness of the Individual

- New figure on Freud's id, ego, superego
- New research on personality and gut microbiome and biological forces in general
- New research on personality stability and change over the lifespan
- New research on culture and multiculturalism and personality
- Updated research on temperament and personality
- New research on personality and drug addiction
- New research on personality and job performance
- New research on assessing personality with phone and social media use
- New research on personality and brain injury and dementia in *Bringing It All Together*

Chapter 14: Social Behavior

- Revised coverage of schemas (social cognition), including a new section on research related to how "belief in a just world" functions as a schema
- Revised coverage of attribution
- Revised coverage of aggression with clarifying language on violence and aggression and updated research, especially on brain and endocrines
- Increased emphasis on culture and ethnicity in some of the new research and revised text, including
  - social exclusion (in opener)
  - conformity research
  - attractiveness of faces (including a new figure on "Averaged" faces, featuring morphed Chinese male faces (to complement the image of Caucasian faces)

Chapter 15: Psychological Disorders

- Expanded information on genetic causation of psychological disorders
- New section on the image of mental illness
- Highlighted coverage of the impact of psychological disorders on people worldwide with mention of different impacts on ethnic, racial, and sexual orientation groups
- New section on the factors that influence mental health, including COVID-19 crisis
- Expanded information about influence of culture and race and ethnicity on prevalence rates in neurodevelopmental disorders
- Expanded explanation of the "spectrum"
- Clarification of descriptive information on ASD
- New section on inflammation and maternal infection as etiological theory for ASD

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- Revised section on the history of schizophrenia and definition
- Updated section on prevalence rates and updated references
- Expanded information on genetic contribution to developing schizophrenia
- Clarified section on hallucinations, delusions, negative symptoms
- Revised coverage of cognitive symptoms of schizophrenia
- Updated section on maternal inflammation and infection in relation to schizophrenia
- Revised coverage of the origins of depression, including an expanded section on learned helplessness
- Updated section on the role of serotonin and norepinephrine on depression
- Added current prevalence rates for bipolar disorder
- Revised discussion of mania
- Added new introduction section and clarified typical versus atypical anxiety
- Updated prevalence rates for anxiety disorders in general as well as GAD, including heavy emphasis on culture and ethnicity related to diagnostic differences among groups
- Replaced "fear" with "anxiety" within section for clarity
- Revised content on obsessions and compulsions
- Updated information on brain activity and OCD
- Updated introduction and clarified features of dissociation
- Updated discussion on symptoms of DID
- Updated information on DID and trauma/abuse
- New introductory section to clarify typical vs. atypical personality
- Updated *Psychology in the Real World* with new information on gaming addiction

Chapter 16: Treatment of Psychological Disorders

- Updated references in opening vignette
- New introductory section, "Culture and Treatment of Psychological Disorders," discussing cultural issues that affect access and use of treatments for psychological disorders
- Updated technology-based section with new reference material, and updated content based on the implications of the massive move to online therapy during the COVID-19 pandemic (based on research on Internet psychotherapy)
- Updates and revisions to "Biomedical Treatments for Psychological Disorders"
  - Added current research on deep brain stimulation
  - Added current research on SSRIs
  - Added paragraph on SNRIs
  - Updated research on lithium and bipolar disorder
  - Updated research on antipsychotics
  - New research on how ECT works (brain effects) and new *Research Process* about ECT and hippocampus and amygdala changes
  - Added research on ethnic group differences in receiving ECT
- Updated research on memory interference drug for PTSD
- Updated coverage of the effectiveness of CBT and psychodynamic therapies
- Updated references on combined therapies
- Substantial revisions to "Emerging Therapies," including updates on genetic approaches and psychedelic medicine

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We are grateful to the following instructors whose insights contributed to the fifth edition as well as previous ones:

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Acknowledgments

Writing *Psychology: Perspectives and Connections* has been an enormous undertaking of hard work and love. We have felt privileged by the opportunity to delve into the literature of so many areas of psychology in depth, something for which career academics rarely have time. We have also been fortunate to have had the commitment of a vast team of collaborators, to whom we offer our profound gratitude. We thank the wonderful professionals at McGraw Hill Education who have had utter confidence in this project from day one: Nancy Welcher, brand manager for psychology, jump-started our vision for this edition and shepherded it through the intense revision schedule. Ryan Treat came on as Nancy's replacement mid-way through the development of the fifth edition and did a wonderful job carrying the project through and on time. Art Pomponio, as product developer, was most helpful in crafting and clarifying language and ideas. Dawn Groundwater, product development manager, was instrumental in keeping the project on task and developing new ideas for how to best package the unique qualities of the book. Thank you also to A. J. Laferrera and Olivia Kaiser, marketing managers, who have their fingers on the pulse of the people for whom we wrote the book—instructors and students. As mid-career authors, we sometimes forget how 19- and 20-year-old students think and will respond to the information we are presenting.

Our thanks also go to the production team: Sandy Wille, who guided us through the copyediting and composition stages of production; designer Beth Blech; and Content Licensing Specialist Sarah Flynn. We also must thank copy editor Janet Tilden who offered invaluable advice in helping craft the language and clarify text. We have also been honored to have the invaluable input of our friends and colleagues—all experts in their fields—on various topics in the book. In particular, we are grateful to Paul Ekman, Elissa Epel, Jess Feist, David Galin, Mary Gomes, Lee Huntington, Allen Kanner, Alan Kaufman, James Kaufman, Lee Kirkpatrick, Katherine MacLean, Clifford Saron, and Valerie Stone. We are especially grateful to Mary True, who contributed her developmental expertise to important revisions in Chapter 5 on both the second and third editions of this book and to Heather Jennings who helped revise Chapter 15 for the fifth edition.

We have also benefited from having research support from our students Sana Ahmed, Sarah Greene, Adam Larson, Spencer James, and Yvette Szabo. Sana wrote a wonderful new piece for Chapter 1 on what Introduction to Psychology has meant for her. Our colleague Rebecca Jedel also caught some inaccuracies in the chapters on Learning and Personality in the previous edition, and we are thankful for that feedback. Sarah Butler helped us flesh out some of the research on sexuality. We extend our thanks also to Dean Simonton, who pointed out historical inaccuracies in the two-string problem discussion and graphic. We also thank our parents—Sandra Rosenberg and the late Jess and Mary Jo Feist—for their love and unending support throughout the writing of previous editions. We also want to give our special and heartfelt thanks to our two wonderful boys, Jerry and Evan. They have been real troopers throughout our work on all the editions. We owe Jerry an extra thanks for helping with some of the research on previous editions.

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Erika would like to extend a very heartfelt "THANKS!" to every single student she has ever taught, in every class, who have been her greatest teachers in life. She is grateful to her partner, Stanley Marshall, for his kindness and support throughout the writing of this edition. Erika would also like to thank her favorite local café, Bica Coffeehouse, for their superb coffees and lovely space that served as her primary office during her writing of the second, third, and fourth editions. Finally, Erika is also grateful to Phil and Jill Lesh for their Terrapin Crossroads—an enriching community of music and love—that has kept Erika sane and happy during both the difficult and easy times and has reinforced her faith in the power of community. Finally, she is grateful for her meditation practice, the study of compassion, and all the friends and colleagues in the Compassion Cultivation world.

Greg would like to thank his thousands of Introductory Psychology students over the years who—with their questions and fresh interest—keep him on his toes and who constantly remind him of the fun and joy in learning how fascinating and perplexing human thought and behavior is and can be. One, Rahul Kandekar, even contributed input in the 5th edition regarding subject–object word order in Arabic. Finally, Greg acknowledges the love, support, and therapeutic sense of humor of Adina Nyström during the writing process of this edition.

The final last stages of working on this edition of the book overlapped with the international pandemic caused by COVID-19 in Winter and Spring of 2020. It was a difficult time to work, though we continued writing, and the McGraw Hill urged us forward to the finish line.

We were married 24 years and started this project when our children were young. Although we are no longer married, we remain deeply grateful to each other as co-authors and co-parents. We share an eternal personal and professional history, and are indebted to each other for the long-term collaboration on a book as complex as this one is—now entering its 5th edition and almost 17 years after we began work on the 1st edition. We have learned how to play off each other's strengths, balance viewpoints and expertise, and compromise. With a collaboration like this one, we are ready for another 17 years!

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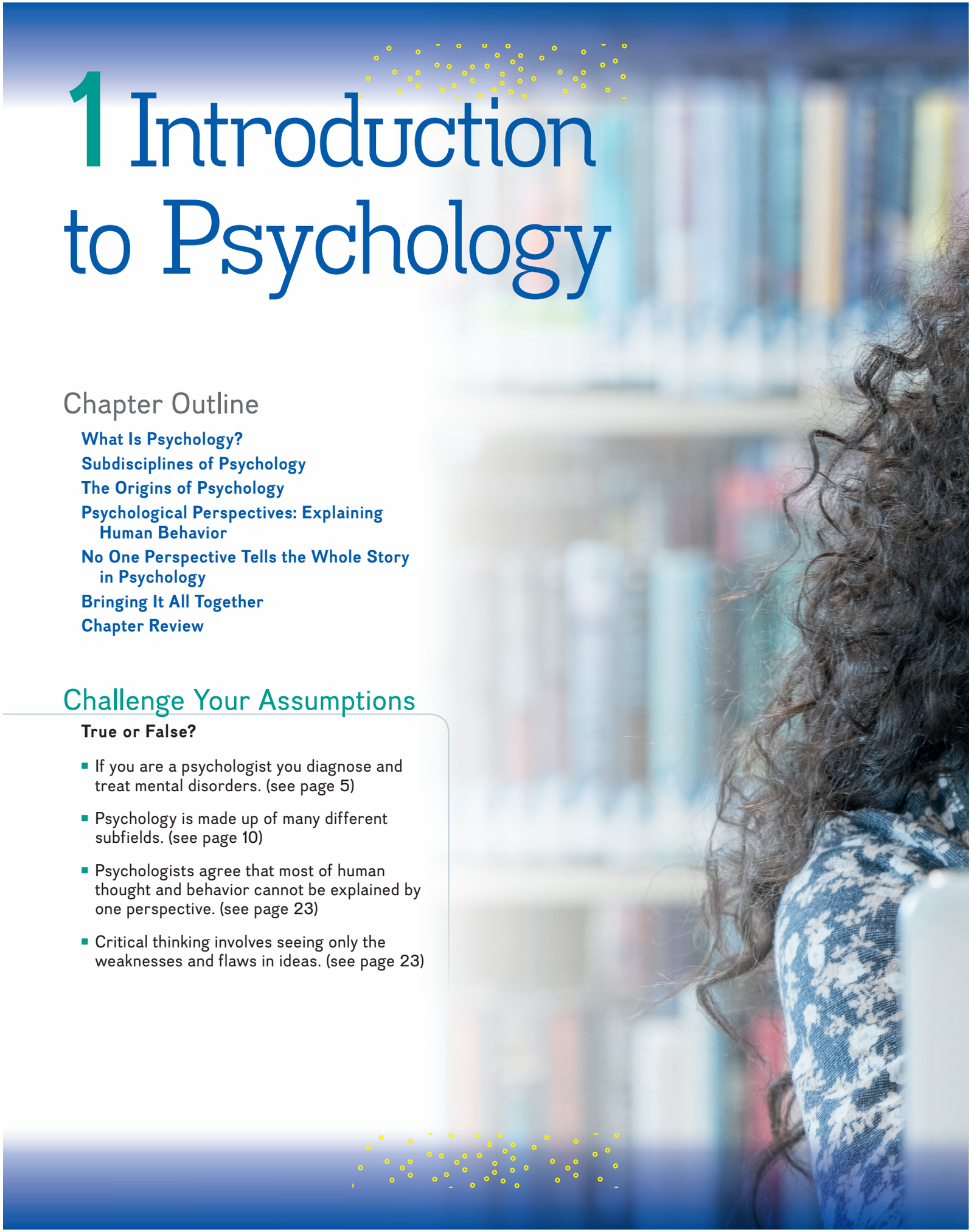
1 Introduction to Psychology



Chapter Outline

- What Is Psychology?
- Subdisciplines of Psychology
- The Origins of Psychology
- Psychological Perspectives: Explaining Human Behavior
- No One Perspective Tells the Whole Story in Psychology
- Bringing It All Together
- Chapter Review

Challenge Your Assumptions

True or False?

- If you are a psychologist you diagnose and treat mental disorders. (see page 5)
- Psychology is made up of many different subfields. (see page 10)
- Psychologists agree that most of human thought and behavior cannot be explained by one perspective. (see page 23)
- Critical thinking involves seeing only the weaknesses and flaws in ideas. (see page 23)

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Doctored videos have serious real-world implications for many aspects of our lives, from our personal relationships to our democratic elections. Deepfake videos manipulate video and audio files, usually of politicians or celebrities, to make people appear to say things that they did not, in fact, say. Realistic deepfake videos exist of celebrities appearing in adult films. Or imagine the potential consequences of a video in which a world leader announces that nuclear warheads have just been launched or that genocide of one particular group is called for. Or, what if a presidential candidate appeared to say something so horrible right before an election that he or she lost what would otherwise have been a close election? Similarly, conspiracy theories with little or no evidence now spread across the world at speeds never before seen.

Rapidly changing technology affects our everyday lives and behavior in both positive and negative ways. Here are just a few examples:

- We can immediately contact friends and family via texting and email and connect with wider circles of people via Twitter, Facebook, Tumblr, TikTok, and Reddit, to name a few.
- Sexting photos have had traumatic effects on people's lives and even ruined politicians' careers.
- A baby died of malnutrition and neglect in South Korea because her parents were spending 14–16 hours a day raising a virtual baby on the online site Prius Online.
- Distracted driving (much of which involves use of mobile devices) kills more than 3,000 Americans a year (more than 10 each day; *Distracted Driving,* 2013).

In addition, more and more people are doing outlandish and sometimes dangerous things intentionally so that they can post photos online. People want to be viewed, liked, and followed, and some are changing their lives accordingly.

These examples of online behavior raise many questions: Does the quality of our friendships increase or decrease through our use of social media? If our online "life" is unrealistically positive, what effect does that have on other people who think their lives don't match that level of excitement? Does technology help or hinder our ability to pay attention and do more than one thing at once? And finally, what are the social and political implications of the ease with which misinformation and disinformation can be spread?

Research in psychological science reveals that social networking both improves and impairs our face-to-face relationships (Garrett & Danziger, 2008; Lundy & Drouin, 2016). People use "friending" on social networks to widen their social circles, which can translate into real-life social benefits (Lange, 2008). These media help us reach people we might not otherwise communicate with at all (such as long-lost cousins or high-school friends). Yet social networking can also reduce interactions with close friends to short electronic statements and lessen the amount of time we spend in face-to-face interactions. In addition, cyberbullying and Internet shaming are real and potentially harmful offshoots of online social interaction (Allen, 2015; Ronson, 2015; Scheff, 2017).

If that weren't enough, how we think, learn, pay attention, reason, argue, and remember are seriously affected by constant and easy access to online communication and social media. Clearly, some of these effects are positive and beneficial and others are negative and harmful. Technology in general increases our tendency to multitask, which makes it harder for us to engage in any one task

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deeply (Bowman et al., 2010; Firth et al., 2019; Foerde, Knowlton, & Poldrack, 2006; Werner, Cades, & Boehm-Davis, 2015).

You may be wondering why we are opening a text about psychology with a discussion of people's use of technology. The answer is that technology involves how people think, behave, and interact, which is exactly what psychology and the next sixteen chapters are all about.

WHAT IS PSYCHOLOGY?

In one sense, you have been a psychologist for most of your life. Every time you ponder why you think and feel in particular ways, you are thinking psychologically. Every time you try to explain what someone else is doing—and why—you are thinking psychologically. You do it when you say your friend dominates conversations because he is self-absorbed. You also do it when you conclude that your big sister is bossy because she is older and always gets what she wants. We think and live psychology every day.

Psychology Defined

Many fields of study aim to understand people's thoughts and actions. Literature helps us understand people through storytelling, character exploration, development of setting, and use of imagery. History helps us understand people through description and analysis of past events and artifacts. Anthropology is the study of human culture and origins. Sociology seeks to understand people in terms of large-scale social forces and group membership rather than individuals. Psychology is unique in that it is the *science* of understanding individuals—animals as well as people. Formally defined, **psychology** is the scientific study of thought and behavior. The root word *psyche* comes from the Greek word for "mind," but modern psychology is as likely to study the brain and behavior as it is the "mind."

psychology
The scientific study of thought and behavior.

You might be thinking, Don't psychologists treat people with mental illness or try to help us figure out how our parents messed us up? Yes, they do these things too. Some professional psychologists practice, or *apply*, psychology to diagnose and treat problems of thought and behavior. In fact, psychology is both a clinical practice and a science. The clinical practice side encompasses the services provided in therapists' offices, schools, hospitals, and businesses. Without fail, when we (the authors of this text) tell people that we are psychologists, they immediately think we are clinical psychologists and are analyzing their every move, looking for hidden meaning in everything they do.

You can also find popular psychology in homes, on radio talk shows, on Internet news sites, and in TV news reports. What sets scientific psychology apart from popular psychology—known as *pop psychology*—are the methods used in each. As you will see in the chapter "Conducting Research in Psychology" and again in the chapter "Treatment of Psychological Disorders," the methods used by scientific and clinical psychologists are quite different from the thinking of people in general, who sometimes draw from an unreliable body of knowledge known as *common sense*.

Challenge Your Assumptions

True or False? If you are a psychologist, you diagnose and treat mental disorders.

False: Some psychologists diagnose and treat mental illness, but others conduct scientific studies on human thought and behavior. Psychology is both a practice and a science.

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Psychology in the Real World

Why Psychology Is Important to My Life

Sana Ahmed, *San Jose State University*

My dad always said that everyone needs to take an Introduction to Psychology class because of how important it is to have a basic understanding of psychology and the human mind and behavior. But I took Introduction to Psychology not because I thought psychology was interesting or because I knew it was my calling, but simply because it was a General Education (GE) course that I had to fulfill for my requirements. Truthfully, I could not even spell "psychology" when I took the class (silent *p*, anyone?). Not to be dramatic (or to convince you that your Intro to Psych class is fantastic), but my intro class changed my life. I found the discipline that held answers to questions I did not even know I had. There was not a single lecture I didn't find intriguing and I found myself going up to the professor after nearly every class, asking questions. These questions, fueled by my desire and drive to learn more, led me to research and study psychology.

I never used to think about my thinking. As a poet, I am always thinking about my feelings and emotions, not a lot about thinking and so my metacognitive skills were . . . lacking. I thought only philosophers, or my teachers, engaged in these kinds of deep thoughts. As it turns out (as I learned in my psychology seminar, Critical Thinking), anyone can practice **metacognitive thinking**, or thinking about your thinking. All it takes is a little critical thinking that starts with not believing everything you think. After learning about the components that make up critical thinking, I realized that I did engage in critical thinking, but only when I was writing a paper, trying to prove someone wrong, or win an argument. My professor demonstrated how critical thinking can be used in our everyday lives (predictions, science vs. pseudoscience vs. anti-science, and "fake news," and fake online reviews, just to name a few examples). I used to believe a good amount of things I saw and read on the Internet, because why would people post things that were not true? I learned about the motivations for why people or groups might deliberately spread and create fake news, as well as the fallacies in our reasonings that cause us to believe in fake news. Now, I fact-check everything and hold a healthy amount of skepticism for new information and news I see, much to the annoyance of people who send me things they find off of Facebook and other social media platforms (without doing their own fact-checking and critical thinking).

metacognitive thinking
The process that includes the ability first to think and then to reflect on one's own thinking.

Perhaps because of the ubiquity of popular psychology, most people you talk to on the street don't think of psychology as a science; rather, they probably think of it only as a clinical practice.

As we will see throughout this text, not only is psychology a science, but it is also considered a core science, along with medicine, earth science, chemistry, physics, and math (Boyack, Klavans, & Börner, 2005). Core sciences are those that have many other disciplines organized around them.

Why Should You Study Psychology?

Reasons for studying psychology vary from person to person. Maybe your adviser suggested it would be a good course to take, or maybe you're taking the course because it satisfies a general education requirement. Psychology is considered part of a good general education because its content is useful in many fields. It is also relevant to your life.

Adopting a scientific perspective on human behavior helps you develop a curiosity for how behavior works. It also fosters an appreciation for how much of human thought and behavior cannot be explained from a single perspective. As you move through this text, you will find that many of the concepts you learn, such as memory, have several definitions depending on how you look at them. *Memory*, for instance, can refer either to a specific recalled event (such as your

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I used to think that intelligence meant only getting good grades in class, nothing more, nothing less. But there are different forms of intelligence beyond tests and grades. Take Gardner's theory of multiple intelligences, for example (see Theories of Intelligence). His theory of intelligence consists of eight natural intelligences! This shifted my entire paradigm regarding intelligence. Now, I see that my sisters are intelligent in more areas than just academics. Their intelligence is not just limited to inside the classroom. With this understanding of intelligence, I encourage my sisters, and others, to continue pursuing their passions and I praise their intelligence in its many forms.

One of the best things that has come out studying psychology is taking the knowledge I have acquired and using it to improve my relationship with my parents. Growing up, I used to butt heads with my parents because we were experiencing the world through different cultural lenses (not uncommon for bicultural children of immigrant parents) which would lead to misunderstandings and misinterpretations of actions and words. For me, everything used to be subjective, but studying psychology has given me the chance to grow and become more open-minded, seeing the world and people's actions in a more objective and mindful manner. There are many ways to look at the same thing. I may not always accept and agree with what my parents say, but at least now I am able to step back from my own feelings and emotions and understand where they are coming from in their role as parents and culturally and respond rather than react. Psychology has allowed me to create a bridge of understanding between mine and my parents' cultural differences.

Another psychology class (Psychology of Prejudice) was a real eye-opener for me. Belonging to a minority group, my community was subject to many forms of discrimination that I could not comprehend and was previously unaware of. Learning the cognitive processes involved in prejudice helped me to understand the world around me better and to help me to be aware of and dampen my own prejudices. I think this is why I love psychology: it allows me to not just understand the world around me, but also to better myself.

I don't just see psychology as an interesting discipline with cool facts, but rather as a crucial tool based in empirical and applied knowledge that plays a role in nearly every aspect of my life. I believe that psychology can pave the path to finding solutions to challenges that we face as a society and members of a global community. It starts with understanding human behavior.

Sana Ahmed, San Jose State University.

memory of last summer's vacation) or to the process by which we recall such information.

Studying psychology not only makes you more aware of how people work in general, but it also makes you more aware of how *you* work—very practical knowledge to have in many settings. Understanding others' thoughts, feelings, and motives—as well as your own—may help you be a more effective doctor, lawyer, businessperson, or friend. Understanding how children learn, think, reason, and play will help you if you become a parent or a teacher. To learn how one recent college graduate has applied her knowledge of psychology in her life, read the "Psychology in the Real World" feature. It is precisely because of both its applied and scientific applications that psychology is a very popular undergraduate major. In 2016–17, psychology ranked second behind business and right above biological and biomedical sciences and engineering among the most popular majors in the United States (Digest of Education Statistics 2017, 2019).

Romy Arroyo Fernandez/NurPhoto/Getty Images

The study of psychology is as old as the human species. Before people wondered about the stars, rocks, and planets, no doubt they tried to

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figure out themselves and others. They did, after all, form relationships, have children, and protect their families. Human babies could not survive without others to care for them. Perhaps that is why people fascinate us. From our very first days, we humans are inherently interested in other humans—for survival. Newborns prefer looking at faces more than almost any other object.

As you begin your study of psychology, you will learn just how broad the field is. You may even find a subfield that dovetails with another interest you have already developed.

Quick Quiz 1: What Is Psychology?

1. Psychology is best defined as the scientific study of
   a. human behavior.
   b. mental illness.
   c. neuroses.
   d. human thought and behavior.
2. As a field, psychology is
   a. a social science.
   b. the practice of diagnosing and treating mental illness.
   c. a biological science.
   d. all of the above.
3. How does psychology differ from the related field of sociology?
   a. Psychology studies systems; sociology studies cultures.
   b. Psychology studies cultures; sociology studies people.
   c. Psychology studies individuals; sociology studies groups.
   d. Psychology studies groups and cultures; sociology studies human behavior.

Answers can be found at the end of the chapter.

SUBDISCIPLINES OF PSYCHOLOGY

As a science and a practice, psychology is divided into various areas of investigation. The science side of psychology conducts research and tests hypotheses. The practice side of psychology is also referred to as "applied" psychology, since it takes psychological practice and applies it to real-world problems such as diagnosing and treating mental illness or exploring how students learn in the classroom.

Just as this book consists of chapters on different topics in psychology, the field of psychology is divided into more than 25 distinct, but increasingly interrelated, subdisciplines. Figure 1 gives a breakdown of the percentages of doctorates awarded in 2017 in each of the major subdisciplines we discuss (Doctorate Recipients, 2018).

It is noteworthy that 71% of all PhDs in psychology in 2017 were earned by women, up from about 67% in 2005. Each subdiscipline in psychology had more than 50% female PhDs, and the only two subfields with less than 60% were experimental psychology and cognitive/psycholinguistics. European-Americans still make up about 75% of psychology PhDs (and about 60% of the U.S. population), but since 2005 the percentage of African-American PhD recipients has increased 12%, Hispanic/Latinx 36%, and Asian-American 46%. It is also worth noting that more PhDs were awarded in psychology in 2017 than all the other social sciences combined (anthropology, economics, political science, and sociology) (Doctorate Recipients, 2018).

Scientific Subdisciplines in Psychology

cognitive psychology
The study of how people perceive, remember, think, speak, and solve problems.

Cognitive psychology is the study of how we perceive information, how we learn and remember, how we acquire and use language, and how we solve problems. For example, a researcher who is concerned with how people visualize objects in their minds is studying cognitive psychology. Those who do research on cognition and

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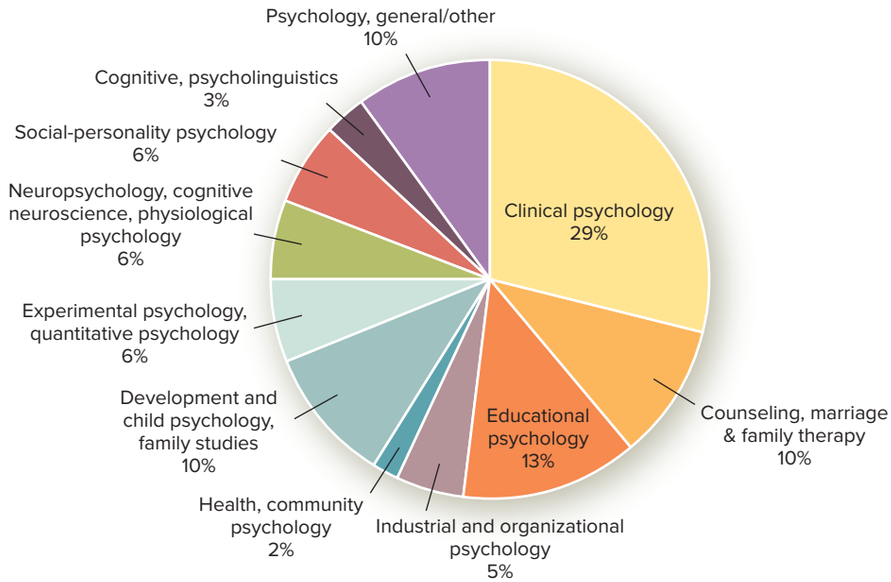

FIGURE **1**
PERCENTAGE OF PhDs AWARDED IN THE SUBFIELDS OF PSYCHOLOGY IN 2017.
Source: Adapted from Doctorate Recipients, 2018

learning are often referred to as *experimental psychologists* because they conduct laboratory experiments to address their research questions.

Developmental psychology explores how thought and behavior change and show stability across the life span. This developmental perspective allows us to appreciate that organisms—human or otherwise—change and grow. Developmental psychologists ask questions such as these: How do our reasoning skills or emotional skills change as we age? How does parent–infant bonding affect adult relationships? Does old age bring wisdom?

developmental psychology
The study of how thought and behavior change and remain stable across the life span.

Behavioral neuroscience studies the links among brain, mind, and behavior. Neuroscience cuts across various disciplines and subdisciplines of psychology. One can study the brain functions involved in learning, emotion, social behavior, and mental illness, to name just a few areas. The more general subdiscipline of **biological psychology** includes research on all areas of connection between bodily systems and chemicals and their relationship to behavior and thought. An example of research in biological psychology appears in the chapter "Stress and Health," where we discuss the effects of stress on hormones and behavior. Neuroscience and biological psychology overlap substantially. Biological or physiological psychology is an older term that is being replaced by *behavioral neuroscience* in contemporary psychology. Using noninvasive advanced imaging techniques and electrical recordings, behavioral neuroscientists study the structure and functions of the living brain.

behavioral neuroscience
The study of the links among brain, mind, and behavior.

biological psychology
The study of the relationship between bodily systems and chemicals and how they influence behavior and thought.

Personality psychology considers what makes people unique, as well as the consistencies in people's behavior across time and situations. Personality research addresses questions such as whether our personal traits and dispositions change or stay the same from infancy to childhood to adulthood. A question from this area, for example, might be whether the tendency to be friendly, anxious, or hostile affects one's health, career choice, or interpersonal relationships or whether a friendly or anxious child will necessarily have the same characteristics in adulthood.

personality psychology
The study of what makes people unique and the consistencies in people's behavior across time and situations.

Social psychology considers how the real or imagined presence of others influences thought, feeling, and behavior. Research on prejudice and racism, for example, looks at how a person of one group perceives and treats people in other groups. Social psychologists ask questions such as these: How does the presence of other people change an individual's thoughts, feelings, or perceptions? Why is someone less likely to help a person in need when there are many people around than when there is no one else around? Why are we attracted to particular kinds of people?

social psychology
The study of how living among others influences thought, feeling, and behavior.

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cross-cultural psychology
is the study of how thought, emotion, personality, mental illness, and behavior varies and is similar across different cultures around the world.

Related to social psychology is **cross-cultural psychology**, which is the study of how thought and behavior varies and is similar across different cultures around the world.

Applied Subdisciplines in Psychology

clinical psychology
The diagnosis and treatment of mental, emotional, and behavioral disorders and the promotion of psychological health.

Clinical psychology focuses on the diagnosis and treatment of mental, emotional, and behavioral disorders and ways to promote psychological health. Some clinical psychologists also conduct research and teach. Clinical psychologists work in universities, medical settings, or private practice. As you can see from Figure 1, clinical psychology is the single largest subdiscipline in psychology.

A related field is *counseling psychology*. Counseling psychologists tend to work with less severe psychological disorders than clinical psychologists. They treat and assess relatively healthy people and assist them with career and vocational interests. Training for counseling psychologists is more likely to occur in schools of education than in psychology departments (Norcross et al., 1998).

Challenge Your Assumptions

True or False? Psychology is made up of many different subfields.

True: Psychology has many subfields and is not just one overall discipline. Each subfield examines an important component of thought and behavior, such as cognition, personality, or social influence.

Other professionals who provide therapy include clinical psychologists who have obtained a PsyD (a professional degree oriented toward nonresearch clinical careers); social workers; marriage and family therapists (who generally have master's degrees); and psychiatrists. Psychiatrists have training in medicine and an MD degree; in addition to offering therapy, they can prescribe drugs.

health psychology
The study of the role psychological factors play in regard to health and illness.

Health psychology examines the role of psychological factors in physical health and illness. Topics in health psychology range from studies of how stress is linked to illness and immune function to studies on the role of social factors in how people interact with health care professionals. Some health psychologists work in disease prevention, treatment, and rehabilitation; thus, this area involves clinical practice as well as research.

educational psychology
The study of how students learn, the effectiveness of particular teaching techniques, the social psychology of schools, and the psychology of teaching.

Educational psychology draws on several other areas of psychology to study how students learn, the effectiveness of particular teaching techniques, the dynamics of school populations, and the psychology of teaching. This field also attempts to understand special populations of students, such as the academically gifted and those with special needs. Educational psychologists are usually academics, theorists, or researchers. *School psychology* is a related field generally practiced by counselors in school settings. Approximately 9% of the doctorates in psychology were awarded in school psychology in 2005–2006.

Matthias Rietschel/AP Images

The woman wearing goggles and headgear is being prepared for a neuroimaging exam in a neuroscience lab.

industrial/organizational (I/O) psychology
The application of psychological concepts and questions to work settings.

Industrial/organizational (I/O) psychology is an applied science, meaning that it involves understanding real-world rather than laboratory behavior (Aamodt, 2010). The industrial and organizational sides focus on two distinct sets of problems. The *industrial* side involves matching employees to their jobs and uses psychological

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principles and methods to select employees and evaluate job performance. For this reason, the industrial side of I/O psychology is also sometimes referred to as personnel psychology. The *organizational* side of I/O aims to make workers more productive and satisfied by considering how work environments and management styles influence worker motivation, satisfaction, and productivity. I/O is one of the fastest-growing subdisciplines in psychology, with a nearly 50% increase in the number of PhD programs between 1986 and 2004 (Rogelberg & Gill, 2006).

Three other applied subdisciplines in psychology are sports psychology, community psychology, and forensic psychology. **Sports psychology** examines the psychological factors that affect performance and participation in sports and exercise (Weinberg & Gould, 2007). For instance, sports psychologists might focus on improving athletic performance through techniques such as relaxation and visualization. **Community psychology** focuses on how individuals are connected to and part of their communities. Like clinical and counseling psychology, community psychology is an applied field that emphasizes how social, cultural, political, and international influences promote positive change and psychological health in individuals and communities. **Forensic psychology** is a blend of psychology, law, and criminal justice (Adler, 2004). Forensic psychologists make legal evaluations of a person's mental competency to stand trial, the state of mind of a defendant at the time of a crime, the fitness of a parent to have custody of children, and allegations of child abuse. Occasionally, they develop criminal profiles of the type of person who might have committed a particular crime.

sports psychology
The study of psychological factors in sports and exercise.

community psychology
An applied subfield of psychology that focuses on how individuals are connected to and part of their communities.

forensic psychology
The field that blends psychology, law, and criminal justice.

Quick Quiz 2: Subdisciplines of Psychology

1. What subdiscipline of psychology examines how thoughts, feelings, and behaviors change over the life span?
   a. developmental psychology
   b. cognitive psychology
   c. personality psychology
   d. educational psychology
2. A psychologist has conducted a series of studies on which part of the brain is most active during a memory task. She is probably
   a. a developmental psychologist.
   b. a behavioral neuroscientist.
   c. a cognitive psychologist.
   d. an industrial/organizational psychologist.
3. The main difference between a clinical and a counseling psychologist is that counseling psychologists treat
   a. people with more severe psychological disorders.
   b. more children than adults.
   c. people with less severe psychological disorders.
   d. people with learning disabilities only.

Answers can be found at the end of the chapter.

THE ORIGINS OF PSYCHOLOGY

In this section, we look briefly at the origins of the two main forms of psychology: clinical practice and science. The practice of psychology has deeper roots in human history than does the science of psychology. The prehistoric record offers evidence of efforts to heal people's suffering from disturbances of the mind, often in ways we now find alarming. The foundations for psychology as a science date back to the ancient Greeks, and the modern science of psychology originated in the 1870s (Robinson, 1995). First, we consider the practice of psychology—that is, clinical psychology.

A Brief History of the Practice of Clinical Psychology

Disorders of thought and behavior are no doubt as old as humans—indeed, there is evidence that primates (monkeys and apes) are afflicted with psychological

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disorders such as depression, anxiety, repetitive and functionless behaviors, and self-injuries (Maestripieri et al., 2006; Novak, 2003; Shackelford & Zeigler-Hill, 2017; Troisi, 2003). Thus, research suggests that these behaviors go back to the ancestors of both species, in this case approximately 6 million years.

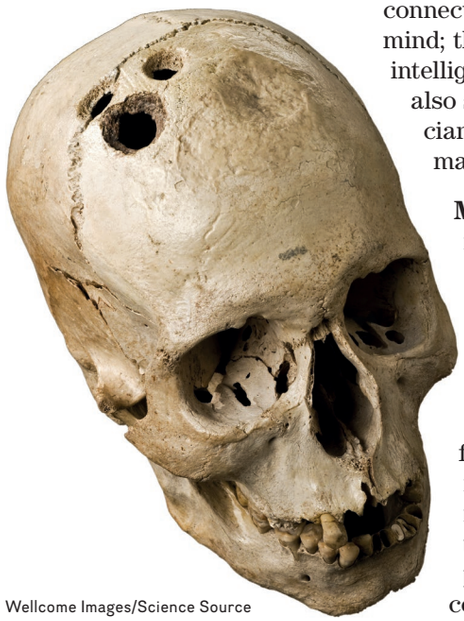
Prehistoric Views As far back as the Stone Age (7,000 years ago and maybe even as long as 50,000 years ago), humans tried to cure one another of various mental problems. Most prehistoric cultures had medicine men or women, known as **shamans**, who treated the possessed by driving out demons with elaborate rituals, such as exorcisms, incantations, and prayers. Some of these shamans appeared to have practiced the oldest of all known surgical procedures, trephination.

shamans
Medicine men or women who treat people with mental problems by driving out their demons with elaborate rituals, such as exorcisms, incantations, and prayers.

Trephination involves drilling a small hole in a person's skull, usually less than an inch in diameter (Alt et al., 1997; Faria, 2015; Weber & Wahl, 2006). Some of these surgeries may have been for medical reasons, such as an attempt to heal a brain injury. Some may also have been performed for psychological reasons, to release the spirits and demons they believed possessed the afflicted person. Others have argued that because prehistoric people had witnessed head injuries that resulted in dying and sometimes "undying" (waking up from concussion or coma), drilling holes was an attempt to "let out the spirit" that entered the head and caused people to die (Faria, 2015). Anthropological evidence suggests that a surprisingly large percentage of people survived such surgeries—which today's scientists can confirm by identifying bone growth after the procedure—and the surgeons must have had moderately sophisticated knowledge and understanding of the brain (Alt et al., 1997; Faria, 2015; Weber & Wahl, 2006).

Ancient Views Around 2600 BCE (Before the Common Era), the ancient Chinese moved away from supernatural explanations of psychological disorders toward natural and physiological explanations (Tseng, 1973). Specifically, they made connections between a person's bodily organs and emotions. The heart housed the mind; the liver, the spiritual soul; the lung, the animal soul; the spleen, ideas and intelligence; and the kidneys, will and vitality. The ancient Egyptians and Greeks also sought natural explanations for psychological disorders. The Greek physician Hippocrates (460–377 BCE), for example, was the first to write about a man suffering from a phobia of heights—now called acrophobia.

asylums
Facilities for treating the mentally ill in Europe during the Middle Ages and into the 19th century.



Wellcome Images/Science Source

The hole in this skull may have been created by trephination, a prehistoric practice believed to release spirits or demons responsible for psychological disturbances.

What do you think actually happens to those who undergo such a procedure?

Medieval to Early Modern Views In medieval Europe from approximately 400 to 1400 CE (Common Era), psychological disorders were again attributed to supernatural causes. In the worldview that dominated this era and the Renaissance (from about 1400 to the early 1600s), people who behaved in unusual ways were thought to be possessed by demons, spirits, and the devil—not by physical disorders. These views were taken to an extreme during the Inquisition, when the Catholic Church investigated witchcraft and heresy as part of a broad campaign to eliminate dissent from established Church dogma. In order to distinguish good witchcraft from bad, Church officials held inquisitions and trials, using several techniques to determine whether a person was a witch (Robinson, 1995). Sometimes the accused was prodded with a metal pole and spears; if she felt no pain, she was protected by the devil and therefore was a witch. In another common method, the *float test*, the woman's hands and feet were tied, and she was thrown into a lake or river. If she floated, she had to be guilty, because only the devil could make someone float; if she sank, she was innocent—but had drowned (Robinson, 1995). The most common punishment for the infrequent survivor of the float test—deemed to be a witch—was being burned at the stake.

During the witch hunts of the 16th and 17th centuries, the first facilities for the mentally ill—called **asylums**—were built throughout Europe. The most famous, or infamous, of these was located at St. Mary of Bethlehem in London, England. Although it had served as a hospital for the mentally ill and others since

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Bettmann/Getty Images

In the Middle Ages, people who were judged to be witches could be burned at the stake. Some of them may have had psychological disorders that caused them to behave strangely.

Although we see these as very outdated reactions to those who may be mentally ill, can you think of modern-day reactions that one day may also seem just as outdated?

the 1300s, Henry VIII designated it as a hospital for the insane in 1547. It was really no more than a storage house for the mentally ill and other social castaways. The conditions were deplorable and chaotic—patients were put in windowless and filthy rooms and were chained and shackled to the walls.

In response to these inhumane conditions, reform movements in support of **moral treatment** emerged in Europe and the United States. The main idea was to provide a relaxing place where patients would be treated with dignity and care. The first major proponent of humane therapies was the Frenchman Philippe Pinel in 1783. Dorothea Dix pioneered moral treatment in the United States. After visiting a prison in 1841 and witnessing the abhorrent and inhumane treatment of the inmates, some of them suffering from psychological disorders, Dix vowed to change these conditions. Moral therapies were among the first forms of treatment that regularly helped people get better.

moral treatment
A 19th-century approach to treating the mentally ill with dignity in a caring environment.

Modern Views The last decades of the 1800s also saw the emergence of the first truly modern view of psychological disorders—the idea that they are simply one form of illness and should be treated as medical conditions, with appropriate diagnosis and therapy. This view is now known as the "medical model" perspective in clinical psychology. In the 1880s and 1890s, the German psychiatrist Emil Kraepelin collected data on the various kinds of psychological disorders and began systematically classifying and diagnosing them (Shepard, 1995). He popularized the term *dementia praecox* (premature dementia), which he later changed to *schizophrenia*, to refer to the major thought disorder known previously as "split mind." He was also the first to distinguish thought disorders (schizophrenia) from the mood disorders of melancholia (depression) and manic depression (bipolar disorder; Jablensky & Woodbury, 1995).

Around the turn of the 20th century in Austria, Sigmund Freud developed a form of therapy called psychoanalysis. A clinical approach to understanding and

Connection

Disturbance, dysfunction, distress, and deviance must be present for the diagnosis of psychological disorders. The *DSM-5* describes specific symptoms of more than 250 different disorders.

See "Defining Psychological Disorders," in the chapter "Psychological Disorders."

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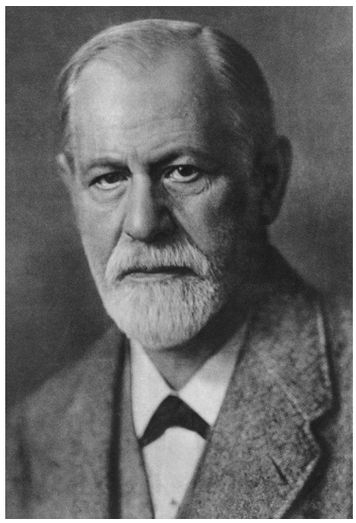
psychoanalysis
A clinically based approach to understanding and treating psychological disorders; assumes that the unconscious mind is the most powerful force behind thought and behavior.



Source: Library of Congress, Prints & Photographs Division

Sigmund Freud

treating psychological disorders, **psychoanalysis** assumes that the unconscious mind is the most powerful force behind thought and behavior and that dreams have meaning and are the most direct route to the unconscious mind (Freud, 1900/1953). It also assumes that our experiences during childhood are a powerful force in the development of our adult personality. Psychoanalysis assumes that people use psychological defenses to protect themselves against threatening impulses, thoughts, feelings, and fantasies. Last, it assumes that the unconscious blocking, or repression, of disturbing thoughts and impulses—especially sexual and aggressive impulses—is at the heart of all maladaptive adult behavior.

By the mid-20th century, three of the major modern developments in clinical psychology had emerged: psychotherapy, drug therapy, and modern criteria for diagnosing mental disorders. For example, one common form of modern therapy—cognitive-behavioral—focuses on changing a person's maladaptive thought and behavior patterns by discussing and rewarding more appropriate ways of thinking and behaving.

When diagnosing psychological disorders, psychologists use the *Diagnostic and Statistical Manual*. Currently in its fifth edition, this standardized reference is referred to as the *Diagnostic and Statistical Manual–5*, or *DSM-5* (American Psychiatric Association, 2013). Originally published in 1952, the *DSM* includes diagnoses for more than 250 psychological disorders. The various editions of the *DSM* have incorporated new findings and added new disorders, objectively describing the behaviors and symptoms of each disorder, so that psychologists from all perspectives can agree on a single diagnosis for an individual with a given set of symptoms. You might find it surprising to know, however, that this goal of universal agreement often is not achieved, so different clinicians hold different views about what constitutes a mental disorder. Occasionally, the *DSM* authors have removed behavior patterns (such as homosexuality, which was deleted from the list of disorders recognized by the American Psychiatric Association in 1973) that do not meet updated diagnostic criteria. Clearly, perspective matters when it comes to psychological treatment, and we must continually question what we know from the perspective we are adopting.

A Brief History of the Origins of Scientific Psychology

As with all sciences, scientific psychology can claim philosophy as one of its parent disciplines. By the middle of the 1800s, however, psychology had grown away from philosophy to become a science. Let's look briefly at this history.

The Philosophy of Empiricism Perhaps the most important philosophical question for psychology is the nature of knowledge and how human beings create knowledge. Does knowledge come from reflection and thinking or from experience? In the 4th century BCE, the Greek philosopher Plato argued for the former and his student Aristotle for the latter. In 17th-century Europe, however, the English philosopher John Locke established the view that knowledge and thoughts come from experience and observations, a point of view known as **empiricism**. Specifically, Locke argued that the mind begins as a *tabula rasa*, or blank slate, onto which experience writes the contents of the mind (Locke, 1690/1959).

empiricism
The view that all knowledge and thoughts come from experience.

This view that the mind simply receives what our sensory organs—eyes, ears, nose, skin, and tongue—take in from the outside world is very important in philosophy and psychology. In contrast to scientists, however, philosophers do not collect data to test their ideas. Psychology gained its independence from philosophy when researchers started to examine and test human sensations and perception using scientific methods. Psychology as a modern empirical science tests predictions about behavior with systematic observations and gathered data.

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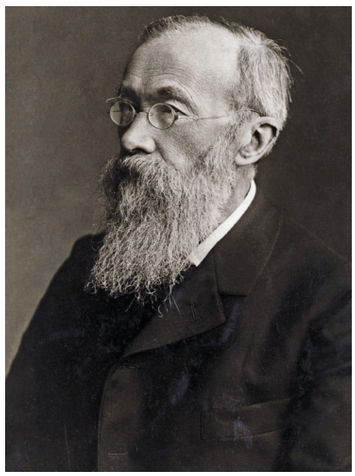
The Psychophysics of Human Perception The starting point for empiricism is that we know and experience the world through our five senses of seeing, hearing, tasting, smelling, and touching. Because of the profound influence of the empiricists, in the 1870s physicists who wanted to understand how people process and experience the sensations of sound, light, smell, taste, and touch developed the field of **psychophysics**—the psychology of physical sensations. By doing so, these physicists started the scientific discipline of psychology. The reasoning was that if the mind consists only of what we sense, then understanding the senses will lead to a direct understanding of the mind.

psychophysics
The study of how people experience physical stimuli such as light, sound waves, and touch.

The scientists who first developed psychophysics were the first experimental psychologists. Ernst Weber (1795–1878) did some of the first research in perception and laid the groundwork for what later became known as psychophysics. For instance, he investigated the smallest change in weight or length that people could discern. Then, in 1850, building on the work of his mentor Weber, Gustav Fechner (1801–1889) had a sudden realization that one could study the psychological and physical worlds. Fechner coined the term *psychophysics* for this new discipline, and he went on to refine some of Weber's principles of perception (Fancher, 1996).

A physician and physicist, Hermann von Helmholtz (1821–1894) not only made important contributions to the study of memory, physiology, and color vision but also made key contributions to the laws of conservation in physics and to music theory, meteorology, and geometry; he designed a workable telephone years before Alexander Graham Bell (Benjamin, 2007). In addition, he was the first to calculate the speed of a nerve impulse at about 90 feet per second. With the work of these pioneers, psychophysics took the first steps toward establishing psychology as a science.



Bettmann/Contributor/Getty Images

Wilhelm Wundt

Psychology blossomed into a full-fledged science with the help of Wilhelm Wundt (1832–1920). In 1879 (one of the few dates in the history of psychology worth remembering!), Wundt set up a psychology laboratory in Leipzig, Germany, now considered the birthplace of experimental psychology. Although others went before Wundt, he is credited with giving psychology its independence from philosophy and physiology (Benjamin, 2007; Fancher, 1996). He did so by applying the scientific methods of physiology and physics to questions of philosophy (Benjamin, 2007). Before Wundt, people evaluated the question of how the mind worked only by way of argument, not by scientific investigation.

An American, G. Stanley Hall (1844–1924) went to Germany to learn from Wundt. At Harvard, Hall also studied with William James, who is considered the founder of American psychology. Hall holds the distinction of earning the first PhD (1878) in psychology in the United States as James's student. He opened the first psychology laboratory in the United States at Johns Hopkins University in Baltimore, officially establishing psychology as a science in this country. He also founded the American Psychological Association (APA) and became its first president in 1892. Hall started the first scientific journal in American psychology, the *American Journal of Psychology*. G. Stanley Hall was also the teacher and mentor of Francis Cecil Sumner (1895–1954), the first African American to earn a PhD in psychology (1920). From 1928 until his death in 1954, Sumner chaired the psychology department at Howard University, where he conducted research on equality and justice.

Bettmann/Getty Images

William James

Another of William James's students, Mary Whiton Calkins (1863–1930), became the first female president of the APA in 1905. Harvard was an all-male university until 1920, and the male students did not want to have a woman in class, so she and James had to conduct their coursework in James's home. Calkins went on to complete the requirements for the PhD, although Harvard would not grant her the degree, simply because she was a woman (Benjamin, 2007). Nevertheless, Calkins had an accomplished academic career. She taught at Wellesley College and conducted research on dreaming, gender issues, and self-image (Furumoto, 1981). James acknowledged her to be among the best students he had ever encountered (Benjamin, 2007).

Our review of the history of psychological science, summarized in Figure 2, has only scratched the surface of how psychologists think about human thought

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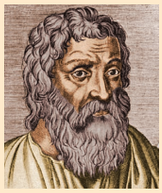
FIGURE **2**

KEY FIGURES AND EVENTS IN THE HISTORY OF PSYCHOLOGY.



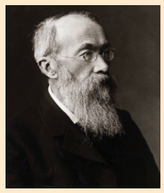
460–377 BCE
Hippocrates describes a patient suffering from mental disorder

5,000 BCE
Trephination is used to release the spirits and demons from the mind

1690
John Locke proposes that the mind is a blank slate to be written on by experience

1860

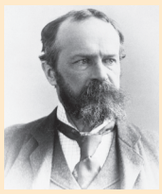
1860
Gustav Fechner publishes *Elemente der Psychophysik,* establishing the discipline of psychophysics



1870

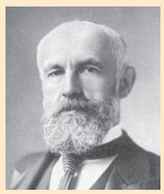
1880

1879
Wilhelm Wundt opens first psychology laboratory in Leipzig, Germany

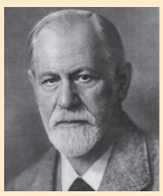


1890

1890
William James publishes *Principles of Psychology,* a text in 2 volumes



1892
G. Stanley Hall, a founding father of the American Psychological Association (APA), becomes its first president



1900

1900
Sigmund Freud introduces his psychoanalytic theory of behavior with the publication of *Interpretation of Dreams*

1905
Mary Whiton Calkins becomes first female president of the APA

1910

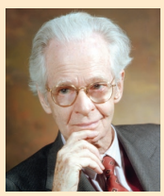
1912
Max Wertheimer develops the principles of Gestalt psychology

1913
John B. Watson establishes behaviorism to study observable behavior

1920

1920
Francis Cecil Sumner becomes first African American to earn a PhD in psychology

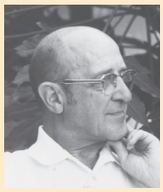
1930



1932
Frederick Bartlett lays the foundation for cognitive science with his book *Remembering*

1940

1938
B. F. Skinner publishes *The Behavior of Organisms,* outlining his version of behaviorism



1950

1950
Karen Horney publishes *Neurosis and Human Growth* outlining her psychoanalytic social theory as an alternative to Freud's psychosexual theory

1951
Carl Rogers publishes *Client-Centered Therapy,* advocating a new humanistic approach emphasizing personal growth

1953
Abraham Maslow's *Motivation and Personality* outlines the stages of growth leading to personal fulfillment

1960

1965
Jean Piaget publishes *The Child's Conception of Number*

1970

1980

1974
Eleanor Maccoby and Carol Jacklin publish a seminal book on gender, *The Psychology of Sex Differences*

1990

1992
John Tooby and Leda Cosmides publish a landmark chapter, "The Evolutionary Foundations of Culture," that jump-starts evolutionary psychology

2000

1998
Martin Seligman starts the positive psychology movement with Mihaly Csíkszentmihalyi to study and promote psychological well-being

Hippocrates: Stock Montage/Archive Photos/Getty Images; Wilhelm Wundt: Bettmann/Contributor/Getty Images; William James: Bettmann/Getty Images; G. Stanley Hall: Bettmann/Getty Images; Sigmund Freud: Source: Library of Congress, Prints & Photographs Division; B.F. Skinner: Bachrach/Archive Photos/Getty Images; Carl Rogers: Bettmann/Getty Images; Karen Horney: Bettmann/Getty Images; Eleanor Maccoby: Courtesy Stanford News Service; Martin Seligman: Courtesy of Dr. Martin E.P. Seligman, University of Pennsylvania.

and behavior, about mind, body, and experience. Debates and theories about how and why we think and act the way we do go back thousands of years. Some of the key debates remain unresolved to this day, primarily because in many cases no one perspective explains the whole story of how things work. These systems of thought have profoundly influenced the development of psychology. Let's now consider the major ways of thinking about mind, body, and experience that have shaped modern psychological science.

Quick Quiz 3: The Origins of Psychology

1. What perspective in psychology assumes that the unconscious is the most powerful force behind most behavior?
   a. trephination
   b. cognitive psychology
   c. humanism
   d. psychoanalysis
2. _____ argued that thoughts, feelings, and motives are unimportant in understanding human behavior.
   a. Behaviorists
   b. Psychoanalysts
   c. Functionalists
   d. Gestalt psychologists
3. Positive psychology is a modern version of which school of thought?
   a. psychoanalysis
   b. humanism
   c. functionalism
   d. introspectionism

Answers can be found at the end of the chapter.

PSYCHOLOGICAL PERSPECTIVES: EXPLAINING HUMAN BEHAVIOR

One of the primary functions of science is to describe and explain how the world works. Psychologists attempt to explain how human thought, emotion, motivation, and behavior work. However, people are so complex that many different perspectives have arisen to explain human thought and behavior. These perspectives make different assumptions and focus on different aspects of behavior. In psychology, there are at least seven major perspectives that explain human behavior (see Figure 3). These perspectives are distinct but can be and sometimes are integrated. After all, it's not all black and white.

Psychoanalytic-Psychodynamic

Beginning with Freud, psychoanalytic and the more recently developed psychodynamic approaches focus on the importance of early childhood experience and relationships with parents as guiding forces that shape personality development. Additionally, this view sees the unconscious mind and motives as much more influential than conscious awareness. Psychoanalysis traditionally used dream interpretation and uncovering unconscious thoughts, feelings, and impulses as a primary method of treating neurosis and mental illness.

Behaviorism-Learning

Founded by John Watson, **behaviorism** argues that if you want to understand behavior you should focus only on behavior, not hypothetical and unobservable internal states such as thoughts, feelings, drives, or motives. All behaviors are learned through association and/or their consequences (whether the behavior is reinforced or punished). To shape desired behavior, we have to understand and then establish the conditions that bring about those particular behaviors.

behaviorism
A school of psychology that proposed that psychology can be a true science only if it examines observable behavior, not ideas, thoughts, feelings, or motives.

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Perspective	Primary Assumptions	Focus	Key Figures
Psychoanalytic-Psychodynamic	• first 5 years of life most shape personality • unconscious forces are most important	unconscious thoughts and motives	Freud Adler Jung Horney
Behavioral-Learning	• only explanation for behavior is the conditions that create behavior • learning occurs through association and consequences of the behavior	behavior, learning, and environmental conditions	Pavlov Watson Skinner Bandura
Cognitive	• thoughts, heuristics, and assumptions are the primary forces behind behavior	thoughts, language, assumptions, memory, decision-making strategies	Chomsky Piaget Kahneman Tversky
Humanistic-Positive	• people strive to live meaningful, happy lives • people are motivated by growth and psychological health	meaningful life, psychological well-being, and growth	Maslow Rogers Seligman
Sociocultural/ Cross-Cultural	• thought, behavior, and personality are mostly products of social and cultural conditions • there are both similarities and differences in thought, personality, and behavior cross-culturally	cultural and society	Hofstede Triandis
Neuropsychology-Behavioral Genetic	• the foundation for thought and behavior is biological and genetic forces	brain structures, neurochemicals, and genes	Kandel Milner Bouchard Plomin
Evolutionary	• human thought and behavior have been shaped by evolutionary forces (natural and sexual selection)	adaptive mechanisms	Tooby Cosmides Buss

FIGURE **3**
SUMMARY OF SEVEN MAJOR PERSPECTIVES IN PSYCHOLOGY.

Humanistic-Positive

Humanistic-positive psychology
Assumes that people strive toward meaning, growth, well-being, happiness, and psychological health; positive emotions and happiness foster psychological health and pro-social behavior.

Humanistic-positive psychology assumes that people strive toward meaning, growth, well-being, happiness, and psychological health; positive emotions and happiness foster psychological health and pro-social behavior. Understanding these evolved positive aspects of human behavior provides just as much insight into human nature as does understanding the pathological aspects (Seligman, 2003).

Cognitive

How we think about ourselves, other people, and the world, as well as the assumptions we make and the strategies we use for solving problems and interacting with others are the keys to understanding differences between people. The particular language we learn and use shapes our way of thinking and perceiving. Memory formation is not a passive process but is shaped by our experiences, attitudes, and personalities. In short, what we do is shaped by how we think and perceive the world.

Sociocultural/Cross-Cultural

The immediate (micro; family, friends) and larger (macro; regional and national) environments impact and mold a person's personality from birth on. One can't understand people without understanding the place and context in which they grew up. Cultures differ along particular dimensions—such as collectivism–individualism or masculinity–femininity—and these cultural differences

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influence the thought and behavior of individuals within each culture. Psychological outcomes can also be compared between cultures, and there are both similarities and differences across cultures.

Neuropsychological-Behavioral Genetic

Behavior, thoughts, feelings, and personality are influenced by differences in basic genetic, epigenetic, and neurological systems between individuals. People have different traits, dispositions, and ways of thinking due to differences in their genotype and central nervous system (brain structures and neurochemistry).

Evolutionary

Because human thought, behavior, and personality are based on evolved brain systems, they have been shaped by forces of evolution (natural and sexual selection) over millions of years. The body, brain, and environment coexist and coevolved, and so more than any other psychological perspective the evolutionary perspective emphasizes that what we think, feel, and do is always an interaction between nature (biological) and nurture (environment).

In addition to these seven psychological perspectives, there are two other overarching issues that have colored much of psychology over the previous few decades: the nature–nurture debate and an increased appreciation for the evolution of human behavior.

The Nature–Nurture Debate

For millennia, thinkers have argued over what determines our personality and behavior—innate biology or life experience (Pinker, 2004; Stewart-Williams, 2018)—a conflict known as the *nature–nurture debate*. The nature-only view is that who we are comes from inborn tendencies and genetically based traits.

On the one hand, the nature-only position argues that inborn and innate (that is, genetic and biological) qualities are the strongest determinants of thought and behavior. We are born predisposed toward particular personality traits and styles of thinking and behaving. On the other hand, the nurture-only side states that we are all essentially the same at birth and that we are the product of our experiences. As we have already considered, John Locke (1690/1959) popularized the idea that the newborn human mind is a blank slate on which the experiences of life are written. This accumulation of experiences makes us who we are. This view means that anything is possible. You can be anything you want to be. It stands as the cornerstone of democracy, free will, and equality (Pinker, 2002).

Until the late 1990s and early 2000s, psychologists generally fell into either a nature or a nurture camp. As has since been widely accepted, pitting nature against nurture gets us nowhere (Kitayama & Salvador, 2017). It creates a false split, or false dichotomy, that hinders our understanding of the mind and behavior. Almost nothing in psychology can be categorized as either nature or nurture—not learning, not memory, not cognition, not emotion, not even social behavior!

What we are born with and what we are exposed to interact to create thought and behavior. For decades, many psychologists have shied away from the idea of an interrelationship, clinging to the nature-nurture debate. Old habits die hard. To fully appreciate human behavior, we must take a broader view. All creatures are born with genetic instructions, but even before birth environmental factors alter the ways in which genes are expressed. Throughout life, genetic factors, such as a familial predisposition toward anxiety, assert themselves. Rather than pitting nature against nurture, we prefer the phrase **nature through nurture**, whereby the environment—be it the womb or the world outside—interacts continuously with biology to shape who we are and what we do (Begley, 2007; Pinker, 2004; Ridley, 2003; Sasaki & Kim, 2016; Stewart-Williams, 2018).

nature through nurture
The position that the environment constantly interacts with biology to shape who we are and what we do.

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The Evolution of Human Behavior

One principle that plays an important role in understanding human behavior is evolution. The basics of this theory are more complex than most of us realize. Here we briefly explain the fundamental processes of evolution.

evolution
The change over time in the frequency with which specific genes occur within a breeding species.

Evolution means "change." With respect to biological species, **evolution** is the change over time in the frequency with which specific genes occur within a breeding species (Buss, 1999). These changes take place by *natural and sexual selection*.

natural selection
A feedback process whereby nature favors one design over another because it has an impact on reproduction.

First described by the 19th-century English naturalist Charles Darwin (1809–1882), **natural selection** is formally defined as a feedback process whereby nature favors one design over another, depending on whether it has an impact on reproduction. This process takes a long time to work, but it ultimately shapes who we are and how species evolve. Charles Darwin's great contribution was not the theory of evolution itself but rather his explanation of *how evolution works*—that is, by natural and sexual selection.

Natural selection occurs by chance. Every once in a while, genes change for no apparent reason. Spontaneous changes in genes, called *chance mutations*, can alter the design of a structure or a set of behaviors. Let's suppose that a chance mutation in a population of green beetles results in a brown beetle. If the brown beetle is less visible to predators, it might have more success in surviving and reproducing, as Figure 4 shows. When it reproduces, the brown beetle passes on its "brown" genes to its offspring.

The brown offspring have a better survival rate, which means they are more likely to reproduce. Eventually, this physiological trait becomes common among members of the species. The complete change takes many generations, but

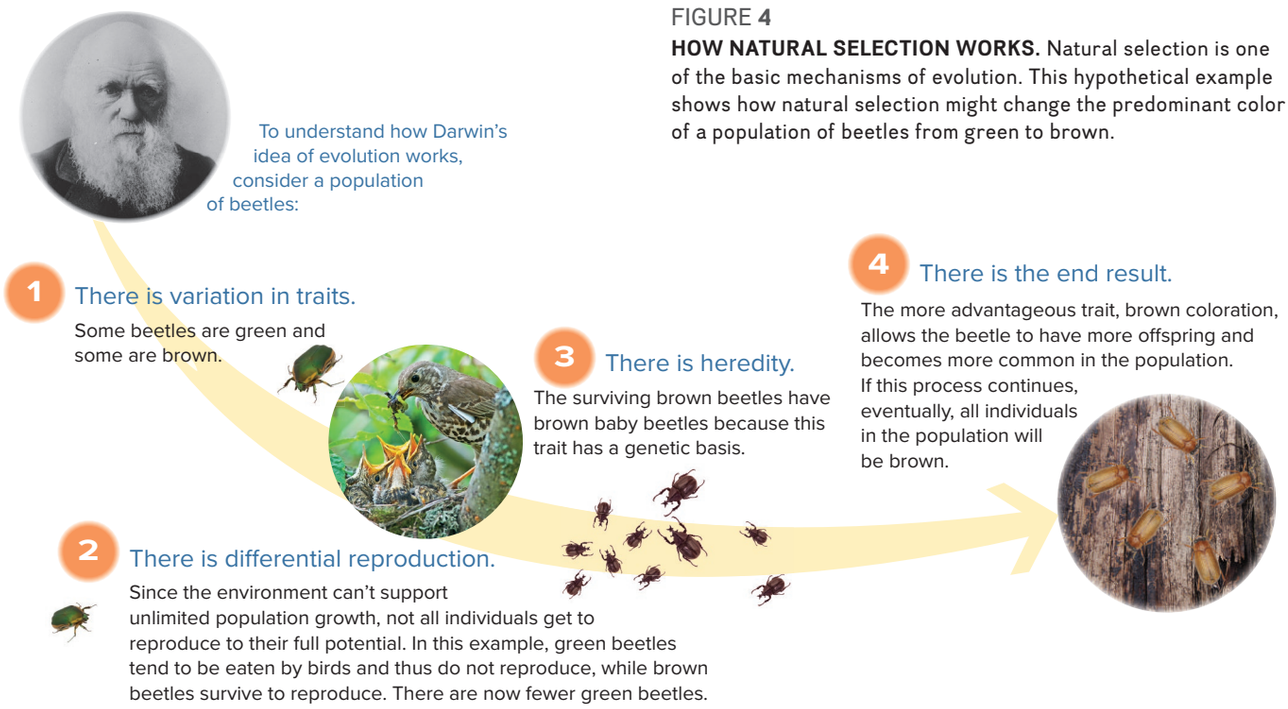

FIGURE **4**
HOW NATURAL SELECTION WORKS. Natural selection is one of the basic mechanisms of evolution. This hypothetical example shows how natural selection might change the predominant color of a population of beetles from green to brown.

Darwin: Source: Library of Congress Prints and Photographs Division [LC- DIG-ggbain-03485]; green beetles: Melinda Fawver/Getty Images; bird: Dave Cole/Alamy Stock Photo; brown chafer: gstalker/Shutterstock; rhinoceros beetle: Ingram Publishing/Fotosearch; tree trunk: Denise McCullough

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IanRedding/Shutterstock

In industrial England in the 1800s, the peppered moth, which was originally mostly white, blended into the white lichen on trees. Pollution killed the white lichen on trees and put the original white moth in danger of being easy prey. Some started to become darker to blend in with the lichenless trees.

How does this exemplify Darwin's idea of natural selection?

eventually the entire beetle species will be brown (Tooby & Cosmides, 1992). The key in natural selection is that the behaviors have to increase reproductive success, because reproduction and gene transmission drive the whole process. The accumulation of chance mutations underlies evolutionary change. Each generation is a product of beneficial modifications from its evolutionary past.

Another form of selection happens not through mutation and chance but rather through attracting members of the opposite sex. Darwin in fact proposed a second form of selection, namely **sexual selection**, which operates when members of the opposite sex find certain traits attractive or appealing and therefore over long periods of time these traits become more common in the population (Darwin, 1859; Miller, 2000).

sexual selection
Operates when members of the opposite sex find certain traits attractive or appealing and therefore over long periods of time these traits become more common in the population.

Natural and sexual selection create structures, behaviors, and traits that solve adaptive problems. Among the adaptive problems that our early human ancestors faced were avoiding predators, choosing nutritious foods, finding a mate, and communicating effectively with others. **Adaptations** are inherited solutions to ancestral problems that have been naturally and sexually selected because they directly contribute in some way to reproductive success (Tooby & Cosmides, 1992). Adaptations evolved to solve problems in past generations, not current ones. Even though these tendencies might not seem to enhance our fitness in today's world, eons spent in harsher environments have left us predisposed to perform certain social behaviors when a situation calls forth ancient patterns. Consider our preference for fatty foods. In our evolutionary past, eating fat was a good strategy. Early humans, as hunter-gatherers, did not know when they would find food. If they found fat, they ate it, because fat could be stored in the body and used later when food might be scarce. For this reason,

adaptations
Inherited solutions to ancestral problems that have been selected for because they contribute in some way to reproductive success.

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humans evolved to like fat. Modern society, however, offers easy access to food. Now eating fat is not the best strategy, because we don't need to store it for future use.

evolutionary psychology
The branch of psychology that studies human behavior by asking what adaptive problems it may have solved for our early ancestors.

Evolutionary psychology is the branch of psychology that aims to uncover the adaptive problems the human mind may have solved in the distant past and the effect of evolution on behavior today. Rather than just describing what the mind does, evolutionary psychologists are interested in the functions of the human mind (Tooby & Cosmides, 1992). How do human behaviors evolve?

Let's consider the emotions as an example of a behavioral adaptation. In the chapter "Motivation and Emotion," we discuss emotions in detail and explore the feelings that move us powerfully. For now, imagine that you are driving on the highway and the car in the lane next to you has just cut you off. You have to slam on your brakes to keep from smashing into it, and you are shaking with fright. The possible car accident is an immediate cause of your fear.

Why do you experience this intense bodily reaction called fear in the first place? The answer, from an evolutionary perspective, is that fear was naturally selected to solve an adaptive problem. What we call fear—including the way it moves our bodies, impels us to act, and makes our hearts race—evolved because it helps us deal quickly and efficiently with danger (Ekman, 2003). Emotions are behavioral adaptations. They are quick and ready response patterns that tell us whether something is good or bad for our well-being (Ekman, 2003; Lazarus, 1991).

Not all products of evolution are adaptations. Sometimes things evolve because they solve one problem and just happen to solve another one too. These structures or features that perform a function that did not arise through natural selection are often called *by-products* (Buss, 1999; Gould & Vrba, 1982). An example of a by-product is feathers. Feathers probably evolved for insulation in flightless dinosaurs, but they turned out to be useful for flight in birds, the dinosaurs' descendants. Because feathers did not evolve for that purpose, they are considered by-products (*Exaptations*, 2006).

Nothing illustrates more vividly than evolution how nature and nurture work together. Depending on how they enable organisms to respond to their

Frank Lukasseck/Getty Images

Early hunters, like the ones portrayed in this ancient rock painting from the Tadrart Acacus of Libya, ate fat when food was available, and their bodies stored the excess in order to survive when food was scarce. This adaptation has persisted for thousands of years, even though for most people access to food is not a problem.

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environment, certain characteristics of animals predominate or not—such as the brown color of a beetle and the fear response in humans. Nature and nurture work together to create our bodies (including our brains) and behavior.

Quick Quiz 4: Psychological Perspectives: Explaining Human Behavior

1. Charles Darwin's great contribution was the theory of
   a. how evolution works (natural selection).
   b. evolution.
   c. psychoanalysis.
   d. adaptations.
2. Which phrase most accurately reflects a modern perspective in psychology?
   a. nature versus nurture
   b. nature over nurture
   c. nurture over nature
   d. nature through nurture
3. A _____ psychologist would be most interested in understanding what it means to be fully functioning, whereas a _____ psychologist would focus on what people do and not what they think or feel.
   a. cognitive; psychoanalytic
   b. psychoanalytic; social-learning
   c. evolutionary; biological
   d. humanistic; behavioral
4. The perspective that argues that unconscious thoughts and feelings are most important in a person's personality is
   a. Behaviorism-Learning.
   b. Humanistic-Positive.
   c. Cognitive.
   d. Psychoanalytic-Psychodynamic.

Answers can be found at the end of the chapter.

NO ONE PERSPECTIVE TELLS THE WHOLE STORY IN PSYCHOLOGY

As we have seen in this chapter, in order to fully appreciate the complexity of human thought and behavior, one must consider a wide variety of perspectives—no one perspective tells the whole story. Throughout this text we highlight diverse explanations of human thought and behavior. This variety of perspectives raises the question, How does one resolve the various views? There are two strategies for answering this question: by using science and critical thinking and by making connections.

Challenge Your Assumptions

True or False? Psychologists agree that most of human thought and behavior cannot be explained by one perspective.

True: Human thought and behavior are so complex and determined by so many different factors that no one perspective can fully capture the richness of human psychology.

Challenging Assumptions and Not Believing Everything You Think—The Art of Critical Thinking

A major theme of this book is that science and education both involve the ability to challenge assumptions. But what do we mean by that? An **assumption** is a starting point for our thinking and reasoning. In everyday life, assumptions are taken for granted. That is, they are assumed to be true. In science, however, assumptions are tested empirically with the scientific method and/or logically with critical thinking. Whether we are evaluating the information conveyed on a Facebook feed or the merits of a scientific perspective, we need to use our skills as critical thinkers to distinguish fact from fiction. To apply critical thinking skills, we should ask ourselves, What is the evidence for this conclusion, and is it valid?

So what exactly is critical thinking? We can answer this question in part by examining the origin of the word *critical*. It comes from the ancient Greek word *kritikos* and means "to question, to make sense of, and to be able to analyze; or to be skilled at judging" (Chaffee, 1999, p. 32). Educator Paul Chance has provided a more complete definition of **critical thinking**: "The ability to analyze facts,

assumption
A starting point for our thinking and reasoning that often is taken for granted.

critical thinking
A process by which one analyzes, evaluates, and forms ideas.

Challenge Your Assumptions

True or False? Critical thinking involves seeing only the weaknesses and flaws in ideas.

False: Critical thinking involves seeing both strengths and weaknesses in claims and evidence.

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generate and organize ideas, defend opinions, make comparisons, draw inferences, evaluate arguments, and solve problems" (Chance, 1986, p. 6). The core traits of critical thinking are sound analysis, evaluation, and the formation of ideas based on the evidence at hand.

What a Critical Thinker Does

- Analyze
- Evaluate
- Make inferences
- Interpret
- Explain
- Self-regulate

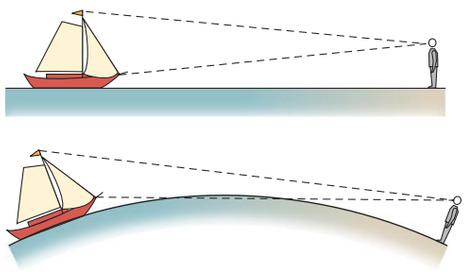
If you become skilled in these activities, or at least in most of them, you will be able to think critically. In particular, you will be able to counter assertions that have little basis in reality, and you will know the difference between sound and faulty reasoning. For instance, the following argument was made by Charles Johnson, a former president of the International Flat Earth Research Society: "Nobody knows anything about the true shape of the world. The known, inhabited world is flat. Just as a guess, I'd say that the dome of heaven is about 4,000 miles away, and the stars are about as far as San Francisco is from Boston."

Instead of simply saying "That's silly," "That's stupid," or "That's just wrong," a critical thinker would examine the claim by analyzing it, evaluating it, and drawing conclusions based on the facts and evidence at hand. A great deal of evidence directly and clearly contradicts the belief that Earth is flat. Just consider these two pieces of evidence: (1) The top of a ship is the last thing we see as it sails out to sea because it is sailing on a sphere rather than on a flat surface (see Figure 5), and (2) images and photographs taken from spaceships and satellites show Earth as a round sphere with half of it shining in the light of the sun.

Critical thinking and its cousin, scientific thinking, both involve being able to think metacognitively. Metacognitive thinking requires the ability first to think and then to reflect on one's own thinking (Feist, 2006; Kuhn & Pearsall, 2000). People who can think metacognitively are able to question their own thinking (see Figure 6). This ability is not universal, however. Without specific training, many people find it difficult to question their own thinking.

FIGURE **5**

EVIDENCE THAT THE EARTH IS NOT FLAT. The drawing on the top shows how a ship would appear as it came into view if Earth were flat. The drawing on the bottom shows a ship coming into view on a round Earth.



Which view is correct?

Science tests our assumptions against observation from the real world. Think about it: People thought the world was flat until explorers began to map out the surface of the Earth. Because it is based on skepticism, the scientific view encourages critical thinking—that is, not believing everything we think. By comparing our assumptions with real-world observation, science helps us choose among competing explanations of behavior.

Although collecting observations and conducting research help us choose one viewpoint over another, sometimes more than one perspective can be correct. Consider the psychological disorder of schizophrenia. For years people attributed the development of this disorder mostly to upbringing, arguing for a pure "nurture" explanation. Then biological explanations, such as an imbalance of particular neurotransmitters, became fashionable. The most recent research suggests that schizophrenia emerges from an interaction of biological and environmental

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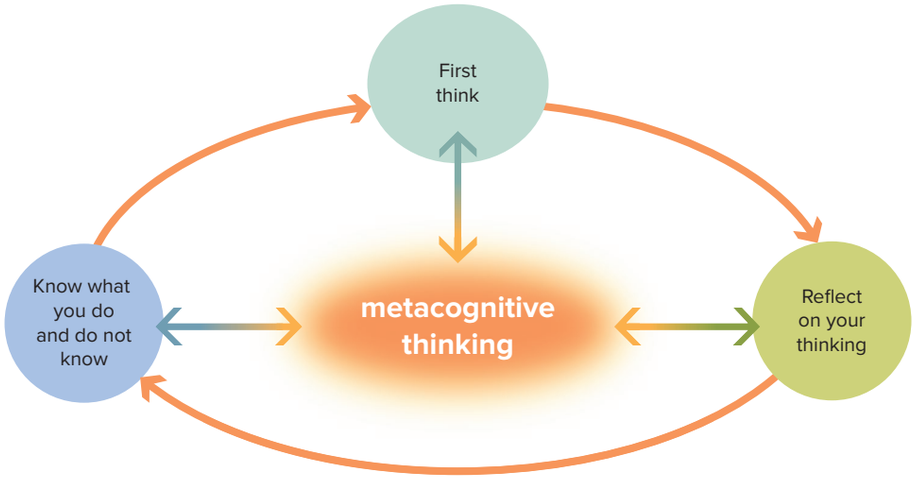
FIGURE 6

METACOGNITIVE THINKING. In an era marked by 24/7 information overload, we often leap to overly simplistic or incorrect conclusions based on what we think we "know."



Can you think of a time when you were surprised by what you didn't know after you felt confident, such as on an exam or some other experience?

influences—in a very real sense, elements of both explanations are correct (Moffitt, Caspi, & Rutter, 2005). The more open we are to diverse perspectives, the better able we will be to explain the whole and often surprising picture of human behavior.

Connections within and between Chapters

To bring together the various perspectives, we also explicitly connect theories and findings throughout the text. Seeing connections is a creative act, and psychological ideas and research findings are connected sometimes in obvious ways and sometimes in surprising ways. Learning to bring together ideas is an important part of learning to think critically. To facilitate this skill, we connect concepts both within and between chapters, as we just did with deep brain stimulation and depression. We do so by means of a "Connection" note alongside the primary narrative, in which we provide section, chapter, and page information to facilitate easy access to these related ideas.

Connection

Area 25 is a region in the front of the brain; it is overly active in people with depression. A therapy known as "deep brain stimulation" can calm this area down and lead to a sudden decrease in depressed symptoms for some people.

See "Challenging Assumptions in the Treatment of Severe Depression," in the chapter "Treatment of Psychological Disorders."

Quick Quiz 5: No One Perspective Tells the Whole Story in Psychology

1. Which of the following is a technique we recommend for integrating the many perspectives in psychology?
   a. not believing everything you think
   b. using the scientific method
   c. making connections within and between chapters
   d. all of the above
2. Research on the association between vaccines and autism has shown
   a. no connection between the two.
   b. a weak connection between the two.
   c. a strong connection between the two.
   d. inconclusive results.

Answers can be found at the end of the chapter.

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Bringing It All Together

Making Connections by Using Different Methods in Psychology: No One Perspective Tells the Whole Story

There are nearly a dozen ways a person can interact with others electronically—via email, blogs, phone calls, chat rooms, texting, instant messaging, audio or video chats, gaming (either solo or multiplayer), videos, photos, bulletin boards, and social networking sites (SNSs). Humans have taken to electronic forms of interaction like fish to water. As a form of behavior that is evolving at a rapid pace, electronic social interaction holds great interest for psychologists in all of the subfields you read about in this chapter. Let's consider how psychologists from some of these areas might study electronic communication and its effects on human behavior and thought.

Cognitive Psychology

Cognitive scientists typically are interested in how we learn, speak, remember, think, and reason. They are also interested in attention. The widespread use of mobile devices has sparked a number of research questions regarding how technology affects memory, attention, and social cognition (Firth et al. 2019). The most obvious question concerns how drivers can pay attention to driving while talking on a mobile device. Researchers have examined the effects of talking on a hands-free mobile device while driving and have found significant impairments that are comparable to driving while drunk (Caird et al., 2008; Strayer, Drews, & Couch, 2006). Interestingly, however, newer technology is being developed that can detect and signal to drivers when they are being distracted so they can refocus on what they are doing and drive more safely (Goel et al., 2018). In addition, attitudes and beliefs about how dangerous and how common mobile phone use is while driving predict use of phones while driving (Hafetz et al., 2010; Zhou et al., 2009): Those who think most about receiving phone calls and think about their phones while their devices are turned off are most likely to have accidents while driving (O'Connor et al., 2013).

Developmental Psychology

Developmental psychologists study how we change over the life span. They might ask questions like these: At what age is a person too young to form electronic social networks? Will these social networks always be used mainly by people in younger age groups, or will people 60 and older use them? Does gender affect interest and participation in SNSs? How have mobile phones and other electronic methods of communicating changed the way teenagers interact with others?

Researchers have already given us answers to some of these questions. Some suggest that older teenage girls and young women are more likely to participate in social networking sites than are boys and young men (Boyd, 2007; Hargittai, 2008). One study found that 13-year-olds checked social media up to 100 times a day, with one 13-year-old girl saying, "I would rather not eat for a week than get my phone taken away. It's really bad. I literally feel like I'm going to die" (Hadad, 2015, p. 1). Moreover, 50% of teens admit to being "addicted" to their cell phones (Felt & Robb, 2016). College men are more likely to use SNSs to begin new relationships, whereas college women are more likely to use them to maintain existing relationships (Muscanell & Guadagno, 2012). There is accumulating evidence, however, that adolescent phone addiction is also associated with higher rates of anxiety and depression (Gao et al., 2017; Shoukat, 2019). Electronic interactions are popular with adolescents because of psychological factors involving identity, autonomy, intimacy, and sexuality (Subrahmanyam & Greenfield, 2008; Walsh, White, & Young, 2009).

Social Psychology

Participation in social digital platforms has exploded in recent decades. More than just about any other area of psychology, social psychology lends itself to a rich set of research questions regarding electronic interactions. Texting in particular and mobile device use in general are the primary tools for communication among young people. In 2018, 85% of U.S. teens said they used YouTube, while 72% used Instagram, 69% Snapchat, and 51% Facebook (Anderson & Jiang, 2018). Forty percent of these teens said the most positive benefit from social media was staying connected to friends and family (see also Walsh et al., 2009). On a more negative note, a majority (59%) of teens reported having experienced online bullying (Anderson, 2018). Bullying, doxing, trolling, hate speech, and sexual predation are just some of the harmful and dangerous online behaviors that put users at risk.

To be sure, classic topics of social psychology—friendship formation, attraction, persuasion, attitude formation, bias, prejudice, and bullying—all play out online. One of the first Internet applications for social purposes was online dating services. In 2018, there were more than 8,000 different online dating sites throughout the world, and almost 50 million Americans had tried online dating at least once (Matthews, 2018). Attitudes toward online

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dating are also becoming increasingly favorable (Matthews, 2018). Social media, however, also facilitate negative and destructive human interaction, but social psychology offers explanations involving the concepts of anonymity and deindividuation. Deindividuation occurs when we lose our sense of self and individual identity in groups (including online groups). For some people, unfortunately, the combination of anonymity and deindividuation on digital platforms frees them to behave in more antisocial ways online than they would in real life.

Personality Psychology

A personality psychologist could ask many questions about electronic interaction and presentation, such as "Are people who interact extensively with other people via Facebook more or less outgoing than those who do not?" or "Can we measure personality by how people use social media?" More recently, researchers have reported that social media footprints, such as Facebook "likes" and shares, correlate with and assess personality, sometimes even more accurately than human inventory rated assessments (Azucar, Marengo, & Settanni, 2018; Park et al., 2015; Youyou, Kosinski, & Stillwell, 2015).

Moreover, does personality reflect how people use social media and which social media they use? Scientific literature consistently finds that people who are extraverted are more likely than introverts to use Facebook compared with other social media and to have a wider network of social relationships (Amichai-Hamburger & Vinitzky, 2010; Nadkarni & Hofmann, 2012). Yet, introverts spend more time on Facebook and have a more favorable attitude toward it than extraverts do (Orr et al., 2009). Finally, personality traits of extraversion, anxiety, and fear of missing out predict social media addiction (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017; Kuss et al., 2014; Nadkarni & Hofmann, 2012).

Health Psychology

Seeking information online and on our mobile devices is now the norm, and seeking health and medical information is no exception. For instance, one recent survey found that 90% of teens and young adults suffering from depression had sought help online (Rideout, Fox, & Well-Being Trust, 2018). Symptoms of physical and mental illness are easily found online, but not all sources of information are equally valid and reliable. It is important to use critical thinking and to carefully examine the source and evidence behind information before accepting it.

Clinical Psychology

Clinical psychologists can diagnose disorders involving technology, and they can also use the same technologies to help treat people with various kinds of disorders. When do SNSs and other electronic interactions become a problem? Can one become "addicted" to such behavior, and can such interactions become dangerous to those involved? One of the main criteria for a mental illness is that it interferes with everyday life and functioning. If a person is online for 10 to 12 hours a day, is that healthy? What about the danger involved in meeting someone in person whom you know only from online interaction? Sexual predators use these connections to meet victims. They contact potential victims through chat rooms, instant messages, and email. According to one study, one in seven teens (ages 10–17) had been sexually solicited online (Ybarra & Mitchell, 2008). As we mentioned above, overuse of technology is correlated with mental health problems (Gao et al., 2017; Kuss et al., 2014; Shoukat, 2019). The cause–effect relationships in these correlations, however, are not yet clear.

Online video services such as Skype and GoogleChat are increasingly used to connect psychotherapists and patients remotely (Manfrida, Albertini, & Eisenberg, 2018). With certain disorders such as being suicidal, online help is often preferred over face-to-face sessions (Wilks et al., 2018). Another area of interest to clinical psychologists is the phenomenon of creating an alternative personality, or avatar, in the gaming world. People sometimes take on personalities that are very different from their own in an online world because it allows them to say things they would not say in direct, face-to-face contact. This ability to explore alternative selves has allowed psychotherapists to use avatar personality games, such as Second Life®, to help people overcome real-world problems such as social anxiety and eating disorders (Cláudio et al., 2019; Gottschalk, 2010; Lisetti et al., 2009; Serino, Polli, & Riva, 2019).

We hope this chapter has helped you appreciate the richness and excitement of psychology as a clinical practice and science. More than that, we hope it encourages you to become an active and critical student of human behavior. *Don't believe everything you are told*, and question how conclusions are drawn—even conclusions in this text. We hope that at this point, as a first step toward active learning and investigating, you are asking, How do psychologists know all this? How do they do research? In the next chapter, we discuss the techniques used by psychological scientists to study mental processes and behavior. Welcome to the fascinating world of psychology.

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