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NAIRNE • MCBRIDE

Psychology

7 EDITION

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Psychology 7e

JAMES S. NAIRNE • DAWN M. MCBRIDE

Psychology

SEVENTH EDITION

Dedicated to the students at Purdue, who taught me so much over the last 30 years.

—JSN

Dedicated to Ruth Grzesnikowski, 1927–2018.

—DMM

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JAMES S. NAIRNE
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PREFACE

CRITICAL THINKING. FROM PSYCHOLOGY TO LIFE.

Psychology, Seventh Edition takes a fresh approach to basic psychological science by stressing the adaptability of human behavior and cognition as its central theme. It uses a unique problem-solving approach in which behavior, as well as the tools of the discipline, is introduced as a solution to pressing adaptive and conceptual problems, particularly those encountered in everyday living. This central theme presents an effective organizing framework for within-chapter development and naturally affords critical thinking, recognition of diversity, and the use of pedagogical devices. Written in an accessible and conversational style, the text draws on the decades of teaching experience of the two authors, both regular instructors of introductory psychology. The text also taps their extensive backgrounds in research scholarship to stress methodology and the research process, as well as highlighting cutting-edge developments such as the use of active learning and retrieval practice to aid in comprehension and retention.

PREFACE TO THE STUDENT

Psychology is the scientific study of behavior and mind. It can be a tough subject, but we're confident that you'll find it fun and even surprising at the same time. There are scores of research studies and hundreds of isolated facts scattered throughout this book, but our main goal is to help you understand the function of psychology in your life—to tell you what psychology is for! Toward that end, we'll show you how your behaviors, thoughts, and emotions help you solve important problems every day.

Everything we do is influenced, in part, by our need to adapt to rapidly changing situations. We're constantly dipping into our psychological "tool kit" to solve specific social, personal, or environmental problems. For example, before you can react, your brain needs to communicate with the environment and with the rest of your body. To communicate internally, your body uses the nervous system, the endocrine system, and, to some extent, even the genetic code. We also must translate the messages from the environment, which come in a variety of forms, into the internal language of the nervous system (which is electrochemical). We solve this problem through our various sensory systems, such as vision and audition. Our survival also depends on our ability to communicate through language and other, nonverbal forms of communication.

You'll soon see that many of our behaviors and thoughts can be viewed as solutions to such problems or demands. We don't think you should be expected to understand a topic unless you first know what it's for! Therefore, each chapter begins with a brief preview section, *The Problems to Be Solved.* In this section, we discuss the function and purpose of the psychological processes that we'll be examining and the particular problems that they help us solve. Throughout the chapter, we'll then show you how these psychological processes help people meet the challenges that they face. At the end of the chapter, a review section, *The Problems Solved*, summarizes the function and purpose of the psychological processes discussed in the chapter.

We invite you to browse through the rest of the preface for a preview of how this book is organized. And we hope you will soon begin applying what you learn to situations in your daily life. The study of psychology may be challenging, but above all else it is relevant to everything we do. Have fun!

PREFACE TO THE INSTRUCTOR

One of the first hurdles we face as instructors of introductory psychology is convincing students that psychology is more than just the study of abnormal behavior. Introduce yourself as a psychologist, and you're likely to get a response like "Don't analyze me!" or "I'd better watch what I say around you!" It takes time for students to realize that psychology is a vast interdisciplinary field that includes all aspects of both normal and abnormal behavior. Even after exposure to its breadth, the topics of psychology can remain mysterious and forbidding. Take a look at a typical chapter on learning, for example, and its contents seem to bear little resemblance to our everyday understanding of what it means to "learn." There are extended discussions of drooling dogs and key-pecking pigeons, but little about the connection between conditioning procedures and the learning problems we face on a daily basis.

In *Psychology, Seventh Edition*, we once again focus extensively on the function and purpose of psychological processes. Instead of leading with the facts and methods specific to a topic, we introduce each topic as a kind of "solution" to a pressing environmental or conceptual challenge. For example, if you want to understand how we learn about the signaling properties of events (problem), you can look to classical conditioning (solution). Notice the shift in emphasis: Instead of topic followed by function, it's function followed by topic. We believe this kind of "functional approach" offers a number of advantages:

1. The student has a reason to follow the discussion.
2. Because the discussion is about an adaptive or conceptual problem, it naturally promotes critical thinking. The student sees the connection between the problem and the solution.
3. The functional problem-solving theme extends across chapters.
4. The organization provides an effective learning framework.

Each chapter is organized around a set of topics that (a) focus the discussion on the functional relevance of the material and (b) demonstrate that we think and act for adaptive reasons. When we view behavior as the product of adaptive systems, psychology begins to make more sense. Students learn that behaviors (including the methods of psychologists!) are reactions to particular problems. When we emphasize adaptiveness, we relax our egocentric view of the world and increase our sensitivity to why behavior is so diverse, both within and across species. Our appreciation of individuality and diversity is enhanced by understanding that differences are natural consequences of adaptations to the environment.

Organization

Psychology, Seventh Edition uses the problem-solving framework to organize its 16 chapters. Traditional textbooks organize chapters around standard topic areas (vision, short-term memory, attribution theory, etc.), but students often have little idea why these particular topics are important. In *Psychology, Seventh Edition*, "topics" are presented as solutions to problems—for example, classical conditioning is discussed as a "solution" to the problem of how people and animals learn about the signaling properties of events. Each of the 16 chapters introduces a set of adaptive or conceptual problems that are then "solved" through topical discussions in the chapters.

As outlined here, the text follows a conventional chapter-by-chapter organization. We begin with a conceptual introduction to the field in Chapter 1, followed by a separate chapter on the "tools" of psychological research. Given the strong emphasis that we place on the research enterprise throughout the text, we felt that it was important to present basic methods in detail. The methods chapter is followed by a chapter on biological processes, which treats neural transmission and general brain activity in detail. We chose to place the developmental chapter next because it serves as a kind of précis for the remaining topics in the book. It too is organized around adaptive problems, namely developing physically, intellectually, and socially. Chapters 5 through 9 cover the basics of cognitive psychology (sensation and perception, consciousness, learning, memory, and cognitive processes). Chapters 10 and

11 focus on intelligence and personality; both use similar organizational structures to help students understand the commonalities in the study of individual differences. Chapter 12 combines the topics of motivation and emotion and argues forcefully that the two topic areas are interrelated. Chapter 13 is a lengthy chapter covering social psychology, focusing on social cognition followed by social influence. Chapter 14 introduces the study of psychological disorders and includes discussions of how disorders should be conceptualized and understood. Chapter 15 focuses on therapy, using the framework developed in Chapter 14 to organize therapies around the factors that explain the development of disorders (biological, cognitive, and environmental). Finally, Chapter 16 concludes the text with a treatment of stress and health and includes discussions of how psychological science can play a role in the treatment and prevention of global pandemics (including COVID-19).

Chapter 1: An Introduction to Psychology

Chapter 1 introduces psychological science by focusing on the basics: how to define and describe the field, trace its historical roots, and identify its modern focus.

- Expanded and updated discussion of retrieval practice and the benefits of testing to learning
- New emphasis on "Big Data" and the replication crisis in psychology
- Extended coverage of underrepresented groups
- Focused research examining women's interactions with gay and straight men

Chapter 2: The Tools of Psychological Research

Chapter 2 introduces students to the methods that psychologists use as tools for observing and describing behavior, predicting and explaining behavior, and treating participants ethically. Experimental and correlational approaches are covered in detail, with an emphasis on the difference between correlation and causation.

- Targeted coverage of the use of Big Data in psychological research
- Additional focus on diversity issues in sampling
- Expanded discussion of the "replicability crisis" in psychological research

Chapter 3: Biological Processes

Chapter 3 introduces and outlines solutions for four major problems in neuroscience: How do we communicate internally, how do we initiate behavior, how is growth regulated, and how is the genetic code adapted and transmitted?

- New coverage of optogenetics as an investigative tool
- Extended and reworked discussion of sex differences in brain function
- Additional section on genome-wide complex trait analysis (GCTA)
- Targeted research on the role of the hippocampus in learning activities

Chapter 4: Human Development

Chapter 4 presents developmental processes as they operate within different areas of behavior: perception, cognition, biology, social psychology, and personality. The major sections explore how humans solve the problems of developing physically, intellectually, and socially.

- New section on the stages of the birth process
- Updated discussion of cultural issues in development

- Targeted research on social media use and effects of the pandemic
- Contemporized discussion of gender and gender roles

Chapter 5: Sensation and Perception

Chapter 5 describes the processes of sensation and perception organized by sense system—vision, hearing, tactile, and chemical senses—along with basic concepts from psychophysics. An emphasis is placed on how the sense systems solve the adaptive problems of translating environmental stimuli into neural activity, identifying the message components, and producing stable interpretations.

- Addition of neuroscientific studies in sensation and perception
- Inclusion of cultural influences on perception
- New section on perception–action

Chapter 6: Consciousness

Chapter 6 describes influences on our conscious awareness. The major sections discuss how we set priorities for mental functioning (attention), sleep and dream, alter awareness through psychoactive drugs, and induce states such as hypnosis and meditation.

- Revised section on ADHD and its effects on attention
- Updated research studies on effects of psychoactive drugs
- New content and research studies on the benefits of mindfulness

Chapter 7: Learning From Experience

Chapter 7 explains the key concepts of learning as a means of adapting behavior in the changing world. We discuss how people and animals learn about events (habituation), learn about what events signal (classical conditioning), learn about the consequences of behavior (operant conditioning), and learn from others (observational learning).

- New and updated examples of learning in everyday life
- Additional section on effects of violent video games on behavior

Chapter 8: Memory

Chapter 8 helps students understand the purpose of remembering and how it operates as a key cognitive process. The major sections cover how we remember over the short term, store information for the long term, recover information from cues, and update memory.

- Current examples to help students connect concepts with their own behaviors
- New section on the seven "sins" of memory
- Updated studies on the neuroscience of memory

Chapter 9: Language and Thought

Chapter 9 connects language and thought as related cognitive processes that aid in everyday life. The major sections treat communicating with others, classifying and categorizing, solving problems, and making decisions.

- Expanded and updated language development section
- Extended discussion of the role of culture in language use and development and other cognitive processes

Chapter 10: Intelligence

Chapter 10 introduces and outlines solutions for basic conceptual problems in the study of intelligence: How do we conceptualize intelligence, how do we measure individual differences, and how do we discover the sources of those differences?

- Added coverage of labeling effects
- Increased discussion of emotional intelligence and test bias
- New application of GCTA to the study of intelligence
- Targeted research assessing the effectiveness of working memory training on intelligence

Chapter 11: Personality

Chapter 11 introduces and outlines solutions for basic conceptual problems in the study of personality: How do we conceptualize and measure personality, how do we determine how personality develops, and how do we conceptualize and resolve the person–situation debate?

- Expanded discussion of sex differences in personality
- Up-to-date coverage on the genetics of personality
- New research investigating the use of psychological targeting as an effective approach to mass persuasion

Chapter 12: Motivation and Emotion

Chapter 12 explores the basic processes underlying motivation and emotion. Separate sections discuss how people activate behavior; meet the biological needs of hunger, eating, and sex; and express and experience emotion.

- Extended coverage of gender effects in motivation
- Updated discussion of the factors involved in sexual orientation
- New critique of the facial-feedback hypothesis
- Focused research on the effect of graphic warnings on sugary-drink purchasing

Chapter 13: Social Psychology

Chapter 13 describes how our behavior is influenced by other people and groups and how our attitudes about others are created and maintained. Our focus is on the adaptive problems of interpreting the behavior of others, behaving in the presence of others, and establishing relations with others.

- New research on racial and other biases
- Updated discussion of attitudes on gender roles
- Current examples included throughout the chapter
- Revised coverage of the role of culture in social interactions and attitudes
- Contemporized discussion of romantic love with new research studies

Chapter 14: Psychological Disorders

Chapter 14 introduces the study of psychological disorders by focusing on three main conceptual problems: How should we conceptualize abnormality, how should psychological disorders be classified,

and how should disorders be understood? In the last section, we consider biological, cognitive, and environmental accounts.

- New critical assessment of the Rosenhan study
- Expanded discussion of DSM-5 categories
- Increased coverage of genetics
- Targeted research on positive thinking and depression

Chapter 15: Therapy

Chapter 15 discusses the treatment of psychological disorders and assesses the overall effectiveness of psychotherapy. The chapter is organized around how psychologists treat the body (biomedical therapies), the mind (insight therapies), and the environment (behavioral therapies).

- Extended discussion of neurotransmitters and disorders
- Updated section on culture and disorders
- Expanded coverage of clinical evaluation studies
- New research on PTSD and catastrophic thinking in combat

Chapter 16: Stress and Health

Chapter 16 deals with the topics of stress and health. The chapter addresses four major problems: experiencing stress, reacting to prolonged stress, reducing and coping with stress, and how to live a healthy lifestyle.

- Revised opening section featuring pandemic stress
- Increased discussion of the positive effects of stress
- Integrated coverage focusing on the effects of COVID-19
- New research on social resilience after a terrorist attack

Chapter Pedagogy

Additionally, the text contains special features designed to highlight each chapter's functional organization, provide in-depth treatment of a particular topic, focus on recent original research studies, and summarize and test for current knowledge.

- **Problems to Be Solved** sections introduce and frame each chapter. These sections describe how psychological processes are tools designed to help people solve important adaptive and practical problems in their lives.
- **Problems Solved** sections summarize and review the main content of the chapters and focus specifically on how the major adaptive and conceptual problems of the chapter are solved by the major processes and tools covered in the chapter.
- **Practical Solutions** sections give students an inside look at a particular study or topic in psychological science with applications to everyday living.

- **Video Enrichment:** Bite-sized videos support learning by digging deeper into foundational experiments in the world of psychology and further exploring tough concepts.
  - Psychology Experiment Exercises: Learn more about some of psychology's most classic experiments, such as Gibson's Visual Cliff and Bandura's social learning theory. These add another perspective to the text about the real-world significance and application of these well-known experiments.
  - Concepts in Action: Dig deeper into tough concepts, such as differentiating between classical and operant conditioning, difficult biological functions, and types of stress.
- **Concept Reviews** are included in each chapter to help students understand and review the main points in the section.
- **Knowledge Checks** focus on the important role that retrieval practice can play in promoting active learning and the retention of knowledge.
- **Thinking About Research:** At the end of each chapter, we present a summary of the main sections of a research article that relates the chapter's concepts. Critical thinking questions about the study are included to help students tie the research study to what they are learning in the chapter.

A NOTE ON CULTURE AND LANGUAGE

Writing a book that discusses topics related to culture and identity, as well as our understanding of human behavior, is fraught with issues related to history and the very identities we will discuss. Cultures are not static. Cultures are fluid, in flux, transforming, and evolving—some slowly, some quickly. As you read through this book, please know that a conscious attempt has been made to be inclusive and nonjudgmental when describing cultural groups and cultural traditions. Language, too, is fluid and evolving. The language spoken today is not the language of our ancestors. And so the language we use to describe cultures can sometimes unintentionally mischaracterize the culture. That's the nature of writing about humans and their interactions.

A thoughtful attempt has been made to use language throughout this book that is sensitive to these issues and, in so doing, to recognize the evolving historical, social, and political dimensions across the globe and the resulting cultural transformations, particularly as they relate to race, ethnicity, and sex and gender issues. The following terms are used in the seventh edition, although regional designations and nationalities are used when they are more accurate and specific.

- *African American* or *Black* is used, whichever is truer to the study being cited. If the person or group is not American, then *African* or *Black* (whichever is most accurate) is used.
- *Native North American* is used to refer to groups or individuals who are members or descendants of indigenous peoples of North America. When referring to groups including Hawaiians and Samoans, the broader term *Native North American* is used.
- *Asian American is used for U.S. citizens of Asian descent. Asian is used to describe things or people of or from Asia.*
- *Hispanic/Latino* is used at first reference; for subsequent references, *Hispanic* or *Latino* may be used as a collective noun depending on the study being cited.
- *White* is used to refer to citizens of the United States who are of European ancestry.

We are grateful to all the scholars from different walks of life who have reviewed the seventh edition of *Psychology* and to our colleagues with whom we've had extensive conversations about how to use the "right" terminology. To be sure, there is no consensus among them. The "correct" terminology depends on who you ask.

ABOUT THE AUTHORS

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From Dr. Nairne: Special thanks are due to Abbie Rickard, who convinced me to move to SAGE and provided unwavering support throughout the early stages of the revision. Abbie also suggested my friend Dawn McBride as a potential co-author. Dawn has provided keen insight and a fresh perspective to *Psychology*, clearly making the 7th edition the best yet. Lara Parra, Reid Hester, Sam Rosenberg, and Liz Cruz provided terrific support as well; I'm so pleased to be working with the folks at SAGE.

From Dr. McBride: Many important people in my life have provided needed balance during my text writing endeavors. First is Jeff Wagman, who supports me in so many ways and talks me out of all my bad ideas. Next is Connor Wagman, who keeps me young. In addition, my family, friends, and colleagues provide support and helpful feedback during the writing process. The folks at SAGE provided much appreciated support to us during the production of this text: Abbie Rickard, Lara Parra, Reid Hester, Sam Rosenberg, and Liz Cruz. My thanks also go to the students at Illinois State University who have taken my courses and influenced my perspectives on the teaching of psychology.

I am so honored to have been able to work with Jim on the revision of his text. He's a wonderful author to work with and a valued friend.

STUDENT SUCCESS GUIDE

Suppose you are taking a college course for the first time. You purchase your course material and begin to peruse its contents. Within moments you realize that there is a lot of information to learn. You wonder how you are going to understand all this material by the end of the course. You might feel a mix of emotions, from intimidated to overwhelmed to excited. These emotions are all quite common among college students. Learning is a process of growth, and growth is not always comfortable. One reason is that learning is similar to exercising. You exercise to become stronger, faster, and more agile. Your goal is to be healthier, and this does not come without times of being tired or exhausted. But you work through it so that you can reach your goal of being healthier. Similarly, as a student, you learn to become more knowledgeable and capable, and to be smarter, and this also does not come without times of being tired or exhausted. But you work through it so that you can reach your goal of being educated. This parallel brings to light a key to your success in college: to set goals. Setting goals helps you to stay focused and motivated to "work through" the challenging times. Of course, it is also helpful to have a plan or guide that can help you achieve your goals. For this reason, we have prepared the following guide to help you achieve your academic goals and to support your success.

TIPS AND TRICKS FOR STUDENT SUCCESS: THE BASICS

Textbooks typically do not provide a "How-to-Rock-This-Class Manual," yet every student would love to have one. How do you study efficiently? How do you know what to say to your professors? Who can you reach out to for help? What strategies can you use to be a successful student? If these types of questions are what students seek answers for, then this guide is a great place to start. So, let's start at the very beginning—the basics:

- It is important to want to be a great student. Being a great student does not mean getting straight A's, but it does mean that you are truly committed to learning. As a student, you should embrace the opportunity to learn, be genuinely curious about the information being taught, and take the time to study it, question it, and think critically about it. This perspective captures the spirit of what it means to be a great student.
- Take the time on the first day of class to introduce yourself to your professor and teaching assistants (if applicable). Whether your class is online, in person, or a hybrid course, go out of your way to introduce yourself. Your professors are more than just teachers. They are experts in their fields of study, and this makes them excellent people to connect with. Additionally, getting to know your professors can benefit your learning in class and even into your career as possible people you can reach out to for a professional recommendation.
- Attend each class session if it is in a synchronous or face-to-face format. What is taught in class is very often the bulk of the material that is tested and/or assessed. Not only are you putting your best foot forward by attending each class session, but you are also doing your due diligence to be a great student and setting yourself up for success. If your class is asynchronous (fully online), then make sure you watch each lecture. Professors who teach asynchronous classes offer good information in the recorded lectures, and it is important to watch the full lecture—from beginning to end—so that you are not missing important information.
- Be prepared—have your materials ready, put your distracting technology away, and read before attending class. If you are in a fully online class, the same rules apply. When you are ready to watch your lecture, put the technology away. Research has demonstrated that being

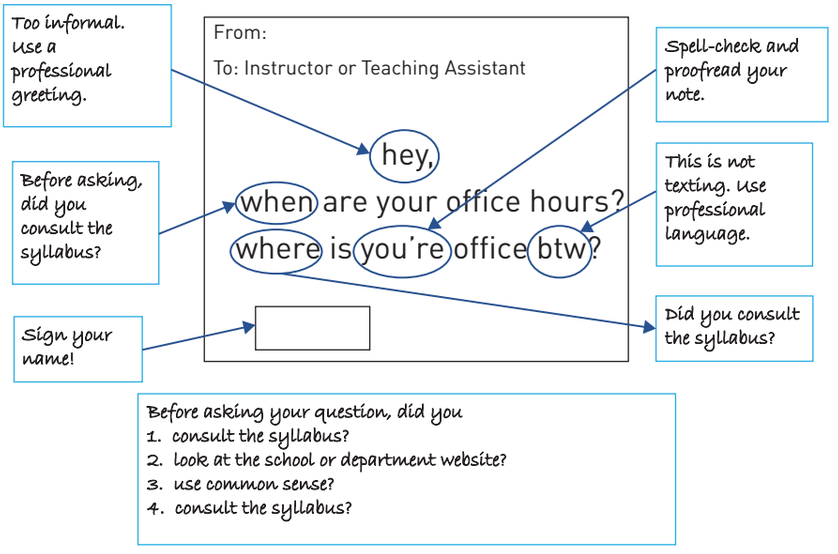
distracted because of multitasking—specifically by looking at your phone at the same time you are listening to a lecture—lowers your performance and retention. Students often think they are good at multitasking, but the science says that's not accurate.

GETTING THE MOST OUT OF YOUR COURSE

On the first day, the professor is going to give you the owner's manual to the class: the **syllabus**. This document will give you all the information you need for the class. In general, the first bit of information you see on the syllabus is your professor's contact information. This information generally includes the professor's email address, office hours, office location (if applicable), and availability. When it comes to professors, there are a few things to remember:

- Be respectful when you email. This is a professional communication. Start the email with "Dear Professor _____."
- When you do email, make sure it does not sound like a text. You are conducting a formal business-like exchange.
- Use correct grammar and punctuation.
- Always let professors know what class you are in by typing it in the subject header, so that they can appropriately answer your questions—most professors teach multiple classes.
- Allow for at least 24–48 hours for a response from your professor. Allow a bit more time if you email on a Friday or the weekend.
- Ask questions. If you have questions, other students likely do too!
- If you have a few questions, consider making an appointment with your professor to meet during office hours. Having a conversation with your professor might answer many questions in one sitting; and, as most of us know, sometimes answers can be lost in translation in an email.
- Just a reminder—teachers love to teach—and they appreciate enthusiastic students. So, make an appointment with your professors and say hello.

FIGURE 1 ■ Professional Communication



Next, you need to sit down and *read all of the syllabus.* The syllabus is like your road map. You will be able to find *exactly* which textbook to obtain (never assume an older edition is going to be "good enough") and any other course requirements. Additionally, the syllabus will include course policies, course materials, a course calendar, and grading and assessment policies.

Helpful tip: Note in your calendar when you should start each assignment and when it is due. That will make it easier to keep on track (in other words, put it in your calendar RIGHT NOW). Multiple research studies have found that 80–95% of college students put off doing their work and studying on "a regular basis." Procrastination is not your friend, so start projects and assignments as early as possible. Life happens, and you do not want to turn in work late. Plan to start working on written work at least two weeks in advance if assignments are available to you that far in advance.

Also add to your calendar the dates for all quizzes and exams. A general rule of thumb is to start studying for quizzes and exams one week in advance. Never, ever cram. And get good sleep.

Many students color-code their schedules to keep all of their classes organized. This might sound like a lot of work, but you will be glad you did it!!

COURSE MATERIALS

It's important to have a plan—and to use science to help you out. Researchers have found that certain strategies work well for learning—particularly when it comes to reading the textbook. So, use them! For starters, many students do not read before class, and they often try to start reading without any real plan for reading a textbook efficiently. *Helpful tip*: Read BEFORE CLASS. It will save you time and improve your grades! Research has shown that if you have no idea what the professor is going to teach about, and then you sit down and try to take notes and listen, your brain will literally put you in a "time out." It is too much! *You will have cognitive overload*. So, be fair to your brain and give yourself the information you need to be able to absorb the material.

As part of your plan, figure out how to tackle your weekly reading, which is often approximately 40 pages of generally dense material. Use tools that will help you want to keep going rather than stop before you have even begun. So, make a plan of action:

- First, skim over the chapter that you are preparing to read. Whether your book is in a hard-copy format or a digital ebook, it's important to get a sense of the formatting of the book such as the illustrations, applied sections, questions, summaries, and text size. If this is your first time using an ebook, spend some extra time familiarizing yourself with the basics such as how to "turn" pages and enlarge the font if needed, as well as the general format of the book. Many students prefer digital ebooks, but if this is your first one, it can be a very different experience for you. It may take a bit of adjusting on your part. Also, no matter the format, get familiar with the interactive elements that are often included with the book.
- When you are ready to start working on a specific chapter, consider starting at the back of the chapter. The end of the chapter will give you a clear and concise **summary** of the chapter. You can also review **key words**, which will acquaint you with what the professor is going to discuss in class.
- Read over the **thought questions** at the end of each chapter. Obviously, you will not know the answers, but it'll give you an idea of what is important.
- When you begin a chapter, peruse the first page. Read the **chapter outline**, or scan the **section headings**, and, if present, review the **learning objectives**. The learning objectives state what you should be able to accomplish when you truly learn the material. They'll also give insight into the chapter.
- Divide your reading into reasonable portions. Researchers recommend setting a timer for 20–30 minutes (approximately 7–10 pages) to serve as a reminder to take a break. When the timer goes off, take a moment or two to stretch and move around a little. It is also

recommended that you not have your phone close by or that you put it on silent mode, so that random alerts and messages won't interrupt you and break your flow.

- **Learning is not about being fast. Learning is about appropriately retaining important information.** When you read those 7–10 pages, try to understand the *main points*, not every point. Do not take notes initially. You don't want to break your cognitive flow. As you go back and review the pages you've read, notetaking can be beneficial. Research has shown that taking notes (pen-to-paper notetaking) can help students understand and retain the material better. *Helpful tip*: Paraphrase what the authors are saying and write it in your notes. This will help you articulate, and therefore understand, the material better. We call this approach *deep processing*, compared to memorizing, which is *surface processing*.
- It is highly recommended that you create a learning community (aka a study group) and then discuss the chapters with that group. This will help you with deep processing, and you are more likely to remember the material. *Helpful tip*: If you are unsure how to go about creating a learning community, consider discussing this with your professor. Professors can make announcements in class, start an online forum for the class, or offer you and your classmates other ways to connect. Many study groups create their own Google Docs so that they can exchange notes with others or post questions. Other study groups may use social media as a way to connect. No matter how you do it, be sure to do it *early* in the term. The sooner you have a study support team, the better.

STUDYING: NOW THAT YOU KNOW HOW TO READ THE MATERIAL, HOW DO YOU STUDY IT?

General Studying

We have talked about ways to tackle the book, but studying involves more than that. Reading, paraphrased notetaking, time with a learning community—all of those are great strategies, but sometimes (to use a saying from my grandfather) "you don't know what you don't know." Well, how are you ever going to *know* what you are supposed to *know*, then? Again, let's turn back to science for help. The cognitive psychologist Regan Gurung posits that, based on his extensive research, the ways people try to learn are not necessarily helpful. Yes, highlighting helps and rereading is good, but if you want GREAT results, start paying attention to what science is saying!!!

Gurung suggests three things you need to keep in mind if you want the best learning outcomes:

1. What do you **NEED** to know? This requires reviewing the syllabus.
2. What **DO** you know? This requires testing yourself and reviewing those tests.
3. What do you **NOT** know? Again, review the tests. Many books offer sets of knowledge checks and flashcards to help you in this process.

It is important for you to fully understand the professor's learning objectives. In other words, what exactly does the professor want you to know? Between the syllabus and the learning objectives in the textbook, you should have a pretty good idea what you need to know. If it's still not clear to you, ask your study group. At that point you should have it figured out, but if not, that is okay. *Helpful tip:* Do not spend more time trying to figure it out. It's time to write to the teaching assistant, or TA, if there is one. TAs are good "first contacts." If you're still unclear or there isn't a TA, then ask the professor. Do not be shy to ask questions. If you can't figure it out, many other students probably can't either. Too, there are great webinars and free materials available online from some of the best researchers out there. Search for reputable online resources on studying, notetaking, and test preparation.

Prepping for a Test

Never, ever, ever cram for a test! Cramming is bad in a multitude of ways:

- Cramming is associated with anxiety and stress, which results in lower scores.
- You will have cognitive overload, which means your brain is overworked.
- Learning takes *time*, and one night of cramming will not help you learn.
- Lack of sleep results in lower test scores.

You get the idea. Do not cram for a test. Here are a few scientifically supported practices for prepping for a test. Recent research by John Dunlosky and colleagues found that a key component for doing well on exams is **space practicing**:

- The idea of space practicing is to study the same content on different occasions. Think of it like this: If you were a softball player, you might practice catching and throwing three of the five days of the week (the same drill on different days). You would schedule these specific days and times to practice your throwing and catching. *Practicing the same thing over and over embeds it into your memory and recall.* It works for softball, and it works for psychology exams!

Next, work on **retrieval practicing**:

- Retrieval practicing involves bringing key information to mind to increase learning and retention.
- Test yourself frequently to make sure you know what you need to know.
- This can be done by using the flashcards and practice tests that go with your textbook. Many researchers believe that practice tests are the most underutilized resource that students have.
- Often, textbook authors work hard to provide the student resources to use in retrieval practicing. If you have them available, be sure to use them.

WHAT ABOUT YOU? SCHOOL-WORK-FAMILY BALANCE

Research has demonstrated that there is no simple, easy answer to balancing multiple roles such as being a student, an employee, a parent, a friend, a partner, and a family member, to name just a few roles. In fact, many psychologists have suggested that "balancing" these roles isn't the correct way to think about them. Is your life ever really balanced? And with one more major life role added to the list—student—it is important to keep expectations in check. This is going to be difficult, but that's okay. It can be done if you use the resources you have around you . . . and science:

- Time management is key to reducing stress and anxiety. Plan out your day and week, and stick to a schedule. *Helpful tip*: It's easy to lose track of time, so setting reminders on your phone or watch will help you to keep track of what you need to be doing and when you should be doing it. Set a timer when you are studying so that you remember to get up and move and take a break, but also set a timer to remind yourself to get back to studying.
- Pick your method of tracking (e.g., when assignments are due, when you should start studying for a test) and stick to it. Many people like to use paper calendars so that they can check off what they've done and color-code what needs to be done. If you choose this method, pick a calendar that fits in your bag and take it everywhere.

- You may choose to use an online calendar. That's a great method, too. You certainly can color-code assignments, due dates, and deadlines, as well as prioritize activities and set alerts. The key to using a calendar (electronic or paper) is to *remember to look at it . . . every day*. Without exception. Do not rely on your memory.
- Prioritize sleeping and exercising. These two activities go together; research has demonstrated that the relationship between sleep and exercise is bidirectional. More specifically, exercise helps you sleep better. And when you sleep better, you are more likely to exercise. Also, research has shown that increasing both activities increases recall. That is a win-win-win! You might think that it's more important to study than to sleep for a full 7 or 8 hours, or take a brisk walk, but that is a myth. The less sleep you get, the less efficient your brain will be. The same goes for exercise. Your brain needs oxygen to function at its best, and there is no better way to get oxygen to your brain than through exercise.
- Ask your academic adviser about your school's counseling center. The transition to college can be difficult. It's always a great idea to build a support system as early as possible, and counselors are trained to provide exactly that. They can also direct you to support groups on and off campus.
- You might be a first-generation college student or a student who is a caretaker of others. There will be times when you might feel pulled in different directions, or times when your family will not understand why you need to spend so many hours on your studies. *Helpful tip*: Keep the lines of communication open with your family, which will help them get a better grasp of what you need to succeed. If you must be in a quiet room for 3 hours a day to study, let them know. If you need to be on campus late that week to prepare for a big project, tell them! Many students who try to balance school and family have found that discussing needs and responsibilities can create a supportive environment.
- Practice mindfulness throughout the day. Many smartphone apps are available that provide guided meditation. Also, many smartwatches have a 2-minute mindfulness activity. For some, it might be praying. For others, it could just be sitting still and being fully present in the moment. There are many ways to practice mindfulness. Pick a technique that works for you and practice consistently. *Helpful tip*: Schedule "mindfulness moments" into your day.

EFFECTIVE DISTANCE LEARNING

More and more people are deciding to become distance learners, and they need a game plan, too. Not attending college in a more traditional manner can make students feel isolated and not connected to their peers or professors. There are ways to address those issues, many of which have already been mentioned. But here's a refresher:

- Ideally, try to designate a specific area for studying. Keep it organized and clean so that when you are ready to study, your study space is prepared. If you cannot do this, make sure you are studying in a nondistracting environment that has all the "tools" (e.g., computer, paper, pen) that you need for studying.
- Create a study community. If you are unsure how to go about it, talking to your professor is a great place to start.
- Study groups give you the opportunity to articulate what you are learning (paraphrasing the content), which helps with deep processing.
- Study groups allow you to test each other on the content.

- Because many people are deciding to take classes from home, try to keep distractions to a minimum when studying and testing. It's easy to get distracted when laundry and other chores need to be done. Also, other family members can be a distraction, so try to communicate what you need and how long you need it to the others in your home. Communication is key when it comes to keeping the distractions at bay.

SECRET WEAPONS

Sometimes it may feel that being a student is a solitary endeavor, but it should not be. A wealth of resources are available to you. Here are a few:

- **Teaching Assistants**. They know so much about the inner workings of the department, faculty, university, and your specific class. They are an amazing resource! If your class is not face-to-face, TAs will often have virtual office hours. Be sure to schedule a short appointment to introduce yourself, and if you have questions, come prepared. *Helpful tip*: Write down all your questions ahead of time so that you can use your time efficiently.
- **Librarians.** Each department has a dedicated librarian. Get to know those wonderful people! They can help you in so many ways. If you're not able to meet with them on campus, you can email them and ask for a quick phone call to introduce yourself. Or you can ask for an online video session to say hello and ask for any resources that you may need. Again, be prepared for the meeting.
- **Writing Center.** The people who work at your school's writing center are focused on helping students. Many writing centers are set up to help students by subject area, and then there are more "generalists" (people who can help in any discipline). Commonly, it is recommended that students go to subject-specific tutors, if possible. Be sure to bring your assignment with you. Writing center tutors do not know every assignment for every class, but they are great with helping you understand the writing component. Keep in mind that if you do not live on campus, most writing centers have evening hours, and most universities offer online sessions.
- **Other Students.** So many students are struggling with school-work-family balance, so creating a support and study group can be extremely beneficial. If you can't find one, ask your TA or professor. Research suggests that the more connections you have, the better you will do in school.

ATTEND OFFICE HOURS

One of the first things students should do at the beginning of the term is to attend their professors' office hours (whether in person or virtually). For many students, the idea of attending office hours can be a scary prospect, but that one-on-one time with the professor is priceless. Specifically, you can ask questions you might not want to ask in class. Additionally, it is a chance for you to find out how nice and caring your professors really are! To make the most of the time with your professors, do the following:

- Read the syllabus before you go and think about any questions you have.
- Write down your questions before you go. This will help you use the time effectively.
- Do not be late.
- Discuss "best practices" with your professor. This means, ask what your professor believes are the best study methods for the class and how long it might take to properly prepare for exams.

- Inquire about any additional resources. It never hurts to ask.
- If you have questions about a grade, now is the time to ask for clarity.
- Take notes during your meeting because you might be covering a lot of ground and you do not want to rely on your memory.
- If you are unsure about what the professor suggested or said, do not hesitate to ask for clarification. Professors appreciate it when you are honest about not understanding an explanation. They would rather clarify during this one-on-one time rather than you leave confused.
- Lastly, thank your professors for their time. That's the best way to leave your appointment.

FIGURE 2 ■ Advice From an Undergraduate Adviser

- It is not recommended that students take classes back-to-back. It's better to have some time to absorb what you just learned, and then maybe write down a few more thoughts.
- If possible, do not take classes at times when you know you cannot do your best. For example, if you are not an 8 AM person, do not take a class first thing in the morning.
- Make sure you are a good fit for the instructor. Ask other students about the instructor and visit the instructor during office hours.
- Do not overload your schedule. You are in college to learn, not to stress yourself out. Be realistic with what you can do.
- We want you to be successful!

LIMIT MEDIA EXPOSURE

Being a student is stressful. If you add in personal or global events, it can be downright unmanageable. It is important that you take care of yourself so that you can prosper as a student, friend, family member, and community member. To help manage stress today, the American Psychological Association offers some great tips. One of the best tips is to limit media exposure. Media are there to keep you interested, so they often focus on the negative so that viewers will have a more visceral reaction. Keep that in mind . . . and limit the amount of time you spend on social media and news outlets.

SUMMARY OF HELPFUL TIPS

- **Planning.** Note in your calendar when you should be starting assignments and when they are due.
- **Reading.** Read *before class*. It will save you time and improve your grades.
- **Studying.** Paraphrase what the authors are saying and write it in your notes.
- **Study group.** If you are unsure how to go about creating a learning community, discuss it with your professor or teaching assistant.
- **Course goals.** If you do not fully understand what the course learning goals are, write to the teaching assistant (if there is one) or the professor (if there is no teaching assistant).
- **Reminders.** Setting reminders on your phone or watch will help remind you what you need to be doing and when you should be doing it.
- **Communication.** Keep the lines of communication open with your family and/or roommates to help them get a better grasp of what you need to succeed.

- **Take a moment:** Schedule mindfulness moments into your day.
- **Questions.** Write down all of your questions for instructors, teaching assistants, or study groups ahead of time so that you can use your time efficiently.

College is an exciting time in a person's life, but it can be stressful at times. By practicing good study habits and connecting to your college community—online or in person—you will be well suited to handle any bumps in the road!

MOMENTS IN PSYCHOLOGY AROUND THE WORLD

Date	Milestone
BCE	
387	Plato argues that the brain is the center of mental process.
335	Aristotle argues that the heart is the center of mental process.
CE	
1637	René Descartes (France) publishes *A Discourse on Method*. Descartes asserts that ideas are innate to humans from birth.
1690	John Locke (England) publishes *An Essay Concerning Human Understanding*. Locke asserts that ideas come from experience and the human ability to reason.
1774	Franz Mesmer (Austria) presents a treatment for mental illnesses, originally called mesmerism and now known as hypnosis.
1794	Philippe Pinel (France) publishes *Memoir on Madness*. It argues for humane treatment of mentally ill patients. Pinel made significant contributions to the classification of mental disorders.
1808	Franz Joseph Gall (Germany) proposes the idea of phrenology, the belief that the shape of a person's skull reveals personality traits.
1848	Phineas Gage (United States) suffers massive brain damage when his brain is pierced by a large iron rod. This leaves his intellect intact, but his personality is changed. From this, researchers study how areas in the brain play a role in personality.
1856	Hermann von Helmholtz (Germany) publishes *Handbook of Physiological Optics*. His many works make important contributions, including reports on the physiology of vision and hearing, and measurement of nerve impulse speed.
1859	Charles Darwin (England) publishes *On the Origin of Species.* Darwin asserts that species evolve, and that living beings all share a common ancestor.
1861	Paul Broca (France) presents his findings regarding the area in the left frontal lobe of the brain that is critical for the production of spoken language. This is now called Broca's area.
1869	Francis Galton (England) publishes *Hereditary Genius.* He asserts that intelligence is inherited. Galton is credited with the expression "nature and nurture" to correspond with "heredity and environment."
1874	Carl Wernicke (Germany) presents his findings that damage to a specific area in the left temporal lobe damages the ability to comprehend or produce language. This is now called Wernicke's area.
1879	Wilhelm Wundt (Germany) founds the first formal laboratory for psychological study at the University of Leipzig. Wundt, the first person to refer to himself as a psychologist, helped to establish psychology as an independent field of study.
1883	The first formal U.S. psychology laboratory is established at Johns Hopkins University.
1885	Hermann Ebbinghaus (Germany) publishes *On Memory*. Ebbinghaus made numerous contributions to the areas of learning and memory.

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Date	Milestone
1887	G. Stanley Hall (United States) founds the *American Journal of Psychology*. Hall was the first North American to receive a Ph.D. in psychology.
1890	William James (United States) publishes *Principles of Psychology*. His research contributes to the study of functionalism. He is also the first person to teach a psychology course in the United States.
1892	The American Psychological Association (APA) is organized by G. Stanley Hall. The APA's stated mission is to promote the advancement, communication, and application of psychological science and knowledge to benefit society and improve lives.
1894	Margaret Floy Washburn (United States) is the first woman to receive a Ph.D. in psychology. She made contributions in the fields of animal behavior and motor theory development.
1896	John Dewey (United States) publishes *The Reflex Arc Concept in Psychology*. He focused on the areas of education and helped develop the psychological philosophy of functionalism.
1898	Edward Thorndike (United States) publishes *Animal Intelligence*. His work proposes that animals and humans learn similarly and leads to the development of operant conditioning.
1900	Sigmund Freud (Austria, England) publishes *The Interpretation of Dreams*. Freud is considered the founder of psychoanalysis.
1901	Mary Whiton Calkins (United States) publishes *An Introduction to Psychology*. In 1905, she is the first female elected as president of the American Psychological Association.
1903	Alfred Binet (France) publishes *Experimental Studies of Intelligence*. Binet made contributions to the study of intelligence, including the creation, along with colleague Theodore Simon, of the Binet-Simon intelligence scale.
1906	Ivan Pavlov (Russia) publishes his first studies on classical conditioning.
1912	Carl Jung (Switzerland) publishes *Psychology of the Unconscious*. Jung is considered the founder of analytical psychology.
1912	Tsuruko Haraguchi (Japan) receives a Ph.D. in psychology. She is the first Japanese woman to receive a Ph.D. in any subject.
1913	John Watson (United States) publishes *The Behaviorist Manifesto*. This puts forth a new area called behaviorism. In 1920, he and his colleague and wife, Rosalie Raynor, conducted the controversial "Little Albert" experiment.
1920	Francis Cecil Sumner (United States) receives a Ph.D. in psychology. He is the first African American to earn a Ph.D. in psychology. His work focuses on race psychology and education reform.
1921	Hermann Rorschach (Switzerland) publishes *Psychodiagnostik*. This work introduces the Rorschach Inkblot Test.
1923	Jean Piaget (Switzerland) publishes *The Language and Thought of the Child*. Piaget contributed in the area of child development, and championed child education.
1926	Leta Stetter Hollingworth (United States) publishes *Gifted Children*. Her work in the psychology of women helped to dispel myths that had been used to argue against women's rights.
1927	Anna Freud (Austria, England), the sixth and youngest child of Sigmund Freud, publishes *Introduction to the Technique of Child Analysis*. Freud developed the field of child psychoanalysis.
1929	Christine Ladd-Franklin (United States) publishes *Color and Color Theories*. Ladd-Franklin makes contributions in the field of color vision, in addition to other fields.
1929	Wolfgang Köhler (Germany) publishes *Gestalt Psychology*. This work criticizes behaviorism.
1932	Walter B. Cannon (United States) publishes *The Wisdom of the Body*. This work introduces the term *homeostasis* and discusses the fight-or-flight response.
1933	Inez Beverly Prosser (United States) becomes the first African American woman to receive a doctoral degree in psychology from a U.S. institution.

Date	Milestone
1936	Anna Freud (Austria, England) publishes her influential book, *The Ego and the Mechanisms of Defense*.
1936	Egas Moniz (Portugal) publishes work on the first human frontal lobotomies.
1936	Herman George Canady (United States) publishes *The Effect of "Rapport" on the I.Q.: A New Approach to the Problem of Race Psychology*. He was the first psychologist to examine the role of the examiner's race as a bias factor in IQ testing. His work provided suggestions for establishing a more equal testing environment.
1938	Ugo Cerletti (Italy) and Lucio Bini (Italy) use electroshock treatment on a human patient.
1939	David Wechsler (Romania, United States) publishes the Wechsler-Bellevue intelligence test, which will later evolve into the Wechsler Intelligence Scale for Children (WISC) and the Wechsler Adult Intelligence Scale (WAIS).
1940	George I. Sanchez (United States) publishes *Forgotten People: A Study of New Mexicans*. Also in 1940, he received a tenured, full professorship at the University of Texas, where he became the first professor of Latin American Studies.
1943	Starke Hathaway (United States) and J. Charnley McKinley (United States) publishes the Minnesota Multiphasic Personality Inventory (MMPI).
1945	Karen Horney (Germany, United States) publishes *Our Inner Conflicts*. Her work criticizes Freud's theory of female sexual development.
1946	Mamie Phipps Clark (United States) founds the Northside Center for Child Development. The first program of its kind in Harlem, it offered necessary therapy and assistance to children and families.
1948	Alfred Kinsey (United States) publishes *Sexual Behavior in the Human Male*, and then *Sexual Behavior in the Human Female* in 1953 with colleagues.
1948	B. F. Skinner (United States) publishes *Walden Two*. It describes a utopian community based on positive reinforcement and an experimental attitude. The book encourages the application of psychological principles to everyday life.
1949	Donald O. Hebb (Canada) publishes *The Organization of Behavior: A Neuropsychological Theory*. It offers a new and influential conceptualization about how the nervous system functions.
1950	Erik Erikson (Germany, United States) publishes *Childhood and Society*. He made contributions that advanced the study of human development across the lifespan.
1951	Carl Rogers (United States) publishes *Client-Centered Therapy*. His work advanced the humanist movement.
1952	The American Psychiatric Association publishes the first *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, an influential text that is updated periodically.
1953	Janet Taylor Spence (United States) publishes her Taylor Manifest Anxiety Scale in the *Journal of Abnormal Psychology*. Her contributions advance the fields of anxiety and gender studies.
1954	Abraham Maslow (United States) publishes *Motivation and Personality*. It proposes a hierarchy of needs, ranging from physiological needs to self-actualization.
1954	Gordon Allport (United States) publishes *The Nature of Prejudice*. He was one of the first psychologists to study personality.
1955	Kenneth Clark (United States) publishes *Prejudice and Your Child*. His earlier research and experiments with his colleague and wife, Mamie Phipps Clark, explored issues of race for African American children. The findings of that research were included as evidence in the Supreme Court decision *Brown v. Board of Education* (1954) by proving that segregation psychologically harms children.
1957	B. F. Skinner (United States) publishes *Schedules of Reinforcement*. He contributed in the areas of behavior analysis and the experimental analysis of behavior.

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Date	Milestone
1957	Leon Festinger (United States) proposes his theory of cognitive dissonance; in 1959, he and his colleague James Carlsmith conducts a landmark experiment to test this theory at Stanford University.
1958	Lawrence Kohlberg (United States) proposes his theory of moral development.
1960	Beatrice Ann Wright (United States) publishes *Physical Disability: A Psychological Approach*. Her contributions include developing appropriate and culturally relevant ways of working with differently abled people.
1961	Aaron Beck (United States) creates the Beck Depression Inventory, which is still used widely. Beck's contributions include the development of cognitive therapy and cognitive-behavioral therapy, along with making advances in the study of clinical depression and anxiety disorders.
1967	Zing-Yang Kuo (China) publishes *The Dynamics of Behavior in Development.* He contributed in the areas of animal and comparative psychology.
1967	Raymond Cattell (England, United States) publishes *Objective Personality and Motivation Tests*. He made contributions in the field of personality, putting forth a taxonomy of 16 different personality traits that could explain differences in peoples' personalities.
1969	Eleanor Gibson (United States) publishes *Principles of Perceptual Learning and Development*. With colleague Richard Walk (United States), Gibson conducts research on infant depth perception, known as "The Visual Cliff."
1971	Phillip Zimbardo (United States) conducts the Stanford Prison Experiment in the basement of an academic hall to examine the effects of authority in a prison environment.
1971	Albert Bandura (Canada, United States) publishes *Social Learning Theory*. His contributions advance the field of social cognitive psychology, and he is well known for his experiments regarding aggression.
1972	Elliot Aronson (United States) publishes *The Social Animal*. His contributions lead to advances in the theory of cognitive dissonance and explore the importance of situational factors on behavior.
1974	Eleanor Maccoby (United States) and Carol Jacklin (United States) publish *The Psychology of Sex Differences*. Their contributions lead to advances in the fields of gender studies and developmental psychology.
1974	Stanley Milgram (United States) publishes *Obedience to Authority: An Experimental View*. Milgram may be best known for his controversial experiments on obedience, which researched to what extent people would obey orders, even if the orders were dangerous or immoral.
1976	Robert V. Guthrie (United States) publishes *Even the Rat Was White,* the first history of African American psychologists in the United States.
1979	James J. Gibson (United States) publishes *The Ecological Approach to Visual Perception*. His contributions lead to advances in the field of visual perception.
1979	Elizabeth Loftus (United States) publishes *Eyewitness Testimony*. Her contributions lead to advances in the field of memory, misinformation, and eyewitness memory.
1983	Howard Gardner (United States) publishes *Frames of Mind*. This work outlines his theory of multiple intelligences.
1984	Hiroshi Azuma (Japan) publishes "Psychology in a Non-Western Country" in the *International Journal of Psychology*. He made contributions in the areas of cross-cultural psychology.
1986	Durganand Sinha (India) publishes *Psychology in a Third World Country: The Indian Experience*. He studied indigenous psychology; self, family, and social values; and human and socioeconomic development. He was central to the modern development of psychology from an Indian perspective.
1987	Marius Romme (Amsterdam) founds the Hearing Voices Network with Sandra Escher, a science journalist, and Patsy Hage, a person who hears voices. The network serves as a peer-mentor organization for persons who have auditory hallucinations and their supporters. The network soon spreads across the world.

Date	Milestone
1988	Muzafer Sherif (Turkey, United States) publishes *The Robbers Cave Experiment* with colleagues. One of the founders of modern social psychology, he advanced the fields of social judgment theory and realistic conflict theory.
1988	The Association for Psychological Science (APS), previously the American Psychological Society, is founded. Its stated mission is to promote, protect, and advance the interests of scientifically oriented psychology in research, application, teaching, and the improvement of human welfare.
1989	Kimberlé Williams Crenshaw (United States) publishes the paper "Demarginalizing the Intersection of Race and Sex." She is one of the founders of critical race theory, developing the theory of intersectionality.
1990	Reiko True (Japan, United States) publishes "Psychotherapeutic Issues with Asian American Women" in the journal *Sex Roles*. Her work has advanced mental health services for Asian Americans and other minorities.
1991	Martin Seligman (United States) publishes *Learned Optimism.* This work introduces the field of positive psychology.
1991	Qicheng Jing (China) publishes *Landmarks of Psychology: Contemporary Great Masters in Psychology*. He made contributions in highlighting the international aspect of psychology, advancing the exchange of international psychology, and lifting Chinese psychology onto the world stage.
1997	Beverly Daniel Tatum (United States) publishes *Why Are All the Black Kids Sitting Together in the Cafeteria?* This work examines the development of racial identity.
1997	U.S. president Bill Clinton apologizes for the Tuskegee Syphilis Study, an infamous study that violated human participant rights and led to the publishing of the Belmont Report in 1979, a U.S. code of ethics for human participants in research.
2003	Kuo-Shu Yang (China, Taiwan) publishes *Progress in Asian Social Psychology* with colleagues. A pioneer in indigenous Chinese and Taiwanese psychology, he also devoted his life to social reform in Taiwan.
2007	Alice Eagly (United States) publishes *Through the Labyrinth: The Truth about How Women Become Leaders* with colleague Linda Carli (United States). Her contributions have advanced the understanding of prejudice, sex differences, leadership styles, feminism, and stereotypes.
2008	U.S. president George W. Bush signs Mental Health Parity Act, requiring insurance to equally cover both mental and physical health.
2008	Lisa Diamond publishes *Sexual Fluidity: Understanding Women's Love and Desire*. Her research has advanced the understanding of sexual identity, sexual orientation development, and human bonding.
2010	Derald Wing Sue (United States) publishes *Microaggressions in Everyday Life: Race, Gender, and Sexual Orientation*. His contributions have advanced the fields of multicultural counseling and research.
2010	Claude Steele (United States) publishes *Whistling Vivaldi and Other Clues to How Stereotypes Affect Us.* He has advanced the areas of stereotype threat and its impact on the academic performance of minority students.
2010	The replication controversy impacts how a variety of disciplines, including psychology, validate existing studies.
2011	Michael Gazzaniga (United States) publishes *Who's in Charge? Free Will and the Science of the Brain*. His studies advance understanding of the functions of each brain hemisphere, and how they work independently and in collaboration.
2011	Daniel Kahneman (Israel) publishes *Thinking, Fast and Slow*. His contributions have advanced the fields of judgment and decision making. With colleague Amos Tversky (Israel), Kahneman has established a cognitive basis for common human errors that arise from heuristics and biases.
2013	*DSM*-5 is published by the American Psychiatric Association.

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Date	Milestone
2014	A radio soap opera, "Musekeweya," is created by clinical psychologist Ervin Staub (Hungary, United States) and disseminated to Rwandan listeners to counteract hate speech and intolerance.
2015	The American Psychological Association bans psychologist participation in national security interrogations.
2015	Mona Amer (Egypt) and Germine Awad (United States) publish *The Handbook of Arab American Psychology.* It is the first major publication to comprehensively discuss the Arab American experience from a primarily psychological lens.
2015	David Trafimow (United States) bans null hypothesis significance testing for the journal *Basic and Applied Social Psychology*. This begins the debate about how to better determine if a hypothesis is supported or rejected.
2016	U.S. president Barack Obama signs the 21st Century Cures Act, which provides essential prevention services and treatments for populations in need and support.
2016	Mahzarin Banaji (India, United States) publishes *Blindspot: Hidden Biases of Good People* with colleague Anthony Greenwald (United States). Her work has advanced awareness of implicit or unconscious bias.
2017	Arkansas (United States) opens the first intimate partner violence shelter for men in the United States. The shelter also runs a domestic violence hotline for men.
2018	Mental Health at Work (United Kingdom) is launched by The Royal Foundation. The nonprofit provides support to employers and employees to help them improve well-being in their workplace and encourage conversations about mental health.
2019	Jennifer Eberhardt (United States) publishes *Biased: Uncovering the Hidden Prejudice That Shapes What We See, Think, and Do*. Her research advances the fields of race, bias, and inequality.
2020	In Mexico, a mental health bill that would have removed a person's right to consent to treatment was stopped by human rights activists.
2020	Telemental health availability broadens treatment options during the coronavirus pandemic.

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1 AN INTRODUCTION TO PSYCHOLOGY

LEARNING OBJECTIVES

1.1 Discuss how psychology is defined, including the relationship between behavior and mind, and then differentiate among the following types of psychologist: clinical, applied, and research.

1.2 Trace the historical roots of psychology, including the importance of nature via nurture, and compare and contrast the major schools represented by structuralism, functionalism, behaviorism, psychoanalysis, and humanism.

1.3 Outline why psychologists adopt a more eclectic approach to research and treatment, and explain how psychologists have benefited significantly from recent discoveries in biology, the study of culture, and the analysis and replicability of data.

1.4 Following the major sections of the chapter, summarize how psychology is defined, its history, and how it is currently practiced.

CHAPTER OUTLINE

Welcome to the study of psychology—the scientific study of behavior and mind. If this is your first psychology course, expect to be surprised by what you find covered in this book. Most people think psychology deals mainly with the study of mental disorders—that is, depression, anxiety, or schizophrenia. Although it's true that psychologists often treat psychological problems, the image of psychology that you see in the movies or on afternoon talk shows is often misleading. Did you know that psychologists tend to focus just as much on the study of normal behavior as they do on abnormal behavior?

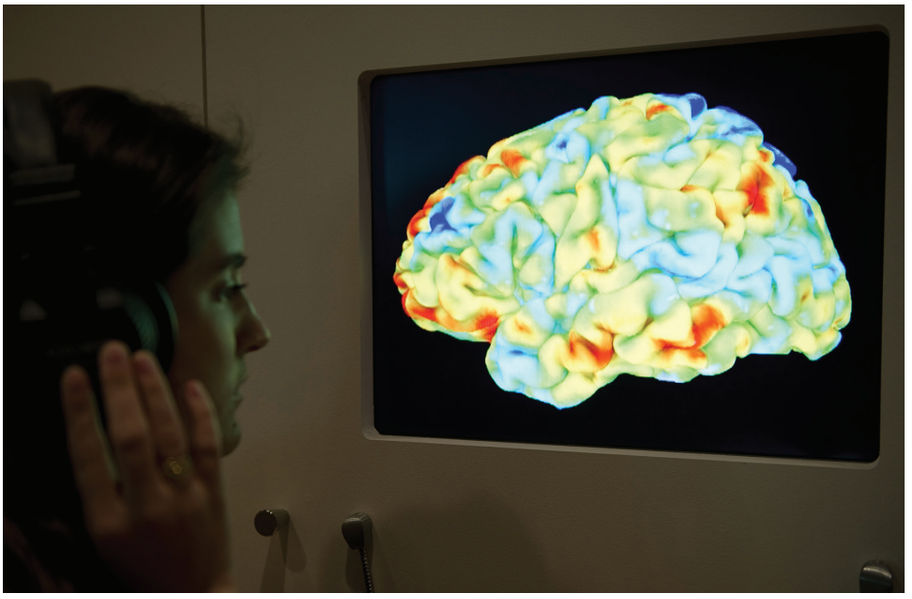
In fact, most of the material in this book comes from the study of normal people. Psychologists study normal behavior for two main reasons: First, to understand the abnormal, it is necessary to understand normal functioning first, in the same way that medical doctors need to understand healthy bodies before they can understand sickness and disease. Second, by understanding normal functioning, we can gain control over our environment and live more productive lives. As you'll soon see, modern psychology has something to say about everything from the treatment of irrational fears (such as the fear of spiders) to the development of effective study skills—even to the design of the kitchen stove. You can live a better life if you understand a little psychology.

At the same time, some of the things you'll learn may be difficult to match up with everyday experience. For example, you'll discover that your personal memories are not always accurate. Instead, what you remember can be an elaborate reconstruction of the past, one that bears little resemblance to what actually occurred. You will learn that your beliefs—how you think you would act and treat others—can be easily changed in the face of a demanding situation. We will even consider the possibility that free will is an illusion—instead, your thoughts may be influenced by unconscious forces and natural drives that are not under your direct control. As the behavioral neuroscientist David Eagleman put it, "The brain runs its show incognito," meaning that much of what

we see and think is produced by a brain working in secret, below conscious awareness (Eagleman, 2011, p. 12). So be prepared: What you'll learn may well change the way you view yourself, the world, and others around you.

THE PROBLEMS TO BE SOLVED: WHAT IS PSYCHOLOGY?

Throughout this book, we present the topics of psychology from a "functional" perspective, which means we explain what a psychological process is *for* before explaining how it works. Our brains are filled with psychological tools, controlling everything from emotion to reason to memory. Each of these tools helps us adapt and solve problems. We'll describe these tools in detail and show you how each is used. We'll also focus on the specific situations in which they are applied. Each chapter begins with a preview section just like this, called "The Problems to Be Solved." Here we explain how and why a given psychological process is important, stressing its function and the particular problems that it helps us solve. To understand any psychological process completely, you first must have some idea of what the process is *for*.



The brain runs its show incognito.

MIGUEL MEDINA / Stringer via Getty Images

Here are a few examples: Suppose you're walking along a mountain trail and you hear a sudden rattle. You stop quickly because that sound could signal the presence of a rattlesnake. One important thing you learn about your environment is that certain events, such as rattling sounds, predict or signal other events, such as dangerous snakes. Our brains are designed to learn associations between significant events so we can better adapt to our environment. In Chapter 7, we'll discuss a procedure called *classical conditioning* that shows us how this important learning process works. As you read about this procedure, you should think about the adaptive problem that needs to be solved—how do we learn about signals in our environment? Likewise, in Chapter 13, you'll learn how we use psychological processes to interpret the behavior of others. If a shadowy figure emerges suddenly from an alleyway, it's important that you size up the situation quickly and decide on an appropriate response. Is this person a threat or just having a little fun? For a broad overview of the types of situations that we'll be considering in this book, take a look at Table 1.1.

At other times, we'll consider the methods psychologists use to understand behavior and mind. Here, too, we'll begin the discussion by examining what each technique is *for*. The methods of

TABLE 1.1 ■ Examples of Functional Problems Considered in the Book

Chapter	Functional Problem	Example	Solution Tools
2	Determining the causes of behavior	Jayla watches a TV program and becomes aggressive.	Experimental research
3	Communicating internally	A bicyclist weaves suddenly into the path of your car.	Electrochemical transmission in the nervous system
7	Learning what events signal	You hear a rattling tail on a mountain path.	Associations acquired through classical conditioning
8	Remembering over the short term	You try to remember a person's name as you cross the room.	Rehearsal in short-term memory
10	Conceptualizing intelligence	Roland is excellent at fixing mechanical devices but is terrible at reading and math.	Psychometric tests designed to measure the mind
13	Interpreting the behavior of others	A shadowy figure emerges suddenly from an alleyway.	Knowledge-based social schemas used to predict outcomes
14	Defining abnormality	Lucinda hears voices and thinks she's immortal.	*Diagnostic and Statistical Manual of Mental Disorders*
15	Treating the mind	Amir is mired in the depths of depression.	Psychoactive drug therapy or "insight" therapy

psychology were not developed in a vacuum—they were developed to help psychologists understand specific aspects of behavior and mind. For example, what are the best strategies for understanding the changes we go through from infancy to adulthood (Chapter 4)? We know a great deal about the mind of a newborn, but how is this possible? Newborns can't tell us what they're feeling or thinking or seeing. What are the best ways to measure intelligence (Chapter 10)? How can abnormal behavior be treated (Chapter 15)? These are practical problems that psychologists face; and, again, the key to understanding the methods psychologists employ is to understand the specific problems that these methods are designed to solve.

Another reason we'll be discussing the methods of psychology—its techniques and strategies—is to help you develop scientific literacy. The scientific method is the "supreme court of appeal" for psychological insight. Most of the conclusions that you'll be reading about are based on controlled research, often in the laboratory but in real-world settings as well. To understand psychology, and what psychology is for, it's essential that you understand the nuts and bolts of scientific research. You'll find that our discussions will often include references to specific research studies, ones that have been published in peer-reviewed scientific journals (*peer-reviewed* means that other experts have critiqued the study prior to publication). We will also end every chapter with a feature called "Thinking About Research" that discusses a specific research study in detail and invites you to think critically about the study and its results.

This first chapter is designed to provide you with a broad introduction to the field of psychology. Our discussion will revolve around three basic questions:

Defining and Describing Psychology

Why is psychology defined as the scientific study of behavior and mind? We'll talk about the distinction between behavior and mind and about how and what psychologists do. Most scientific fields include subspecialties, and psychology is no exception.

Tracing the Development of Psychology: A Brief History

How did current psychological perspectives evolve? Psychology has a short history as a science, but scholars have been interested in psychological questions for centuries. We'll discuss some of the famous "schools" of psychological thought and how they developed. Modern psychology continues to bear the "footprints" of these schools of thought, so it's important to understand them well.

Identifying the Focus of Modern Psychology

What trends and directions are shaping modern psychology? We'll characterize how modern psychologists think and some important recent influences. Increasingly, modern psychologists are concerned with cognitive, biological, evolutionary, and cultural factors in understanding behavior and mind. Moreover, in keeping with our emphasis on research, psychologists are increasingly concerned with new data techniques, and with fine-tuning research methods to prevent false conclusions.

DEFINING AND DESCRIBING PSYCHOLOGY

Psychology is the scientific study of behavior and mind. The word comes from the Greek *psyche*, which translates as "soul" or "breath," and *logos*, which means the study or investigation of something (as in biology or physiology). The word *psychology* was not in common use before the 19th century, and the field of psychology didn't become an independent science until the middle of the 19th century (Boring, 1950). Prior to that point, "the study of the mind," as psychology was widely known, was conducted mainly by philosophers and physiologists. Neither Sigmund Freud nor Ivan Pavlov was trained in psychology, despite their reputations as famous psychologists. The field as we now know it simply didn't exist.

Notice that today's definition of psychology is quite precise—it is not simply the study of the mind; rather, it is the scientific study of behavior and mind. The emphasis on science, and particularly the scientific method, distinguishes psychology from the closely related field of philosophy. The essential characteristic of the scientific method, as you'll see in Chapter 2, is observation: Scientific knowledge is always based on some kind of direct or indirect observation. Psychologists collect observations, look for regularities, and then generate predictions based on what they've observed.

The term *behavior* can mean many things to a psychologist—even electrical activity in the brain.

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By **mind**, psychologists mean the contents and processes of subjective experience: sensations, thoughts, and emotions. Behavior and mind are kept separate in the definition because only behavior can be directly measured. Psychologists use the term **behavior**, though, in a quite general way. The activity of cells within the brain and even internal thoughts and feelings can be considered types of "behavior"—as long as they can be observed and measured in a systematic way.

What Psychologists Do

The work of all psychologists revolves around the scientific study of behavior and mind, but specialties abound. As summarized in Concept Review 1.1, we can divide the general job description into three main categories: *clinical psychologists, applied psychologists*, and *research psychologists*. These categories are somewhat artificial—for example, clinical psychologists often work in applied settings, and many conduct research—but the categories provide a useful way of defining the profession.

Clinical Psychologists

A **clinical psychologist** diagnoses and treats psychological problems—such as depression, anxiety, phobias, and schizophrenia. Clinical psychologists typically work in clinics or in private practice, delivering human services such as psychotherapy or counseling. To become a clinical psychologist, it is necessary to obtain a postgraduate degree such as a PhD (doctor of philosophy) or a PsyD (doctor of psychology).

A clinical psychologist diagnoses and treats psychological problems. Clinical psychologists typically work in clinics or in private practice, delivering human services such as psychotherapy or counseling.

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Counseling psychologists also deliver human services, but they usually work on different kinds of problems. Counseling psychologists are more likely to deal with adjustment problems (marriage and family problems), whereas clinical psychologists tend to work with psychological disorders. Counseling psychology also requires a postgraduate degree, perhaps a PhD from a graduate program specializing in counseling psychology or an EdD (doctor of education). Together, clinical and counseling psychologists make up the majority of the profession (American Psychological Association, 2017).

What is the difference between a *psychologist* and a *psychiatrist*? Many people confuse the terms. **Psychiatrists** also specialize in the diagnosis and treatment of psychological problems, but psychiatrists are medical doctors. To become a psychiatrist, you must graduate from medical school and complete further specialized training in psychiatry. Like clinical psychologists, psychiatrists treat mental disorders, but unlike most psychologists, they are licensed to prescribe medication.

As you'll see in Chapter 15, medications are often useful in treating problems of the mind. There is an ongoing debate among mental health professionals about whether psychologists should be allowed to prescribe medication (Linda & McGrath, 2017; Nasrallah, 2017). Some states are considering legislation that will extend prescription privileges to licensed clinical psychologists; psychologists currently may prescribe in five states—Iowa, Idaho, Illinois, New Mexico, and Louisiana—as well as in the Public Health Service, the Indian Health Service, the U.S. military, and Guam. Usually, though, psychologists and medical doctors must work together. Clinical psychologists are likely to refer a client to a psychiatrist or general practitioner if they suspect that a physical problem might be involved.

Medications are often useful in treating problems of the mind.

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Some clinically oriented psychologists choose to work with communities rather than individual clients. In fact, there is an entire field of psychology, known as *community psychology*, that examines and seeks to understand complex individual–environment interactions in order to bring about social change, particularly for those who have limited resources and opportunities (Jason et al., 2019). The field of community psychology typically focuses on the prevention of psychological problems rather than simply on their treatment. We'll discuss some of these prevention techniques in Chapter 16 when we focus on health psychology in general.

Applied Psychologists

Applied psychologists extend the principles of scientific psychology to practical, everyday problems in the real world. Applied psychologists work in many settings. For example, *industrial/organizational* psychologists are employed in industry to help improve morale, train new recruits, or help managers establish effective lines of communication with their employees. Industrial/organizational psychologists have developed sophisticated methodologies for assessing, evaluating, and recruiting employees, and they seek to understand what motivates performance and how workers react to stress (e.g., see Riggio, 2017).

Educational psychologists are concerned with the scientific study of how humans learn. Once again, sophisticated methodologies now exist that measure the effectiveness of classroom interventions, and educational psychologists are heavily involved in classroom management and instructional design. For example, as discussed in detail in the accompanying Practical Solutions feature, psychologists have recently been exploring the role of testing as a strategy for learning in the classroom. It turns out that actively taking a test, one that requires you to retrieve the information that you've just read about, leads

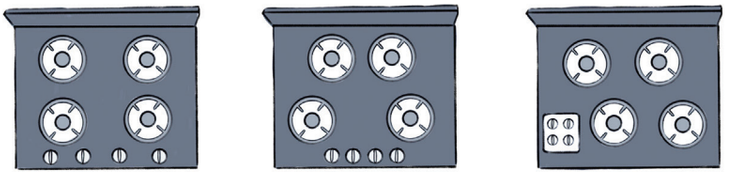
to superior long-term retention, much better than retention of information that has simply been repeatedly read (see P. C. Brown, Roediger, & McDaniel, 2014).

Forensic psychologists apply psychological principles to legal issues, such as the reliability of eyewitness testimony or the evaluation of a defendant's mental competence. Forensic psychologists can also work directly with law enforcement to help with crisis management or to help officers understand the motives and emotions of both people who commit crimes and the victims of crimes. Academic researchers have been actively investigating the science of criminal confessions—both true and false—and the conditions that lead to false and true memories of a crime (e.g., E. F. Loftus, 2018; Wixted & Wells, 2017). We'll consider some of this research in detail in Chapter 8.

Human factors psychologists play a key role in the design and engineering of new products: For example, why do you think telephone numbers are seven digits long, grouped in three, then four (e.g., 555-9378)? How about traffic lights—why red and green? You'll find answers to these questions later in the book. Human factors psychologists even work on the design of the kitchen stove. Does your stove look like the one shown in the left panel of Figure 1.1? There are four burners, arranged in a rectangle, and four control knobs that line up horizontally along the front (or sometimes the back). To use the stove properly, you need to learn the relationship, or what psychologists call the *mapping*, between the control knobs and the burners. In this case, you need to learn that the far-left knob controls the back burner on the left. Or is it the front burner on the left? If you have a stove like this one, which is poorly designed from a psychological perspective, you likely have trouble remembering which knob controls which burner. We bet you've placed a pot of water on one of the burners, turned a control knob, and found moments later that you've turned on the wrong burner . . . right? The reason is simple: The stove has been designed with an unnatural mapping between its controls and the burners.

FIGURE 1.1 ■ The Human Factors of Stove Design

The stove on the left does not provide a natural mapping between the control knobs and the burners and is therefore difficult to use. The stoves in the middle and on the right provide psychologically correct designs that reduce user errors.



Illustrated by Sarah Yeh

Mapping is easier to understand when you look at a psychologically correct design, as shown in the middle panel of Figure 1.1. Notice that the arrangement of the burners naturally aligns with the controls. The left-to-right display of the control knobs matches the left-to-right arrangement of the burners. There is no need to learn the mapping in this case. It's obvious which knob you would use to turn on the appropriate burner. Alternatively, if you want to keep the rectangular arrangement of the stove top, then simply arrange the control knobs in a rectangular manner that matches the burners, as shown in the far-right panel. As these examples illustrate, there are natural and unnatural ways to express the relationship between product control and product function.

We'll be considering the work of applied psychologists throughout this book. Applied psychologists usually have a postgraduate degree, often a PhD, although a master's in psychology can be sufficient for a successful career in an industrial setting.

Research Psychologists

Some psychologists conduct basic research to discover the principles of behavior and mind. They are called **research psychologists**, and like applied psychologists, they usually specialize. *Behavioral neuroscientists* seek to understand how biological or genetic factors influence and determine behavior. *Personality psychologists* are concerned with the internal factors that lead people to act consistently across situations and also with how people differ. *Cognitive psychologists* focus on higher mental processes such

as memory, learning, and reasoning. *Developmental psychologists* study how behavior and internal mental processes change over the course of the life span. *Social psychologists* are interested in how people think about, influence, and relate to each other. We're giving these psychologists only a brief mention here because you'll be reading about their work in every chapter of this book.

CONCEPT REVIEW 1.1
TYPES OF PSYCHOLOGISTS

Type of Psychologist	Guiding Focus	Primary Workplace	Examples of What They Do
Clinical psychologists	The diagnosis and treatment of psychological problems	Clinics Private practice Academic settings	Counsel clients suffering from adjustment problems or more severe psychological problems; evaluate diagnostic techniques and therapy effectiveness
Applied psychologists	Extending psychological principles to practical problems in the world	Private industry Schools Academic settings	Help performance of students in school; improve employee morale and performance at work; design computers so that humans can use them efficiently
Research psychologists	Conduct research to discover the basic principles of behavior and mind	Academic settings Private industry	Conduct experiments on the best study method for improving memory; assess the impact of day care on children's attachment to their parents; observe the effects of others on a person's helping behavior

PRACTICAL SOLUTIONS: WANT TO DO WELL ON THE TEST? TEST YOURSELF!

We've seen that psychologists focus on many different kinds of problems, but you're probably more interested in what they have to say about doing well in school. Have psychologists discovered the secret to understanding and remembering classroom material, or the subjects covered in your textbook? In fact, psychologists have a lot to say about successful learning and retention, and what they've discovered flies in the face of conventional wisdom.

The Myth: Repeated Reading

Suppose we conduct a simple experiment. Two groups of students are asked to read and remember a section of material from a college textbook. One group is given four separate opportunities during which they're allowed to read over the material and try to remember it. The other group is shown the material only once, but is required to recall what they studied on three consecutive tests. Two weeks later, everyone is asked to remember the material on a final test. Who does better—the group receiving four opportunities to read and reread the material or the group taking three tests? If you are like most people, you picked the read and reread group—after all, they're given four chances to go over the material. But if you did, you would be wrong, very wrong. In fact, the group given the three tests does substantially better. Not only does repeated testing lead to better memory for the original material; it leads to better comprehension as well (Karpicke, 2017; Karpicke & Roediger, 2008).

The Fact: Repeated Testing

The key to effective studying is effective testing. You need to practice retrieving the information, not simply read the material over and over again. In fact, repeated reading does very little to enhance either comprehension or later memory. Unfortunately, students rarely engage in repeated self-testing; their preferred technique is repeated studying, in the form of rereading or rewriting material from the book or their notes. You will learn about why repeated retrieval is so effective later in

Chapter 8, but consider the following example: Suppose you were trying to learn to play a piece of music on the piano. Which would be better—reading the sheet music over and over again or playing the piece on the piano? If the goal is to play the piano, you need to practice playing the piano. Likewise, if you want to remember something later on, you need to practice remembering it, not staring at it for hours.

Be Accurate

One final warning: Practicing retrieval through self-testing is a terrific way to study and learn material in a course. But it's very important that you practice retrieving the right information. If you test yourself and recall the wrong information, you could be in a lot of trouble. That means it's important to check your work. What you retrieve needs to be accurate, or you will "remember" the wrong thing. To make matters worse, many students tend to be overconfident about what they know—they are very poor at monitoring their learning effectively—and this leads to very poor retention and comprehension in the long term (Dunlosky & Rawson, 2011).

KNOWLEDGE CHECK 1.1

You can test your knowledge about how best to define and describe psychology by deciding whether each of the following statements is true or false. (You will find the answers in the Appendix.)

1. Psychologists use the term *behavior* to refer only to observable responses, such as moving about, talking, and gesturing. Internal events, such as thoughts and feelings, fall outside the domain of scientific psychology. *True or False*?
2. Psychology did not exist as a separate field of science 150 years ago. To explore questions about behavior and mind, it was necessary to study philosophy and physiology. *True or False*?
3. Clinical psychologists are generally interested in diagnosing and treating psychological problems such as depression or schizophrenia. *True or False*?
4. Psychiatrists differ from psychologists primarily in their focus of interest. Psychiatrists tend to work on severe and chronic problems, such as schizophrenia, whereas psychologists treat milder problems, such as phobias and anxiety disorders. *True or False*?

TRACING THE DEVELOPMENT OF PSYCHOLOGY: A BRIEF HISTORY

The field of psychology has a relatively short past, but it has a long and distinguished intellectual history. Thousands of years ago, the Greek philosopher Aristotle (384–322 BCE) wrote extensively on topics that are central to modern psychology—topics such as memory, sleep, and sensation. It was Aristotle who first argued that the mind is a kind of *tabula rasa*—a blank tablet—on which experiences are written. The idea that knowledge arises directly from experience, a philosophical position known as **empiricism**, continues to be an important theme in modern psychological thought.

Modern psychology developed out of the disciplines of philosophy and physiology. In a sense, psychology has always occupied a kind of middle ground between the two. Aristotle, Plato, and other philosophers helped frame many of the basic questions that occupy the attention of psychologists today: Where does knowledge come from? What are the laws, if any, that govern how we see and hear? What are the necessary conditions for learning and remembering? Physiologists, on the other hand, focused their attention on the workings of the human body. Before psychology was formally established, physiologists collected volumes of data on the mechanics of physical movement and the anatomy of sensory systems, which proved essential in the development of a scientific understanding of behavior and mind.