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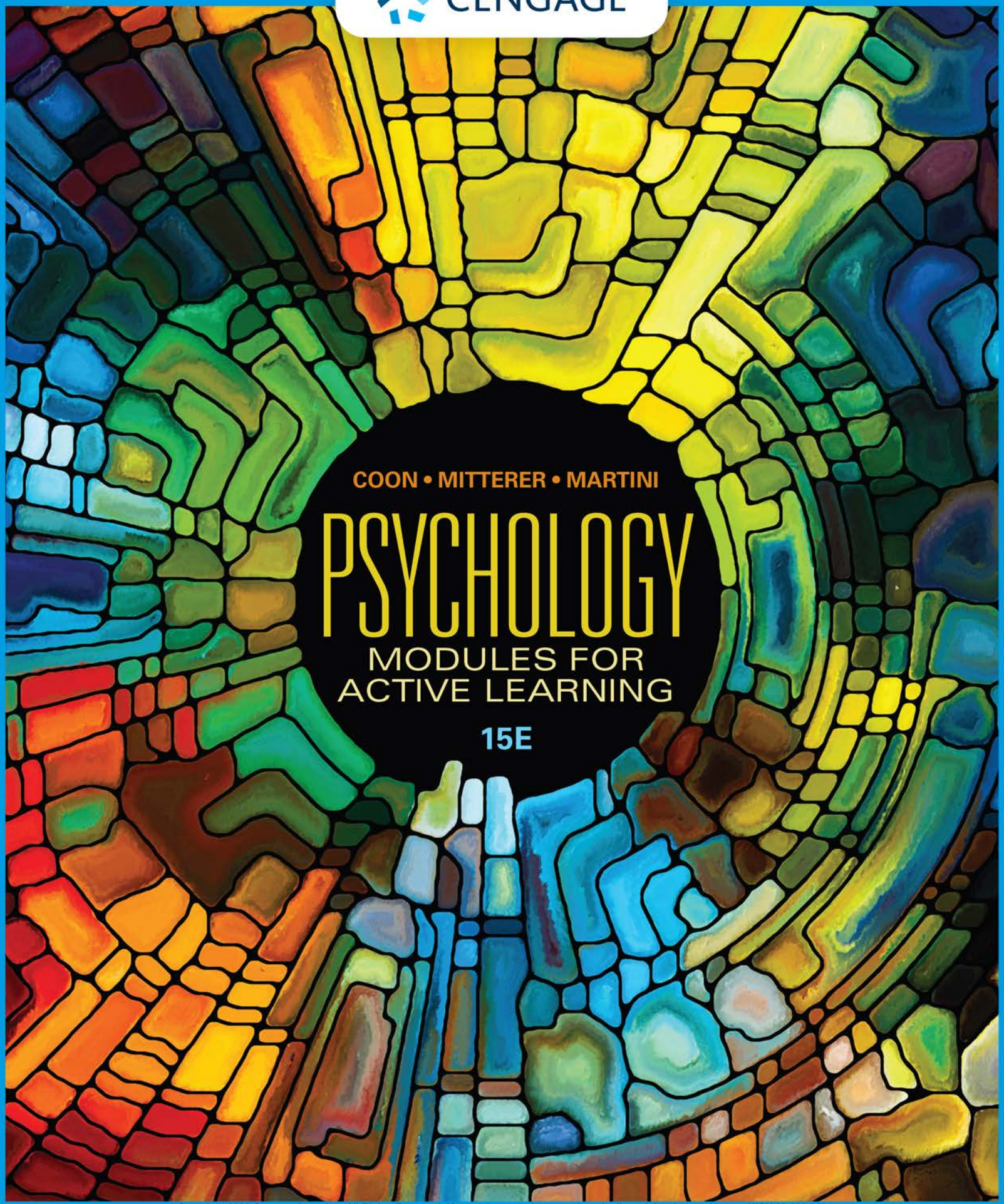

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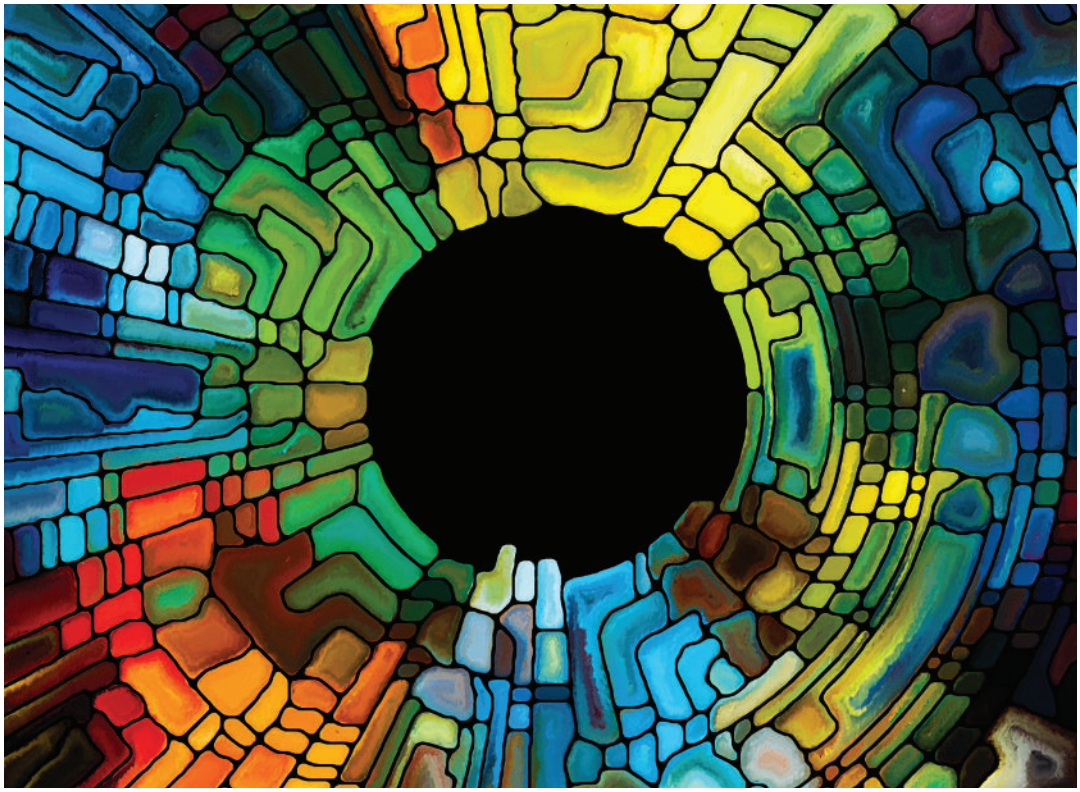
PSYCHOLOGY

MODULES FOR ACTIVE LEARNING

15E

Psychology

Modules for Active Learning 15e



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Psychology: Modules for Active Learning,
Fifteenth Edition
Dennis Coon, John Mitterer, Tanya Martini

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Dedication

For Sevren
–DC

For Rue Elizabeth Pante
–JM

For George and Betty Shepherd
and Janis Knifton, because it
takes a village.
–TM

About the Authors

Courtesy of Dennis Coon

Dennis Coon

Dennis Coon is a publishing phenomenon and one of the best-selling authors in the field of psychology. His innovative instructional methods and student-focused style make his works perennial favorites among instructors and students alike. To date, more than two million students have learned psychology with a Coon text as their guide. Dr. Coon graduated with a B.A. in psychology from the University of California, Riverside, and earned his PhD in social psychology from the University of Arizona. He is also coauthor, with John Mitterer and Tanya Martini, of *Introduction to Psychology: Gateways to Mind and Behavior, 16th Edition.*

Courtesy of John Mitterer

John Mitterer

John Mitterer was awarded his PhD in cognitive psychology from McMaster University. He has taught psychology at Brock University to more than 30,000 introductory psychology students. He is an award-winning teacher whose several teaching awards include a National 3M Teaching Fellowship, the Canadian Psychological Association Award for Distinguished Contributions to Education and Training in Psychology, and the Brock University Don Ursino Award for Excellence in the Teaching of Large Classes. He has created textbooks and support materials for both students and instructors, and he has published and lectured on undergraduate instruction throughout Canada and the United States.

Courtesy of Callum Williams

Tanya Martini

Tanya Martini obtained her PhD in developmental psychology from the University of Toronto. In addition to introductory psychology, she also teaches research methods, human learning, and courses aimed at facilitating students' understanding of career-related skills. She has received both the Brock University Distinguished Teaching Award and the Chancellor's Chair for Teaching Excellence. Dr. Martini's research examines how undergraduates think about the skills that are being fostered during university experiences, both inside and outside the classroom. She's also interested in how we can improve students' understanding of career-related skills so that they are in a better position to leverage them when they apply for jobs or post-graduate programs. In addition to her position at the university, Dr. Martini currently sits on the advisory board for the Socio-Emotional Skills Initiative that has been undertaken by the Conference Board of Canada.

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Preface

To You, the Student—An Invitation to Learn Psychology with Us

Greetings from your authors! We look forward to being your guides as you explore the exciting field of psychology and our ever-evolving understanding of human behavior. In a very real sense, we wrote this book about you, for you, and to you. We sincerely hope you will find, as we do, that what you learn is at once familiar, surprising, and challenging.

Reading *Psychology: Modules for Active Learning*

We have done all we could to make *Psychology: Modules for Active Learning* enjoyable to read and relevant to your everyday life. Each module takes you on a journey into a different realm of psychology, where you will explore areas such as personality, abnormal behavior, memory, consciousness, and human development. Each one is complex and fascinating in its own right, with many pathways, landmarks, and interesting detours for you to discover. Like any journey of discovery, your exploration of psychology will help you better understand yourself, others, and the world around you. It's definitely a trip worth taking.

Studying Effectively with *Psychology: Modules for Active Learning*

As would be the case on any interesting trip, studying psychology will be most rewarding if you adopt a reflective attitude. Psychologists believe that answers to important questions come through engaged and careful thought, observation, and inquiry. Put another way, they often ask "How can we step outside ourselves to look objectively at how we live, think, feel, and act?" As simple as that approach may seem, this type of careful consideration takes practice to develop. *Psychology: Modules for Active Learning*, then, is your passport to an adventure in active, reflective learning, not just passive reading.

We offer at least three different ways to help you develop this type of reflective approach to your studies. First, to help you get off to a good start, we strongly encourage you to read Module 1, our short "manual," *The Psychology of Reflective Studying*. In it, we describe what you can learn by taking this course, including the skills you'll develop that can be helpful in both your personal and professional life. In *The Psychology of Reflective Studying*, you'll also read about a variety of well-established study skills that you can use to get the most out of your psychology course, and your other courses as well.

Second, *MindTap® Psychology* for this text is a digital tool that can help you to learn the material in this book on your own terms. Using MindTap, you can read or listen to the electronic copy of the textbook, highlight key ideas, add notes, and create custom flashcards. MindTap also allows you to reinforce your learning with assignments that revisit topics you have learned about throughout each module. You can track your scores and stay motivated while pursuing your goals. Moreover, you can take advantage of the *MindTap Mobile App* to learn where and when it's convenient for you.

Third and finally, a set of *guided notes* is available for each module. Developed using the well-established Cornell method of note-taking, we have created them to help you distill the most important aspects of each module and develop good study aids to assist you in preparing for tests. Available as MS Word files, you can use the guided notes to help organize your thinking about the material, focus on key ideas and concepts, and practice summarizing important points in your own words.

To You, the Instructor—An Invitation to Teach Psychology with Us

Thank you for choosing *Psychology: Modules for Active Learning* for your students and for your course. Marcel Proust wrote, "The real voyage of discovery consists not in seeing new landscapes but in having new eyes." It is in this spirit that we have written this book—our goal is to promote not just an interest in human behavior but an appreciation for the perspective of the psychological scientist as well.

As the authors of this textbook, we have together accumulated over 80 years of classroom experience, teaching tens of thousands of college and university students. Although we have found most students to be generally well intentioned, our modern world certainly does immerse them in their work, careers, families, intimate relationships,

and popular culture. As we compete for ever-more-limited student attention, we need to motivate our students to read and educate them about how to learn effectively—learning, after all, is a life-long endeavor (Matthew & Sternberg, 2009; Paternoster & Pogarsky, 2009).

We have explicitly designed and written the fifteenth edition of *Psychology: Modules for Active Learning* to foster this type of deeper student engagement with the field of psychology. We believe that this will result in better memory for what has been read and studied, and a deeper understanding of how to become more reflective learners and thinkers. To help you and your students reach these goals, we have designed this edition around two key goals: ***integrating support to address instructor learning objectives*** and ***integrating support for active student learning***. In the sections below, we discuss each of these in more detail.

Integrating Support to Address Instructor Learning Objectives

This edition of *Modules* has a structure that we firmly believe will make it easier for instructors to customize their use of the book to address their specific learning outcomes, regardless of whether they are driven by department/state standards or by personal preference. Specifically, each traditional psychology chapter is organized around approximately five modules that represent the "big ideas and issues" in that particular area of psychology. Each of these self-contained modules begins with a set of learning outcomes that are compatible with Bloom's Taxonomy and ends with a short *Reflective Practice* feature that allows students to receive some immediate formative feedback regarding their understanding of the key concepts and ideas from that section. We believe that structuring the book around a smaller number of key topics like this will allow instructors the flexibility to customize their course by having students read only those modules that are central to their unique learning objectives.

In addition, we have worked hard to bring the fifteenth edition of *Modules* in line with the new recommendations put forth by the APA's Introductory Psychology Initiative (APA-IPI), while still maintaining the past edition's compatibility with the broader APA Guidelines for the Undergraduate Major. There are three main themes woven throughout the textbook that are relevant to the APA-IPI. The first is related to *Human Diversity*, including discussions of race, ethnicity, culture, SES, gender, sexual orientation, and age. Too often, such differences needlessly divide people into opposing groups. Our aim throughout this book is to discourage stereotyping, prejudice, discrimination, and intolerance. To that end, all pronouns and examples involving females and males are equally divided by gender. In artwork, photographs, and examples, we have also set out to portray the rich diversity of humanity.

The second APA-IPI theme that is woven throughout this book are sections which highlight psychology as a science. These sections model good critical thinking on topics such as adolescent mental health and the replication crisis, but they're also intended to emphasize how thinking in psychology has evolved with new research, and to highlight areas in which we're still searching for answers (e.g., How should we best conceptualize intelligence? How can we best manage bias in the workplace?).

Finally, you'll see APA-IPI sections woven throughout this book that emphasize how psychological science can be applied to the world around us, including topics such as using laptops to take notes in class, intersex athletes competing at the Olympics, and celebrity endorsements to promote marketing campaigns. Table P.1 underscores the text's compatibility with the APA-IPI and Table P.2 shows how it can help you and your students meet the American Psychological Association's (2013) Guidelines for the Undergraduate Major.

In addition to our compliance with APA initiatives, this edition of *Modules* has a newly revised and expanded Instructor Companion Site that includes an *Instructor's Resource Manual*, which provides a wealth of teaching tips and classroom resources; *Cengage Learning Testing Powered by Cognero* featuring questions correlated to learning objectives, Bloom's taxonomy level, and difficulty; and *PowerPoint slides* providing concept coverage with dynamic animations, photographs, and video. Each of these resources has been designed with your needs in mind and will support you in successfully addressing the learning objectives you've created for your course.

Integrating Support for Active Student Learning

We have built in a number of features into the new edition of *Modules* that we believe will assist students in honing their active learning skills. We'd like to draw your attention to four of them: *assisting with active reading*, *scaffolding student*

TABLE P.1 | APA-IPI Objectives Addressed by Reading *Psychology: Modules for Active Learning*, 15e

Psychology Content: Identify Basic Concepts and Research Findings	
1.1. Define and explain basic psychological concepts.	All modules, with support provided by *Glossary* and *Guided Notes*
1.2. Interpret research findings related to psychological concepts.	Modules 4–5 (*Research Methods*), Module 6 (*A Psychologist's Skill Set: Information Literacy*), and throughout this book
1.3. Apply psychological principles to personal growth and other aspects of everyday life.	*A Psychologist's Skill Set* modules, and throughout this book
Scientific Thinking: Examples of How to Solve Problems Using Psychology Methods Can Be Found Throughout This Book	
2.1. Draw logical and objective conclusions about behavior and mental processes from empirical evidence.	Module 2 (*Critical Thinking*), Modules 4–5 (*Research Methods*), Module 6 (*A Psychologist's Skill Set: Information Literacy*), and Module 70 (*Statistics Appendix*)
2.2. Describe the advantages and limitations of various research strategies.	Modules 4–5 (*Research Methods*), *A Psychologist's Skill Set* modules, and throughout this book.
2.3. Design, conduct, or evaluate psychological research.	Modules 4–5 (*Research Methods*), *A Psychologist's Skill Set* modules, and throughout this book.
2.4. Evaluate how psychological science can be used to counter unsubstantiated statements, opinions, or beliefs.	Modules 4–5 (*Research Methods*), Module 6 (*A Psychologist's Skill Set: Information Literacy*), and throughout this book
Key Themes: Provide Examples of Psychology's Integrative Themes	
3.A. Psychological science relies on empirical evidence and adapts as new data develop.	All modules throughout this book
3.B. Psychology explains general principles that govern behavior while recognizing individual differences.	All modules throughout this book
3.C. Psychological, biological, social, and cultural factors influence mental processes and behavior.	All modules throughout this book, with specific emphasis on Module 3 (*Biopsychosocial Model*) and Module 49 (*A Psychologist's Skill Set: Diversity and Inclusion*)
3.D. Our perceptions filter our experiences of the world through an imperfect personal lens.	Modules 20–21 (*Attention and Perception*), Module 26 (*A Psychologist's Skill Set: Metacognition*), and throughout this book
3.E. Applying psychological principles can change our lives and communities in positive ways.	Module 77 (*Community Psychology*), *A Psychologist's Skill Set* sections, and throughout this book
3.F. Ethical principles guide psychology research and practice.	Modules 4–5 (*Research Methods*), Module 16 (*Ethical Behavior*)
3.G. Psychologists strive to promote respect for human diversity in its many forms.	All modules, with specific emphasis in Module 49 (*A Psychologist's Skill Set: Diversity and Inclusion*)

note-taking, *promoting empirically-supported learning strategies*, and *emphasizing practical applications*.

Assisting with Active Reading We have incorporated a number of features into the text itself that are intended to help students to learn actively as they are reading. We'd like to draw your attention to several of them here.

New Bloom's-Oriented Learning Outcomes Act as Advance Organizers to Help Guide Student Reading. Research suggests that, when included at the beginning of each module, learning outcomes help students build cognitive maps of upcoming topics and guide reading in productive ways (Ausubel, 1978; Gurlitt et al., 2012). Each

TABLE P.2 | APA Skills Guidelines 2.0 Addressed by Reading *Psychology: Modules for Active Learning*, 15e

Modules	Topic of Module Cluster	Skills in Action Topic	Chapter Addresses Material from APA Guidelines 2.0:
1	How to Study	N/A	4.1, 5.2, 5.3, 5.5
2–6	Research Methods	Information Literacy	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1
7–11	Brain	Self-Regulation	1.1, 1.2, 5.2
12–16	Development	Behaving Ethically	1.1, 1.2, 2.5, 3.2, 5.1
17–22	Sensation and Perception	Communication	1.1, 1.2, 4.1, 4.2, 4.3, 5.4
23–26	Consciousness	Metacognition	1.1, 1.2, 5.2, 5.3
27–31	Learning	Behavioral Self-Management	1.1, 1.2, 5.2
32–36	Memory	Giving Memorable Presentations	1.1, 1.2, 4.2, 5.3
37–41	Cognition and Intelligence	Creativity and Innovation	1.1, 1.2, 1.3, 2.3, 2.5
42–45	Emotion and Motivation	Positivity and Optimism	1.1, 1.2, 1.3, 2.5, 4.3, 5.4
46–49	Sexuality	Diversity and Inclusion	1.1, 1.2, 1.3, 2.5, 3.2, 3.3, 4.3, 5.1, 5.4
50–54	Personality	Leadership	1.1, 1.2, 2.1, 3.3, 5.1, 5.2, 5.4
55–59	Health	Stress Management	1.1, 1.2, 1.3, 3.3, 5.1
60–64	Psychopathology	Perseverance	1.1, 1.2, 3.2, 3.3, 4.3, 5.1, 5.4
65–69	Therapies	Managing Mental Health Problems	1.1, 1.2, 1.3, 3.3
70–74	Social	Teamwork	1.1, 1.2, 3.2, 3.3, 4.3, 5.1, 5.4
75–78	Applied Psychology	Career Preparation	1.1, 1.2, 1.3, 2.3, 5.1, 5.5

module of this book begins with a number of clearly-defined learning outcomes to prime student interest and focus their attention on the key ideas that they will encounter.

Active Questioning Is Emphasized and Modeled. *How can questioning be built into a textbook?* This edition of *Modules* continues our long tradition of using italicized *Dialogue Questions*, such as the previous sentence. They are typically the sorts of questions that students might find themselves thinking as they begin reading a section of text. As such, they model a dialogue in which the questions and the reactions of students are anticipated—that is, *Dialogue Questions* prompt students to look for important ideas as they read, thus promoting active learning while serving as advance organizers. They also clarify difficult points in a lively give-and-take between questions and responses.

Formative Feedback Is Provided to Students as They Read. Each module in this book concludes with a *Reflective Practice* feature that allows students to test their recall and further develop their understanding of the topics presented. Each *Reflective Practice* feature begins with a series of short, noncomprehensive quiz questions to help students actively process information and assess their progress. These questions, which are not as difficult as in-class tests, are meant to offer a sample of what students could be asked about various topics. Students who miss any items are encouraged to backtrack and clarify their understanding before reading further.

Reflective Practice features also include *Think Critically* questions. These stimulating questions challenge students to think critically and analytically about psychology. Each is followed by a brief answer with which students can compare their own thoughts. Many of these answers are based on research and are informative in their own right. Finally, *Reflective Practice* features conclude with *Self-Reflect* questions that encourage students

to connect new concepts with personal experiences and prior knowledge.

Built-in Reading Aids Assist Students in Mastering Key Concepts and Ideas. These include:

- Boldface terms, robust illustrations, summaries of information relevant to the learning outcomes at the end of each module.
- In-text links to other material relevant to the reading at hand. For example, a student reading about the Freudian theory of dreams will encounter a link to a relevant discussion of psychoanalysis in a later module.
- *Placeholders*—different colored text and small geometric shapes—are used to draw attention to figure and table references in the text and make it easier for students to return to the section that they were reading after they have paused to view a table or figure.
- The *glossary function* has been made as powerful as possible. The *Main Glossary*, at the end of the book, is integrated with the *Subject Index*, making it easy to link important definitions to where they are discussed in the text. All glossary items are bolded and defined in-text when the term is first encountered. In addition, the parallel *Running Glossary* defines key terms in the margins of the relevant pages, making it easy for students to find, study, and review important terms.

Scaffolding Student Note-Taking We've noticed that many students struggle to take a good set of notes based on their reading of college texts. To address this issue, this new edition of *Modules* comes with guided notes that are designed to scaffold students' ability to address the learning outcomes by extracting the most important information from each module. The notes, which are available in MS Word, were developed using the well-established Cornell method of note-taking.

Each set of notes begins with a single-page multi-level summary of the module called *The Big Picture*, which gives students a bird's eye view of the module as a whole and emphasizes the structure that's created with headers and subheaders. The guided notes themselves focus students' attention on information relevant to the learning outcomes and press them to generate their own examples and summarize important ideas in their own words. Concept maps that are included with the notes are designed to assist students in recognizing the relationships between ideas presented in each section so that they can make important connections.

Promoting Empirically-Supported Learning Strategies One of our goals with *Modules* was to ensure that students begin thinking about skills during your course. Given its far-reaching implications, one that we spend considerable time on relates to effective learning. In the text itself, effective learning is promoted in a few places, beginning with Module 1, *The Psychology of Reflective Studying*, which outlines some of the key features of reflective cognition and underscores its links to deeper understanding and memory. It also introduces students to specific empirically-supported strategies for a variety of different assessments, including multiple choice and short/long answer question formats.

In addition, *MindTap® Psychology* for this text provides a digital learning solution that powers students from memorization to mastery. MindTap gives you complete ownership of your content and learning experience. You have the freedom to customize the interactive syllabi, emphasize the most important topics, and add your own material or notes in the eBook. Assign Mastery Training to encourage students to begin studying early, and reinforce all that they have learned from the eBook with virtual labs, auto-graded writing assignments, and more. Whatever your learning goals may be, MindTap allows you to provide engaging content, and to challenge every single student while building his or her confidence.

Emphasizing Practical Applications To further encourage students' reading, we have emphasized the many ways that psychology relates to practical problems in daily life and addresses issues relevant to the world around us. Another major feature of this book is the *Psychologist's Skill Set* modules that are spaced throughout this book. These high-interest discussions bridge the gap between theory and practical applications by exploring how psychology has contributed to our understanding of the skills that are valuable at work and in our relationships.

We believe that it is fair for students to ask, "Does this mean anything to me? Can I use it? Why should I learn it if I can't?" These two unique sections found throughout the text allow them to see the benefits of adopting new ideas from this text, and they breathe life into psychology's concepts.

Psychology: Modules for Active Learning— What's New in the 15th Edition?

On the content side, the 15th edition of *Psychology: Modules for Active Learning* has been lightly updated and features some of the most recent, reliable, and interesting findings from psychological science, plus updated statistics. The following sections provide some highlights regarding the new topics and features that appear in this edition.

Module 1: The Psychology of Reflective Studying

- What used to be described in previous editions as reflective SQ4R is now described as reflective learning. Aside from no longer exhorting students to survey before reading by thumbing through the textbook pages, all else remains as it was in previous editions.

Modules 2–6: Introducing Psychology

- A new Module 2 opening vignette is followed by a strengthened critique of introspection, which is sustained and echoed throughout the book, stressing the importance of objective evidence. In addition, it is more clearly implied that introspection is still valued as one of many types of evidence.
- The distinction between experimental and nonexperimental (descriptive) research methods is now clearer.
- The final module in this cluster now discusses the popular media in terms of detecting "fake news."
- New material also relates to the pressing need to check sources at a time when it is so easy to create misleading or biased web-based content, as well as quick and practical suggestions related to lateral reading, which is the primary method employed by professional fact checkers.

Modules 7–11: Brain and Behavior

- This cluster of modules contains more recent research concerning mirror neurons, questioning their role in autism (the *broken mirrors hypothesis*).
- Research on self-control in an extended discussion of poverty and the marshmallows addresses recent efforts to replicate Mischel's famous "marshmallow test" and discusses how poverty can impact the results of such self-regulation tasks.

Modules 12–16: Human Development

- *Fetal alcohol syndrome* (FAS) is now referred to as *fetal alcohol spectrum disorder* (FASD). FAS is used to refer to more severe cases of FASD.
- The development of emotions has been reworked for greater clarity and to prefigure the discussion of emotions and emotion schemas in Module 44.
- The section on adulthood has been reorganized.

Modules 17–22: Sensation and Perception

- Material on *attention* has been rewritten and expanded to include new material related to multitasking.

Modules 23–26: States of Consciousness

- With a gentle rewrite, these modules now flow better.
- Drug use statistics are updated throughout.
- The medically correct term *cannabis* is now used instead of the slang term *marijuana*.

Modules 27–31: Conditioning and Learning

- These modules have been significantly modified. Material related to conditioning has been streamlined to allow for a significantly expanded discussion of observational and cognitive learning.
- The first module begins with a new opening vignette and now discusses classical conditioning, with a view to using it to explain some forms of advertising.
- The next module combines and streamlines material on operant conditioning. Material on observational learning is treated next. Material related to observational learning and media-based violence has been updated. Cognitive learning is discussed, and may be of special interest to students pursuing careers in education, as well helping students to better understand their own learning. Newly-written material covers the distinction between school and educational psychologists, Bloom's Taxonomy, and factors that influence cognitive learning (e.g., learner characteristics and learning strategies).

Modules 32–36: Memory

- These modules now more clearly delineate memory systems (that is, types of memory) from memory

processes and emphasize the general process of encoding as the means of moving information from working memory into long-term memory.

Modules 37–41: Cognition and Intelligence

- These modules benefited from a light rewrite and now flow more clearly.
- The distinction between experts and novices has been rewritten for greater clarity.
- *G-factor* is now much better described, along with *G-F* and *G-C*, and a good example.
- Material on artificial intelligence has been rewritten to clarify the field of machine learning and its links to psychology.
- A new section on emotional intelligence has been added.

Modules 42–45: Motivation and Emotion

- Self-determination theory is defined and given expanded coverage.
- Material on emotion has been rewritten for greater clarity and to dovetail better with earlier treatments of emotional development and a subsequent more detailed module on emotion.
- Carroll Izard's differential emotions theory and the notion of an emotion schema are introduced.

Modules 46–49: Human Sexuality

- These modules have been lightly revised to better flow.
- Relevant statistics are revised throughout.

Modules 50–54: Personality

- These modules have also been lightly revised.
- The section on the dark triad now suggests that women can also possess these traits.

Modules 55–59: Health Psychology

- These modules have been rewritten for greater clarity.
- Health statistics have been updated where possible.

Modules 60–64: Psychological Disorders

- In all sections, there is a greater emphasis on the biopsychosocial model as a means of understanding psychopathology.
- Prevalence statistics have been updated.
- The distinction between signs and symptoms is introduced in the section on diagnosis.
- A new module on perseverance, or "grit," is now included.

Modules 65–69: Therapies

- The modules concerning therapies have been more thoroughly revised, including a new introduction.
- Sections on the effectiveness of therapy, spontaneous remission, empirically supported therapies, and token economies are now improved.

Modules 70–74: Social Psychology

- A new module opener kicks off coverage of social psychology.
- A discussion of Zimbardo's prison study includes criticisms of the research.
- A new section now reviews the subject of anger management.
- Material on prejudice and managing prejudice has been updated.

Modules 75–78: Applied Psychology

- A new section on performance appraisal and 360-degree feedback is now included.
- The concept of environmental melancholia is introduced.
- Material on the tragedy of the commons has been clarified.
- A new section on community psychology is now included.

Appendix: Behavioral Statistics

- The statistics appendix has been lightly revised.

A Complete Course—Teaching and Learning Supplements

A rich array of supplements accompanies *Psychology: Modules for Active Learning*, including several that make use of the latest technologies. These supplements are designed to make teaching and learning more effective. Many are available free to professors or students. Others can be packaged with this textbook at a discount. Contact your local sales representative for more information on any of the listed resources.

Student Support Materials

Introductory students must learn a multitude of abstract concepts, which can make a first course in psychology difficult. The materials listed here will greatly improve students' chances for success.

MindTap *MindTap® Psychology* for Coon/Mitterer/Martini's *Psychology: Modules for Active Learning*, 15th Edition helps you learn on your terms. Begin studying early with Mastery Training, interact with the eBook, and reinforce your learning with assignments that revisit the topics you've learned about and help you prepare for the test. You can also take advantage of the *MindTap Mobile App* to learn on your terms. Read or listen to textbooks and study with the aid of instructor notifications, flashcards, and practice quizzes. No one knows what works for you better than you. Highlight key text, add notes, and create custom flashcards. When it's time to study, everything you've flagged or noted can be gathered into a guide you can organize.

In short, MindTap helps you create your own potential. Track your scores and stay motivated toward your goals. Whether you have more work to do or are ahead of the curve, you'll know where you need to focus your efforts. And the MindTap Green Dot will charge your confidence along the way.

Instructor Resources

Teaching an introductory psychology course is a tremendous amount of work, and the supplements listed here should help make it possible for you to concentrate on the more creative and rewarding facets of teaching. All of these supplements are available online for download. Go to login.cengage.com to create an account and log in.

MindTap *MindTap® Psychology* for Coon/Mitterer/Martini's *Psychology: Modules for Active Learning*, 15th Edition is the digital learning solution that powers students from memorization to mastery. It gives you complete control of your course—to provide engaging content, to challenge every single student, and to build his or her confidence. Empower students to accelerate their progress with MindTap. MindTap: Powered by You.

MindTap gives you complete ownership of your content and learning experience. Customize the interactive syllabi, emphasize the most important topics, and add your own material or notes in the eBook. Assign Mastery Training to encourage students to begin studying early, and reinforce all that they have learned from the eBook with virtual labs, auto-graded writing assignments, and more.

The Instructor Companion Site The Instructor Companion Site for this title includes an *Instructor's Resource Manual*, which provides a wealth of teaching tips and classroom resources; *Cengage Learning Testing Powered by Cognero* featuring questions correlated to learning objectives, Bloom's taxonomy level, and difficulty; and *PowerPoint slides* providing concept coverage with dynamic animations, photographs, and video.

Summary

We sincerely hope that both teachers and students will consider this book and its supporting materials a refreshing change from the ordinary. Creating it has been quite an adventurous journey for us; one that we look forward to sharing with you in the modules that follow. We hope that you enjoy the ride.

Acknowledgments

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MODULE 1

The Psychology of Reflective Studying

Well, Hello There!

As your authors, we are delighted to welcome you to the "manual" for this textbook. No! Don't skip this. Please read on.

Few of us prefer to start a new adventure by reading a manual. We just want to step off the airplane and begin our vacation, get right into that new computer game, or start using our new camera or smartphone. Please be patient. Successfully learning psychology depends on how *reflective* you are as you read your textbook, listen during your classes, study for exams, and then write them.

Students who get good grades tend to work more reflectively, not just longer or harder. They also tend to understand and remember more of what they've learned long after their exams are over. Psychology is for their lives, not just for their exams. In this module, we share a variety of ways to become more reflective learners.

Tyler Olson/Shutterstock.com

~LEARNING OUTCOMES~

After reading this module you should be able to:

- **1.1** Explain how studying psychology will help you in your personal and professional life
- **1.2** Describe how you can get the most out of this textbook
- **1.3** Describe how you can get the most out of class time
- **1.4** Describe how you can best study and prepare for tests

What's in It for You?—More Than You Might Think

Learning Outcome 1.1 Explain how studying psychology will help you in your personal and professional life

As you begin exploring the field of psychology, you may well be asking yourself what you'll get out of it. In general, most of your courses will offer you opportunities to learn in two important ways. The first has to do with course *content*—in this introductory psychology course, the content is what you'll learn about the field of psychology. This includes what psychological research tells us about memory, social relationships, brain functioning, children's development, and psychopathology (to name just few topics). But taking a psychology course will also promote your learning in a second way—specifically, it will teach you about the *skills* that you'll need to be successful in your personal and professional life.

What do you mean by "skills"? When we talk about skills, we're often talking about things that you can do, such as communicate clearly or work well with others. But in some

TABLE 1.1 | APA Guidelines for the Undergraduate Psychology Major

Goal 1: Knowledge Base of Psychology
Goal 2: Scientific Inquiry and Critical Thinking
Goal 3: Ethical and Social Responsibility in a Diverse World
Goal 4: Communication
Goal 5: Professional Development

Adapted from American Psychological Association, 2013. For complete details, go to: www.apa.org/ed/precollege/about/learning-goals.pdf.

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Working on developing your skills may seem like a waste of your time compared with putting that time into learning course content. But don't sell it short; your skill set will be at least as important as your content expertise whether you go on to postgraduate education or a career.

cases, the term *skills* can also refer to personal characteristics; for example, independence, tolerance, and adaptability are often considered to be important skills.

These two broad categories of learning—content and skills—are outlined in the American Psychological Association's (APA) *Guidelines for the Undergraduate Psychology Major (Version 2.0)* (American Psychological Association, 2013). It is well worth having a look at the full document (which is available online), but you can start by having a look at ■ **Table 1.1**.

Do you assume that your only goal is to memorize "the facts," or knowledge base, of psychology? If so, as you can see in Table 1.1, you are thinking in terms of Goal 1. But what about the other goals listed there? Suppose you are given an assignment that involves working in small groups to evaluate some published research articles. Would you wonder why you have to work with other students? Or wish your professor would just get to the point and tell you what the articles are about? Understanding that your education is also about acquiring skills—like being able to think critically (Goal 2), communicate clearly (Goal 4), and work as part of a team (Goal 5)—makes it easier for you to appreciate that professors set up assignments like this to build skills, as well as furthering what you know about psychology.

One of the things that you might notice as you look through Table 1.1 is that many of the skills listed aren't really specific to psychology—they're likely to be just as relevant to someone majoring in history or business or biology. After all, people in all disciplines need to understand how to communicate well, work well with others, and behave ethically.

Some of the most important advice we can give you, then, is to remember to focus on the skills that you are learning throughout your studies at university, whether in psychology or other subjects. They may not always seem obvious when you're reading a textbook or when you're completing your assignments, but when it comes time for you to hit the job market, you'll be happy that you did.

Psychology and Your Skill Set

To understand why your skill set is important, have a look at ■ **Table 1.2**, which lists a few of the career opportunities open to psychology majors.

TABLE 1.2 | A Skills-Based List of Some Potential Careers for Psychology Majors

Addictions counselor	Manager
Administration	Market research analyst
Advertising	Marketing
Career/employment counselor	Mental health worker
Case worker	Motivational researcher
Child care worker	Personnel
Child welfare worker	Population studies researcher
Community worker	Probation or parole officer
Correctional officer	Professional consultant
Counselor	Program coordinator
Cultural diversity consultant	Psychiatric assistant or aide
Customs or immigration agent	Public health statistician
Day care worker, supervisor	Public opinion interviewer
Educational counselor	Public relations

TABLE 1.2 | (Continued)

Entrepreneur	Recreation specialist
Fundraiser or development officer	Research assistant
Gerontology	Sales representative
Government researcher	Social services
Health services	Social worker
Hospice coordinator	Teaching
Human resources	Technical writer
Immigration officer	Travel agent
Labor relations specialist	Youth worker

Adapted from Canadian Psychological Association (2020).

Travel agent? Think about it for a moment. A travel agent may not need psychology content expertise, such as being able to list Freud's stages of psychosexual development or explain what psychological functions are controlled by the different parts of the brain. But it *would* help to be able to work independently, do your own research, be able to make presentations to individuals or groups, have some sensitivity to cross-cultural issues, write well, and, in general, work well with people. While these sorts of skills also can be learned in other ways, studying psychology provides a "golden opportunity" for you to develop an impressive set of skills that are valued by many employers.

How This Book Will Help You with Skill Development

You probably won't be surprised to learn that *Psychology: Modules for Active Learning* has been written with the APA *Guidelines* in mind, in an effort to help you further develop your career-related skill set. Here are some skill highlights:

- ***A Psychologist's Skill Set* modules:** Every few modules, you will encounter a *A Psychologist's Skill Set* module. Each of these modules connects the field of psychology to a skill that is likely to be useful across a broad range of career paths. These modules, combined with the digital resources for this book, will allow you to measure your skill level and give you practical ideas you can use to improve your skill set.
- **Study skills:** In this module, we discuss a full set of study skills, from how to read and listen for understanding to how to take tests and overcome procrastination. We also introduce the importance of reflective processing, and we carry this idea throughout the book. All of those skills are very helpful in many different jobs.
- **Research skills:** We will introduce you to science and psychological research, from the research methods in Modules 2–6 to the Statistics Appendix. This will help you be a more educated and literate consumer of research in your chosen career, especially if it involves applying psychological research in any way.
- **Critical thinking skills:** From the discussion of critical thinking in Modules 2 and 6 to the *Think Critically* questions at the end of the modules, we stress critical thinking skills. The term *critical thinking* actually encompasses a wide array of related skills, including defining problems, searching for and evaluating information to address those problems, and synthesizing and applying information that you gather. You can see why such skills are in high demand among employers.
- **Cultural awareness skills:** OK, so we couldn't take you on a field trip to Japan, but throughout the book, we will invite you to reflect on the differences among people of different ethnicities, sexual orientations, ages, and genders. This kind of information will be particularly important when you find yourself having to work with others whose background or belief system is not the same as your own.

Not to put too fine a point on it, but that's a lot of career-relevant skills, no?

Of course, we understand that the classroom isn't the only place to learn skills that can help you in your personal life and career. Many college and university students will also have part-time jobs, or they will participate in other learning experiences such as community-based volunteering, or campus activities such as student government or clubs, or study abroad. Often, the skills that you develop through these extra-curricular experiences will support or complement the skills that you can learn through the assignments that you'll complete for your courses.

For example, common part-time student jobs involving interaction with the public (e.g., waiting tables, customer service, or retail jobs) often help to build *verbal* communication skills such as the ability to speak to others, and to listen effectively to what others are saying. In contrast, class assignments often build *writing* skills and the ability to *read and understand* complex material. When you are attempting to persuade an employer that you have a broad range of

communication skills, then you should make sure that you discuss what you have learned from a variety of experiences both inside and outside of the classroom to demonstrate the full range of your abilities.

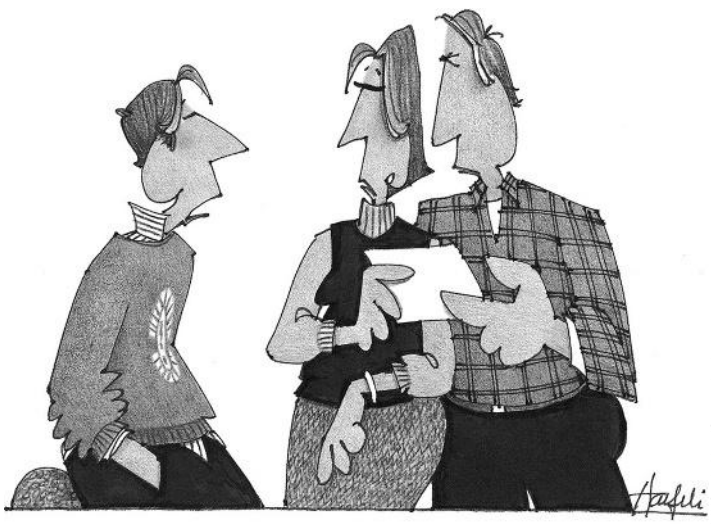
Reflective Learning: The Most Important Ingredient

Simply deciding that you want to learn some content or skills isn't going to actually make it happen. To understand why, think about the last time you spent the evening relaxing in front of the television. It probably was fun, but you may have noticed that you didn't think too much about what you were watching and that your subsequent memories are not detailed. You were engaging in **experiential processing**, more or less passively soaking up the experience (Kahneman, 2011; Norman, 1994).

Now contrast that with your experience in a recent job interview. It is highly unlikely that you got through the interview by relying on experiential processing alone (and even less likely that you landed the job if you did). Instead, you probably actively and carefully listened to the questions and put some serious effort into thinking through the implications of answering in different ways before responding. No drifting off here; you were focused and controlled until you left the interview, when you likely breathed a much-deserved sigh of relief. By reacting mindfully (Siegel, 2007), you engaged in **reflective processing** (Kahneman, 2011; Norman, 1994). Rather than just having the experience, you *actively thought* about it. Similarly, **reflective learning** occurs when you engage in deliberately reflective and active self-regulated study (Anthony, Clayton, & Zusho, 2013; Mega, Ronconi, & De Beni, 2014). Here, in general, is how you can promote reflective learning of both content and skills:

1. **Set specific, objective learning goals.** Begin each learning session with specific goals in mind. What knowledge or skills are you trying to master? What do you hope to accomplish (Pychyl, 2013)?
2. **Plan a learning strategy.** How will you accomplish your goals? Make daily, weekly, and monthly plans for learning. Then put them into action.
3. **Be your own teacher.** Effective learners silently give themselves guidance and ask themselves questions. For example, as you are learning, you might ask yourself, "What are the important ideas here? What do I remember? What don't I understand? What do I need to review? What should I do next?"
4. **Monitor your progress and correct your strategy when necessary.** Reflective learning depends on self-monitoring. Exceptional learners keep records of their progress toward learning goals (pages read, hours of studying, assignments completed, and so forth). They quiz themselves, use study guides, and find other ways to check their understanding while learning. Consider asking yourself these questions regularly as you work toward mastering both course content and skills: Do any specific areas of your work need improvement? If you are not making good progress toward long-range goals, do you need to revise your short-term targets? If you fall short of your goals, you may need to adjust how you budget your time. You may also need to change your learning environment to deal with distractions such as browsing the web, daydreaming, talking to friends, or testing the limits of your hearing with your new ear buds.
5. **Reward yourself.** When you meet your daily, weekly, or monthly goals, reward your efforts in some way, such as going to a movie or downloading some new music. Be aware that self-praise also rewards learning. Being able to say "Hey, I did it!" can be rewarding. In the long run, success, self-improvement, and personal satisfaction are the real payoffs for learning.

If you discover that you lack certain knowledge or skills, ask for help, take advantage of tutoring programs, or look for information beyond your courses and textbooks. Knowing how to reflectively enhance learning can be a key to lifelong enrichment and personal empowerment (Van Blerkom, 2012).



"I'm too busy going to college to study."

William Haefeli/Conde Nast/Cartoon bank

Reflective Reading—How to Tame a Textbook

Learning Outcome 1.2 Describe how you can get the most out of this textbook

One powerful way to get the most out of this textbook is be more reflective is through **self-reference**. As you read, relate new facts, terms, and concepts to your own experiences and information that you already know well. Doing this will make new ideas more personally meaningful and easier to remember. **Critical thinking** is another powerful way to be more reflective. Remember, critical thinkers pause to evaluate, compare, analyze, critique, and synthesize what they are reading (Chaffee, 2019). You should, too. In Module 2, we will learn how to think critically about psychological science.

Does this really work? You bet! Using a reflective reading strategy improves learning and course grades (Taraban, Rynearson, & Kerr, 2000). It also results in enhanced long-term understanding. Simply reading straight through a textbook can give you intellectual indigestion. That's why it's better to stop often to reflect, review, and digest information as you read.

Going Digital

Digital media can also offer several ways to learn more reflectively from this textbook. You can get a good start by exploring MindTap.

MindTap *What is MindTap?* MindTap is a highly personalized, fully online learning platform that integrates in one site all of the authoritative content, assignments, and services that accompany your textbook, *Psychology: Modules for Active Learning*.

What can I expect to get out of MindTap? Many of the more active elements of reflective learning are better presented digitally. There is room, for example, to include only a few practice quizzes in a print textbook (and you, the reader has to self-score them). In contrast, digital media make it feasible to present more extensive practice materials, as well as to provide immediate feedback.

MindTap has been designed to make it easier for you to engage in reflective learning. You will be able to complete reading assignments, annotate your readings, complete homework, and interact with quizzes and assessments. MindTap includes a variety of apps known as "MindApps," allowing functionality such as having the text read aloud to you, as well as synchronizing your notes with your personal Evernote account. MindApps are woven into the MindTap platform and enhance your learning experience with this textbook.

Psychology Websites As you read (reflectively, of course) through this textbook, you may, from time to time, find yourself wanting to read more about a particular topic. Consider following up by looking up some of the references included in this text. Suppose that you were just reading about procrastination and wanted to learn more about the reference *Pychyl* (2013). You can look up all in-module references in the "References" section at the back of this text. There, you will find that *Pychyl* (2013) is a book about overcoming procrastination.

Sometimes, though, the reference that you are interested in will be a psychology journal article. To locate journal articles, you can use *PsycINFO,* a specialized online database offered by the American Psychological Association (APA). **PsycINFO** provides summaries of the scientific and scholarly literature in psychology. Each record in PsycINFO consists of an abstract (short summary), plus notes about the author, title, source, and other details. Entering the author's name(s) and article title will bring you to the article in question. Also, all PsycINFO entries are indexed using key terms. Thus, you can search for various topics by entering words such as *procrastination, postpartum depression,* or *creativity* and find research papers on any topic in psychology that might interest you.

Most colleges and universities subscribe to PsycINFO. You can usually search PsycINFO from a terminal in your college library or computer center—for free. PsycINFO can also be directly accessed (for a fee) through the Internet via APA's PsycINFO Direct service. For more information on how to gain access to PsycINFO, check out www.apa.org/pubs/databases/psycinfo/index.aspx. Beware, though: Many

Experiential processing Thought that is passive, effortless, and automatic.

Reflective processing Thought that is active, effortful, and controlled.

Reflective learning Deliberately reflective and active self-guided study.

Self-reference The practice of relating new information to prior life experience.

Critical thinking An ability to evaluate, compare, analyze, critique, and synthesize information.

PsycINFO A searchable, online database that provides brief summaries of the scientific and scholarly literature in psychology.

of the primary research papers available through PsycINFO are highly technical. Don't be put off by this; read and digest what you can. You'll pick up some interesting information and become a better psychology student in the process.

Aside from PsycINFO, there are a number of good websites that you can consult for reliable information about psychology. For example, the American Psychological Association (APA) and the Association for Psychological Science (APS) maintain online libraries of general-interest articles on many topics. They are well worth consulting when you have questions about psychological issues. You'll find them at www.apa.org and www.psychologicalscience.org. For links to recent articles in newspapers and magazines, check the APA's PsycPORT page at www.apa.org/news/psycport/index.aspx. Other high-quality websites include those maintained by other professional organizations, such as the Alzheimer's Association (www.alz.org), and government agencies, such as the National Institute of Mental Health (www.nimh.nih.gov). (See Module 6 for more on the important skill of information literacy.)

Reflective Note Taking—LISAN Up!

Learning Outcome 1.3 Describe how you can get the most out of class time

Just as studying a textbook is best done reflectively, so, too, is learning in class (Norman, 1994). Like effective reading, good notes come from actively seeking information. A **reflective listener** avoids distractions and skillfully gathers ideas. Here's a listening/note-taking plan that works for many students. The letters LISAN, pronounced like the word *listen,* will help you remember the steps:

L = *Lead. Don't follow.* Read assigned materials before coming to class. Try to anticipate what your teacher will say by asking yourself questions. If your teacher provides course notes or Microsoft PowerPoint® overheads before lectures, survey them before coming to class. Reflective questions can come from those materials or from study guides, reading assignments, or your own curiosity.

I = *Ideas.* Every lecture is based on a core of ideas. Usually, an idea is followed by examples or explanations. Ask yourself often, "What is the main idea now? What ideas support it?"

S = *Signal words.* Listen for words that tell you what direction the instructor is taking. For instance, here are some signal words:

There are three reasons …	Here come ideas
Most important is …	Main idea
On the contrary …	Opposite idea
As an example …	Support for main idea
Therefore …	Conclusion

A = *Actively listen.* Sit where you can get involved and ask questions. Bring questions that you want answered from the last lecture or from your text. Raise your hand at the beginning of class or approach your professor before the lecture. Do anything that helps you stay active, alert, and engaged.

N = *Note taking.* Students who take accurate lecture notes tend to do well on tests (Williams & Eggert, 2002). However, don't try to be a tape recorder. Listen to everything, but be selective and write down only key points. If you are too busy writing, you may not grasp what your professor is saying. When you're taking notes, it might help to think of yourself as a reporter who is trying to get a good story (Ryan, 2001; Wong, 2015).

Most students take reasonably good notes—and then don't use them! Many students wait until just before exams to review. By then, their notes have lost much of their meaning. If you don't want your notes to seem like chicken scratches, it pays to review them periodically (Ellis, 2019).

Using and Reviewing Your Notes

When you review, you will learn more if you take these extra steps (Ellis, 2019; Pychyl, 2013):

- As soon as you can, reflect on your notes to fill in gaps, complete thoughts, and look for connections among ideas.
- Remember to link new ideas to what you already know.
- Summarize your notes. Boil them down and organize them.
- After each class session, write down several major ideas, definitions, or details that are likely to become test questions. Then, make up questions from your notes and be sure that you can answer them.

Summary The letters LISAN are a guide to active listening, but listening and good note taking are not enough. You must also review, organize, reflect, extend, and think about new ideas. Use active listening to get involved in your classes and you will undoubtedly learn more (Van Blerkom, 2012).

Reflective Study Strategies—Making a Habit of Success

Learning Outcome 1.4 Describe how you can best study and prepare for tests

Grades depend as much on effort as they do on intelligence. But good students work more efficiently, not just harder, and that's true when they study as well as when they write exams. In this section, we provide some tips for improving your studying and test-taking skills.

Strategies for Studying

In an interesting paper, researchers reviewed more than 700 research articles on 10 of the most commonly used learning strategies to determine which ones were the most effective (Dunlosky et al., 2013). One of the study strategies most commonly used by students—highlighting or underlining material in the text or lecture notes—was found to be a particularly *ineffective* way to master the material, largely because it doesn't usually promote active or reflective learning. If you cannot imagine your textbook without the pretty neon colors, make sure that you combine your highlighting with one (or more!) of the effective strategies that we discuss below.

Test Yourself A great way to improve grades is to take practice tests before the real one (Karpicke & Blunt, 2011; Sutterer & Awh, 2016), and this strategy came out as a clear winner in the review of learning strategies. In other words, reflective studying should include **self-testing**, in which you pose questions to yourself. You can use flashcards, online quizzes, a study guide, or any other means that you might find helpful. You'll also find *Reflective Practice* self-tests at the end of each major section of this textbook. As you study, try to anticipate potential test questions and be sure you can answer them. Studying without self-testing is like practicing for a basketball game without shooting any baskets.

Use Spaced Study Sessions Another clear winner in the review of learning strategies was the use of spaced study sessions. It is reasonable to review intensely before an exam. However, you're taking a big risk if you are only cramming (learning new information at the last minute). Spaced practice is much more efficient (Dunlosky et al., 2013; Sternberg, 2017). **Spaced practice** consists of a large number of relatively short study sessions. Long, uninterrupted study sessions are called **massed practice**. (If you "massed up" your studying, you probably messed it up, too.) Cramming places a big burden on memory. Generally, you shouldn't try to learn anything new about a subject during the last day before a test. It is far better to learn small amounts every day and review frequently.

Other Suggestions for Studying Ideally, you should study in a quiet, well-lit area free of distractions. If possible, you should also have one place only for studying. Do nothing else there: keep magazines, social media sites, friends, cell phones, pets, video games, puzzles, food, lovers, sports cars, elephants, pianos, televisions, and other distractions out of the area (Przepiorka, Błachnio, & Díaz-Morales, 2016). In this way, the habit of studying will become strongly linked with one specific place.

Also, many students *underprepare* for exams, and most *overestimate* how well they will do. A solution to both problems is **overlearning**, in which you continue studying beyond your initial mastery of a topic. In other words, plan to do extra study and review *after* you think you are prepared for a test. One way to overlearn is to approach all tests as if they will be essays. That way, you will learn more completely, so you really "know your stuff."

Strategies for Taking Tests

OK, but what about actually taking the tests? Are there any strategies for that? You bet! You'll do better on all types of tests if you observe the following guidelines (Van Blerkom, 2012; Wong, 2015):

1. Read all directions and questions carefully. They may give you good advice or clues about what to include in your answer and how to format it.
2. Survey the test quickly before you begin.
3. Answer easy questions before spending time on more difficult ones.
4. Be sure to answer all questions.
5. Use your time wisely.
6. Ask for clarification when necessary.

Reflective listener A person who knows how to maintain attention, avoid distractions, and actively gather information from lectures.

Self-testing Evaluating learning by posing questions to yourself.

Spaced practice Practice spread over many relatively short study sessions.

Massed practice Practice done in a long, uninterrupted study session.

Overlearning Continuing to study and learn after you think that you've mastered a topic.

Objective Tests Several additional strategies can help you do better on objective tests. Such tests (multiple-choice and true–false items) require you to recognize a correct answer among wrong ones or a true statement versus a false one. Here are some strategies for taking objective tests:

1. Relate the question to what you know about the topic. Then, read the alternatives. Does one match the answer that you expected to find? If none match, reexamine the choices and look for a partial match.
2. Read all the choices for each question before you make a decision. Here's why: if you immediately think that *a* is correct and stop reading, you might miss seeing a better answer like both *a* and *d*.
3. Read rapidly and skip items that you are unsure about. You may find free information in later questions that will help you answer difficult items.
4. Eliminate certain alternatives. With a four-choice multiple-choice test, you have one chance in four of guessing right. If you can eliminate two alternatives, your guessing odds improve to 50–50.
5. Be sure to answer any skipped items, unless there is a penalty for guessing. Even if you are not sure of the answer, you may be right. If you leave a question blank, it is automatically wrong. When you are forced to guess, don't choose the longest answer or the letter that you've used the least. Both strategies lower scores more than random guessing does.
6. Following this bit of folk wisdom is a mistake: "Don't change your answers on a multiple-choice test. Your first choice is usually right." This is wrong. If you change answers, you are more likely to *gain* points than to lose them. This is especially true if you are uncertain of your first choice, or it was a hunch and your second choice is more reflective (Higham & Gerrard, 2005).
7. Search for the one best answer to each question. Some answers may be partly true, yet flawed in some way. If you are uncertain, try rating each multiple-choice alternative on a 1 to 10 scale. The answer with the highest rating is the one you are looking for.
8. Remember that few circumstances are always or never present. Answers that include superlatives such as *most, least, best, worst, largest,* or *smallest* are often false.

Essay Tests Essay questions are a weak spot for students who lack organization, don't support their ideas, or don't directly answer the question (Van Blerkom, 2012). When you take an essay exam, try the following:

1. Read the question carefully. Be sure to note key words, such as *compare, contrast, discuss, evaluate, analyze,* and *describe.* These words all demand a certain emphasis in your answer.
2. Answer the question. If the question asks for a definition and an example, make sure that you provide both. Providing just a definition or just an example will get you half marks.
3. Reflect on your answer for a few minutes and list the main points that you want to make. Just write them as they come to mind. Then rearrange the ideas in a logical order and begin writing. Elaborate plans or outlines are not necessary.
4. Don't beat around the bush or pad your answer. Be direct. Make a point and support it. Get your list of ideas into words.
5. Look over your essay for errors in spelling and grammar. Save this for last. Your ideas are more important. You can work on spelling and grammar separately if they affect your grade.

Short-Answer Tests Tests that ask you to fill in a blank, define a term, or list specific items can be difficult. Usually, the questions themselves contain little information. If you don't know the answer, you won't get much help from the questions.

The best way to prepare for short-answer tests is to overlearn the details of the course. As you study, pay special attention to lists of related terms.

Again, it is best to start with the questions whose answers you're sure you know. Follow that by completing the questions whose answers you think you probably know. Questions whose answers you have no idea about can be left blank.

See ➤ Figure 1.1 for a summary of study skills.

Procrastination: Don't Be Late!

All these techniques are fine. But what can I do about procrastination? **Procrastination**, the tendency to put off working on unpleasant tasks, is almost universal. (When campus workshops on procrastination are offered, many students never get around to signing up!) Even when procrastination doesn't lead to failure, it can cause much suffering (Hensley, 2016; Sirois & Tosti, 2012; Wohl, Pychyl, & Bennett, 2010). Procrastinators work only under pressure, skip classes, give false reasons for late work, and feel ashamed of their last-minute efforts. They also tend to feel frustrated, bored, and guilty more often (Pychyl, 2013).

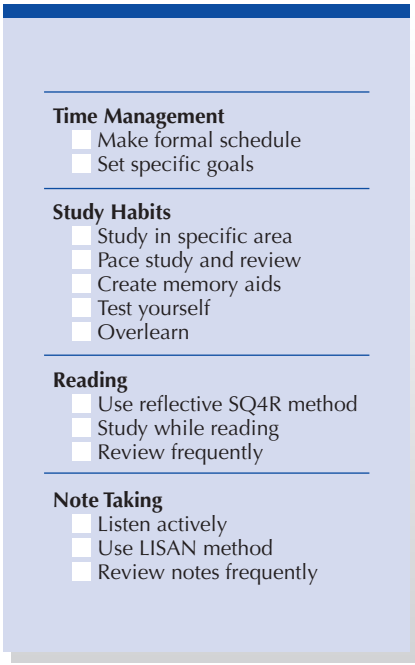


Figure 1.1
Study skills checklist.

Why do so many students procrastinate? Many students equate grades with their personal worth—that is, they act as if grades tell whether they are good, smart people who will succeed in life. By procrastinating, they can blame their poor work on a late start rather than a lack of ability (Haghbin, McCaffrey, & Pychyl, 2012). After all, it wasn't their best effort, was it? Perfectionism is a related problem. If you expect the impossible, it's hard to start an assignment. Students with high standards often end up with all-or-nothing work habits (Rice, Richardson, & Clark, 2012).

While procrastination can be a real problem for students, most can improve by learning to manage time effectively, setting realistic goals, and considering their attitude toward learning. We have already discussed general study skills, so let's consider these other strategies in a little more detail.

Time Management A **weekly time schedule** is a written plan that allocates time for study, work, and leisure activities. To prepare your schedule, make a chart showing all the hours in each day of the week. Then fill in times that are already committed: sleep, meals, classes, work, team practices, lessons, appointments, and so forth. Next, fill in times when you will study for various classes. Finally, label the remaining hours as open or free times. Each day, you can use your schedule as a checklist. That way, you'll know at a glance which tasks are done and which still need attention (Pychyl, 2013).

You may also find it valuable to make a **term schedule** that lists the dates of all quizzes, tests, reports, papers, and other major assignments for each class. The beauty of sticking to a schedule is that you know you are making an honest effort. It will also help you avoid feeling bored while you are working or guilty when you play.

Be sure to treat your study times as serious commitments, but respect your free time, too. And remember, students who study hard and practice time management *do* get better grades (Nandagopal & Ericsson, 2011).

Goal Setting As mentioned earlier, students who are reflective, active learners set **specific goals** for studying. Such goals should be clear-cut and measurable (Pychyl, 2013). If you find it hard to stay motivated, try setting goals for the semester, the week, the day, and even for single study sessions. Also, be aware that more effort early in a course can greatly reduce the stress that you might experience later. If your professors don't give frequent assignments, set your own day-by-day goals. That way, you can turn big assignments into a series of smaller tasks that you can complete. An example would be reading, studying, and reviewing eight pages a day to complete a forty-page chapter in five days. For this textbook, reading one module every day or two might be a good pace. Remember, many small steps can add up to an impressive journey.

Developing a Positive Attitude A final point to remember is that you are most likely to procrastinate if you think that a task will be unpleasant. Learning can be hard work. Nevertheless, reflective students find ways to make schoolwork interesting and enjoyable (Mega, Ronconi, & De Beni, 2014). Try to approach your schoolwork as if it were a game, a sport, an adventure, or simply a way to become a better person. The best educational experiences are challenging, yet fun.

Virtually every topic is interesting to someone, somewhere. You may not be particularly interested in the sex life of South American tree frogs. However, a biologist might be fascinated. (Another tree frog might be, too.) If you wait for teachers to make their courses interesting, you are missing the point. Interest is a matter of *your attitude* (Sirois & Tosti, 2012).

Procrastination The tendency to put off working on unpleasant tasks.

Weekly time schedule A written plan that allocates time for study, work, and leisure activities during a one-week period.

Term schedule A written plan that lists the dates of all major assignments for each of your classes for an entire term.

Specific goals Goals with clearly defined and measurable outcomes.

The Whole Human: Psychology and You

There is a distinction in Zen between *live* words and *dead* words. Live words come from personal experience; dead words are about a subject. This book will be only a collection of dead words unless you accept the challenge of taking an intellectual journey. You will find many helpful, useful, and exciting ideas in the pages that follow. To make them yours, you must set out to actively and reflectively learn as much as you can. The ideas presented here should get you off to a good start. Good luck!

For more information, consult any of the following books:

Chaffee, J. (2019). *Thinking critically* (11th ed.). Boston, MA: Cengage Learning.

Ellis, D. (2019). *The essential guide to becoming a master student* (4th ed.). Boston, MA: Cengage Learning.

Pychyl, T. A. (2013). *Solving the procrastination puzzle: A concise guide to strategies for change*. New York: Tarcher/Penguin.

Van Blerkom, D. L. (2012). *College study skills: Becoming a strategic learner* (7th ed.). Boston, MA: Cengage Learning.

Wong, W. (2015). *Essential study skills* (8th ed.). Boston, MA: Cengage Learning.

MODULE 1

The Psychology of Reflective Studying—Learning Outcomes Revisited

1.1 Explain how studying psychology can help you in your personal and professional life

Two broad categories of learning are learning content and learning skills. Psychology students learn a variety of study skills, research skills, critical thinking skills, cultural awareness skills, and personal skills during their studies—all of which can be useful at work or in your personal life. The study of psychology will also prepare you for many potentially rewarding careers. Some of those exist within the field of psychology, but the skills learned in a psychology degree can also be applied to a wide range of other career paths.

1.2 Describe how you can get the most out of this textbook

Reflective reading, which involves actively thinking about what is being read, is better than passive reading. Using digital media offers another way to be more reflective.

1.3 Describe how you can get the most out of class time

Effective learning in class involves reflective listening. One way to be a more reflective listener in class is to follow the five steps of the LISAN method: lead, don't follow; ideas; signal words; actively listen; note taking.

1.4 Describe how you can best study and prepare for tests

More reflective studying involves studying in a specific place, using spaced study sessions, trying mnemonics, testing yourself, and overlearning. Remember that more specialized strategies may be needed for objective tests, essay tests, and short-answer tests. Avoid procrastination through time management, setting goals, and making learning an adventure.

Reflective Practice

Content Check

1. The facts you pick up during your academic studies are the most important aspect of your education. T or F?
2. Setting learning goals and monitoring your progress are important parts of _____ learning.
3. When using the LISAN method, students try to write down as much of a lecture as possible so that their notes are complete. T or F?
4. Spaced study sessions are usually superior to massed practice. T or F?
5. According to research, you should almost always stick with your first answer on multiple-choice tests. T or F?
6. To use the technique known as overlearning, you should continue to study after you feel you have mastered a topic. T or F?
7. Procrastination is related to seeking perfection and equating self-worth with grades. T or F?

Skill Check

Think Critically

8. How is the LISAN method reflective?

Self-Reflect

Do you already use any of the reflective learning techniques discussed in the module? What career paths are you considering? What skills do you think would be valuable in a career like that? Do you already possess these skills? If so, how might you strengthen them? If not, what kinds of experiences can you undertake during your degree to develop these skills? One of the best ways to begin answering these questions is to sit down and undertake an inventory of the skills you have learned from your psychology studies and elsewhere.

ANSWERS

1. F 2. reflective 3. F 4. T 5. F 6. T 7. T 8. LISAN encourages people to be reflective and to actively seek information as a way of learning more effectively.

MODULE
2

Introducing Psychology

Psychology, Critical Thinking, and Science

Living in a Tree House

When Nate Madsen was 25 years old, he learned that loggers were cutting down giant redwoods in a grove that had become his refuge—a restful spot where he could leave behind the stressors of student life. Determined not to simply watch as the trees were destroyed, Nate climbed 160 feet into the branches of a giant redwood and stayed there for more than two years. During that time, he endured heavy rain and winds from above and harassment from people below.

What could Nate possibly have been thinking, you might wonder. But you might equally wonder why people get married, go skydiving, grow roses, become suicide bombers, go to college, or live out their lives in monasteries. You might even wonder why *you* do some of the things you do. In other words, the odds are that you are curious about human behavior (just like your authors). That may even be a part of the reason that you are taking a course in psychology and reading this book.

How, in general, do psychologists set out answer questions about human behavior, such as, "Why, Nate, why?" Let's find out.

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~LEARNING OUTCOMES~

After reading this module you should be able to:

2.1 Explain why introspection is inadequate for the scientific study of psychology

2.2 Explain the role of critical thinking in psychological science

2.3 Outline the six steps of the scientific method as applied in psychology

Psychology—Behave!

Learning Outcome 2.1 Explain why introspection is inadequate for the scientific study of psychology

We humans have always been curious about humankind. Even the word *psychology* is thousands of years old, coming from the ancient Greek roots *psyche*, meaning mind, and *logos*, meaning knowledge or study. Today, psychology is both a science and a profession. As scientists, some psychologists do research to discover new knowledge. Others apply psychology to solve problems in fields such as mental health, business, education, sports, law, medicine, and the design of machines (Bayne & Jinks, 2013). Still others are teachers who share their knowledge with students. Later,

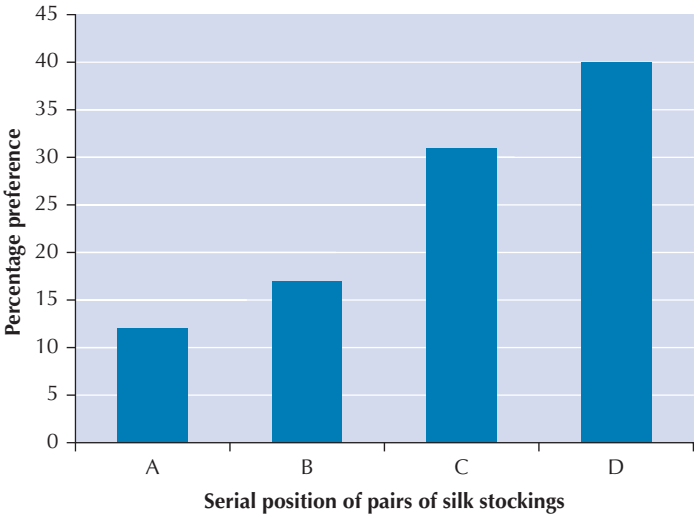
we will return to the profession of psychology. For now, let's focus on how psychologists answer questions in psychology.

Answering Questions in Psychology

If psychology is the study of the mind, then how can a psychologist tell me anything about what is in my own mind? The earliest psychologists would have agreed. After all, you are the only person who can directly observe the inner workings of your own mind, right? To answer questions about you, they would have relied upon **introspection**, the personal observation of your own thoughts, feelings, and behavior. Stop reading, close your eyes, and carefully describe aloud your inner thoughts, feelings, and sensations. You are *introspecting*. (Introspect, Nate, introspect!)

The Failings of Introspection You may be surprised to learn that introspection was abandoned years ago when psychologists realized that it was too flawed to serve as a truly scientific method (see Module 3). To begin to understand the problem, imagine that you are one of the shoppers that psychologists Timothy Wilson and Richard Nesbitt invited to examine four pairs of silk stockings hanging on a rack. The shoppers were asked a deceptively simple question: "Which pair is the highest quality, and why?" (Wilson & Nisbett, 1978). The results can be found in ➤ Figure 2.1. As you can see, the order in which the stockings were displayed strongly influenced which pair was chosen.

The shoppers were not told that all the stockings were objectively identical. Also, each pair appeared equally often in each of the four serial positions. This was achieved by changing the order of the four pairs before each shopper made a choice. This made it virtually impossible that the pair in position D was actually consistently of better quality.



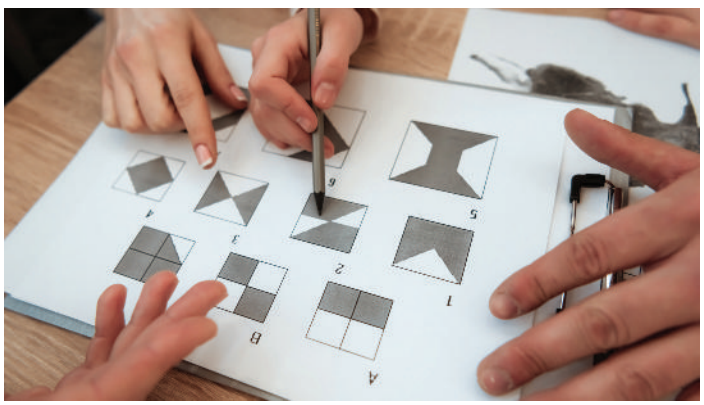
➤ Figure 2.1

The effects of serial position on preference. The four pairs of silk stockings in this experiment were labeled A, B, C, and D, from left to right. The results clearly show that the serial position of the individual pairs of stockings; that is, where each pair appeared in the "lineup" influenced shoppers' preferences. (Adapted from Wilson and Nisbett, 1978.)

If the shoppers were introspectively aware of the underlying psychological processes that resulted in their choices, they surely would have identified serial position as a relevant factor. Amazingly, while serial position *objectively* influenced the shopper's choice, no shopper gave serial position as a *subjective* reason for his or her choice. Apparently, you are not always the best judge of why you behave the way you do (Wilson, 2004). That is, even when introspection does yield information, there is no guarantee that the information is accurate.

What reasons did the shoppers give? If you think about it, it *would* be odd to hear someone say, "The pair in position D are the best because they are on the far right." Apparently, not knowing exactly why they made their choice, the shoppers gave the sorts of reasons that you (and they) might expect a thoughtful shopper to give: smoothness, visual appearance, color, weave, and so on. They gave plausible but incorrect answers such as, "I chose the pair in position D because they were the sheerest and most elastic."

Wilson and Nisbett's finding is only one of hundreds of similar reports. Taken together, they confirm that



Freeograph/Shutterstock.com

Psychologists are highly trained professionals who have specialized skills in counseling and therapy, measurement and testing, research and experimentation, statistics, diagnosis, treatment, and many other areas. Here, a psychologist tests a person's intellectual capacity.

Introspection Personal observation of your own thoughts, feelings, and behavior.

much of our thinking actually takes place in the **cognitive unconscious**, a part of the mind of which we are subjectively unaware and is therefore not open to introspection (see, e.g., Bar-Anan, Wilson, & Hassin, 2010; Nisbett & Wilson, 1977). Oddly enough, then, objective scientific methods often yield more accurate answers than subjective introspection.

We will encounter the cognitive unconscious many times during our exploration of psychology. For example, in Module 33, we explore the accuracy of police lineups. Given what you now know, just imagine being arrested on suspicion of committing a murder … and being assigned to position D in a four-person lineup.

Objectivity in Psychology Because introspection is not the best way to answer many psychological questions, psychologists accept that the mind can't be fully understood from a subjective viewpoint. Accordingly, **psychology** is now defined as the scientific study of behavior and mental processes (i.e., covert behavior). It is this reliance on objective scientific observation to systematically answer questions about all sorts of behaviors that distinguishes psychology from many other fields, such as history, law, art, and business (Stanovich, 2019).

To what does behavior refer in the definition of psychology? Any directly observable action or response—eating, hanging out, sleeping, talking, or sneezing—is an *overt behavior*. So are studying, gambling, watching television, tying your shoes, giving someone a gift, reading this book, and, yes, extreme marathoning. But psychologists haven't left out the mind; they also objectively study *covert behaviors*. These are mental events, such as dreaming, thinking, remembering, understanding what you read, choosing stockings (or murder suspects), and other mental processes (Jackson, 2016).

But how can you study covert behaviors without relying on introspection? Progress in psychology often depends on developing suitable objective **research methods**—systematic scientific approaches to answering particular questions. For example, at one time we had no choice but to rely upon the introspective reports of people who say they never dream. Then the electroencephalograph (EEG) was invented to measure brainwaves. Certain brainwave patterns, as well as the presence of eye movements, can objectively reveal whether a person is dreaming. People who report never dreaming, it turns out, dream frequently. Rather, they forget their dreams upon awakening. If they are awakened when the EEG and eye movement patterns indicate they are dreaming, they vividly remember the dream. Thus, the EEG helped make the study of dreaming more scientific.

AJPhoto/Science Source

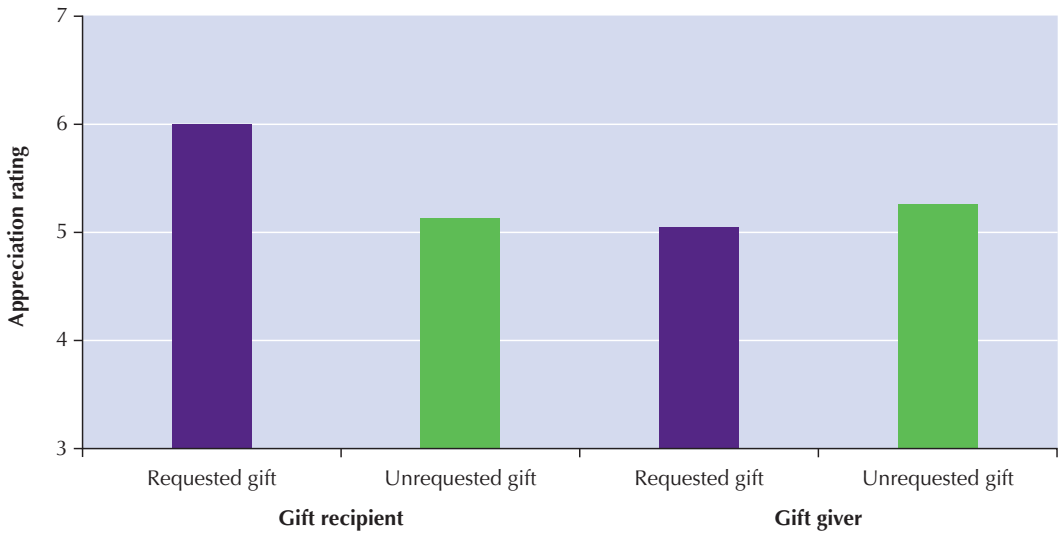
The scientific study of dreaming was made possible by use of the EEG, a device that records the tiny electrical signals the brain generates as a person sleeps. The EEG converts these electrical signals to a written record of brain activity. Certain shifts in brain activity, coupled with the presence of rapid eye movements, are strongly related to dreaming. (See Module 24 for more details.)

Scientific Observation *People have been observing other people for centuries. Isn't psychology, by now, mostly common sense?* You may be surprised to learn how many common-sense beliefs about human behavior are false. For example, have you ever heard that some people are left-brained and some are right-brained? Or that subliminal advertising really works? Or that people prefer to receive thoughtful gifts rather than an impersonal gift, like money? It turns out that these widely held beliefs, and many others, are simply wrong (Lilienfeld et al., 2010).

But how could common sense be wrong so often? One problem with common sense is that it often depends on casual or haphazard observations. For example, has someone ever told you that people in New York City (or Paris, or wherever) are rude? This often means no more than that someone is relying on hearsay or had a bad encounter on one visit. It may well say nothing about New Yorkers or Parisians in general.

Unlike casual observation, psychologists rely on **scientific observation**. Although both are based on gathering *empirical evidence* (information gained from direct observation), scientific observation is *systematic*, or carefully planned. Scientific observations also are *intersubjective*, which means that more than one observer can confirm them. Basically, the scientific approach says, "Let's take a more objective look" (Stanovich, 2019).

Psychologists, then, study behavior directly by systematically collecting data (observed facts) so that they can draw valid conclusions. Would you say it's true, for instance, that "the clothes make the man"? Or do you believe that "you can't judge a book by its cover"? Why argue about it? As psychologists,



➤ **Figure 2.2**

Results of an empirical study. The graph shows that the recipients of gifts appreciate gifts that they have requested more than gifts that the giver chooses. Gift givers were slightly more likely to believe that recipients would prefer receiving an unrequested gift (although the difference was not statistically significant). (Data adapted from Gino & Flynn, 2011.)

we simply look at some people who are well dressed and some who are not and, through scientific observation, find out who makes out better in a variety of situations.

Here's an example of gathering empirical evidence: Have you ever wondered if, when it comes to giving gifts, it really is "the thought that counts"? Francesca Gino and Francis Flynn (2011) decided to find out. They asked gift recipients to rate how much they would appreciate getting a gift that they requested, as opposed to one chosen by the gift giver. It turns out people prefer gifts that they specifically request over gifts that the giver *thinks* might be appreciated. In contrast, gift givers believed that recipients would be just as appreciative of a gift that they chose for them (see ➤ Figure 2.2).

Isn't the outcome of this study obvious? It isn't if you started out believing otherwise. Sometimes the results of studies match our personal observations or commonsense beliefs, and other times they come as a surprise. In this instance, you may have guessed the outcome. Your suspicions were confirmed by scientific observation. However, it could easily have turned out differently.

How about getting money for a gift—does that make a difference? Gino and Flynn (2011) checked that out as well. They found that gift recipients preferred getting money even more than getting a gift that they requested, even though gift givers thought exactly the opposite. Apparently, we struggle more with the idea of thoughtful gifts when we are the givers than when we are the recipients.

One way to summarize the foregoing is to say that it would be impossible to accurately answer most questions about human behavior without the aid of objective, scientific observation.

Critical Thinking—Take It with a Grain of Salt

Learning Outcome 2.2 Explain the role of critical thinking in psychological science

We humans have always been curious about humankind. Even the word *psychology* is thousands of years old, coming from the ancient Greek roots *psyche*, meaning mind, and *logos*, meaning knowledge or study. Today, psychology is both a science and a profession. As scientists, some psychologists do research to discover new knowledge. Others apply psychology to solve problems in fields such as mental health, business, education, sports, law, medicine, and the design of machines (Bayne & Jinks, 2013). Still others are teachers who share their knowledge with students. Later, we will return to the profession of psychology. For now, let's focus on how psychologists answer questions in psychology.

Cognitive unconscious The part of the mind of which we are subjectively unaware and that is not open to introspection.

Psychology The scientific study of behavior and mental processes.

Research methods Systematic approaches to answering scientific questions.

Scientific observation An empirical investigation structured to answer questions about the world in a systematic and intersubjective fashion (i.e., observations can be reliably confirmed by multiple observers).

But isn't there more to psychology and science than a reliance on scientific observation? Yes. In general, psychologists rely on critical thinking. **Critical thinking** in psychology is a type of reflection (you *did* read Module 1, "The Psychology of Reflective Studying," right?) that involves asking whether a particular belief can be supported by both scientific theory and observation (Vaughn, 2016; Yanchar, Slife, & Warne, 2008).

Because we deal with human behavior every day, we think that we already know what is true in psychology. All too often, however, we are tempted to accept commonsense beliefs, false news, urban legends, and even outrageous claims about the powers of healing crystals, miraculous herbal remedies, astrology describing people's personalities, psychics predicting the future, and so forth. However, critical thinkers are willing to challenge both conventional and unconventional wisdom by asking hard questions (Ruggiero, 2015). For this and many other reasons, learning to think critically is one of the lasting benefits of a college education.

For example, when it comes to achieving our goals, is it better to focus on how far we still have to go before we reach a goal, or should we focus on what we have already accomplished? Critical thinkers might immediately ask: "Is there any theory to support stressing either a goal focus or an accomplishment focus? Is there any empirical evidence either way? What could we do to find out for ourselves?" (Be on the lookout later in this module for some evidence concerning this question.)

Critical Thinking Principles

The heart of critical thinking is a willingness to actively *reflect* on ideas. Critical thinkers evaluate ideas by deliberately probing for weaknesses in their reasoning and analyzing the evidence supporting their beliefs. They question assumptions and look for alternative conclusions. True knowledge, they recognize, comes from constantly revising our understanding of the world. Critical thinking relies on the following basic principles (Jackson & Newberry, 2016; Ruggiero, 2015; Vaughn, 2016):

1. *Few truths transcend the need for logical analysis and empirical testing.* Whereas religious beliefs and personal values are often held as matters of faith, most other ideas can and should be evaluated by applying the rules of logic, evidence, and the scientific method.
2. *Authority or claimed expertise does not automatically make an idea true or false.* Just because a teacher, guru, celebrity, or authority is convincing or sincere doesn't mean that you should automatically believe (or disbelieve) that person. Naively accepting (or denying) the word of an expert is unscientific and self-demeaning unless you ask, "Is this a well-supported explanation, or is there a better one? What evidence convinced her or him?"
3. *Judging the quality of the evidence is crucial.* Imagine that you are a juror in a courtroom, judging claims made by two battling lawyers. To decide correctly, you can't just weigh the *amount* of evidence. You must also critically evaluate the *quality* of the evidence. Then you can give greater weight to the most credible facts.
4. *Critical thinking requires an open mind.* Be prepared to consider daring departures and go wherever the evidence leads. However, don't become so open-minded that you are simply gullible. Astronomer Carl Sagan once noted, "It seems to me that what is called for is an exquisite balance between two conflicting needs: the most skeptical scrutiny of all hypotheses that are served up to us and at the same time a great openness to new ideas" (Kida, 2006, p. 51).
5. *Critical thinkers often wonder what it would take to show that a "truth" is false.* **Falsification** is the deliberate attempt to uncover how a commonsense belief or scientific theory might be false. Critical thinkers adopt an attitude of actively seeking to *falsify* beliefs, including their own. They want to find out when they are wrong, even if it is difficult to accept. As Susan Blackmore (2000, p. 55) said when her studies caused her to abandon some long-held beliefs, "Admitting you are wrong is always hard—even though it's a skill that every psychologist has to learn." On the plus side, finding out what is wrong with a belief often points the way to improving it. Similarly, critical thinkers can be more confident in beliefs that have survived their attempts at falsification.

To put these principles into action, here are some questions to ask as you evaluate new information (Jackson & Newberry, 2016; Ruggiero, 2015; Vaughn, 2016):

1. What is the claim being made? Is it understandable? Does it make logical sense? Does it fit into an existing theory? What are the implications of the claim? Is there another possible explanation? Is it a simpler explanation?
2. What empirical tests of this claim have been made (if any)? How good is the evidence? (In general, scientific observations provide the highest quality evidence.) Can the claim be falsified?
3. Who did the tests? How reliable and trustworthy were the investigators? Do they have conflicts of interest (for example, are they being paid or rewarded in some other way for making these claims)? Do their findings appear to be objective? Has any other independent researcher duplicated the findings?

Uncritical Acceptance and Confirmation Bias *If falsification is a good strategy, then what is the opposite of falsification, and why would people do that?* Good question. We humans are vulnerable to **uncritical acceptance**—the tendency to believe claims because they seem true or it would be nice if they were true. Consider horoscopes, which generally contain mostly flattering traits. Naturally, when your personality and your future are described in *desirable* terms, it is hard to deny that the description has the ring of truth (Rogers & Soule, 2009). On the other hand, how much acceptance would astrology receive if all horoscopes read like this?

> **Virgo:**
> Your nitpicking is unbearable to your friends. You are cold, unemotional, and usually fall asleep while making love. You have no chance of ever finding a person who will love you. Virgos make good doorstops.

Even when a horoscope contains a mixture of good and bad traits, it may seem accurate because we humans are also vulnerable to **confirmation bias**, the tendency to remember or notice things that confirm our expectations and ignore the rest (Lilienfeld, Ammirati, & Landfield, 2009). For example, how well does the following astrological description describe your personality?

> **Your Personality Profile:**
> You have many personality strengths, with some weaknesses to which you can usually adjust. You tend to be accepting of yourself. You are comfortable with some structure in your life but do enjoy diverse experiences from time to time. Although on the inside, you might be a bit unsure of yourself, you appear under control to others. You are sexually well adjusted, although you do have some questions. Your life goals are more or less realistic. Occasionally, you question your decisions and actions because you're unsure that they are correct. You want to be liked and admired by other people. You are not using your potential to its full extent. You like to think for yourself and don't always take other people's word without thinking it through. You are not generally willing to disclose to others because it might lead to problems. You are a natural introvert, cautious, and careful around others, although there are times when you can be an extrovert who is the life of the party.

A psychologist read a similar summary to college students who thought they were taking a personality test. Only a few students felt that the description was inaccurate. Reread the description and you will see that it contains both sides of several personality dimensions ("You are a natural introvert … although there are times when you can be an extrovert …"). Its apparent accuracy is an illusion based on confirmation bias.

To summarize, we humans are vulnerable to uncritical acceptance and confirmation bias. The result is the selection of evidence and arguments to support your own beliefs while ignoring contradictory evidence or arguments (Boudry, Blancke, & Pigliucci, 2015). This is a sure-fire way to protect yourself from confronting your mistaken beliefs. It is also a sure-fire way to remain mistaken (Schick & Vaughn, 2014).

Superstition vs. Science Before leaving this topic, we should note that the entire belief system of astrology fails the test of critical thinking. As such, it can be considered a type of **superstition**, an unfounded belief held without objective evidence or in the face of falsifying evidence.

Astrology is based on a zodiac map invented several thousand years ago in the ancient civilization of Babylon. Unlike scientific theories, which are regularly falsified and rejected or revised accordingly, the basic underpinnings of astrology have remained relatively unchanged. Nevertheless, to date, no astrologer has offered a convincing theory of *how* the positions of the planets at a person's birth affect his or her future.

Empirical studies of astrology have also failed to uncover supporting evidence. One classic study of more than 3,000 predictions by famous astrologers found that only a small percentage of them were accurate. These successful predictions tended to be vague ("There will be a tragedy somewhere in the east in the spring") or easily guessed from current events (Culver & Ianna, 1988). Similarly, no connection exists between people's astrological signs and their intelligence or personality traits (Hartmann, Reuter, & Nyborg, 2006). There also is no connection between the compatibility of couples' astrological signs and their marriage and divorce rates or between astrological signs and leadership, physical characteristics, or career choices (Martens & Trachet, 1998).

Many superstitious beliefs such as astrology can seem scientific at first. For example, *graphology*, the study of handwriting, is useful for detecting forgeries. Isn't it plausible that personality traits are also revealed by handwriting? On further examination, though, this turns out to be *pseudoscience* (i.e., *false* science). Graphologists score no better than average on tests of accuracy in rating personality (Dazzi & Pedrabissi, 2009; Furnham, Chamorro-Premuzic, & Callahan, 2003).

Critical thinking In psychology, a type of reflection involving the support of beliefs through scientific explanation and observation.

Falsification The deliberate attempt to uncover how a commonsense belief or scientific theory might be false.

Uncritical acceptance The tendency to believe claims because they seem true or because it would be nice if they were true.

Confirmation bias The tendency to remember or notice information that fits one's expectations, while forgetting or ignoring discrepancies.

Superstition Unfounded belief held without evidence or in spite of falsifying evidence.

In closing, valid psychological principles are based, then, on critical thinking, scientific theory, and objective evidence, not superstitions, pseudoscience, fads, opinions, or wishful thinking.

Scientific Research—How to Think Like a Psychologist

Learning Outcome 2.3 Outline the six steps of the scientific method as applied in psychology

Psychology generally follows the **scientific method**, a form of critical thinking based on the systematic collection of evidence, accurate description and measurements, precise definitions, controlled observations, and repeatable results (Jackson, 2016; Yanchar, Slife, & Warne, 2008). As we noted previously, the first step in the scientific method is the careful recording of observation, the foundation of all science (Stanovich, 2019). To be *scientific*, our observations must be *systematic*, so they reveal something reliable about behavior. To return to an earlier example, if you are interested in whether gift recipients prefer gifts that they requested or gifts that were chosen for them, you will learn little by making haphazard observations of gift-giving at family birthday parties.

The Six Steps of the Scientific Method

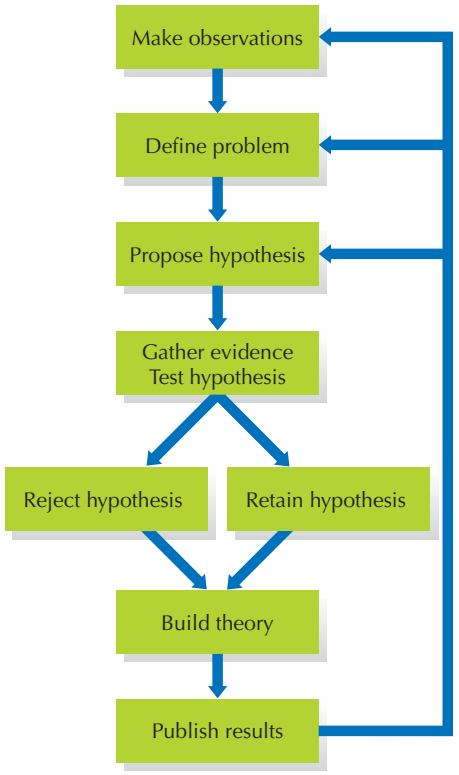
In its ideal form, the scientific method has six steps (➤ Figure 2.3). All six steps are found in the following example, from Florida State University psychologist Kyle Conlon and his colleagues (2011). Earlier, we wondered whether goals are more attainable if people maintain a goal focus (stressing how much remains to be done to achieve the goal) or an achievement focus (stressing how much has already been achieved). These researchers decided to find out.

The Star-Ledger/Robert Sciarrino/The Image Works

Applying the scientific method to the study of behavior requires careful observation. Here, two psychologists observe and record a session in which a child's eating behavior is being studied.

Make Observations The researchers reviewed previously published studies, noting that both goal-focused and achievement-focused approaches are popular. If the goal is weight loss, for example, one goal-focused approach is to count down the pounds (only 10 pounds to go!), while one achievement-focused approach is to celebrate milestones (congratulations on losing the first 10 pounds!).

Define the Problem The researchers also noted that maintaining a goal focus seems to inspire more goal-oriented behaviors. Thus, they defined their main problem as "Will people lose more weight if they maintain a goal focus compared to an achievement focus?"



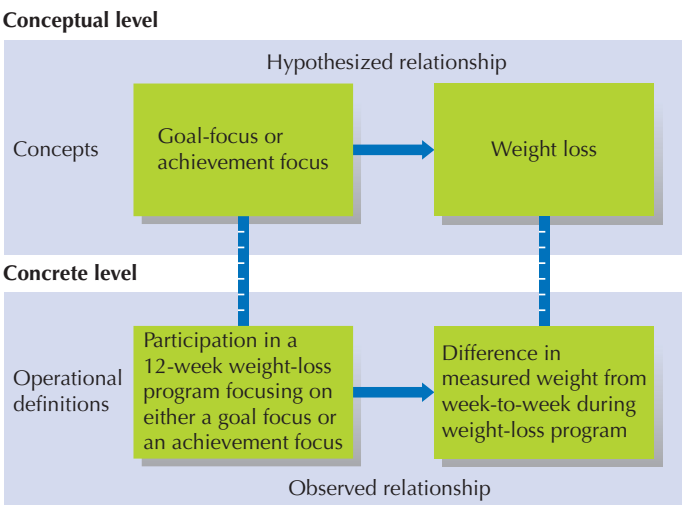
➤ **Figure 2.3**

The scientific method. Psychologists use the logic of science to answer questions about behavior. Specific hypotheses can be tested in a variety of ways, including controlled experiments, naturalistic observation, correlational studies, case studies, and surveys. Psychologists revise their theories to reflect the evidence that they gather. New or revised theories then lead to new observations, problems, and hypotheses.

Propose a Hypothesis *What exactly is a hypothesis?* A theoretical question or statement (like "Will people lose more weight if they maintain a goal focus or if they maintain an achievement focus?") is usually too vague to be assessed directly. In contrast, a **hypothesis** (hi-POTH-eh-sis) is the predicted outcome of an experiment or an educated guess about the relationship between variables. In other words, a hypothesis is a *testable* hunch about behavior.

Theoretical questions are transformed into testable hypotheses through operational definitions. An **operational definition** states the exact procedures used to measure a concept. Conlon and his colleagues began by creating a 12-week exercise program involving weekly group meetings and a companion website. Operationally defining weight loss was straightforward; participants were weighed on a standard digital scale at the beginning of the weight-loss period and once every week until the program ended.

Measuring someone's goal focus or achievement focus was a bit harder since these terms refer to covert behaviors (mental processes). Fortunately, operational definitions also allow covert behaviors that are not directly observable to be tested in real-world terms (see ➤ Figure 2.4). Conlon and his colleagues modified their weight-loss program so that the weekly surveys, feedback, and group discussions revolved around either a goal focus or an achievement focus. They then assigned a third of their participants to one program or the other (the final third was assigned to a group without either focus). For example, every week, goal-focused participants were asked to describe how much more weight they needed to lose to reach their goal, while achievement-focused participants were asked to describe how much weight they had already lost.



➤ **Figure 2.4**

Operational definition. Operational definitions are used to link concepts with concrete observations. Conlon and his colleagues (2011) define their weight-loss programs in enough detail that other researchers can confirm both the validity of their operational definitions and the accuracy of their results. Operational definitions vary in how well they represent concepts. For this reason, many different experiments may be necessary to draw clear conclusions about hypothesized relationships in psychology.

Gather Evidence/Test Hypothesis Now let's return to the question of whether weight loss is easier when you maintain a goal focus or an achievement focus. As predicted, goal-focused individuals lost more weight than did either achievement-focused or control individuals. They also reported being more committed to reaching their goal weights. Accordingly, the researchers retained the hypothesis rather than rejecting it.

Build Theory *How do theories fit in?* A **theory** is a system of ideas designed to interrelate concepts and facts in a way that summarizes existing data and predicts future observations. Good theories summarize observations, explain them, allow prediction, and guide further research. Without theories of forgetting, personality, stress, mental illness, and the like, psychologists would drown in a sea of disconnected facts (Stanovich, 2019).

Conlon and his colleagues interpreted their results as consistent with theories of motivation that stress the importance of being aware of how much work remains to be done to achieve a goal. The results were also portrayed as extending these theories into the field of health psychology and as being relevant to the design of health-intervention programs.

Publish Results Because scientific information must always be *publicly available*, the results of psychological studies are usually published in professional journals (see ■ Table 2.1). That way, other researchers can read about the results and make their own observations if they doubt the study's findings (Gravetter & Forzano, 2019). If others are able to *replicate* (repeat) the results of a study, those results become more credible.

In a scholarly article published in the *Journal of Experimental Social Psychology,* Conlon and his colleagues (2011)

Scientific method A form of critical thinking based on careful measurement, controlled observation, and repeatable results.

Hypothesis Predicted outcome of an experiment or an educated guess about the relationship between variables.

Operational definition Defining a scientific concept by stating the specific actions or procedures used to measure it. For example, *hunger* might be defined as the number of hours of food deprivation.

Theory Comprehensive explanation of observable events.