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SCHACTER GILBERT WEGNER



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PSYCHOLOGY

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PSYCHOLOGY



Almost everyone who sees this image by Lois Greenfield stops, stares, and then whispers the word "Wow." We did too. Why is this image so captivating?

Throughout history, human beings have seen themselves as creatures that exist somewhere between the mundane and the divine. The figure in this image appears to be both descending from the heavens and rising from the earth, briefly suspended between two worlds, engaged in some uniquely human ritual that neither the gods above him nor the beasts below him can fully comprehend. For us, this moment of balance captures the essential tension between the mind and the body, between our higher and lower natures, between the aspirations and the origins of our species.

Lois Greenfield has been photographing dancers and dance movement since 1973. In the last three decades, her work has appeared in such diverse publications as *American Photographer, Dance Magazine, Elle, Esquire, Life, The New York Times, Newsweek, Rolling Stone, Vanity Fair, The Village Voice,* and *Vogue.* She has been featured in one-woman exhibitions in the United States, Europe, China, and most recently Japan. She has published two books, *Breaking Bounds: The Dance Photography of Lois Greenfield* (Chronicle Books, 1992) and *Airborne: The New Dance Photography of Lois Greenfield* (Chronicle Books, 1998). She currently lives in New York City.

To our children and their children

Hannah Schacter

Emily Schacter

Arlo Gilbert

Shona Gilbert

Daylyn Gilbert

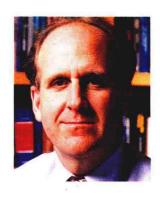
Sari Gilbert

Kelsey Wegner

Haley Wegner

About the Authors

DANIEL L. SCHACTER is a professor of psychology at Harvard University. Schacter received his BA degree from the University of North Carolina at Chapel Hill in 1974. He subsequently developed a keen interest in memory disorders. He continued his research and education at the University of Toronto, where he received his PhD in 1981. He taught on the faculty at Toronto for the next 6 years before joining the psychology department at the University of Arizona in 1987. In 1991, he joined the faculty at Harvard University. His research explores the relation between conscious and unconscious forms of memory and the nature of memory distortions. He has received the Phi Beta Kappa teaching prize and several research awards, including the Troland Award from the National Academy of Sciences. Many of Schacter's studies are summarized in his 1996 book, Searching for Memory: The Brain, the Mind, and the Past, and his 2001 book, The Seven Sins of Memory: How the Mind Forgets and Remembers, both winners of the APA's William James Book Award.



DANIEL T. GILBERT is a professor of psychology at Harvard University. After attending the Community College of Denver and completing his BA at the University of Colorado at Denver in 1981, he earned his PhD from Princeton University in 1985. He taught on the faculty of the University of Texas at Austin for the next 11 years. In 1996, he joined the faculty of Harvard University. Gilbert received the American Psychological Association's Distinguished Scientific Award for an Early Career Contribution to Psychology. He has also won numerous teaching awards, including the Phi Beta Kappa Teaching Prize. His research on "affective forecasting" is an attempt to understand how and how well people predict their emotional reactions to future events. He is the author of the 2006 national best seller *Stumbling on Happiness*, winner of the Royal Society General Book Prize given for the year's best popular science book.



DANIEL M. WEGNER is a professor of psychology at Harvard University. He received his BS in 1970 and PhD in 1974, both from Michigan State University. He began his teaching career at Trinity University in San Antonio, Texas, before his appointments at the University of Virginia in 1990 and then Harvard University in 2000. He is Fellow of the American Association for the Advancement of Science and former associate editor of *Psychological Review*. His research focuses on thought suppression and mental control, social memory in relationships and groups, and the experience of conscious will. His seminal work in thought suppression and consciousness served as the basis of two trade titles, *White Bears and Other Unwanted Thoughts* and the *Illusion of Conscious Will*, both of which were named *Choice* Outstanding Academic Books.



Preface

or most of our adult lives, the three of us have been studying the human mind and teaching our students what we and other psychologists have learned about it. We've each written articles in professional journals to convey our findings and ideas to our colleagues, and we've each published popular nonfiction titles to communicate with the general public. For each of us, though, something important has been missing: a text written specifically for students. Reading a textbook should be just as engaging as reading a popular book, and we've worked hard to make sure that happens in *Psychology*.

Telling the Story of Psychology from a Fresh Perspective

As we wrote this textbook, we found ourselves confronting a question: Why were we attracted to psychology in the first place? Although we each have different interests in psychology that cover a broad range of the field—from cognitive psychology to social psychology to clinical psychology and neuroscience—we all share a common fascination with the errors, illusions, biases, and other mental mistakes that reveal how the mind works.

We believe psychology is interesting in large part because it offers insights into the errors of human thought and action. Some of these errors are familiar and amusing (why do we forget jokes the moment we've heard them?), and others are exceptional and tragic (what causes a pilot to fail to deploy his landing gear on approach?). But all of them cry out for explanation. Indeed, if our thoughts, feelings, and actions were error free, our lives would be orderly, predictable, and dull—and there would be few mysteries for psychology to illuminate.

But human behavior is endlessly surprising, and its surprises are what motivates us to understand the psychological complexities that produce them. Why is memory so prone to error, and what can be done to improve it? How can people discriminate against others even when they're trying hard not to? How can mobs make normal people behave like monsters? What allows a child with an IQ of 50 to compose a symphony? How can newborn babies know about kinetics and occlusion when they can't even find their own fingers? Psychology offers the possibility of answering such questions from a scientific perspective, and it is this possibility that drew us to the field.

Troubleshooting the Mindbugs

Every rambunctious child knows that you can learn how a toy works by breaking it. If you want to understand things so that you can eventually fix them and even build new ones, knowing how they break is invaluable. When things break, we learn about the pieces and processes that normally work together. Breakdown and error are not just about destruction and failure—they are paths to knowledge. Psychology has long followed these paths. The "bugs" of the human mind reveal a great deal about its function, structure, and design. For example: Freud and other pioneers studied psychological disorders not only to alleviate human misery, but because the disordered mind provides a window through which to view normal psychological functioning; the social blunders of autistic people teach us how human beings usually manage to have such seamless interactions; depression teaches us how most people deal so effectively with the losses and heartbreaks of everyday life; violence and antisocial behavior teach

us how most people manage to live relatively peaceful lives characterized by morality and self-control; visual illusions teach us how the eye and brain normally generate visual experiences that correspond so faithfully to the realities they represent; errors of inference and memory teach us how people ordinarily make successful decisions and how they remember so much, so well, for so long. These and other examples of mindbugs are integrated throughout the chapters:

- Automatic behaviors, such as when an individual says "Thank you" to a machine that has just delivered a stamp, provide important insights into the role of habit in mental life (Chapter 1, page 4)
- The tendency to underestimate the likelihood of coincidences helps us understand why people believe in magical abilities such as ESP (Chapter 2, page 46)
- Phantom limb syndrome, in which amputees can feel their missing limbs moving and even feel pain in their absent limbs, sheds light on plasticity in the brain (Chapter 3, page 100)
- The experience of synesthesia, where certain musical notes can evoke visual sensations of certain colors or certain sounds can produce an experience of specific tastes, provides clues about how perception works (Chapter 4, pages 121–123)
- The "seven sins" of memory are aspects of forgetting and distortion that show how people reconstruct their pasts and also reveal the adaptive functions of memory (Chapter 5, pages 187–203)
- Rewarding an individual can result in a decrease in the rewarded behavior when an external award undermines the intrinsic satisfaction of performing a task, thereby illuminating some of the limits of reinforcement (Chapter 6, page 229)
- Savants, such as an English boy named Christopher who was fluent in 16 languages yet lacked the cognitive capacities to live on his own, provide striking evidence that cognition is composed of distinct abilities (Chapter 7, page 253)
- Trying not to think about something can make you obsessed with it and quickly reveals one of the key problems we have in controlling our minds and actions (Chapter 8, pages 303–304)
- The pattern of people's errors on intelligence tests teaches us about how different abilities—such as language and reasoning—are related (Chapter 9, page 348)
- The mistakes people make when identifying their own emotions helps us understand the role that cognition plays in emotional experience (Chapter 10, page 378)
- The mistakes young children make when trying to answer questions about other people's beliefs and desires tell us how human beings come to understand their own minds and the minds of others (Chapter 11, pages 416–417)
- People often report that their favorite letter of the alphabet is the one that begins their own name, revealing an irrational bias to think of "me" first (Chapter 12, page 483)
- Some personality problems—such as being extremely dramatic, shy, or dishonest—are not recognized by the people who have them, showing how little insight we have into our own disorders (Chapter 13, pages 528–529)
- Placebo treatments such as sugar pills or therapies with no "active ingredients" can still sometimes be effective and so show how susceptible we are to psychological influences on our health (Chapter 14, pages 571–572)
- Students taking a boring class cough more often than those in an exciting class, revealing how disease symptoms can be modified by processes of attention (Chapter 15, pages 604–605)
- Stereotyping teaches us how people use categories to make predictions about objects and events they have never seen before (Chapter 16, pages 652–656)

Our experience as teachers suggests that students are every bit as fascinated by these mental oddities as we are. So we've incorporated these inherently interesting examples of human behavior throughout the text. Derived from the idea of "computer bugs," we refer to these examples as "mindbugs." Mindbugs are useful in illuminating the mechanisms of human psychology: They relate seemingly different topics to one another and highlight the strengths of the human mind as well as its vulnerabilities. We have used these errors, mistakes, and behavioral oddities as a thematic focus in each of the domains traditionally covered by introductory textbooks.

This approach has at least two benefits. First, it provides a conceptual linkage between chapters on normal psychological functions (such as memory, perception, and emotion) and chapters on pathology (such as psychological disorders, therapy, and stress and health). Second, psychologists know that most errors occur when normally adaptive mechanisms temporarily misbehave. For example, the tendency to stereotype others is not merely a bad habit acquired from ignorant parents but rather a misuse of the normally adaptive tendency to categorize objects and then use what one knows about the category to prejudge the object itself. A focus on mindbugs invites students to think of the mind as an adaptive solution to the problems that human beings face in the real world.

The Brain and the Classic Questions of Psychology

Just as psychologists come to understand the mind by observing the instances in which it fails and by considering the problems that it has adapted to solve, they also understand the mind by examining the brain. Traditionally, psychologists have relied on nature's occasional and inexact experiments to teach them about the function of the brain, and the study of brain-damaged patients continues to be an important source of new information. In the last two decades, emerging neuroimaging technologies (such as functional magnetic resonance imaging and positron emission tomography) have allowed psychologists to peer deep into the healthy, living brain as well. These two methods have led to the birth of a new field called cognitive neuroscience, and the findings from this field are already shedding light on some interesting and familiar problems. Consider these examples:

- When people have hallucinations, do they actually see pink elephants and hear the voice of God? Neuroimaging studies have shown that both visual and auditory hallucinations are accompanied by increased activity in the regions of the brain that are normally activated by real visual and auditory experience. This suggests that people really are seeing and hearing during hallucinatory episodes.
- When people claim to remember satanic rituals and childhood sexual abuse, are they really remembering? Neuroimaging studies have revealed that false memories are accompanied by activity in the regions of the brain that are normally associated with true memories, suggesting that people who claim to remember such events are, in fact, having a memorial experience.
- When people fail to get what they wanted and then claim to like what they got, is this just a case of "sour grapes" or do they really prefer the outcome they received to the one they originally desired? Studies of amnesiac patients have revealed that people like the outcomes they receive even when they cannot remember what those outcomes are, suggesting that unreachable grapes really do taste sour.

Cases such as these provide a natural entry to discussions of fundamental issues in perception, memory, and motivation. The brain is the basis of all psychological phenomena, and imaging technologies reveal how the brain creates the miracle of the mind. Our decision to integrate neuroscience in this way reflects the current direction in which the field of psychology is moving. The brain is no longer just the province of specialists—the widespread use of imaging techniques has allowed a whole generation of researchers who study cognition, development, personality, emotion, and social psychology to become excited about the possibility of learning how the brain

and the mind are interrelated. We have attempted to bring this excitement and new knowledge to introductory students through vivid case illustrations, brain images, and nontechnical explanations.

Choices That Inspire, Teach, and Respect Students' Intelligence

An introduction to psychology should focus on what is most important and what is most compelling. It should not be a rehashing of all things psychological. In fact, no single author—nor any three authors—can be expert in all the various domains of psychology. To ensure that Psychology offers the very best of psychological science, we formed our Contributing Consultants board of accomplished researchers and master teachers in areas outside our areas of expertise. They advised us on early drafts and throughout the writing process, explaining what is important, what is true, and how to think about the issues and data in their respective fields. Taking this information, we have addressed topics in each subfield of psychology in the greater context of that field as a whole. Each chapter has a narrative arc that tells the story of that field of psychology and provides a thematic context that will hook students from the start. In writing Psychology, we have made informed choices about our topic coverage weighing classic studies and current research to produce a contemporary perspective on the field. We believe that our approach engages students, teaches students, entertains students, and above all inspires them as the three of us are inspired by psychology.

Effective Pedagogy

Captivating and entertaining our readers are not our only goals in *Psychology*. Helping students learn and remember what they have learned remains paramount. We have devised a pedagogical program that reinforces the book's themes and supports student learning.

Chapter-Opening Vignette Each chapter begins with a story of an incident from everyday life or a case study to capture students' attention and preview the topics covered in the chapter. The stories typically describe a mindbug that helps explain the chapter topic.

Special-Topic Boxes

- Hot Science: Each chapter has one or more boxes that feature exciting, cutting-edge research on one of the chapter's core topics. Often this research points toward some big question that psychologists hope to answer in the next few decades. For example, in the chapter on consciousness (Chapter 8), one of the Hot Science boxes looks at recent research suggesting that decisions made without conscious thought can sometimes be better than those made with intensive conscious deliberation. These boxes are meant to help students see that psychology is a living enterprise with many uncharted territories, an enterprise that has room for "hot" new insights and future contributions—perhaps from the students themselves.
- The Real World: Psychology is about things we experience every day. These boxes focus on these experiences and apply the chapter content to some pressing real-world phenomenon. Some of The Real World boxes focus on issues straight from the news (Chapter 3, "Neuroscience and Behavior," includes a box on the legal status of brain death and discusses the Terry Schiavo case), whereas others focus on issues that may be relevant to their personal lives (Chapter 16, "Social Psychology," has a box on secret romantic relationships).

Where Do You Stand? (End of Chapter) Each chapter ends with a "critical thinking" feature that discusses a topic related to the chapter content. Students are presented

with questions that encourage them to consider more deeply the implications of these topics and require them to report their own experiences or to generate defensible arguments and cogent opinions—rather than to remember factual answers. For example, Chapter 11, "Development," presents students with arguments for and against parental licensing, and Chapter 10, "Emotion and Motivation," asks students whether governments should pay citizens to vote.

Interim Summaries To promote study and learning of the material, each major section concludes with *In Summary* features that recap the major points in the section and provide a transition to the next section.

Only Human Features These funny-but-true accounts of oddities and errors in human behavior provide a bit of comic relief that relates to the issues under discussion.

Definitions and Glossary Each key term—a central concept, experimental procedure, or theory—is set apart from the text in boldface type, with its definition immediately following in italic type. The terms and their definitions are provided in a marginal glossary as well as an alphabetical, end-of-text glossary. The terms themselves appear at the end of the chapter with page numbers for easy reference.

Chapter Review In addition to the interim summaries, a bulleted summary at the end of the chapter summarizes the main concepts in each major section.

Recommended Readings Each chapter concludes with recommended readings, including trade books accessible to students, classic articles from the professional literature, online articles, and occasionally films related to a key concept or phenomenon discussed in the chapter.

Media and Supplements to Accompany Psychology Web/CD-ROM

NEW! Worth Publishers Student Video Tool Kit for Psychology

With its superb collection of brief (1 to 13 minutes) clips and emphasis on the biolog-

ical basis of behavior, the **Student Video Tool Kit** gives students a fresh way to experience both the classic experiments at the heart of psychological science and cutting-edge research conducted by the field's most influential investigators.

The **Student Video Tool Kit** provides 51 video clips with a balance of contemporary news footage and classic experiments (both original and re-created) to help illustrate key concepts of the introductory psychology course. The **Student Video Tool Kit** is correlated to each Worth introductory psychology textbook, providing students with book-specific activities and multiple-choice questions. Students can print their answers to these questions, making the **Student Video Tool Kit** a seamless part of your course.



NEW! Video Tool Kit for *Psychology*: Online Version

The online version of the **Video Tool Kit for** *Psychology* includes the 51 video clips found on the student CD and is easily accessible through an access code packaged with *Psychology*. Fully customizable, the **Online Video Tool Kit** offers instructors the option of incorporating videos into assignments as well as annotating each video with notes or instructions, making the tool kit an integral part of the introductory course. Instructors also have the option of assigning the tool kit to students without instructor involvement. Videos are correlated to the textbook, and each video is accompanied by multiple-choice questions so that students can assess their understanding of what



they have seen. Student responses/grades are sent to an online grade book, allowing instructors to easily assign and assess as much of the **Online Video Tool Kit** as desired.

NEW! PsychInvestigator: Laboratory Learning in Introductory Psychology by Arthur Kohn, PhD, Dark Blue Morning Productions

This exciting new Web-based product is a virtual laboratory environment that enables students to participate in real experiments. Students are introduced—step by step—to the various research techniques that are used in psychology. In **PsychInvestigator**, students participate in classic psychology experiments, generate real data, and are trained to create lab reports that summarize their findings. In each experiment, students participate in compelling video tutorials that are displayed before *and* after the actual experiment. **PsychInvestigator** requires no additional faculty time. Students' quiz scores can be automatically uploaded into an online grade book if instructors wish to monitor students' progress.

eLibrary to Accompany Psychology (worthpublishers.com/elibrary)

The **eLibrary** brings together text and supplementary resources in a single, easy-to-use Web site and includes a sophisticated, straightforward search engine (similar to Google) that allows a quick search for resources related to specific topics (not just by chapter). Through simple browse and search tools, users can quickly access content from the text and ancillary package and either download it or create a Web page to share with students.



PsychSim 5.0 CD-ROM and Booklet by Thomas Ludwig, Hope College

These 42 interactive simulations involve students in the practice of psychological research by having them play the role of experimenter (conditioning a rat, probing the hypothalamus electrically, working in a sleep lab) or subject (responding to tests of memory or visual illusions, interpreting facial expressions). Other simulations provide dynamic tutorials or demonstrations. In addition, five-question multiple-choice quizzes are available for each activity on the **Book Companion site**.

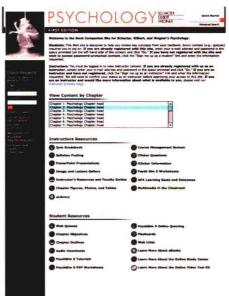
Psychology Book Companion Website at www.worthpublishers.com/schacter

The *Psychology* **Book** Companion Website offers students a virtual study guide 24 hours a day, 7 days a week. Best of all, these resources are free and do not require any special access codes or passwords. The site includes

- Annotated Web links
- Online quizzing
- Interactive flash cards
- Online version of 20 PsychSim 5.0 modules (by Thomas Ludwig, Hope College), accompanied by five-question, multiple-choice quizzes for each PsychSim activity
- Audio downloads
- A password-protected Instructor site offers a full array of teaching resources, including a new suite of PowerPoint slides, electronic lecture guides, an online quiz grade book, and links to additional tools.

PsychInquiry for *Psychology:* Student Activities in Research and Critical Thinking CD-ROM by Thomas Ludwig, Hope College

Customized to work specifically with *Psychology*, this CD-ROM contains dozens of interactive activities designed to help students learn about psychological research and to improve their critical-thinking skills.



Course Management

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PsychPortal Features

- The Interactive eBook and Study Center offers a complete online version of the text, equipped with interactive note taking and highlighting capability and fully integrated with all the media resources available with Psychology.
- Course Materials organizes all the resources for *Psychology* in one location for both students' and instructors' ease of use. In addition, it allows instructors to post their own materials for use or assignment.
- Quizzes and Assignments enable instructors to automatically assign and grade homework and quizzes for their classes. Student assignments are collected in one location and allow students immediate feedback on their progress.

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turnkey course in Blackboard, WebCT (Campus Edition and Vista), and Angel course management systems offers a completely integrated solution that you can easily customize and adapt to meet your teaching goals and course objectives. Student content is organized by book chapters and instructor content by content type (e.g., PowerPoint slides). On demand, we can also provide our enhanced *Psychology* solution to those using Desire2Learn, Sakai, and Moodle.

Sample Instructor Content

- Video clip library of more than 40 digitized video clips organized by the text chapters
- Complete test bank
- Complete instructor's resources (in Word and PDF formats)
- Complete suite of PowerPoint slides
- Chapter art PowerPoint slides
- Enhanced lecture PowerPoint slides
- Step-up psychology review game
- Personal response system/clicker questions
- PsychSim 5.0 work sheet answer key
- Link to the instructor's eLibrary

Sample Student Content

- PsychSim 5.0 (20 activities, work sheets, and quizzes)
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- Anatomical art self-quizzes (for select chapters)
- Crossword puzzles
- Additional simulations and demonstrations (for select chapters)
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- Link to American Psychological Association style guide

To learn more about the course management solution to accompany *Psychology*, go to www.bfwpub.com.

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Through the custom program, we can also help you tailor *Psychology* content to meet your course needs as well as provide you with technical support and services such as customizing your tests and quizzes, adding new student premium resources, adding Web links, reorganizing content, and adding a customized course banner. For more details, contact your Worth representative.

Assessment

Printed Test Bank by Russell Frohardt and Helen Just, St. Edward's University

The **Test Bank** provides more than 2,000 multiple-choice, true/false, and essay questions. Each question is keyed to a chapter objective and APA Outcome, referenced to the textbook pages, and rated for level of difficulty. Web quizzes from the Book Companion site and Quick Quizzes from the Study Guide (for instructors who incorporate or require the Study Guide in their courses) are also included.

Diploma Computerized Test Bank (available in Windows and Macintosh on one CD-ROM)

The CD-ROM allows you to add an unlimited number of questions, edit questions, format a test, scramble questions, and include pictures, equations, or multimedia links. With the accompanying grade book, you can record students' grades throughout a