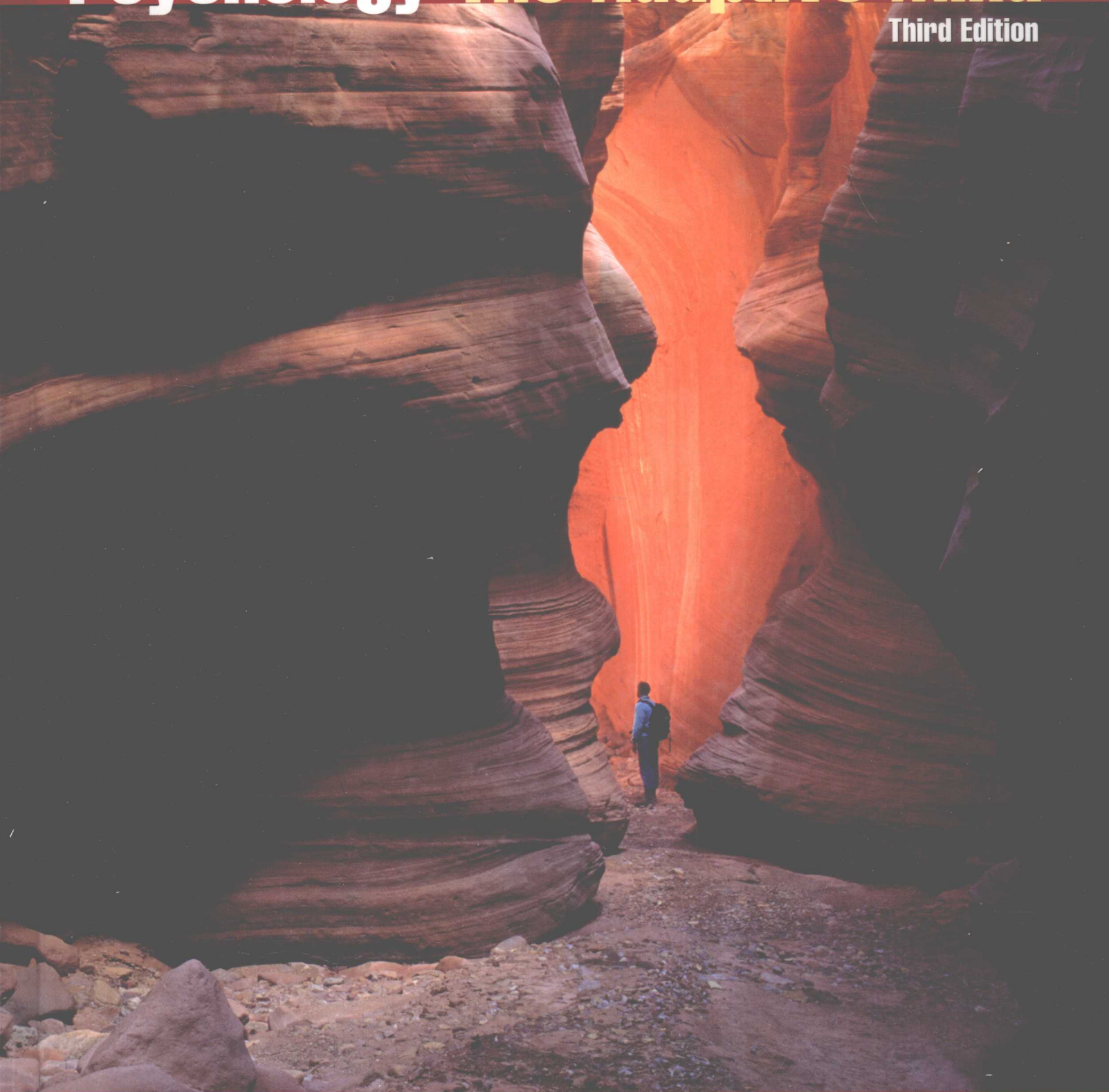


Psychology The Adaptive Mind

Third Edition



James S. Nairne

Psychology

The Adaptive Mind Third Edition

James S. Nairne
Purdue University

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Psychology for a Reason

You can't truly understand a psychological process unless you first know what it's for—that is, how it helps you adapt to or solve problems in your environment.

Psychology: The Adaptive Mind is based on this idea. When we discuss a psychological process, therefore, we don't start out with facts and methods that seem to have little relation to your life. Instead, we focus right up front on how you really use that process as a tool to solve—or adapt to—problems in your environment. This is what we mean by “The Adaptive Mind.”

The advantage of this approach is that it helps you relate the material to what you already know—your own life. Then, the facts and methods that we bring into the discussion will make sense because you'll see them in the context of your own adaptive mind.

We each carry around a kind of psychological “tool kit” for solving the various **adaptive problems** that we face, and the table at the right lists some of the tools that we explore in this book. The table also contains examples of **practical problems** that psychologists seek to solve, either to advance basic knowledge or to help individuals.

The Adaptive Mind in Action

	Example Situation	Problem to be Solved	Solution Tools
<i>Adaptive Problems</i>			
Chapter 3	A bicycle weaves suddenly into the path of your car.	Communicating internally	You use the electrochemical transmission in your nervous system to quickly get a message to muscles controlling the foot on the brake.
Chapter 7	You hear a rattling sound on a mountain path.	Learning what events are predicted by other events	You use knowledge of the associations between events, acquired through classical conditioning, to give you early warning of a snake.
Chapter 8	You try to remember a phone number as you cross the room.	Remembering over the short term	You use rehearsal, or continual repetition, to store the numbers in short-term memory.
Chapter 13	A shadowy figure emerges from an alleyway.	Interpreting the behavior of others	You use knowledge structures called social schemas to categorize the person and determine your course of action.
<i>Practical Problems</i>			
Chapter 2	Sally watches a violent TV program and becomes aggressive.	Determining the causes of behavior	Psychologists use experimental research to study the connection between the TV program and Sally's behavior.
Chapter 10	Andy is excellent at fixing mechanical devices but terrible at reading and math.	Conceptualizing intelligence	Psychologists use psychometric tests to measure Andy's mind.
Chapter 14	Lucinda hears voices and thinks she's immortal.	Defining abnormality	Psychologists use the <i>Diagnostic and Statistical Manual</i> to find her condition.
Chapter 15	Ralph suffers from deep depression.	Treating the mind	Psychologists use psychoactive drug therapy or insight therapy to help.

An Overview of the Problems

Chapter 2: The Tactics of Psychological Research

- ▶ What is the best way to observe behavior?
- ▶ How can we predict behavior?
- ▶ How can we determine the underlying causes of behavior?
- ▶ What procedures can ensure that our research participants are treated ethically?

Chapter 3: Biological Processes

- ▶ How does your body, particularly the nervous system, communicate internally?
- ▶ How does your brain initiate and coordinate behavior?
- ▶ How does your body regulate growth and other internal functions?
- ▶ How do we adapt, store, and transmit the genetic code?

Chapter 4: Human Development

- ▶ How do we go from fertilized eggs to fully functioning adults, capable of producing our own offspring?
- ▶ How do we develop the intellectual tools needed to solve survival problems?
- ▶ How do we form the social relationships and sense of personal identity needed for personal protection, nourishment, and continuation of the species?

Chapter 5: Sensation and Perception

- ▶ How does the external message from the environment get translated into the language of the nervous system?
- ▶ How do the elementary components—the sensations—get extracted from the message?
- ▶ How does the brain build a stable and lasting interpretation of these components once they've been extracted?

Chapter 6: Consciousness

- ▶ How do we set priorities for mental functioning?
- ▶ What roles do sleep and dreaming play for the adaptive mind?
- ▶ Why do certain chemicals, or drugs, produce profound alterations in awareness?
- ▶ What happens under hypnosis and meditation, two other techniques that seem to alter awareness significantly?

Chapter 7: Learning from Experience

- ▶ How do we recognize significant events when they occur and react to them appropriately?
- ▶ How do we learn about the signaling properties of stimuli, or events, in the environment?
- ▶ How do we learn about the consequences of our behavior?
- ▶ How can we learn by simply observing others?

Chapter 8: Memory

- ▶ How do we remember information over the short term?
- ▶ How do we store information for the long term?
- ▶ How do we recover information from the immediate and distant past?
- ▶ How and why do we forget?

Chapter 9: Language and Thought

- ▶ How do we communicate with others?
- ▶ How do we categorize objects in our world?
- ▶ How do we solve problems?
- ▶ How do we make decisions when confronted with a set of alternatives?

Chapter 10: Intelligence

- ▶ How should intelligence be conceptualized?
- ▶ How can we measure the individual differences in performance?
- ▶ What are the sources of intelligence?

Chapter 11: Motivation and Emotion

- ▶ What activates goal-directed behavior?
- ▶ What factors create hunger and control eating?
- ▶ What factors promote sexual behavior?
- ▶ How are emotions expressed and experienced, and what functions do they serve?

Chapter 12: Personality

- ▶ What is the proper way to conceptualize and measure the traits that make us both consistent and unique?
- ▶ Why do personality traits develop?
- ▶ Are personality characteristics expressed in a way that is independent of the environment?

Chapter 13: Social Psychology

- ▶ How do we interpret the behavior of others?
- ▶ How does our behavior change when we're in the presence of others?
- ▶ How do we establish relations with others, especially close interpersonal relationships?

Chapter 14: Psychological Disorders

- ▶ What is the proper way to conceptualize and define abnormal behavior?
- ▶ How can the various psychological disorders that produce abnormal behavior be classified?
- ▶ What are the causes of psychological disorders?

Chapter 15: Therapy

- ▶ What are the most effective ways to treat biologically based problems?
- ▶ How can irrational beliefs be changed?
- ▶ How can the environment be altered to reduce or eliminate abnormal behavior?
- ▶ How can we evaluate the effectiveness of psychotherapy?

Chapter 16: Stress and Health

- ▶ How and why does the body produce stress, and how is it experienced?
- ▶ How does the body react when exposure to stressful situations is long lasting?
- ▶ What strategies enable us to cope with stress?
- ▶ What general factors and lifestyle choices promote physical and psychological health?

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Changing the way the world learns®

To Virginia and Stephanie

About the Author

James S. Nairne is professor of psychological sciences at Purdue University in West Lafayette, Indiana. He received his undergraduate training at the University of California at Berkeley and his Ph.D. in psychology from Yale University. As a graduate student, he was recruited to provide demonstrations for all sections of introductory psychology at Yale, and he has been an enthusiastic teacher of introductory psychology ever since. He is the recipient of the 2000 Excellence in Education Award from Purdue University and the 2001 Charles B. Murphy Award, and he delivered the 2000 G. Stanley Hall Address at the annual convention of the American Psychological Association. He is an active researcher in cognitive psychology, specializing in human memory, and he has published dozens of articles in professional journals. He is currently associate editor for *Psychonomic Bulletin & Review*, a past associate editor of the *Journal of Memory and Language*, and he has served on numerous editorial boards.

Preface

To the Student

Psychology is the scientific study of behavior and mind. It can be a tough subject, but it can also be fun and even surprising in a number of unexpected ways. You'll find scores of research studies and hundreds of isolated facts scattered throughout this book, but my main goal is to enable you to understand the value and usefulness of psychology in your life. Toward that end, I'll show you how particular behaviors, cognitive processes, and emotions help you solve important problems every day.

WHAT DO WE MEAN BY "THE ADAPTIVE MIND"?

I take the view that everything we do is influenced, in part, by our need to "solve"—or adapt to—problems in our environment. By "problem" I simply mean the challenges we need to meet, or the demands we need to resolve, as we move through everyday life. We're constantly dipping into our psychological "tool kit" to solve one problem or another. For example, before you can react, your brain needs to communicate with the environment and with the rest of your body. To solve this adaptive problem—communicating internally—your body uses the nervous system, the endocrine system, and, to some extent, even the genetic code. We also need to translate messages from the environment, which come in a variety of forms, into the internal language of the nervous system (which is electrochemical). We solve this problem through our various sensory systems, such as vision and audition. Our survival also depends on our ability to communicate. Again, communicating with others is a crucial problem to solve. In this case, the solution—or adaptation—was the development of language and other nonverbal forms of communication.

I'm going to be continually stressing the idea that many of our behaviors and thoughts are solutions to problems or demands. Each chapter begins with three or four adaptive or conceptual problems such as the ones described above, and throughout the chapter I show you how these particular problems are solved by the body and mind.

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

To the Instructor

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

and key-pecking pigeons, but little about the connection between conditioning procedures and the learning problems we face on a daily basis.

In *Psychology: The Adaptive Mind, Third Edition*, I focus extensively on the function and purpose of psychological processes. Instead of leading with the facts and methods specific to a topic, I introduce each topic as a kind of “solution” to an adaptive or conceptual/practical “problem.” For example, if you want to understand how we learn about the signaling properties of events (problem), we can look to classical conditioning (solution). Notice the shift in emphasis: Instead of topic followed by function, it’s function followed by topic. This is what I call the adaptive problem-solving approach, and it offers a number of advantages:

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

Each chapter is organized around a set of adaptive or conceptual and practical problems that (a) focus the discussion on the functional relevance of the material and (b) demonstrate that we think and act for adaptive reasons. For example, classical conditioning is introduced as a solution to an adaptive problem: How do we learn about the signaling properties of events? Similarly, electrochemical transmission in the nervous system is introduced as the solution to the adaptive problem of communicating internally; the experimental method is introduced as a solution to the conceptual problem of determining the causes of behavior, and so on.

When we view behavior as the product of adaptive systems, psychology begins to make more sense. Students learn that behaviors (including the methods of psychologists!) are reactions to particular problems. When we emphasize adaptiveness, we relax our egocentric view of the world and increase our sensitivity to why behavior is so diverse, both within and across species. Our appreciation of individuality and diversity is enhanced by the understanding that differences are natural consequences of adaptations to the environment.

CONTENT CHANGES SINCE THE SECOND EDITION

Below I’ve listed the major content changes in the third edition. In addition to these specific changes, I’ve improved the clarity of the narrative throughout, rewritten parts that seemed too technical in earlier editions, and updated the science. I’ve added numerous new references (many from 2000 and beyond)—I have, however, kept primary and classic references in place where appropriate. Finally, importantly, I’ve substantially increased the number of practical applications in the third edition; each chapter now contains new sections, entitled “Practical Solutions,” that specifically deal with how the topics of psychology apply to real-world situations.

Chapter 1: An Introduction to Psychology

- New problem headings
- New section on evolutionary psychology
- Newly integrated discussion of Gestalt psychology

Chapter 2: The Tactics of Psychological Research

- Simplified problem headings
- Expanded critique of case studies
- Streamlined and updated section on surveys
- Newly integrated discussion of zero correlations and precognition

Chapter 3: Biological Processes

- Streamlined section on communication and neural networks
- New Practical Solutions entitled “Better Thinking through Chemistry”
- Expanded section on genetics, included new discussions of adaptations, natural selection, and mutations

Chapter 4: Human Development

- New discussion of morning sickness as a natural adaptation
- Updated discussion of neural growth and experience
- Updated discussion of memory and aging
- New discussion of Vygotsky’s “zone of proximal development”
- Expanded section on the role of culture in moral development
- New Practical Solutions entitled “Choosing a Day Care Center”
- Expanded coverage of attachment, including new discussion of a fourth “disorganized/disoriented” attachment group

Chapter 5: Sensation and Perception

- Rewritten and expanded discussion of receptive fields
- New streamlined section on dark adaptation
- More focused discussion of visual pathways
- New Practical Solutions entitled “Creating Illusions of Depth”
- Expanded and updated section on taste

Chapter 6: Consciousness

- Newly integrated discussion of subliminal messages
- New research on visual neglect and attention deficit/hyperactivity disorder
- New Practical Solutions entitled “Cell Phones and Driving”
- Updated section on REM and new evolutionary-based account of dreaming
- Streamlined discussion of the neurological basis of sleep
- Expanded section on drugs to include crack cocaine and ecstasy
- Expanded section on the psychological effects of drugs
- Streamlined section on the phenomena of hypnosis

Chapter 7: Learning from Experience

- Rewritten chapter opener
- Shortened and rewritten discussion of habituation and sensitization
- New treatment of the role of conscious intent in classical conditioning
- Shortened and simplified section on the conditioned response
- Clarified section on second-order conditioning, particularly the timing relations
- New coverage of the Garcia-Koelling taste aversion experiment
- Instrumental conditioning changed to operant conditioning throughout
- Streamlined discussion of the discriminative stimulus in operant conditioning
- Section on punishment now follows the section on reinforcement
- Expanded and updated section on the relationship between television violence and aggression

Chapter 8: Memory

- Reworked and shortened introduction emphasizes encoding, storage, and retrieval
- Reorganized and shortened section on sensory memory
- New introduction to the section on short-term memory stresses the adaptive value of short-term memories
- Discussion on the visual code now appears in a new section on the inner eye

- New section on Baddeley's working memory model
- Reorganized section on elaboration now includes visual imagery and distributed practice
- New section on why mnemonic techniques actually work
- Shortened and simplified section on the encoding-retrieval match
- New Practical Solutions entitled "Studying for an Exam"
- Section on reconstructive memory now follows the discussion of implicit memory
- Shortened section on implicit memory
- Shortened discussion of flashbulb memories now appears in the section covering elaboration
- Shortened section on repression

Chapter 9: Language and Thought

- New section, "Is Language an Adaptation?"
- Shortened introduction to "Classifying and Categorizing"
- New section on mental set stresses its adaptive value
- New section on psychological biases in decision making includes discussion of confirmation bias and belief persistence
- New Practical Solutions on incubation effects in problem solving

Chapter 10: Intelligence

- Reorganized section on conceptualizing intelligence
- Expanded section on fluid and crystallized intelligence includes discussion of the relationship between working memory capacity and intelligence
- New section on neural transmission speed
- Coverage of Gardner's new kind of intelligence (naturalist intelligence)
- Expanded sections on mental retardation and giftedness
- Expanded section on the validity of intelligence testing includes a discussion of cultural applications
- New section on tacit knowledge added to section on individual differences related to intelligence
- New section on the Flynn effect
- New Practical Solutions entitled "Can Mozart's Music Make You Smarter?"

Chapter 11: Motivation and Emotion

- Expanded section on instincts includes comparisons with evolutionary psychology
- Expanded section on achievement motivation includes a discussion of how projective tests can be used to measure the need for achievement
- Expanded discussion of eating disorders
- New Practical Solutions entitled "Dietary Variety and Weight Gain"
- New introduction to the section on sexual motivation includes a discussion of why sexual reproduction evolved
- Expanded sections on anger and happiness
- Section on disgust is now integrated into the narrative

Chapter 12: Personality

- Expanded section on defense mechanisms with coverage of "denial" and "rationalization"
- Cognitive-behavioral now called social-cognitive
- New Practical Solutions entitled "The Value of Self-Monitoring"
- New discussion of the limitations of twin studies

Chapter 13: Social Psychology

- Expanded section on prejudice
- New Practical Solutions entitled “Combating Prejudice”
- Expanded discussion of attributional biases includes new discussion of the actor-observer effect and cross-cultural limitations
- New discussion of reciprocal altruism and the adaptive value of helping others
- New section on the role of culture in social influence
- New discussion on predicting the length of a romantic relationship

Chapter 14: Psychological Disorders

- New section on the concept of insanity
- New Practical Solutions entitled “Preventing Suicide”

Chapter 15: Therapy

- Expanded and updated discussion of biomedical therapy includes new coverage of the medications risperidone and buspirone and an expanded critique of shock therapy (ECT)
- Discussion of the distinction between manifest and latent content of dreams reintroduced in the section on psychoanalysis
- Section on social skills training now integrated into the narrative
- Expanded discussion of common factors in psychotherapy notes the importance of the therapeutic alliance
- New Practical Solutions entitled “Choosing a Therapist”

Chapter 16: Stress and Health

- Simplified problem headings
- New section on gender differences in the stress response—tending-and-befriending instead of fight-or-flight
- New coverage of stress and the September 11th terrorist attacks
- Expanded section on optimism and stress
- New Practical Solutions entitled “Pet Support”

NEW AND REVISED FEATURES

- Learning Goals at the beginning and a Test Yourself review at the end of every section give students regular opportunities to check their understanding.
- Concept Summaries throughout each chapter help students review important themes, approaches, or subject areas.
- Comprehensive chapter summaries let students review important points without having to take extensive notes or wade through lots of text again. The summaries have been revised to reflect the text as closely as possible. Main and secondary heads reappear so students can't miss the parallels between the summary text and the chapter content, and the Learning Goals are also reproduced, as the summary clearly provides information the students have been directed to focus on.
- Annotated Recommended Readings for every chapter offer brief descriptions of relevant books and articles to steer students toward further investigation.
- Text connections to the CD-ROM PsychNow 1.5! are indicated throughout by this icon:
- Relevant Web sites are listed at the end of each chapter.
- InfoTrac College Edition URLs and suggested search terms appear at the end of each chapter.



- <http://psychology.wadsworth.com> Students are encouraged to visit our text-specific Web site, which offers practice quizzes, hypercontents, updates, critical thinking questions, and discussion forums.

TEACHING AND LEARNING SUPPLEMENTS

Psychology: The Adaptive Mind is supported by a state-of-the-art teaching and learning package.

Study Guide (0-534-59950-8)

Prepared by Janet Proctor of Purdue University, who also updated the Language Enhancement Guide, this is a revision of the last edition. All test items have answers with rejoinders.

Thomson Learning WebTutor Advantage™ (Blackboard 0-534-59952-4 WebCt 0-534-59951-6) and WebTutor Advantage Plus™ (Blackboard 0-534-53674-3 and WebCT 0-534-53675-1)

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Instructor's Resource Guide (0-534-59953-2)

By Charles Grah of Austin Peay State University and Gregory Robinson-Reigler of the University of St. Thomas at St. Paul. This update of the last edition contains the following for each chapter in the text:

- Resource Integration Guide
- Detailed chapter outlines
- Demonstrations and activities
- Student critical thinking journal
- Making connections
- Incorporating diversity
- Focus on research
- Questions for study and review
- Practical Solutions
- Answering critical thinking questions
- Film and video suggestions
- PsychNow! 1.5 and Psyk.trek correlations
- Recommended readings
- What's on the Web?
- InfoTrac search terms

Test Bank (0-534-59954-0)

By Shirley-Anne Hensch of the University of Wisconsin Center. This update of the last edition contains approximately 4035 test items. For each chapter of the Test Bank, you will find:

- Approximately 200 multiple-choice items, each with key concept, main text page reference, type of question, and correct answer.

- These multiple-choice items include questions about the content of PsychNow! 1.5 and about the content of the newest version of Psyk.trek.
- 20 multiple-choice items per chapter are marked as online quiz items.
- An additional 10 multiple-choice items are repurposed from the Study Guide.
- There are approximately 20 sentence-completion questions.
- Approximately 15 essay questions are also included.
- Chapter-opening guide with cross-referencing of items.
- All test items can be located easily in the chart at the beginning of each chapter.

ExamView® (0-534-59955-9)

This is the electronic version of the Test Bank.

Transparency Acetates (0-534-59957-5)

Approximately 100 text figures are available in this acetate package.

Multimedia Manager for Introductory Psychology 2003 (0-534-59956-7)

Free to adopters! This one-stop lecture tool makes it easy to use *Microsoft® PowerPoint®* to assemble, edit, publish, and present custom lectures for your introductory psychology course.

Multimedia Manager for Introductory Psychology 2003 is a CD-ROM that lets you bring text-specific lecture outlines, art, video, animations, and Web content together with your own material to create a powerful, personalized, media-enhanced presentation. *Multimedia Manager for Introductory Psychology 2003* includes:

- Book-specific *Microsoft® PowerPoint®* presentations, pre-built with graphics, simulations, and CNN video clips, which you can use as is or modify with your own materials.
- Exciting, relevant *CNN Today* video clips.
- A very simple wizard that guides you in publishing your lectures online.
- A Web link to Wadsworth's online Psychology Resource Center.
- Book-specific lecture outlines.

The Wadsworth Psychology Study Center Web Site

<http://psychology.wadsworth.com>

Wadsworth's Psychology Study Center contains 20 test items per chapter for the online quiz, as well as all the basic Psychology Study Center amenities: practice quizzes, Web link updates, critical thinking questions, discussion forums, teaching tips, and InfoTrac College Edition links.

CNN® Today Videos: Introductory Psychology

Volume 1 (0-534-36634-1); Volume 2 (0-534-50420-5)

Volume 3 (0-534-50749-2); Volume 4 (0-534-50751-4)

Exclusive to Wadsworth. The *CNN Today Videos* are course-specific to help you launch lectures and encourage discussion. Organized by the topics covered in a typical course, these 60-minute videos contain many exciting clips. Qualified adopters will each receive one free video.

PsychNow! 1.5 (0-534-59045-4)

This highly interactive CD-ROM is versatile enough to be used as a supplement in any introductory psychology course. Colorful graphics, animations, and video clips bring abstract concepts to life and help students relate topics to their own lives. In addition, **PsychNow! 1.5** includes interactive exercises that allow students to self-test their progress. Students can do more than just read about a topic: They can watch, listen, and react to the encounters.

Thirty-nine fully interactive modules cover the major topic areas of introductory courses. Each module contains up to three activities, including interactive exercises, experiments, and simulations. Text, photos, video, audio, animations, and graphics present and explain topics in a stimulating manner. Modules include:

- *Explore* sections that introduce students to standard topics, using multimedia activities
- *Lesson* sections that elaborate on topics and provide text, media, and interactive exercises to help students gain a solid understanding
- *Apply* sections that offer hands-on activities
- An Electronic Study Guide

Psyk.trek 2.0 (0-534-37062-4)

Psyk.trek is a student tutorial CD-ROM organized in 62 individual learning modules that reflect the core content of any introductory psychology course. The intuitive landscape and easy navigation of **Psyk.trek** encourages students to explore psychological topics, interact with numerous simulations, and participate in classical and contemporary experiments. The CD-ROM is rich with impressive illustrations, animations, and video clips that help students commit information to memory, and over 150 concept checks with quizzing to help them attain set learning goals.

ACKNOWLEDGMENTS

My publisher deserves enormous credit for organizing the team and for helping me carry out my original plan for this book. I've had the opportunity to work with a number of talented individuals during the past decade. My original editor, Jim Brace-Thompson, was quite influential in shaping the first edition and deserves enormous thanks (and credit). My second editor, Stacey Purviance, took over from JBT with vigor and an astonishing amount of intelligence and savvy. My current editor, Marianne Taflinger, has been a friend and supporter for a long time and is a constant source of fresh ideas. I've also been fortunate to work with two gifted developmental editors, Joanne Tinsley and Penelope Sky—both influenced the book in many ways. Penelope, in particular, helped with the art, the photo scheme, and the chapter summaries for both the second and third editions. Thanks are also due to Greg Robinson-Riegler, who, among other things, helped me craft the fine Concept Summaries that appear in the second and third editions.

On the production side, the captains of the third edition team were Mary Anne Shahidi and Kirk Bomont, who held together the tight production schedule and coordinated the efforts of numerous people. Special thanks also go—again—to Nicole Barone at Thompson Steele, Inc. She is an absolute pleasure to work with—competent, friendly, and always there when I call.

Of course, I could never have written this book without the help and guidance I received from the reviewers listed below. I hope they can see their mark on the book because it's substantial.

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