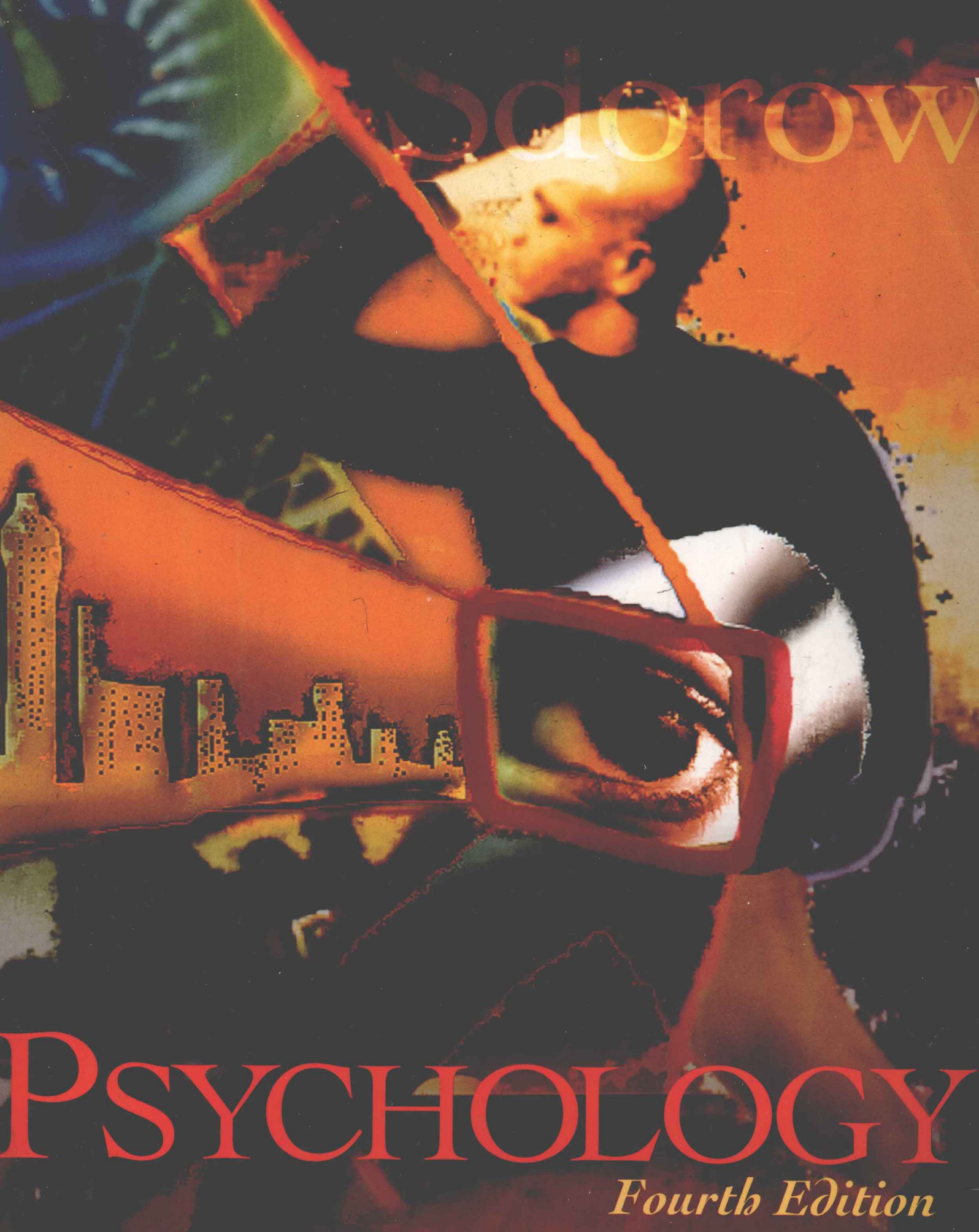

# PSYCHOLOGY

*Fourth Edition*

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*Fourth Edition*

Lester M. Sdorow
*Lafayette College*


Boston, Massachusetts Burr Ridge, Illinois Dubuque, Iowa
Madison, Wisconsin New York, New York, San Francisco, California St. Louis, Missouri

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*In memory of*

*Sal Vicenzino,*

*truly a good man*

# PREFACE

From psychology's inception as a separate discipline, authors of introductory psychology textbooks have been confronted with the need to convey a broad discipline to students in a book of reasonable length. To accomplish all that I originally intended, this book could easily have been twice as long as it is now. A century ago, William James, disturbed at the length of his now-classic *Principles of Psychology,* gave his own stinging review of it. He called it, among other things, "a bloated tumescent mass." Though this comment may have been written during one of James's frequent bouts with depression, it indicates the challenge of synthesizing a vast quantity of information. Given that psychology has become an even broader discipline and has accumulated an enormous information base, I quickly discovered that I would somehow have to manipulate a kind of intellectual "Rubik's cube" of seven goals to avoid producing a bloated, tumescent mass (or what textbook reviewers often, perhaps euphemistically, refer to as an "encyclopedic" book). My goals could only be achieved by considering each goal in light of the others.

## My Seven Goals

### 1. Do Justice to the Breadth of Psychology

My students often express amazement at the breadth of psychology. One psychologist might devote a career to studying the relationship between brain activity and schizophrenia; another might devote a career to studying the social factors that promote human love. And while one member of a psychology department studies the perceptual abilities of newborn infants, another studies the language abilities of chimpanzees. Because of this breadth, I was forced to be selective in the topics, studies, and concepts that I included in the book. Nonetheless, I believe the book presents a fair, representative sampling of the discipline.

### 2. Present Material in Sufficient, but Not Excessive, Detail

Again, compromise was in order. As a teacher and a student, I have disliked textbooks that go to extremes. At one extreme are textbooks that present many topics but only superficial coverage of them. At the other extreme are textbooks that present fewer topics but overwhelm the reader with details. Though my discussions of topics naturally vary somewhat in their extensiveness, I have provided enough information to assure student comprehension, while permitting coverage of a sufficient number of topics to assure a good representation of the entire discipline. The main exceptions to this approach are topics covered in greater depth in the "Thinking About Psychology" sections (discussed below) that end each chapter.

### 3. Encourage Appreciation of the Research Process

A psychology textbook should provide students with more than theories and research findings. It should discuss "how we know" as well as "what we know." To give students enough background to appreciate the research process, I introduce, in Chapter 2, psychology as a science, the methods of psychological research, and the statistical analysis of

research data. The chapter includes a concrete example of the scientific method that shows how it relates to a classic study of interpersonal attraction. The chapter also includes data from a hypothetical health-psychology study on the effect of melatonin on sleep and tells how to calculate descriptive statistics using that data.

In trying to help the student appreciate the research process, I have once again tried to strike a balance throughout the book by discussing research studies in moderate detail. For examples of this, turn to Chapter 9 for the discussion of a study on naturalistic concepts in which nonartists formed concepts of artistic styles from paintings without being able to state the defining features that distinguish one style from another; or turn to Chapter 16 and read the discussion of a study of the use of classical conditioning to suppress the immune system.

## 4. Promote Critical Thinking

I believe that students should know scientific methodology, research findings, and how to critically evaluate what they read by relying on objective, rational evaluation of empirical evidence. Chapter 2 describes formal steps in thinking critically. Students will find that the ability to think critically benefits them in their daily lives when confronted with claims made by friends, relatives, politicians, advertisers, or anyone else. Almost every page of this book gives the student an opportunity to think about popular claims, provide alternative explanations for research findings, or think of possible implications of research findings. For an example of how I have integrated critical thinking in the textbook, turn to the discussion in Chapter 6 of hypnosis as an altered state of consciousness. Most of the "Thinking About Psychology" sections also provide extended examples of critical thinking.

## 5. Present Psychology in Context

An article in the *American Psychologist*, dealing with psychology and the liberal arts curriculum, stressed that providing students with the historical context of psychology is an essential goal in undergraduate psychology education. Introductory psychology textbooks should not present psychology as though it developed in "ivory towers" divorced from a historical or personal context. Throughout this book, you will find many ways in which topics are given a historical grounding. For example, Chapter 10 traces the nature/nurture debate regarding intelligence back to the work of Francis Galton and the flood of immigrants in the early twentieth century. And Chapter 11 highlights changing values concerning sexuality by discussing the case of an article submitted to the *Journal of the American Medical Association* in 1899 that was not published until 1983.

I have also taken care to show that psychology is a human endeavor, practiced by people with emotions as well as intellect, and that scientific progress depends on serendipity as well as cool calculation. For example, Chapter 1 discusses William James's effort to have Harvard University grant the doctoral degree to Mary Whiton Calkins, who became an eminent psychologist, but who, as a woman, was denied the degree despite fulfilling the requirements for it. Chapter 3 tells how the first demonstration of the chemical basis of communication between nerve cells came to Otto Loewi in a dream. Chapter 13 describes how psychoanalyst Alfred Adler's concept of the inferiority complex may be rooted in his own sickly childhood.

## 6. Present a Balanced and Scholarly View of Psychology

This is not only a psychoanalytic book, a behavioristic book, a cognitive book, a humanistic book, or a biopsychological book. It is a bit of each, which reflects my belief that an introductory psychology textbook should introduce students to a variety of perspectives, rather than reflect the author's favored one. Over the decades, the perspectives have waxed and waned in their dominance. Students are introduced to the major psychological perspectives in Chapter 1 and continue to encounter them throughout the book, most obviously in the chapters on personality, psychological disorders, and therapy.

For students to respect psychology as a science, the textbook they use must be scholarly. Though popular examples are sprinkled throughout this text, they are not used as substitutes for evidence provided by scientific research. A perusal of the reference list at the end of the text reveals that it is up-to-date in its coverage of research studies, yet does not slight classic studies.

### 7. Show the Relevance of Psychology to Everyday Life

I enjoy books that give me a sense of the author by providing "coloration" for the typically sober material that is presented. The examples I use in showing the relevance of psychology to everyday life provides this coloration. The examples come from virtually every area of life, including art, literature, history, biography, entertainment, sport, politics, and student life. Instead of showing the relevance of psychology segregating it in "boxes," I have interwoven the examples into the narrative. For example, Chapter 6 provides research-based suggestions for overcoming insomnia, Chapter 7 discusses how operant conditioning is used to train animals, and Chapter 8 describes ways to improve one's memory and study habits.

## Special Features

### Anatomy of a Research Study

The "Anatomy of a Research Study" sections provide unique examinations of research methodology. Beginning with Chapter 2, each chapter features brief expositions of both a classic and a contemporary psychological research study. These sections briefly highlight the rationale, methods, and results of featured studies in an accessible manner for beginning students. These studies are tied directly to the text discussion and emphasize both methodology and critical thinking. Key questions about research findings reinforce the focus on essential and ongoing issues of psychology that appear throughout the book and are highlighted in the "Thinking About Psychology" sections that end each chapter.

### Thinking About Psychology

In a senior seminar course I have taught over the years, entitled "Current Issues in Psychology," students read many journal articles and some popular articles on a host of controversial topics, which they then discuss or debate. Because of the success of this course—students enjoy sinking their teeth into controversial issues—I have adapted its rationale for this textbook in many of the topics covered in the "Thinking About Psychology" sections. To provide adequate discussion of each topic, I devote several pages to presenting the status of a particular issue or application.

Many of the topics in these sections illustrate how psychologists think critically about issues such as hemispheric specialization, parapsychology, unconscious influences, ape language, personality consistency, effectiveness of psychotherapy, and Type A behavior. Other "Thinking About Psychology" sections illustrate the connection of research to practical reality, as in the sections discussing biofeedback and motivation and sport. Some of the sections illustrate how scientific issues cannot always be divorced from ethics, values, and politics, including the sections on the ethics of psychological research, the nature-nurture controversy in regard to intelligence, the study of gender differences, the insanity defense, and the effect of pornography on aggression.

### For More Information

I believe that the "For More Information on . . . " lists of readings at the end of each chapter are a unique feature of the book. The lists are extensive and are arranged according to the major headings of the chapters. Each list ends with biographical or autobiographical

readings about contributors to psychology. The readings provide substantial material for students who are interested in learning more about particular topics or people, or who would like a starting point for writing research papers.

### Appendix A: Majoring in Psychology

The appendix "Majoring in Psychology" will prove useful for psychology majors interested in preparing for a career. It might also help other students decide whether or not to major in psychology.

### Appendix B: Statistics

The appendix "Statistics" provides an extended discussion and examples of the use of statistics in describing and making inferences from research data.

### Appendix C: Industrial/Organizational Psychology

Appendix C surveys industrial/organizational psychology, an important topic for many students who are considering making psychology their career. It was written by Paul Levy, an industrial/organizational psychologist at the University of Akron..

### Other Features

Chapter Outline. The outline provides a framework for the content of each chapter.

Margin Glossary. Terms that are printed in boldface are defined in the margins, and these definitions are collected in a page-referenced glossary at the end of the book.

Illustrations. I selected or helped design all of the illustrations in this book. My goal was for each to serve a sound pedagogical purpose. Illustrations were chosen because their visual presentations complemented the material discussed.

Chapter Summary. Each chapter ends with a summary that captures the essential points made in the major sections of the chapter.

Key Concepts. Following the summary is a page-referenced alphabetical list of important concepts which are boldfaced in the text.

Key Contributors. At the end of each chapter is a list of key people who were discussed in the chapter.

## Changes in the Fourth Edition

After synthesizing comments from users and reviewers, I found that they considered the third edition scholarly and challenging, yet interesting and clearly written. They particularly appreciated its attention to the historical context of psychology. As many pundits have noted, "If it ain't broke, don't fix it." Nonetheless, I have made some important changes in the fourth edition.

First, the amount of detail covered in the text has been trimmed. Where three or four examples might have been used previously, they have been trimmed to one or two. Prioritizing and condensing examples helps focus a student's attention on what is truly important.

At the end of major topic headings, brief lists of questions called "Staying on Track" have been added to focus student attention where it needs to be directed. These questions help students pinpoint the most essential information from major subject headings and provide a means of seeing if they have absorbed the material they will most need to understand from the chapter. The answers for all of the "Staying on Track" questions have been provided at the end of the book.

The most visible change might be the addition of the appendix devoted to industrial/organizational psychology. Because many instructors cover this important topic in their classes, I wanted to include material on it for this edition. However, because many other instructors do not cover it, and the time limitations within the semester are already severe, I placed it at the end of the book, where those who wish to take advantage of it can do so.

## Request for Comments

Realizing that the ideal textbook might be approached but never achieved, I welcome your comments about the book and suggestions for improving it. Just as user comments improved the previous editions, more comments will improve the next edition. Please send your correspondence to the following address:

Les Sdorow
c/o Psychology Editor
McGraw-Hill College Division
699 Boylston Street
Boston, MA 02116

## Supplements

We've combined a student-oriented textbook with an integrated ancillary package designed to meet the unique needs of instructors and students. Our goal has been to create a teaching package that is as enjoyable to teach with as it is to study from.

The **Instructor's Course Planner** was prepared by Steven A. Schneider of Pima Community College. This flexible instructor's manual and planner provides many useful tools to enhance your teaching. For each chapter, an extended chapter outline, suggestions for teaching, lecture/discussion suggestions, video and film suggestions, and classroom activities are provided.

Two **Test Item Files** will provide ample questions for your tests for as long as you use this book. Test Item File #1 is newly prepared by Grace Galliano of Kennesaw State University. I prepared the Test Item File #2. Both Test Item Files have 100 items per chapter. Each item is classified as Factual, Conceptual, or Applied and referenced to the learning objectives in the Course Success Guide and the textbook page number. The questions in the test item files are also available on **MicroTest III,** a powerful but easy-to-use test-generating program by Chariot Software Group. MicroTest is available for your use in DOS (3.5-inch disks), Windows, and MacIntosh versions. With MicroTest, instructors can easily select questions from the Test Item File and print tests and answer keys. Instructors can also customize questions, headings, and instructions; add or import their own questions; and print tests in a choice of printer-supported fonts.

The **Course Success Guide** is available in printed and electronic versions. For each chapter of the textbook this study guide provides students with learning objectives, a detailed outline of the chapter, a review of terms and concepts, and multiple choice practice tests.

**Sixty book-specific transparencies,** which match key illustations in the textbook, are available for your classroom presentation.

**The Introductory Psychology Transparency Set** features over 100 additional transparencies illustrating key concepts in general psychology and accompanying handbook with specific suggestions for classroom use by Susan J. Shapiro of Indiana University East.

***The Critical Thinker,*** second edition, by Richard Mayer and Fiona Goodchild, both of the University of California–Santa Barbara, explicitly teaches strategies for understanding and evaluating material in any introductory psychology textbook.

***The AIDS Booklet,*** third edition, by Frank D. Cox of Santa Barbara City College, is a brief but comprehensive introduction to Acquired Immune Deficiency Syndrome, HIV, and related viruses.

**The Encyclopedic Dictionary of Psychology** provides easy reference access to the key figures, concepts, movements, and practices of the field of psychology.

**Psychology: The Active Learner CD-ROM** by Jane Halonen, Marilyn Reedy, and Paul Smith is an innovative interactive product that will help students learn key concepts taught in introductory psychology in a fun and dynamic way. Focusing on concepts that tend to be most difficult for the beginning psychology student, this program contains 15 modules containing tutorial review and critical thinking exercises for biological foundations, sensation and perception, states of consciousness, learning, memory, development, social psychology and more.

The CD-ROM **Explorations in Health and Psychology** by George B. Johnson of Washington University in St. Louis will help students actively investigate processes vital to their understanding of psychology as they should be explored—with movement, color, sound, and interaction. This set of 10 interactive animations on CD-ROM allows students to set and reset variables in each (including modules on Life Span and Lifestyle, Drug Addiction, Nerve Conduction, IDS, Immune Response, and more) and then evaluate those results. In addition to the colorful and precisely labeled graphics and animated illustrations, the CD-ROM also offers narration in English and Spanish, a glossary with written and oral pronunciations, and lists of additional recommended readings.

A large selection of **videotapes** is also available to adopters based on the number of textbooks ordered.

**The Brain Modules on Videodisc,** created by WNET in New York, Antenne 2 TV/France, the Annenberg/CPB Foundation, and Professor Frank J. Vattano of Colorado State University, is based on the Peabody Award–winning series *The Brain*. Thirty segments, averaging 6 minutes each, illustrate an array of topics in psychology.

The **Reference Disk Set** is available free to adopters. The disks include over 15,000 book references arranged in files by topic. The complete set of five disks is available on IBM (3.5") or MacIntosh disks.

**Psych Online** is a reference guide that points students and instructors to electronic resources in introductory psychology. Prepared by Dr. Patricia Wallace, Director of Information Technologies and psychologist at the University of Maryland, Psych Online offers useful general help in using the internet. It includes a list of sites for each area of the discipline.

***Annual Editions*** provides convenient, inexpensive access to a wide range of current, carefully selected articles from magazines, newspapers, and journals. Written by psychologists, researchers, and educators, *Annual Editions: Psychology* provides useful perspectives on important and timely topics. *Annual Editions* is updated yearly, and includes a number of features designed to make it particularly useful including a topic guide, annotated table of contents, and unit overviews. For the professor using *Annual Editions* in the classroom, an Instructor's Resource Guide with test questions is available.

**Taking Sides: Clashing Views on Psychological Issues** is a debate-style reader designed to introduce students to controversies in psychology. By requiring students to analyze opposing viewpoints and reach considered judgments, *Taking Sides* actively develops students' critical thinking skills.

***Sources: Notable Selections in Psychology*** brings together 46 selections including classic articles, book excerpts, and research studies that have shaped the study of psychology. If you want your students to gain greater background knowledge in reading and interpreting first hand from source material, *Sources* collects a diverse array of accessible but significant readings in one place.

## ACKNOWLEDGMENTS

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Any of the good qualities of the textbook owe themselves in great measure to the many reviewers who read drafts of this text in part or in whole. I have valued, seriously considered, and even savored, each of their suggestions.

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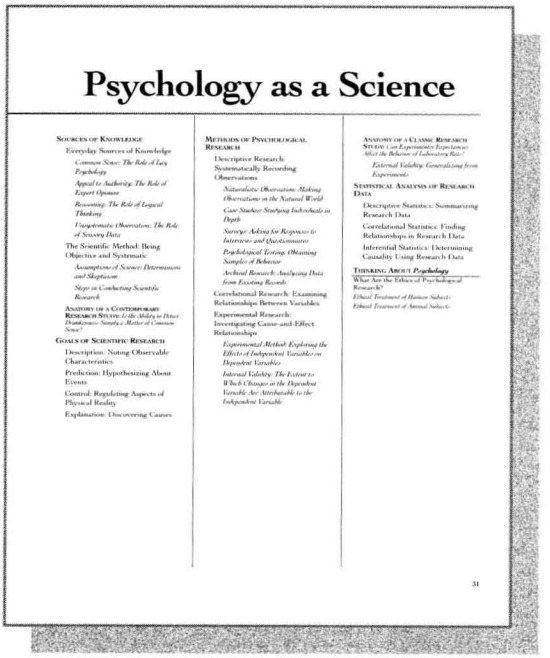
# TO THE STUDENT

While writing this introductory psychology textbook, I kept the needs of the student reader in mind. In addition to writing a textbook that has been well-received for being interesting and clearly written, I have included several special features to help you in studying its content, to represent psychology as a science, and to show the relevance of psychology to the "real world." The combination of the special features, the engaging writing style, and concrete and relevant examples of numerous concepts makes the textbook a powerful learning tool for students who are new to psychology.

—Les Sdorow

## *Chapter Outline*

A detailed outline of the topics covered introduces each chapter. By reading the outline before you start the chapter you can quickly glean the major sections that are covered as well as the subsections, which are indented beneath the capitalized headings. The organization of these sections was crafted to present new material in a logical, student-friendly fashion.



Psychology as a Science

Sources of Knowledge
- Everyday Sources of Knowledge
  - *Common Sense: The Role of Lazy Psychology*
  - *Appeal to Authority: The Role of Expert Opinion*
  - *Reasoning: The Role of Logical Thinking*
  - *Unsystematic Observation: The Role of Sensory Data*
- The Scientific Method: Being Objective and Systematic
  - *Assumptions of Science: Determinism and Skepticism*
  - *Steps in Conducting Scientific Research*

Anatomy of a Contemporary Research Study: *Is the Ability to Detect Drunkenness Simply a Matter of Common Sense?*

Goals of Scientific Research
- Description: Noting Observable Characteristics
- Prediction: Hypothesizing About Events
- Control: Regulating Aspects of Physical Reality
- Explanation: Discovering Causes

Methods of Psychological Research
- Descriptive Research: Systematically Recording Observations
  - *Naturalistic Observation: Making Observations in the Natural World*
  - *Case Studies: Studying Individuals in Depth*
  - *Surveys: Asking for Responses to Interviews and Questionnaires*
  - *Psychological Testing: Obtaining Samples of Behavior*
  - *Archival Research: Analyzing Data from Existing Records*
- Correlational Research: Examining Relationships Between Variables
- Experimental Research: Investigating Cause-and-Effect Relationships
  - *Experimental Method: Exploring the Effects of Independent Variables on Dependent Variables*
  - *Internal Validity: The Extent to Which Changes in the Dependent Variable Are Attributable to the Independent Variable*

Anatomy of a Classic Research Study: *Can Experimenters Expectancies Affect the Behavior of Laboratory Rats?*
- *External Validity: Generalizing from Experiments*

Statistical Analysis of Research Data
- Descriptive Statistics: Summarizing Research Data
- Correlational Statistics: Finding Relationships in Research Data
- Inferential Statistics: Determining Causality Using Research Data

Thinking About *Psychology*
- What Are the Ethics of Psychological Research?
- *Ethical Treatment of Human Subjects*
- *Ethical Treatment of Animal Subjects*

► The Ethical Treatment of Animal Subjects

Animal rights activists have picketed meetings of the American Psychological Association to oppose research that uses animals as subjects. Psychologists have responded by pointing out the benefits of animal research and the strict ethical standards that they follow in conducting their research with animals.



potential confounding variables that might affect the behavior of an animal. You would be less likely to worry about subject bias effects, for instance, when studying pigeons. Third, developmental changes across the life span can be studied more efficiently in animals. If you were interested in the effects of the complexity of the early childhood environment on memory in old age, you might take 25 years to complete an experiment using human subjects, but only 3 years to complete one using rats.

Fourth, research on animals can generate hypotheses that are then tested using human subjects. B. F. Skinner's research on learning in rats and pigeons stimulated research on learning in human beings. Fifth, research on animals can benefit animals themselves. For example, as described in Chapter 7, psychologists have developed techniques to make coyotes feel nauseated by the taste of sheep; perhaps these can someday be used to protect sheep from coyotes, and coyotes from angry sheep ranchers. Sixth, because of an assumption that animals do not have the same moral rights as human beings (Baldwin, 1993), certain procedures that are not ethically permissible with human subjects are ethically permissible under current standards with animal subjects. Thus, if you wanted to conduct an experiment in which you studied the effects of surgically removing a particular brain structure, you would be limited to the use of animals.

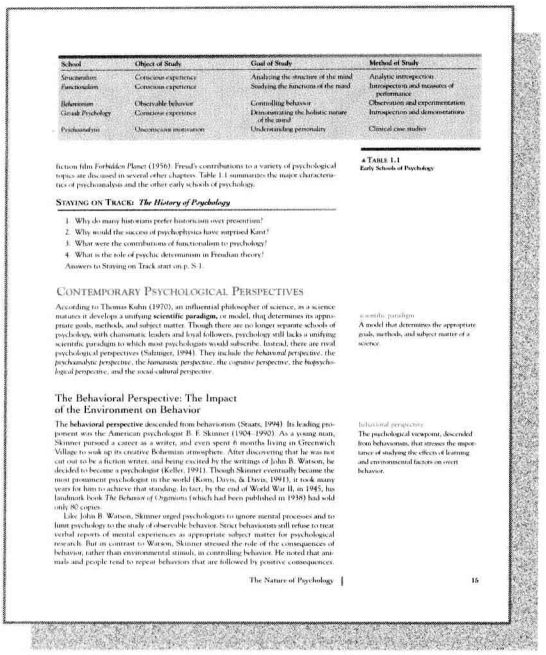
But these reasons have not convinced animal rights advocates of the merits of psychological research on animals. Animal rights advocates argue that the benefits of laboratory research that subjects animals to painful procedures do not outweigh the suffering they induce (Bowd, 1990). During the past decade some animal rights advocates have even vandalized animal research laboratories and stolen animals from their laboratory cages. The vast majority of advocates, however, have been content to lobby for stronger laws limiting animal research or to picket meetings of animal researchers. Prior to the meeting at which he was lionized, Neal Miller (1985) had pointed out that for every dog and cat used in laboratory research, 10,000 are abandoned by their owners, and that, in contrast, few psychology experiments inflict pain or distress on animals. He urged animal rights advocates to spend more time helping the millions of abandoned pets that are killed in pounds, starve to death, or die after being struck by motor vehicles.

Miller (1985) has also cited ways in which animal research contributes to human welfare. Findings from animal research have contributed to progress in the treatment of pain; the development of behavior therapy for phobias; the rehabilitation of victims of neuromuscular disorders, such as Parkinson's disease; the understanding of neurological disorders associated with aging, such as Alzheimer's disease; and the development of drugs for



## *Illustrations*

Special care has been taken to ensure that the illustrations and photographs in this book enhance your understanding of the ideas described. There are several clear figures and graphs as well as excellent physiological drawings. I sought photographs that were relevant and related current events to the concepts in the book. Since many topics within the broad spectrum of psychology are controversial, I have reinforced certain issues visually.



| School | Object of Study | Goal of Study | Method of Study |
|---|---|---|---|
| Structuralism | Conscious experience | Analyzing the structure of the mind | Analytic introspection |
| Functionalism | Conscious experience | Studying the functions of the mind | Introspection and measures of performance |
| Behaviorism | Observable behavior | Controlling behavior | Observation and experimentation |
| Gestalt Psychology | Conscious experience | Demonstrating the holistic nature of the mind | Introspection and demonstrations |
| Psychoanalysis | Unconscious motivation | Understanding personality | Clinical case studies |

fiction film *Forbidden Planet* (1956). Freud's contributions to a variety of psychological topics are discussed in several other chapters. Table 1.1 summarizes the major characteristics of psychoanalysis and the other early schools of psychology.

**A TABLE 1.1**
**Early Schools of Psychology**

**STAYING ON TRACK: *The History of Psychology***

1. Why do many historians prefer historicism over presentism?
2. Why would the success of psychophysics have surprised Kant?
3. What were the contributions of functionalism to psychology?
4. What is the role of psychic determinism in Freudian theory?

Answers to Staying on Track start on p. S-1.

## CONTEMPORARY PSYCHOLOGICAL PERSPECTIVES

According to Thomas Kuhn (1970), an influential philosopher of science, as a science matures it develops a unifying **scientific paradigm,** or model, that determines its appropriate goals, methods, and subject matter. Though there are no longer separate schools of psychology, with charismatic leaders and loyal followers, psychology still lacks a unifying scientific paradigm to which most psychologists would subscribe. Instead, there are rival psychological perspectives (Stalnaker, 1994). They include the *behavioral perspective,* the *psychoanalytic perspective,* the *humanistic perspective,* the *cognitive perspective,* the *biopsychological perspective,* and the *social-cultural perspective.*

scientific paradigm
A model that determines the appropriate goals, methods, and subject matter of a science.

### The Behavioral Perspective: The Impact of the Environment on Behavior

The **behavioral perspective** descended from behaviorism (Staats, 1994). Its leading proponent was the American psychologist B. F. Skinner (1904–1990). As a young man, Skinner pursued a career as a writer, and even spent 6 months living in Greenwich Village to soak up its creative Bohemian atmosphere. After discovering that he was not cut out to be a fiction writer, and being excited by the writings of John B. Watson, he decided to become a psychologist (Keller, 1991). Though Skinner eventually became the most prominent psychologist in the world (Korn, Davis, & Davis, 1991), it took many years for him to achieve that standing. In fact, by the end of World War II, in 1945, his landmark book *The Behavior of Organisms* (which had been published in 1938) had sold only 80 copies.

Like John B. Watson, Skinner urged psychologists to ignore mental processes and to limit psychology to the study of observable behavior. Strict behaviorists still refuse to treat verbal reports of mental experiences as appropriate subject matter for psychological research. But in contrast to Watson, Skinner stressed the role of the consequences of behavior, rather than environmental stimuli, in controlling behavior. He noted that animals and people tend to repeat behaviors that are followed by positive consequences.

behavioral perspective
The psychological viewpoint, descended from behaviorism, that stresses the importance of studying the effects of learning and environmental factors on overt behavior.

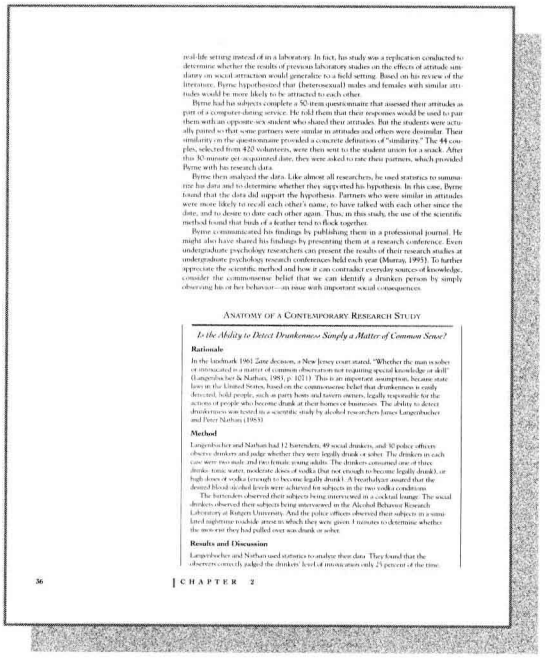


## *Staying on Track*

After each of the major sections per chapter you will find 3 or 4 questions to aid you in reviewing the material you've covered so far. It's a good idea to try to answer these for yourself as you go, to test your own retention of what you've learned and to see what you will need to read again and reinforce. The questions are general and designed to help you understand "the big picture."

## *Margin Glossary*

Key terms with their definitions appear in the margin of the same page on which each term is introduced. This running glossary provides an unobtrusive way to accumulate and learn a psychological vocabulary. These terms are also in the glossary at the end of the book.



real-life setting instead of in a laboratory. In fact, his study was a replication conducted to determine whether the results of previous laboratory studies on the effects of attitude similarity on social attraction would generalize to a field setting. Based on his review of the literature, Byrne hypothesized that (heterosexual) males and females with similar attitudes would be more likely to be attracted to each other.

Byrne had his subjects complete a 50-item questionnaire that assessed their attitudes as part of a computer-dating service. He told them that their responses would be used to pair them with an opposite sex student who shared their attitudes. But the students were actually paired so that some partners were similar in attitudes and others were dissimilar. Their similarity on the questionnaire provided a concrete definition of "similarity." The 44 couples, selected from 420 volunteers, were then sent to the student union for a snack. After this 30-minute get-acquainted date, they were asked to rate their partners, which provided Byrne with his research data.

Byrne then analyzed the data. Like almost all researchers, he used statistics to summarize his data and to determine whether they supported his hypothesis. In this case, Byrne found that the data did support the hypothesis. Partners who were similar in attitudes were more likely to recall each other's name, to have talked with each other since the date, and to desire to date each other again. Thus, in this study, the use of the scientific method found that birds of a feather tend to flock together.

Byrne communicated his findings by publishing them in a professional journal. He might also have shared his findings by presenting them at a research conference. Even undergraduate psychology researchers can present the results of their research studies at undergraduate psychology research conferences held each year (Murray, 1995). To further appreciate the scientific method and how it can contradict everyday sources of knowledge, consider the commonsense belief that we can identify a drunken person by simply observing his or her behavior—an issue with important social consequences.

ANATOMY OF A CONTEMPORARY RESEARCH STUDY

*Is the Ability to Detect Drunkenness Simply a Matter of Common Sense?*

**Rationale**

In the landmark 1961 *Zate* decision, a New Jersey court stated, "Whether the man is sober or intoxicated is a matter of common observation not requiring special knowledge or skill" (Langenbucher & Nathan, 1983, p. 1071). This is an important assumption, because state laws in the United States, based on the commonsense belief that drunkenness is easily detected, hold people, such as party hosts and tavern owners, legally responsible for the actions of people who become drunk at their homes or businesses. The ability to detect drunkenness was tested in a scientific study by alcohol researchers James Langenbucher and Peter Nathan (1983).

**Method**

Langenbucher and Nathan had 12 bartenders, 49 social drinkers, and 30 police officers observe drinkers and judge whether they were legally drunk or sober. The drinkers in each case were two male and two female young adults. The drinkers consumed one of three drinks: tonic water, moderate doses of vodka (but not enough to become legally drunk), or high doses of vodka (enough to become legally drunk). A breathalyzer assured that the desired blood-alcohol levels were achieved for subjects in the two vodka conditions.

The bartenders observed their subjects being interviewed in a cocktail lounge. The social drinkers observed their subjects being interviewed in the Alcohol Behavior Research Laboratory at Rutgers University. And the police officers observed their subjects in a simulated nighttime roadside arrest in which they were given 4 minutes to determine whether the motorist they had pulled over was drunk or sober.

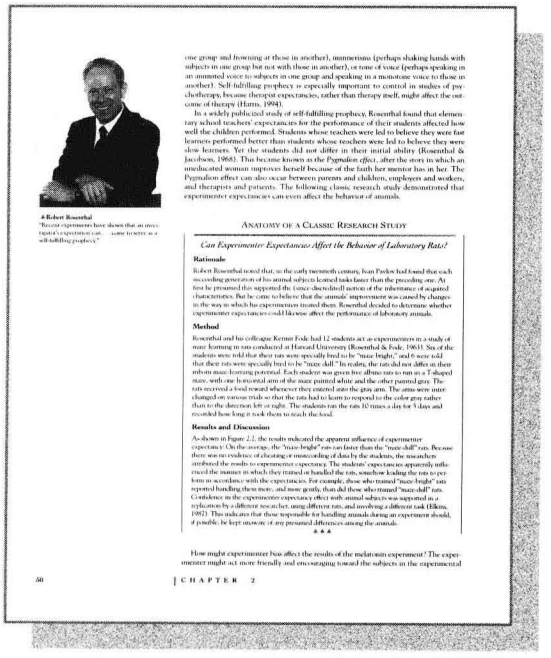
**Results and Discussion**

Langenbucher and Nathan used statistics to analyze their data. They found that the observers correctly judged the drinkers' level of intoxication only 25 percent of the time.



## *Anatomy of a Contemporary Research Study*

Many chapters use this feature to convey how the scientific method can be applied to formulate questions and draw conclusions on current issues that touch most people's lives. Sometimes the findings are surprising and demonstrate the limitations of assumptions that are based on "common sense."





**A Robert Rosenthal**
"Because experimenters have shown that an investigator's expectation can . . . come to serve as a self-fulfilling prophecy."

one group and frowning at those in another), numerisms (perhaps shaking hands with subjects in one group but not with those in another), or tone of voice (perhaps speaking in an animated voice to subjects in one group and speaking in a monotone voice to those in another). Self-fulfilling prophecy is especially important to control in studies of psychotherapy, because therapist expectancies, rather than therapy itself, might affect the outcome of therapy (Harris, 1994).

In a widely publicized study of self-fulfilling prophecy, Rosenthal found that elementary school teachers' expectancies for the performance of their students affected how well the children performed. Students whose teachers were led to believe they were fast learners performed better than students whose teachers were led to believe they were slow learners. Yet the students did not differ in their initial ability (Rosenthal & Jacobson, 1968). This became known as the *Pygmalion effect,* after the story in which an uneducated woman improves herself because of the faith her mentor has in her. The Pygmalion effect can also occur between parents and children, employers and workers, and therapists and patients. The following classic research study demonstrated that experimenter expectancies can even affect the behavior of animals.

ANATOMY OF A CLASSIC RESEARCH STUDY

*Can Experimenter Expectancies Affect the Behavior of Laboratory Rats?*

**Rationale**

Robert Rosenthal noted that, in the early twentieth century, Ivan Pavlov had found that each succeeding generation of his animal subjects learned tasks faster than the preceding one. At first he presumed this supported the (since-discredited) notion of the inheritance of acquired characteristics. But he came to believe that the animals' improvement was caused by changes in the way in which his experimenters treated them. Rosenthal decided to determine whether experimenter expectancies could likewise affect the performance of laboratory animals.

**Method**

Rosenthal and his colleague Kermit Fode had 12 students act as experimenters in a study of maze learning in rats conducted at Harvard University (Rosenthal & Fode, 1963). Six of the students were told that their rats were specially bred to be "maze bright," and 6 were told that their rats were specially bred to be "maze dull." In reality, the rats did not differ in their inborn maze-learning potential. Each student was given five albino rats to run in a T-shaped maze, with one horizontal arm of the maze painted white and the other painted gray. The rats received a food reward whenever they entered into the gray arm. The arms were interchanged on various trials so that the rats had to learn to respond to the color gray rather than to the direction left or right. The students ran the rats 10 times a day for 5 days and recorded how long it took them to reach the food.

**Results and Discussion**

As shown in Figure 2.1, the results indicated the apparent influence of experimenter expectancy. On the average, the "maze-bright" rats ran faster than the "maze-dull" rats. Because there was no evidence of cheating or miscording of data by the students, the researchers attributed the results to experimenter expectancy. The students' expectancies apparently influenced the manner in which they trained or handled the rats, somehow leading the rats to perform in accordance with the expectancies. For example, those who trained "maze-bright" rats reported handling them more, and more gently, than did those who trained "maze-dull" rats. Confidence in the experimenter expectancy effect with animal subjects was supported in a replication by a different researcher, using different rats, and involving a different task (Elkins, 1992). This indicates that those responsible for handling animals during an experiment should, if possible, be kept unaware of any presumed differences among the animals.

* * *

How might experimenter bias affect the results of the melatonin experiment? The experimenter might act more friendly and encouraging toward the subjects in the experimental



## *Anatomy of a Classic Research Study*

Many key terms and approved approaches to experiments are results of findings from classic research studies. I have included brief synopses of classic studies that are particularly relevant to the ideas, terms, and topics in various chapters. Reading these studies will enhance your conceptual and factual understanding of issues in psychology.

# BRIEF CONTENTS

# CONTENTS