

SEVENTH EDITION

PSYCHOLOGY

STEPHEN F. DAVIS

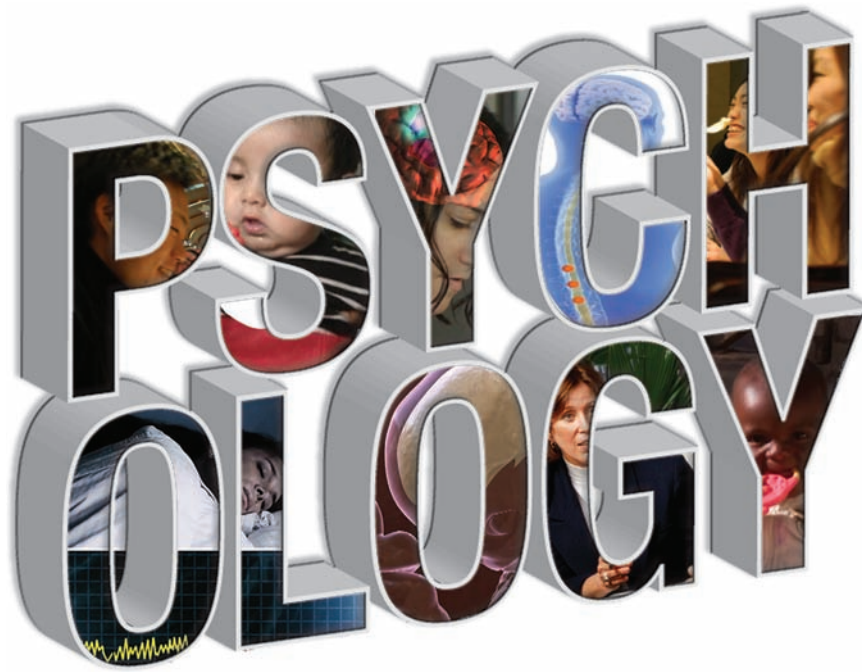
JOSEPH J. PALADINO

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PSYCHOLOGY

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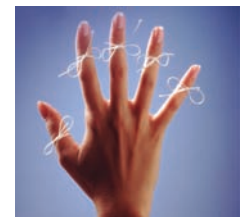
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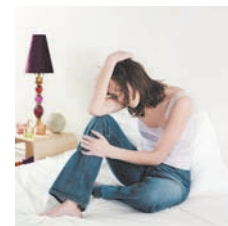
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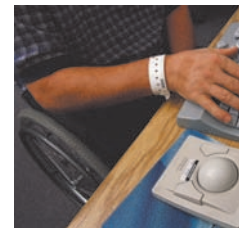
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PREFACE

TO THE INSTRUCTOR

We began the first edition of this text with the premise that introductory psychology may be the only psychology course your students ever take. With that in mind, we set out to write a text that would make the beginning psychology course an engaging, relevant, and interactive experience. We have maintained this philosophy in all six editions of this text.

Among the three of us, we have taught introductory psychology for many years. Our experience has taught us that students would rather be “talked with” than “talked to.” We hope that as students read the seventh edition of this book they will have the feeling they are engaging in a conversation with us. We have also attempted to convey the excitement and love of psychology that we hope characterize our own classes.

OUR OBJECTIVES IN THE SEVENTH EDITION

Our objectives for this edition were to make the book as accessible as possible to students, to encourage active learning through the design and features of our text, and to help students apply what they learn in this class to their own lives.

ACCESSIBILITY As in the first six editions of this text, our first objective is to make our book intellectually and financially accessible to students. We’ve worked hard to develop a conversational and interactive style of writing that will appeal directly to students. Rather than trying to impress colleagues with our command of the material, our primary interest is always making sure that the student comes away with a clear understanding of key principles. We’re also very conscious of the fact that the cost of college tuition and textbooks can put a strain on students’ (and parents’!) finances. That’s why this book is offered in a variety of formats at different price points, including eText, Books à la Carte, and hardback editions. We, along with Pearson, are committed to providing students a quality educational package at the lowest possible price.

ACTIVE LEARNING We believe that students learn better when they are actively engaged in the process, so we’ve built several features into each chapter that are designed to facilitate active learning. Each major section begins with a brief **vignette** that includes questions to spark interest and anticipation for the content to come. Several times within each chapter, **Psychological Detective** features ask students to consider a question about the topic under discussion. The question may deal with issues such as research ethics, how to conduct research, or the importance of a particular research finding. The student is asked to supply an answer to the question before reading further. **Hands On** questionnaires and exercises bring students into direct contact with the material presented

in the chapter. Each chapter also includes **Review Summaries** and **Check Your Progress** quizzes after each major section. These allow students to test their mastery of the material they have just read and to prepare for exams. In addition, **Watch/Listen/Explore/Simulate/Study & Review** icons integrated in the text lead to MyPsychLab for Web-based expansions on topics, allowing instructors and students access to videos, podcasts, simulations, and quizzes. Finally, we provide **Study Tips** in the margins of each chapter that offer specific suggestions for studying key concepts in the text.

APPLIED KNOWLEDGE Psychology is a dynamic discipline that is constantly seeking new ways to apply knowledge gained from research. Within each chapter, we stress the wide range of practical applications of psychological research. Based on a thorough coverage of research methods and in the interest of making students better consumers of psychological information (see Chapter 1), we present these applied findings throughout to demonstrate the relevance of research to everyday life. Examples deal with the effects of alcohol on the brain (Chapter 2), sleep problems (Chapter 4), research on treating individuals with autism (Chapter 6), efforts to determine if people are telling the truth (Chapter 7), improving your memory (Chapter 4), and using personality tests in employment situations (Chapter 16).

WHAT’S NEW IN THE SEVENTH EDITION?

As in prior editions, we believe that the most effective approach is to continue to provide an interactive framework, numerous illustrations, and pedagogical aids designed to help students study and review material as they progress through each chapter. The 16 chapters of this text follow the sequence that has become standard in introductory psychology textbooks, beginning with the nature of psychology and its biological foundations and ending with maladaptive behaviors, therapy, health psychology, social psychology, and industrial/organizational psychology.

NEW MATERIAL IN EACH CHAPTER In preparing the seventh edition, we streamlined narrative to focus on core concepts, updated examples throughout textbook, updated statistics, and changed chapter organization, moving **MEMORY** up to Chapter 4 to provide information useful to students in terms of studying earlier in the textbook. However, note that the chapters are independent and can easily be used out of order for the course. Specific changes to the sixth edition include:

Chapter 1—Psychology, Research, and You

- New examples of naturalistic observation (called the “butt brush”) from marketing research

- Revised examples of scatterplots to improve pedagogical value
- A new Hands On exercise assists students in developing their understanding of the concept of correlation
- Updated examples of survey research, including a very large-scale survey on traffic safety
- Revised and simplified the section on ethics of research
- Separated discussion of Wundt (which was updated) from discussion of structuralism, consistent with view of the history of psychology that Wundt was not the founder of structuralism
- Updated and extended information on earned degrees in psychology, from college to Ph.D.
- Extended coverage of Kenneth Clark and his contributions to psychology and education
- Updated figure on the specialties in psychology
- Revised and updated coverage of school psychology
- Provided information on a helpful resource on careers in psychology (O*NET) and added two cases of the careers of psychologists called Pathways to Psychology

Chapter 2—Behavioral Neuroscience

- Reorganized and streamlined coverage of evolutionary psychology to improve comprehension
- Improved several figures for greater clarity and added a number of new and improved figures of neurons and parts of the brain
- Added new coverage related to low levels of testosterone and its treatment
- Added material on multiple sclerosis and related diseases that affect myelin sheaths
- Updated information on Parkinson's disease
- Revised material on the neural signal making it easier for students to comprehend
- Added material on concussions and its symptoms
- Revised section on brain waves for improved comprehension
- Replaced figures related to brain imaging with more up-to-date materials
- Added new material on both the hypothalamus and hippocampus
- Provided some of the historical background for the split brain operations

Chapter 3—Sensation and Perception

- Expanded and updated coverage of subliminal stimulation
- Replaced several figures with clearer, more user-friendly examples of the eye and other sensory receptors
- Added additional material on how color deficiencies are diagnosed as well as possible causes of color deficiencies
- Updated material on beliefs in paranormal phenomenon in the general population and added new, recent research by Daryl Bem

Chapter 4—Memory

- Moved from seventh chapter to the fourth chapter to provide students with information that will be useful in terms of studying earlier in the textbook
- New Table 4-2 shows paired-associate learning
- Research on influence of higher criterion levels for initial studying on later exams
- More of a theme of the importance of meaning in memory and more examples of how to incorporate this into study habits
- Added new study tip in Levels of Processing section
- Formatted study chart to include explicit or implicit memory
- New semantic network diagram – Figure 4-9
- Moved state-dependent memory section to go after encoding specificity
- Updates to repressed memory controversy – renamed the “memory wars”
- Moved information about suggestive questioning techniques from recovered memory to memory illusions section

Chapter 5—States of Consciousness

- New material on how to deal with jet lag
- New material on the sleep latency test, used in assessing level of sleepiness
- New material on the siesta, a cultural phenomenon
- New material on Peter Tripp's sleep deprivation (first such case)
- New material on the possible function of sleep as it relates to the size of organisms
- New material on the definition of insomnia, effects of this sleep problem, and the stimulus control treatment for insomnia
- Updated information, including epidemiology, on sleepwalking
- New material on REM sleep behavior disorder
- Added figure illustrating results of the Monitoring the Future study of the use of licit and illicit drugs by grade school and high school students
- New coverage of benzodiazepine drugs
- New coverage of cocaine, how it is taken, and its effects
- New coverage of marijuana, including material on current legal status

Chapter 6—Learning

- Updated Figure 6-2 to include illustrating classical conditioning with the Pavlov example
- Changed all references to US and UR to UCS and UCR for consistency across chapters
- Added information about the finding of Little Albert
- Added section on classical conditioning drug tolerance

- Removed separate section on escape and avoidance learning and included these terms in the more general negative reinforcement section along with examples of these two types of learning
- Removed “Classical Conditioning and Our Motives” section and “Cue-to-Consequence Learning”
- Changed section titled “Recent Advances in Operant Conditioning” to “Applications of Operant Conditioning Principles”
 - Included a section on autism and applied behavioral analysis
 - Included a section on addiction disorders and contingency management therapy
- Moved “Delayed Reinforcement and Discounting” to the section in “Schedules of Reinforcement”
- Removed section on behavioral ecology
- Revision of section on TV and video games in the social cognitive section
 - Presents the issue as more complex
 - Updates statistics and research in these areas
- Removal of some detail about some researchers not necessary for an intro course

Chapter 7—Motivation and Emotion

- Added explanation of why most people do not reach self-actualization
- Removed information about the old method of determining obesity using insurance tables
- Updated information about validity of claim that women who live together synchronize menstrual cycles
- Removed information on TAT test
- New information about goal orientation theory in the achievement motivation section
- New information on emotional intelligence and addictive disorders and high-stress work environments

Chapter 8—Thinking, Language, and Intelligence

- Updated information on WAIS, WISC
- New figure showing updated WAIS scales
- Updated statistics on traffic and airline accidents
- Inclusion of current companies who work to facilitate creativity (Google, Facebook, Zappos)
- Included section on second language acquisition
- Included explanation of why heritability in intelligence increases with age
- Removed artificial intelligence section

Chapter 9—Development across the Lifespan

- More research on the influence of fathers on child development
- Replaced APA’s guidelines for child care facilities with the National Association for the Education of Young Children’s standards for accreditation

- Removed the TV influence on development section; this is addressed in Chapter 6 social learning section
- Updates to secular trend in puberty
- New section on bullying
- Removed feminization of poverty section

Chapter 10—Sex and Gender

- Inclusion of a section on transgender issues
- Changed section titled “Sexual Behavior” to “Gender Differences in Sexual Attitudes and Practices”
 - Information on the basics of sexuality removed
- Removed psychodynamic theory of gender development
- Removed section on early analysis of sex differences
- Updated the division of work and combined with the juggling section

Chapter 11—Personality

- Provided historical context for consideration of personality tests, tracing them back to World War I
- Updated coverage of MMPI with emphasis on changes occurring in MMPI-2 and the more recent MMPI-2-RF
- Updated material on the Big Five traits, including updated terminology
- New material on correlates of the Sensation-Seeking Scale
- New material on Freud’s concept of parapraxes
- Added specific example of the defense mechanism of reaction formation in the text and added repression to the table of defense mechanisms

Chapter 12—Psychological Disorders

- Updated estimate of the prevalence of depression
- Updated data on suicide and added updated figure illustrating suicide rates across the world
- Reorganized material on the epidemiology of schizophrenia and updated data; also added new information on the role of the thalamus in schizophrenia
- Added material on expressed emotion and its possible role in schizophrenia
- New material on the possible genetic basis of schizophrenia

Chapter 13—Therapy

- Updated material on therapy, therapies, who seeks treatment, and medication privileges for psychologists
- Updated the contact material in the table of self-help groups
- Updated material on antianxiety drugs
- Expanded material on drugs used to treat psychological disorders

Chapter 14—Health Psychology

- Moved introduction to “Resilience and Positive Psychology” to beginning of chapter and brought in more references to positive psychology through the chapter

- Removed the “environmental factors” from the specific health risks section
- Added a section on diabetes with a focus on type II
- Expanded some information in the religion and spirituality section

Chapter 15—Social Psychology: The Individual in Society

- Removed “Self-Perception” section
- Added information about characteristics of effective working groups
- Removed brainstorming section

Chapter 16—Industrial, Organizational, and Other Applications of Psychology

- Enhanced the historical context for considering applications by including the earliest applied psychologists
- Included coverage of O*NET, a resource on jobs and their needed abilities and characteristics (first introduced in Chapter 1)
- Added more examples of sample items from tests used in employee selection
- Included discussion of behaviorally anchored scales used in assessing employee performance
- Added material on occupational health and the role of OSHA

DESIGN AND PEDAGOGY FOR ACTIVE LEARNING

In keeping with our goals of making this text accessible and encouraging active learning, we have devoted a great deal of attention to the text’s design and pedagogical aids. Our experience in the classroom tells us that students tend to skip over material that is boxed or separated from the main narrative, viewing it as less important and not likely to be on the test. We have therefore made a deliberate decision not to include long sections of boxed material. Instead, we offer very brief features within the body of the text that encourage students to read actively, review often, and apply concepts immediately.

CHAPTER OUTLINE Each chapter begins with a detailed chapter outline that lets students know what to expect in that chapter.

CHAPTER IN PERSPECTIVE We open each chapter with a brief discussion of how the material fits with the “big picture.” As we progress from the chapters that emphasize basic processes to those that deal with more complex behaviors, we show students how chapters build on one another to create a more complete understanding of behavior.

OPENING VIGNETTES Each major section begins with a brief *vignette* that includes questions to spark interest and anticipation for the content to come.

PSYCHOLOGICAL DETECTIVE Every chapter includes several **Psychological Detective** features that ask students to consider a question about the topic under discussion. The question may deal with issues such as research ethics, how to conduct research, or the importance of a particular research finding. We ask the student to supply an answer to the question before reading further.

HANDS ON We include at least one **Hands On** activity in every chapter that features a questionnaire or similar interactive exercise. These activities bring the students into direct contact with the material presented in the chapter.

WATCH/LISTEN/SIMULATE/STUDY AND REVIEW

These icons integrated in the text lead to MyPsychLab for Web-based expansions on topics, allowing instructors and students access to videos, podcasts, simulations, and quizzes. The icons are not exhaustive—many more resources are available than those highlighted in the book—but the icons do draw attention to some of the most high-interest materials available at www.mypsychlab.com.

MYTH OR SCIENCE These brief sections compare the findings of psychological research with widely held popular notions and help students evaluate “pop psychology” claims.

MARGIN DEFINITIONS Since so much of the terminology in this course is new to students, we believe it is important to provide instant access to definitions. We therefore include the definition of each key term in the margin on the page where that term is introduced.

REVIEW SUMMARIES AND CHECK YOUR PROGRESS

QUIZZES Students learn material more effectively when it is presented in smaller “chunks” of information. We have therefore included **Review Summaries** and **Check Your Progress** quizzes at the end of each major section within chapters. These “intellectual speed bumps” ask students to slow down, review what they have just read, and quiz themselves to determine if they have understood the previous section before moving on to the next. **StudyTip Activities** are placed in the margins of the text.

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A good textbook is only one part of the package of educational materials that makes an introductory psychology course valuable for students and effective for instructors. A number of valuable ancillary materials in both electronic and print form will make the difficult task of teaching introductory psychology easier for you and more interesting for your students.

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Instructor's Resource DVD (ISBN 0-205-92562-6): Bringing all of the seventh edition's instructor resources together in one place, the Instructor's Resource DVD offers all versions of the PowerPoint Presentations, the electronic files for the Instructor's Resource Manual materials, and the Test Bank to help you customize your lecture notes. (Note that these resources can also be downloaded from the

Instructor Resource Center online by following the directions at www.pearsonhighered.com/irc.)

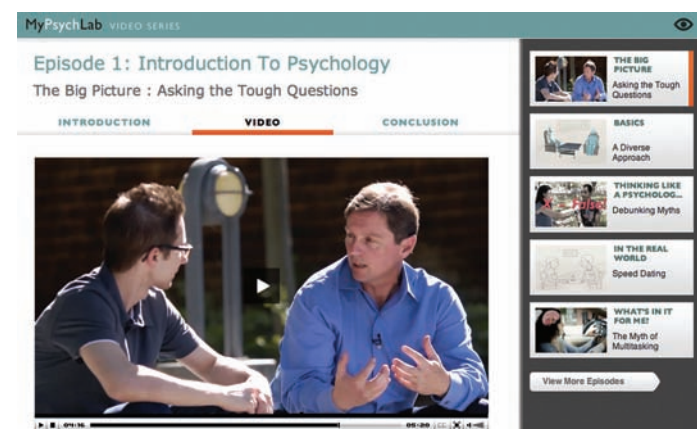
Pearson Assessment Bank for APA Student Learning Outcomes: Pearson has created a bank of assessment questions tied to the APA Guidelines for the Undergraduate Psychology Major to help departments conduct program assessment. This assessment bank, available with either MyPsychLab or Pearson MyTest, was created to provide developmentally appropriate questions that assess student learning over the course of their undergraduate career. Please contact your Pearson representative for additional information on this unique resource.

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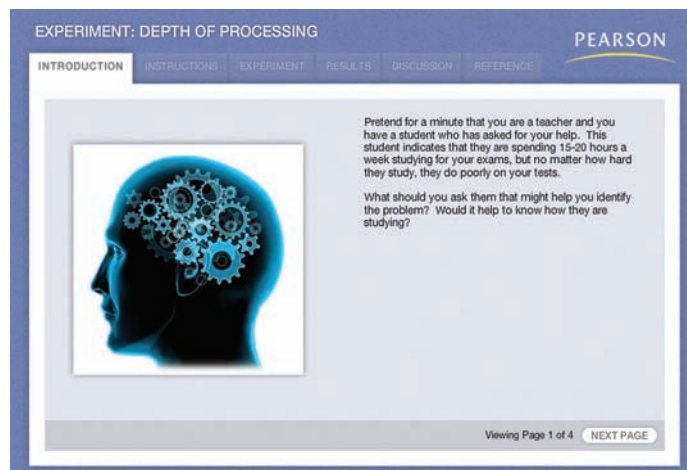
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K.M.C

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1

PSYCHOLOGY, RESEARCH,
AND YOU



This chapter introduces you to psychology, a field that has grown tremendously over the years. We describe the methods psychologists use to gather information about the numerous problems and areas they research, describe the historical development and growth of psychology, and look at the different types of jobs that psychologists currently hold. In addition to introducing you to the broad and exciting field of psychology, we explain how you can become a knowledgeable consumer of psychological research. The results and claims of psychological research fill our daily lives; we need to know how to evaluate them. Once we have put contemporary psychology in perspective in this chapter, we will be ready to examine its special topics in greater detail in subsequent chapters.

Almost every day we encounter events in our lives or the mass media that involve what we call “psychology.” These events cover a wide variety of topics. Consider the following example.

At a university on the other side of town, Kara’s psychology instructor begins the class by asking an unusual question, “How much electric shock, from 0 to 450 volts, would you administer to someone as part of a psychology experiment?” Kara learns that a social psychologist, Stanley Milgram (1974), conducted a study in which people were asked to administer shocks to others as part of what they believed was an investigation of how people learn. No shocks were actually delivered; the participants were unaware of this fact but they continued to administer “shocks” even when they believed the shocks could be harmful. Kara is both surprised and saddened by the results of Milgram’s study, which we discuss in more detail in Chapter 15.

BECOMING A PSYCHOLOGICAL DETECTIVE

This situation poses questions that psychologists might ask and try to answer. In many ways, psychologists are like detectives; they seek to find the best answers to questions about the behavior of human beings and animals. We define **psychology** as the science of behavior and mental processes. Although this definition emphasizes behavior, it does not exclude the rich inner life that we all experience, such as dreams, daydreams, and other inner experiences. As a science of behavior and mental processes, psychology provides the tools we need to answer questions about how we develop, what causes abnormal behavior patterns, why people commit acts of aggression, and countless other issues.

To understand the situation we described, you need to be clear about what happened before you can determine why and how it happened. For example, will most people administer a 450-volt shock to another person as part of a study of learning? How strong is obedience to authority? Answering such questions helps you understand similar situations and provides the tools you need to answer questions about other situations.

How can you learn to be a good psychological detective when every day you are bombarded by information designed to influence your opinion, persuade you to buy products, entertain you, or inform you about the world (McDonald, Nail, Levy, 2004)? The information flows from newspapers, radio, television, the Internet, family and

BECOMING A PSYCHOLOGICAL DETECTIVE

Arthur Conan Doyle’s Belief in Fairies

Guidelines for the Psychological Detective

RESEARCH METHODS IN PSYCHOLOGY

The Case Study

Naturalistic Observation

Correlational Research

Survey Research

Qualitative Research

The Experimental Method

Statistics and Psychologists

Research Ethics

THE ORIGINS OF MODERN PSYCHOLOGY

Wundt and the Founding of Psychology

Structuralism

Functionalism

Gestalt Psychology

The Behavioral Perspective

Sigmund Freud and the Psychodynamic Perspective

The Humanistic Perspective

The Physiological Perspective

The Evolutionary Perspective

The Cognitive Perspective

The Cultural and Diversity Perspective

The Environmental, Population, and Conservation Perspective

PRESENT-DAY PSYCHOLOGY

PSYCHOLOGICAL SPECIALTIES

CAREERS IN PSYCHOLOGY

psychology

Science of behavior and mental processes



Obedience to authority can be incredibly powerful. In 1968 U.S. soldiers killed at least 347 unarmed civilians in Viet Nam, following the direction of their commanding officer (left). In 1978 Jim Jones persuaded his followers to give cyanide-laced Kool-Aid to their children and then poison themselves (right).

friends, and advertisements. Often it takes the form of headlines like the following (adapted from Lilienfeld, Lynn, Ruscio, & Beyerstein, 2010):

Smarter than you think: Stop using only 10% of your brain
 For sale: Retailers use subliminal messages to get you to buy
 Your life on a DVD: Waiting to be accessed in your brain
 Police use hypnosis to collect information from traumatized crime victims
 Schizophrenic patient with several personalities commits violent acts

To evaluate such information, psychologists have found certain techniques to be helpful in thinking critically. We introduce these techniques in the next section, but first, let's consider a common alternative: folk wisdom.

When we try to understand events in the world around us, we sometimes turn to what is known as *folk wisdom*. Table 1-1 contains examples of folk wisdom in the form of proverbs. Read each proverb and decide whether you agree with it.

TABLE 1-1 Folk Wisdom


This test of folk wisdom includes general principles of behavior. Which ones do you agree with? Why?

List A

1. Look before you leap.
2. You can't teach an old dog new tricks.
3. Out of sight, out of mind.
4. Two heads are better than one.
5. A penny saved is a penny earned.
6. Opposites attract.

List B

1. People who hesitate are lost.
2. It's never too late to learn.
3. Absence makes the heart grow fonder.
4. If you want something done right, do it yourself.
5. Nothing ventured, nothing gained.
6. Birds of a feather flock together.

Such efforts to explain events are usually presented in ways that can never be proved wrong. Look at the list of proverbs again and notice that the proverbs in List B contradict those in List A. Folk wisdom can provide an explanation for every conceivable event—as well as for its exact opposite (Teigen, 1986). Hence folk wisdom provides answers for all situations but explains none. If folk wisdom does not provide helpful guidance in understanding our world, where can we turn? 

The answer is to look for insights and explanations through psychological research methods. Psychologists are trained to ask good questions, to gather useful information, to arrive at appropriate conclusions, and to develop and ask further questions based on the information collected. However, there are right and wrong ways to ask questions and arrive at conclusions. Becoming a good psychological detective requires practice. To understand the need to practice the skills of a psychological detective, let's journey back to England in 1920.

Arthur Conan Doyle's Belief in Fairies


After World War I, *spiritualism* (a belief in the supernatural) sparked interest on both sides of the Atlantic. Almost every city had several *mediums*—people who claim that they can contact the spirit world and communicate with the dead during a *séance* (Horowitz, 2009). The participants in a *séance* hold hands as they sit around a table in a darkened room. Strange things often seem to occur during a *séance*: Spirits are heard to speak through floating trumpets, cool breezes and touches are felt, and tables tip over even when no one has touched them.

Sir Arthur Conan Doyle, the creator of the master detective Sherlock Holmes, was deeply interested in spiritualism. His interest started as a hobby but later became the focus of his life, because he wished to communicate with his son, who had been killed in World War I. In fact, Doyle believed he had spoken with his son on several occasions (Hanson & Hanson, 1989).

In May 1920, Doyle heard reports that fairies had been photographed; he greeted the reports with enthusiasm because they seemed to confirm his belief in the existence of a spirit world. The photographs had been taken by two young girls who said they had observed the fairies in a nearby field. Doyle dismissed the possibility of fraud because the girls were young and did not know how to use photographic equipment (although one of them had worked in a photography shop). In 1921, he presented the results of his investigation in a book, *The Coming of the Fairies*. Doyle's authoritative statements led many people to believe that the photographs of fairies were genuine, and hundreds of people wrote to him describing fairies they had seen (Randi, 1987).

Modern technology has shown the photographs of fairies to be a hoax. Computer enhancement of the photographs reveals that the supposed fairies were actually cardboard cutouts from a children's book suspended by almost invisible threads.

What lessons can we learn from the story of the fairies? First, although prominent public figures may have great credibility, their statements should not keep us from asking our own questions. Second, we should be aware of the potential for **bias**, or beliefs that interfere with objectivity. Such preconceptions can cloud our observations, influence the questions we ask, determine the methods we use, and influence our interpretation of the information we gather. Before Doyle had seen the photographs of the fairies, he was convinced of the existence of a spiritual realm. Had Doyle been a good detective, he would have recognized the potential for bias, asked good questions, and arrived at appropriate conclusions.

 **Watch the Video** *Thinking Like a Psychologist: Debunking Myths* on **MyPsychLab**



Frances Griffiths is shown with some of the cardboard cutouts she used to convince Sir Arthur Conan Doyle that she had contacted fairies.

bias
Beliefs that interfere with objectivity

law of parsimony


Principle that simple explanations of phenomena are preferred to complex explanations

THE LAW OF PARSIMONY. In studying Doyle's claim that fairies exist, we have applied the **law of parsimony**. Suppose we have two or more explanations for an event or a claim. Which one should we accept? Assume that all the proposed explanations explain the event or claim. The law of parsimony tells us to adopt the simplest explanation—the one that requires the fewest assumptions.

Doyle was faced with two explanations for the apparent sighting of the fairies by the girls. One explanation was that the girls had actually seen the fairies. The second explanation was that the girls had played an elaborate hoax on Doyle. Which explanation is simpler and involves fewer assumptions? Belief in the existence of fairies involves many more complex assumptions than does the view that the girls perpetrated a hoax.

One of our goals in writing this book is to help you become a better psychological detective—capable of asking good questions, collecting useful information, arriving at defensible conclusions, and being aware of your own biases and those of others. The process we discuss can be applied to the story of Doyle's fairies, to headlines in news stories and advertisements, to this chapter's opening example of the administration of 450-volt shocks, and to countless events you experience during the course of a typical day.

Guidelines for the Psychological Detective

How do you know what to believe? How do you separate sense from nonsense? Critical thinking, or the reasoning we do in order to determine whether a claim is true (Clifford, Boufal, & Kurtz, 2004), is a cornerstone of psychology. In this book, you will read about many experiments in which psychologists put critical thinking into action to reach conclusions about behavior and experience. In the *Psychological Detective* features that you will find throughout this book, we encourage you to assess facts intelligently and improve your own reasoning skills. We encourage you to use these sections as a form of self-test of your reading and understanding. Be sure to write your answers down before you read further. You also will learn how to evaluate critically the information you read and hear in the media and elsewhere. Use the following questions as guidelines in evaluating a statement or claim. 

 **Watch the Video** *How to Be a Critical Thinker* on **MyPsychLab**

STUDY TIP

Name a bias that you have seen in people you know or even in yourself. Evaluate the bias: What effects does it have on behavior and belief? What are the results of such behaviors or beliefs, and are the results positive or negative?

WHAT IS THE STATEMENT OR CLAIM, AND WHO IS MAKING IT? Before accepting a statement or claim, consider the possibility of personal bias. Whenever a person makes what seems like an extraordinary claim, always ask yourself if he or she has anything to gain by making that claim. Salespeople have a personal stake in convincing you to purchase the products they sell. For example, car dealers want new customers to know that past buyers have been satisfied, and to prove their point they often offer the results of surveys. Car manufacturers mail surveys to recent buyers to determine their level of satisfaction. Some car dealers have offered customers incentives to complete these surveys—but only if they take the survey to a dealer, who is more than happy to help them complete it!

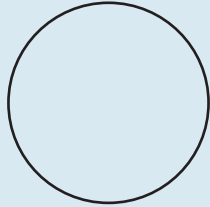
Besides considering the influence of personal bias, we should evaluate the authority of the person making the claim. Authority figures may provide helpful insights, but we should not be blinded by those insights. Remember, credibility does not automatically transfer from one field of expertise to another.

We have focused on the potential for bias among people who make some claim. We must recognize, however, that the very assumptions we hold can themselves create biases that in turn influence our views of claims, questions, or proposed solutions to a problem. The influence of bias is not limited to the experts; we are all subject to its influence and must strive to recognize its sometimes subtle effects. Table 1-2 contains a series of seemingly simple questions. Try answering them, and then check to see if your answers are correct.

TABLE 1-2 Simple Questions That May Reveal Evidence of Bias

Answer each of these questions to the best of your ability. Then compare your answers with those on page 39.

1. Are there more daylight hours in December or in June?
2. How many stars are there on the flag?
3. Who hit the most career home runs playing professional baseball?
4. Can you change this drawing into a cube by adding another circle?



IS THE STATEMENT OR CLAIM BASED ON SCIENTIFIC OBSERVATIONS? Many people support conclusions about behavior by citing personal experiences or anecdotes. For example, you may think that you succeeded on an exam because you sat in your “lucky seat.” Personal experiences are also frequently offered as proof of the quality of particular products, ranging from detergents to cars.

Whenever you come across such a claim, ask whether it is justified. For example, does the fact that one customer is satisfied with a product prove that the product is consistently satisfactory? Critical thinking also requires us to question where the facts came from. Was the information based on scientific research or was it based on casual observation? Later in this chapter we discuss several research methods that psychologists use to collect data for answering questions. Only one of these methods, the experimental method, can provide the basis for cause-and-effect statements.

Popular sources ranging from such tabloids as the *National Enquirer*, the *Star*, and the *National Examiner* to more respected newspapers such as *The New York Times* often print news related to psychology. However, most of these articles do not specify the research methods on which the claims in these news stories are based. Thus many sources of the claims we read in the print media pay little attention to the process of scientific inquiry, which makes it difficult for us to evaluate these claims. The same cautions hold true for the Internet. Anyone can create a Web page and post information on the Internet. There is no guarantee that the information there is accurate.

WHAT DO STATISTICS REVEAL? Many students are fearful of statistics in any form, yet we use statistics all the time—although not always wisely. Never hesitate to ask for numbers to support a claim, but be sure you understand them.

Claims are often presented as some type of average (or typical score). An average conveys information about the middle of a distribution, or collection of numbers. There are actually three types of averages, however, and you need to know which type is being presented and whether it is appropriate.

When evaluating claims, we need to know whether the findings could have occurred by chance. Researchers usually report the likelihood that their findings might have resulted from the operation of chance alone. Findings that exceed chance occurrence are said to be *statistically significant*. It is important to remember that you cannot tell if a finding is statistically significant just by looking at the results; a statistical test needs to be performed.

Such tests, and other statistical topics, are covered in the Appendix at www.mypsychlab.com. We encourage you to read this material at this time; it will improve your ability as a psychological detective.

ARE THERE PLAUSIBLE ALTERNATIVE EXPLANATIONS FOR THE STATEMENT OR CLAIM?

Researchers frequently report that two variables (behaviors or events) are related. When we deal with an association between two variables, called a *correlation* (see p. 13), we must consider the possibility that the relation is actually due to a third variable. The fact that two events are correlated does not *prove* that one of the events caused the other; however, knowing the relation between two events helps us to make predictions about when events will occur in the future. For example, whenever the moon is full, the police report more crimes and emergency rooms treat more accident victims. Is there a relation between the full moon and these occurrences? Researchers who have examined broader periods have consistently failed to find such a relation (Rotton & Kelly, 1985), yet this belief persists.

Although all the world's events demand an explanation, some are mere coincidences. Consider the statements in Table 1-3. Did one of the factors cause the other, or are there other factors involved?

Among the many claims we encounter every day are ones about drugs and other remedies. Patients may respond to drug treatment even if the treatment contains no active ingredient. Why? If you expect that a drug will give you relief from some ailment, that belief may bring about a reduction in the symptoms. This positive response associated with your belief or attitude is termed the **placebo effect**. The claims made for drugs often sound quite impressive; when judging a drug's effectiveness, however, we need to know how many patients may have improved because of the placebo effect alone. Only when we have obtained this comparative information can we judge the true effectiveness of a drug.

We have presented four guidelines that can be helpful in evaluating a claim:

1. What is the statement or claim, and who is making it?
2. Is the statement or claim based on scientific observations?
3. What do statistics reveal?
4. Are there plausible alternative explanations for the statement or claim?

Using these guidelines does not guarantee that you will always arrive at a complete and accurate understanding of any claim or proposed explanation. Not even a

STUDY TIP

Gather in a group of four. In a current newspaper or magazine article, find a statement or claim. Assign one of the four "Guidelines for the Psychological Detective" to each of the four group members. Then, each student should evaluate the claim using his or her chosen guideline and share this information with the group.

placebo effect

In drug research, positive effects associated with a person's beliefs and attitudes about the drug, even when it contains no active ingredients

TABLE 1-3 Cause and Effect

Consider each of the following statements. Does one of the factors in each statement cause the other? If not, what other factors might be involved?

1. The phone always rings when I'm in the shower.
2. I lose my keys only when I'm in a hurry.
3. People always call at the wrong time.
4. It always rains just after I wash the car.
5. An item goes on sale the day after I buy it.

well-conducted scientific experiment can guarantee that you have found the truth. Depending on the specific type of experiment conducted, the culture in which the experiment is conducted, and the personal interpretation of the results, different views of “the truth” may exist. The guidelines do, however, help you avoid certain pitfalls that can easily lead to inaccurate conclusions.

In the next section we examine the methods psychologists use to answer research questions. These techniques truly are the tools of the psychological detective.

REVIEW SUMMARY Listen to the Chapter Audio on MyPsychLab

1. Events of our daily lives pose questions that psychologists can answer. In answering these questions, **psychology** can help us develop the skills needed to evaluate claims critically.
2. The story of Sir Arthur Conan Doyle and the photographs of alleged fairies teaches us the importance of asking good questions and demonstrates the importance of being aware of how **bias** can influence the questions we ask and the conclusions we draw.
3. When there are two (or more) competing explanations for an event or claim, the **law of parsimony** indicates that we should select the one requiring the fewest assumptions.
4. By asking good questions, collecting useful data, and arriving at defensible conclusions, we can become good consumers of psychological research.
5. In evaluating causal or research claims, we need to know exactly what the claim is and who is making it. Authority figures often have great credibility, but their expertise does not transfer from one field to another, and their pronouncements should not be accepted uncritically.
6. Determining whether claims are based on scientific observations is also important. Even though science does not guarantee that the researcher will find truth, conclusions based on systematic and empirical (objectively quantifiable) observations of large samples are stronger than those based on a few personal testimonials.
7. Understanding and using statistics aids in evaluating claims. Psychologists usually report the likelihood that their findings might have resulted from chance alone.
8. A relation between two events does not prove that one event caused the other. We should consider alternative explanations that might account for a particular event or claim. ■

CHECK YOUR PROGRESS Study and Review on MyPsychLab

1. What is the *best* definition of the discipline of psychology?
 - a. the science of behavior
 - b. the science of mental processes
 - c. the science of behavior and mental processes
 - d. the science of human behavior and mental processes
2. What is the major problem in relying on folk wisdom or proverbs to explain behavior?
 - a. Folk wisdom and proverbs cannot be refuted because they can account for any event.
 - b. Folk wisdom and proverbs are never correct.
 - c. Folk wisdom and proverbs are too vague.
 - d. Folk wisdom and proverbs provide no insight into behavior.
3. Which of these is likely to be characteristic of biased scientific investigation?
 - a. Researchers remain objective at all costs.
 - b. Researchers allow preconceptions to cloud their observations.
 - c. Researchers require more stringent proof than what is normally demanded.
 - d. Researchers ask their own questions, regardless of what other people tell them.
4. Read each of the following claims and assess its validity by using the guidelines for the psychological detective presented on pages 6–9.
 - a. Students in an introductory psychology course were intrigued by the topic of dreams. They decided to conduct a survey on the presence of color in dreams. The students reported whether color appeared in any dream they had had the previous night. Only 2 of the 50 students reported color in their dreams. The class concluded that we rarely dream in color.
 - b. An educational company claims that using its tapes of key points taken from textbooks and lectures can boost exam performance by as much as 40%.
 - c. The disorder known as *autism* is associated with avoidance of human contact, and little or no ability to speak. Many people with this disorder are also mentally handicapped. To help autistic persons communicate, researchers developed a technique in which an assistant guided an autistic person’s arm to point to letters on a keyboard and thus spell words. With this assistance, people who were previously unable to communicate reportedly learned how to spell correctly, to construct grammatically correct sentences, and to solve math problems. Skeptical critics noticed that the autistic persons rarely looked at the keyboard while the assistant guided their arms.