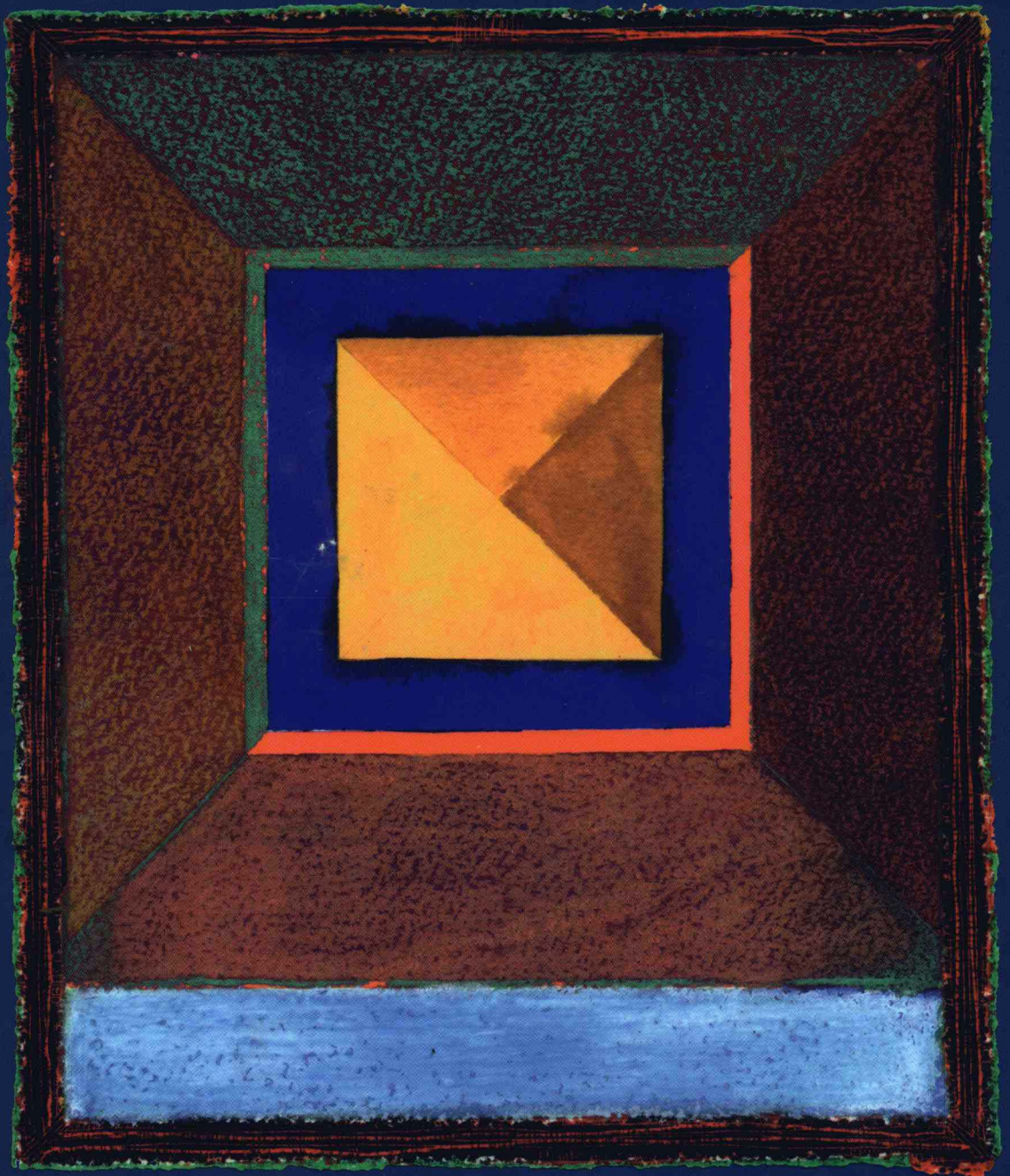


FIFTH EDITION

# PSYCHOLOGY

CAMILLE WORTMAN / ELIZABETH LOFTUS / CHARLES WEAVER



# PSYCHOLOGY

F I F T H E D I T I O N

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## PSYCHOLOGY, FIFTH EDITION

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## DEDICATION

To my parents, Carol Weaver and the late Charles A. Weaver, Jr.,  
who instilled in me a love of learning and provided a warm and  
secure environment in which to pursue that passion.

CAW



## ABOUT THE AUTHORS

**Camille B. Wortman** is professor of psychology and director of the training program in social and health psychology at the State University of New York at Stony Brook. Her research interests include causal attribution and reactions to stress and victimization. Wortman has published numerous articles in every major journal in her field, and has contributed chapters to many books, including *Advances in Social Psychology*, *New Directions in Attribution Research*, and the *Advances in Environmental Psychology* series.

Wortman received her Ph.D. from Duke University in 1972. For seven years she taught introductory psychology at Northwestern University, where she received the Distinguished Teaching Award. A winner of the American Psychological Association's Distinguished Scientific Award for an Early Career Contribution to Psychology, she has also taught and conducted research at the University of Michigan.

**Elizabeth F. Loftus** is professor of psychology and adjunct professor of law at the University of Washington, Seattle. A specialist in human memory and courtroom procedure, she has been nationally recognized for her research on eyewitness testimony. Her first book on the subject, *Eyewitness Testimony*, won an APA National Media Award, Distinguished Contribution, in 1980. Her most recent book, co-authored with Katherine Ketcham, is *The Myth of Repressed Memory*. Loftus has been an expert witness or consultant in hundreds of criminal cases, including numerous cases involving allegations of repressed memories.

Loftus received her Ph.D. in psychology from Stanford University (1970). She has received three honorary doctorates for her research, from Miami University of Ohio, Leiden University in the Netherlands, and the John Jay College of Criminal Justice in New York. In 1995 she received the American Academy of Forensic Psychology's Distinguished Contributions to Forensic Psychology Award; and in 1996, the American Association of Applied and Preventive Psychology Award for Distinguished Contribution to Basic and Applied Scientific Psychology. Loftus was a James McKeen Cattell Fellow in 1997. She was recently elected President of the American Psychological Society.

**Charles A. Weaver III** is associate professor of psychology and neuroscience and director of the Ph.D. program in neuroscience at Baylor University in Waco, Texas. His research includes numerous scientific studies of flashbulb memory, eyewitness memory, metacognition, language comprehension, and reading. He is presently preparing a book on flashbulb memory for the Oxford Psychology Series (Oxford University Press).

Weaver received his Ph.D. from the University of Colorado (1988). He has served on the editorial boards of several journals, including *Memory and Cognition*, the *Journal of Educational Psychology*, and the *American Educational Research Journal*, as well as on the scientific advisory board of the False Memory Syndrome Foundation. Students at Baylor University have named him Outstanding Psychology Professor on three separate occasions.



## PREFACE

EVER SINCE THE first edition was published in 1981, *Psychology* has been regarded as the book without gimmicks. As authors, we stressed the empirical and scientific nature of the discipline in an engaging and readable manner. The fifth edition of *Psychology* represents a major revision, the first in more than six years. While long-time readers will see significant improvements in all parts of the text, our basic approach has not changed. *Psychology* introduces readers to the science of psychology, and does so unapologetically.

In the fifth edition we have attempted to capture the excitement we felt when we first encountered this exciting subject. In fact, our experiences in introductory psychology shaped our decisions to pursue psychology as a profession. We find this field to be truly fascinating, and we hope that our enthusiasm for it will kindle the same spark in those who are reading this book for the first time.

### Features of this Text

From the first edition, several features have distinguished this book from others. They include: (1) an integration of theory and research with applications; (2) a focus on the process of scientific inquiry—that is, on how psychologists develop testable hypotheses, gather and interpret data, and arrive at conclusions; and (3) discussions of important issues in special In Depth sections. The fifth edition incorporates a new feature, a discussion of four recurring themes in psychology. The four themes are introduced in the In Depth section of chapter 1 (pages 33–35) and are referred to at appropriate points throughout the text.

### Integrated Treatment of Theory, Research, and Applications

Some psychology texts have a strong research orientation, which is often achieved at the expense of readability or student interest. Other texts offer extensive coverage of applications and other high-interest topics, whose connection to the science of psychology is not always clear. From the first edition, this book has offered a balanced treatment of theory,

research, and applications. We strongly believe that students do not need to be coerced into appreciating the scientific approach to the study of human behavior. And we still think that instructors can make psychology an exciting and engaging field of study without resorting to gimmicks or sacrificing their scholarly integrity.

### Focus on the Process of Scientific Inquiry

In the fifth edition we continue to make every effort to emphasize the process of scientific inquiry. Psychologists do not develop theories about human behavior in a vacuum. Instead, they make observations about behaviors, develop explanations (theories) for those behaviors, and then design ways (experiments) to evaluate their explanations. Thus, the path psychologists follow is essentially the reverse of the path most students assume they follow. Psychologists do not develop esoteric theories and then look for ways to apply those theories to the real world. Rather, the real world serves as the inspiration—the guidepost—for the development of psychological theory.

Chapter 2 describes the research process: how psychologists define their research objectives, select a method of inquiry, gather and interpret data, rule out alternative explanations, and deal with the theoretical dilemmas their research sometimes poses. Throughout the book, we repeatedly encourage students to evaluate the theories and research we present for themselves.

### In Depth Sections

Perhaps the most important way we try to foster an appreciation for the scientific approach to psychology is through the In Depth sections at the ends of chapters. Most psychology texts offer fairly broad coverage of all the main concepts in the field, without going into much detail. But we felt there was a real advantage to taking a closer look at just a few problems, thus exposing students to the process of psychological inquiry in depth.

Each In Depth section explores a topic that is interesting to students, one that flows directly from the



core topics in the chapter. Each is divided into three main parts. In the first, Initial Studies, we discuss the problem and review the early studies designed to address it. In the second part, Criticisms and Alternatives, we discuss how scientists later challenged the early findings, and sometimes arrived at alternative hypotheses. In the last part, Current Thinking, we summarize the latest information on the problem—what is known and widely accepted, and what is still under debate. We make note of studies currently in progress, which have been designed to clarify outstanding questions.

### Recurring Themes in Psychology

Many students who enroll in Introductory Psychology are surprised by the course content. They may have expected to learn about abnormal psychology, theories of personality, and psychological therapies, but are often unprepared for discussions of memory, perception, language, learning, and consciousness. Many are bewildered by the array of seemingly different and disconnected topics.

To help students see the commonalities across these subfields, we have added a new feature, Recurring Themes in Psychology. In chapter 1, students are introduced to these four basic themes:

#### THEME



**The best predictor of future behavior is past behavior**

#### THEME



**Psychologists learn about the normal by studying the abnormal**

#### THEME



**A large proportion of behavior is controlled by unconscious activity**

#### THEME



**Cognition and thought are dynamic, active processes, best considered reconstructive, not reproductive**

Throughout the book we periodically remind readers of these overarching themes. (When themes are reintroduced, they are noted by these icons.) Our hope is

that rather than focusing on the differences among the subfields, students will be able to see the similarities.

### What's New in this Edition?

While each new edition of *Psychology* has incorporated important changes in the field, the fifth edition represents the most comprehensive revision ever undertaken. Every chapter has undergone extensive updating. Some—Chapters 2, 3, 5, 6, 7, 9, 11, and 14—are so thoroughly revised, they are essentially brand new. All in all, the fifth edition contains hundreds of new references.

Especially significant to this edition is the expanded, functional coverage of neuroscience, which reflects the increased importance of that branch of the discipline in recent years, and the addition of material on behavioral genetics, also growing in influence. Long-time users of *Psychology* will appreciate the additions and extensive revisions to the In Depth sections.

### Expanded, Functional Coverage of Neuroscience

In the last decade, advances in the field of neuroscience have revolutionized the study of psychology. The fifth edition thoroughly incorporates these exciting and important changes. Rather than restricting biologically-based material to a single chapter, we have taken a functional approach, introducing neuroscientific evidence wherever necessary to explain a psychological concept. We think the result is a much more coherent presentation of core material throughout the book. Students will not be left wondering why they need to learn about biology in a course on psychology; instead, its importance will be self-evident.

To illustrate this functional approach, consider chapters 5 and 16. Chapter 5, on consciousness, includes new coverage of dissociations between behavior and awareness, which tend to be seen most dramatically in those who have suffered some kind of neurological trauma. Case histories of patients with blindsight and implicit memory help to illustrate the relationship between neural brain structures and consciousness. This chapter also illustrates the role of brain chemistry in consciousness, from the cravings suffered by drug addicts, to the effects of melatonin, an over-the-counter supplement used by millions to induce sleep.



Chapter 16, on psychological therapies, includes a discussion of drug therapies, such as the treatment of depression and obsessive-compulsive disorder with antidepressants. To understand why the newer drugs, like Prozac, are so effective, and why they produce far fewer side effects than the older antidepressants, students must grasp their action as selective serotonin reuptake inhibitors. Presented all in one chapter, such technical terms can easily overwhelm students; but presented throughout the book, wherever they are applicable, they are learned much more readily.

### Extensive Coverage of Behavioral Genetics

The fifth edition of *Psychology* includes an extensive discussion of behavioral genetics, perhaps the most revolutionary approach to psychology since the cognitive revolution of the late 1950s. As behavioral genetics has grown in influence, it has drawn increasing criticism, most of it based on a flawed understanding of the approach. Chapter 2 therefore contains an extensive discussion of behavioral genetics, including common errors in the interpretation of such data. While we have incorporated coverage of behavioral genetics in the fifth edition, we recognize that these data are often misunderstood or misrepresented. Thus, we have striven to present a responsible as well as thorough discussion of these complicated issues.

As with neuroscience, coverage of specific research in behavioral genetics is distributed throughout the book. For example, chapters 9 and 10 cover the effects of heredity on development and temperament; chapter 11, the genetic factors that influence health and well-being. Chapter 13 contains an extensive discussion of how genetic factors influence personality. Chapter 14 addresses the role of genetics in intelligence, including a discussion (in the In Depth section) of Herrnstein and Murray's highly controversial book *The Bell Curve*. Chapter 15 describes genetic influences on psychological disorders such as schizophrenia and substance abuse, while chapter 18 describes genetic influences on aggression.

### New and Revised In Depth Sections

Six of the In Depth sections are new to this edition; each of the others has been revised, updated, and ex-

panded. The In Depth section in chapter 1 introduces the four recurring themes that appear throughout the text. In chapter 2, a new In Depth section focuses on the concept of ecological validity, and the tradeoffs between laboratory experiments and the applicability of their results. Concerns about ecological validity and generalizability are among students' most frequent criticisms of the field of psychology. Thus, this section is designed to answer the perennial question, "What does this have to do with the real world?"

The In Depth section in chapter 5 explores the relationship between cognition, behavior, and awareness through two fascinating case histories, one of the amnesiac H. M., the other of D. B., a patient who suffered from the curious phenomenon of blindsight. Both men displayed powerful dissociations between what they could do and their awareness of what they could do. Neurologically intact individuals can also display such dissociations, as has been shown by Berridge and Robinson's recent analysis of addiction.

A new In Depth section of chapter 7 examines the highly controversial topic of repressed and recovered memory. Two of the authors of this book, Elizabeth Loftus and Charles Weaver, have done primary research on this topic in recent years. Though we have doubts about the psychological reality of repressed and recovered memories, we have attempted to present the evidence on both sides in as evenhanded a manner as possible.

The In Depth section in chapter 9 presents the tragic case of Genie, a modern-day wild child. Though Genie's case has long been familiar to those who teach Introductory Psychology, recently released evidence (including Russ Rymer's book *Genie: Escape from a Silent Childhood* [1993] and a documentary in the PBS *Nova* series) has prompted a re-evaluation of the case.

Finally, a new In Depth section in chapter 14 discusses Herrnstein and Murray's controversial book *The Bell Curve*. The debate over the relative influence of heredity and environment on human behavior is hardly new. In fact, many of the issues raised in *The Bell Curve* have been discussed for twenty-five years or more. Even so, the potential implications of Herrnstein and Murray's work are staggering. We have therefore attempted to present both the evidence and the arguments based on that evidence as dispassionately as possible.



## Ancillary Package

The supplements listed here may accompany *Psychology*, fifth edition. Please contact your local McGraw-Hill representative for details concerning policies, prices, and availability, as some restrictions may apply.

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### Expert Consultants

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It would be impossible to overstate the role of Betty Morgan, the developmental editor for the fifth edition, in the shaping of this edition. Her professionalism, skill, and wisdom were vital to the project. She read, critiqued, edited—and *improved*—virtually every paragraph in this book, and she did so with unfailing good humor. It has been, truly, a pleasure to work with her.

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—CBW, EFL, CAW



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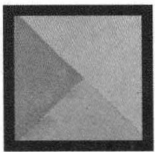


# PSYCHOLOGY

## CHAPTER

# 1

# The Science of Psychology



Give me a dozen healthy infants, well-formed and my own specific world to bring them up in and I'll guarantee to take any one at random and train him to become any

type of specialist I might select—a doctor, lawyer, artist, merchant-chief, and yes, even beggar-man and thief, regardless of his talents, penchants, abilities, vocations and race of his ancestors. (John B. Watson, 1924, p. 10)

A great nation, founded on principles of indi-

vidual liberty and self-government, approaches the 21st century. . . . Yet even as the principle of equal rights triumphs, strange things begin to happen to two small segments of the population.

In one segment, life gets better in many ways. These people are welcomed at the best colleges, then at the best graduate and professional schools. . . . After they complete their education, they enter fulfilling and prestigious careers. . . .

In the other group, life gets worse, and its members collect at the bottom of society. Poverty is severe, drugs and crime are rampant, and the traditional family all but disappears. . . .

. . . the nation's social scientists and journalists and politicians seek explanations. They examine changes in the economy, changes in demographics, changes in the culture. They propose solutions founded on better education, on more and better jobs, on specific social interventions. But they ignore an underlying element that has shaped the changes: *human intelligence*. (Richard J. Herrnstein & Charles Murray, 1994)

Psychology is the greatest failure of the 20th century. Psychology, it seems to me, has made us all these grand promises, which it has been manifestly unable to fulfill. We have placed in psychology the faith that our fathers placed in God, in country, in *doing what was right*. Psychology has largely supplanted the concepts of manhood and honor and eaten into literature and manners, but what has it done for us? We were all supposed to gain insight into ourselves, to understand why we are who we are and what we can do about it. We're more confused about who we are than we've ever been. (James, 1991)

These three quotes provide very different views of "psychology." They also reveal much about how psychology is perceived by the general public. The first quote is from John B. Watson, a pioneering figure in psychology during the first half of the twentieth century. His opinion is clear: the science of psychology provides the tools to understand—and manipulate—all behavior.

The second quote is taken from the recent book *The Bell Curve*, by Richard Herrnstein and Charles Murray (1994). Herrnstein was a psychologist at Harvard, Murray his colleague at the American Enterprise Institute. Their book examines the role of intelligence in virtually every aspect of life. Herrnstein and Murray present hundreds of pages of facts, dozens of tables and figures, in an attempt to show that "intelligence" (defined in any number of ways):

- Is predictive of economic and social success

## Chapter Outline

### Psychology as a Science

*Scientific Theories in Psychology*

*Science and Theories: Three Warnings*

*Common Sense and Science*

*The Ongoing Nature of Science*

### The Roots of Psychology

*The Influence of Philosophy*

*Charles Darwin's Theory of Evolution and Natural Selection*

### A Short History of Psychology

*Psychology in the Nineteenth Century*

*The Early Twentieth Century*

*The Middle Twentieth Century*

*The Late Twentieth Century*

*Psychology Today*

### Contemporary Fields of Specialization

*Experimental Psychology*

*Neuroscience*

*Personality Psychology*

*Social Psychology*

*Developmental Psychology*

*Industrial and Organizational Psychology*

*Educational and School Psychology*

*Clinical and Counseling Psychology*

*Health Psychology*

### Psychology's Value to You

*In Depth: Four Recurring Themes In Psychology*



- Is stable throughout the life span
- Has a significant genetic component (intelligent parents tend to produce intelligent children)

*The Bell Curve* has triggered a vigorous, intense debate. What is “intelligence”? What does it mean to say it has a strong genetic component? What, if anything, can be done to “improve” intelligence? The answers to these questions have far-reaching implications. Indeed, the controversy generated by *The Bell Curve* will be the focus of the “In Depth” section of Chapter 14.

Look back at the final quote. Who would you suspect wrote it? A television newscaster, in a documentary about “the failed promise of psychology”? A politician, arguing that we need to get experts out of the school system and return our children to traditional family values? A member of the clergy, reacting to the growth of self-help groups in a time when “we need to return to spiritual values”? Perhaps the author is a disgruntled psychologist, offering a critical appraisal of the field?

Actually, the quote is taken from a book on *baseball* by Bill James (1991, p. 152) and is discussing a player who never lived up to expectations because of “emotional problems.” He interrupts his evaluation of the player to deliver this resounding criticism of the entire field of psychology. Obviously, he believes that the role of psychology is to “fix” people, or at least help them. However, he makes a common mistake: assuming that psychology is about changing people for the better.

For many people, “psychology” is synonymous with “psychotherapy.” To them, a psychologist is someone who interprets a client’s dreams, decoding the hidden meaning in the symbols. According to this view, a psychologist offers suggestions for how to change behavior—how to overcome the “emotional problems” that are hindering a baseball player, for example. But most people realize that not all psychologists perform therapy.

What else do you know about psychologists? You may have an image of a psychologist in a white lab coat, coaxing a rat through a maze. You may know that psychologists are employed to administer intelligence and aptitude tests. For example, a psychologist might tell an employer what a certain score on a standardized test means, or may provide advice on the most suitable candidate for a specific job. You

may know that psychologists are consulted about what kind of reading program would be best for six-year-olds. “Psychology,” in fact, covers a vast number of topics—many more than are listed here.

What is psychology? What kinds of things does psychology study? What do psychologists *do*? And what does psychology have to do with life in the “real world”? This book is designed to answer those questions, and many more questions you might not even think to ask. Much of what you “know” of psychology is likely to be incorrect, or at least incomplete. The goal of this book is to help you understand what psychology is all about, and to do so in a way that conveys its inherent interest. After all, what could be more fascinating than human behavior?

## Psychology as a Science

**Psychology**, broadly defined, is the scientific study of behavior, both external observable action and internal thought. Such a definition has important implications. The first, and one whose significance is easy to miss, is that *psychology is a science*. This might seem odd. Somehow psychology doesn’t seem as “scientific” as chemistry or physics. Where are the test tubes, the microscopes, the laboratory equipment? After all, psychologists don’t study “scientific things” like photosynthesis or nuclear radiation. They study the effects of the presence of books in the home on the development of children’s reading skills, or the effect of being watched by six experts on performance of a complex task. Psychologists study why animals who are exposed to certain chemicals before they are born have difficulty learning to avoid being shocked, or are less likely to form attachments to their offspring. These things aren’t “science,” are they?

The answer is that science is defined not by *what* is studied, but by *how* it is studied. *Science is a process*, a method of obtaining and organizing knowledge. Psychologists use the systematic methods of science to gather information about the things that interest them. Once they have collected their data, psychologists carefully analyze them and interpret their meaning as objectively as possible.

Another assumption implied by this broad definition is that *not all behavior is directly observable*. Some behavior—such as motivation, emotion, or thought—is internal, and therefore much more difficult to study. For much of psychology’s history, in-