lilienfeld lynn namy woolf cramer schmaltz

third canadian edition

PSYCHOLOGY

from inquiry to understanding

SIX PRINCIPLES OF SCIENTIFIC THINKING

What Scientific Thinking Principle Should We Use?	When Might We Use It?	How Do We Use It?
ruling out rival hypotheses HAVE IMPORTANT ALTERNATIVE EXPLANATIONS FOR THE FINDINGS BEEN EXCLUDED?	You're reading the newspaper and come across this headline: "Study shows depressed people who receive a new medication improve more than equally depressed people who receive nothing."	The results of the study could be due to the fact that people who received the medication expected to improve. 
correlation vs. causation CAN WE BE SURE THAT A CAUSES B?	A researcher finds that people eat more ice cream on days when crimes are committed than when they aren't, and concludes that eating ice cream causes crime.	Eating ice cream (A) might not cause crime (B). Both could be due to a third factor (C), such as higher temperatures. 
falsifiability CAN THE CLAIM BE DISPROVED?	A self-help book claims that all human beings have an invisible energy field surrounding them that influences their moods and well-being.	We can't design a study to disprove this claim. 
replicability CAN THE RESULTS BE DUPLICATED IN OTHER STUDIES?	A magazine article highlights a study that shows people who practise meditation score 50 points higher on an intelligence test than those who don't.	We should be skeptical if no other scientific studies have reported the same findings. 
extraordinary claims IS THE EVIDENCE AS STRONG AS THE CLAIM?	You come across a website that claims that a monster, like Bigfoot, has been living in the American Northwest for decades without being discovered by researchers.	This extraordinary claim requires more rigorous evidence than a less remarkable claim, such as the assertion that people remember more words from the beginning than from the end of a list. 
occam's razor DOES A SIMPLER EXPLANATION FIT THE DATA JUST AS WELL?	Your friend, who has poor vision, claims that he spotted a UFO while attending a Frisbee tournament.	Is it more likely that your friend's report is due to a simpler explanation—his mistaking a Frisbee for a UFO—than to alien visitation? 

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Cover and Interior Designer: Anthony Leung
Cover Image: Image 1, Vasily Merkushev/Fotolia; Image 2, Artem Furman/Fotolia

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Original edition published by Pearson Education, Inc., Upper Saddle River, New Jersey, USA.

10 9 8 7 6 5 4 3 2 1 V0RJ

Library and Archives Canada Cataloguing in Publication

Lilienfeld, Scott O., 1960-, author
Psychology : from inquiry to understanding / Scott O. Lilienfeld, Steven Jay Lynn, Laura L. Namy, Nancy J. Woolf, Kenneth M. Cramer, Rodney Schmaltz.—Third Canadian edition.

Includes bibliographical references and index.
ISBN 978-0-13-387028-2 (bound)

1. Psychology—Textbooks. I. Lynn, Steven Jay, author II. Namy, Laura L., author III. Woolf, Nancy Jean, author IV. Cramer, Kenneth M. (Kenneth Michael), 1967-, author V. Schmaltz, Rodney, 1976-, author VI. Title.

BF121.P8327 2016 150 C2015-905563-6

PEARSON

ISBN 978-0-13-387028-2

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PREFACE

"What are infants' earliest memories?" "Does watching violence on TV really teach children to become violent?" "Is human intelligence related to brain size?" "Is it usually dangerous to wake up sleepwalkers?" "Do genes contribute to obesity?" "Is the polygraph test really a *lie detector*?" "Should we trust self-help books?"

Every day, our students encounter a host of questions that challenge their understanding of themselves and others. Whether it's from the Internet, television programs, radio call-in shows, movies, self-help books, or advice from friends, our students' daily lives are a steady stream of information—and often misinformation—about intelligence testing, parenting, romantic relationships, mental illness, drug abuse, psychotherapy, and a host of other topics. Much of the time, the questions about these issues that most fascinate students are precisely those that psychologists routinely confront in their research, teaching, and practice.

As we begin our study of psychology, it's crucial to understand that we're *all* psychologists. We need to be able to evaluate the bewildering variety of claims from the vast world of popular psychology. Without a framework for evaluating evidence, making sense of these often contradictory findings can be a bewildering task for anyone. It's no surprise that the untrained student can find claims regarding memory- and mood-enhancing drugs, the overprescription of stimulants, the effectiveness of Prozac, and the genetic bases of psychiatric disorders, to name only a few examples, difficult to evaluate. Moreover, it is hard for those who haven't been taught to think scientifically to make sense of extraordinary psychological claims that lie on the fringes of scientific knowledge, such as extrasensory perception, subliminal persuasion, astrology, alien abductions, lie-detector testing, handwriting analysis, and inkblot tests, among many others. Without a guide for distinguishing good from bad evidence, our students are left to their own devices when it comes to weighing the merits of these claims.

Our goal in this text, therefore, is to empower readers to apply scientific thinking to the psychology of their everyday lives. By applying scientific thinking—thinking that helps protect us against our tendencies to make mistakes—we can better evaluate claims about both laboratory research and daily life. In the end, we hope that students will emerge with the "psychological smarts," or open-minded skepticism, needed to distinguish psychological misinformation from psychological information. We'll consistently urge students to keep an open mind to new claims but to insist on evidence. Indeed, our overarching motto is that of space scientist James Oberg (sometimes referred to as "Oberg's dictum"): *Keeping an open mind is a virtue, just so long as it is not so open that our brains fall out.*

WHAT'S NEW IN THIS EDITION?

Psychology: From Inquiry to Understanding continues its commitment to emphasize the importance of scientific thinking skills. In the third Canadian edition, our focus has been to better convey the excitement of psychological science to the reader and to help the reader connect the dots between inquiry and understanding. In addition, thanks to the ongoing support and feedback from instructors and students of our text, the third Canadian edition reflects many insightful and innovative updates that we believe enhance the text. Among the key changes made to the third Canadian edition are the following:

General Changes

- For the third Canadian edition, we took great care to revise the narrative throughout to improve flow and to strike a better balance between presenting the value and fun of sound psychological science on the one hand, and the warning signs and dangers of pseudoscience on the other.

- A new "From Inquiry to Understanding" feature in every chapter shows the power of psychological science to answer enduring mysteries about human behaviour, emotion, and thought. Features examine such questions as "How do we recognize faces?" "How do magic tricks work?" and "Why do we experience déjà vu?"
- Updated coverage throughout is based on the Fifth Edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5).
- MyPsychLab icons integrated in the text guide students to the best of our Web-based practice quizzes, tutorials, videos, and simulations that consolidate the knowledge they acquired from the textbook. The icons are not exhaustive—many more resources are available than those highlighted in the text—but they draw attention to some of the most high-interest materials available at www.pearsonmylabmastering.com.

New Content and Updated Research

- **Chapter 1 (Psychology and Scientific Thinking)** has been reorganized to begin with the history of psychology. Information on evolutionary psychology has been expanded, and updated Canadian statistics on belief in the paranormal have been added.
- **Chapter 2 (Research Methods)** now includes expanded discussion of naturalistic observation with Bowker et al.'s (2009) research on hockey parents.
- **Chapter 3 (Biological Psychology)** includes updated research and a streamlined organization.
- **Chapter 4 (Sensation and Perception)** has been fully reorganized so that sensation and perception are discussed separately.
- **Chapter 5 (Consciousness)** includes updated statistics on Canadian drug and alcohol use.
- **Chapter 6 (Learning)** includes clarified discussion of the discriminative stimulus and a new section on the discovery of Little Albert's identity by Canadian researchers Russ Powell and Nancy Digdon.
- **Chapter 7 (Memory)** includes a new overview of long-term depression (LTD).
- **Chapter 8 (Thinking, Reasoning, and Language)** has been reorganized to begin with thinking and reasoning topics, including coverage of heuristics and biases (formerly in Chapter 2).
- **Chapter 10 (Human Development)** includes updated information on divorce rates in Canada and on the rate of career changes in a typical lifetime.
- **Chapter 12 (Stress, Coping, and Health)** includes updated statistics for smoking, weight, and breast cancer.
- **Chapter 13 (Social Psychology)** includes new references on culture, attributions, and stereotypes.
- **Chapter 14 (Personality)** features additional discussion on the impact of birth order on personality.
- **Chapter 15 (Psychological Disorders)** has been fully updated based on the DSM-5, and includes revised discussions of disorders and statistics regarding the epidemiology of mental disorders. The chapter also includes new research on suicide and updates statistics about autism.
- **Chapter 16 (Psychological and Biological Treatments)** features new references and information on self-help books.

ruling out rival hypotheses

HAVE IMPORTANT ALTERNATIVE EXPLANATIONS FOR THE FINDINGS BEEN EXCLUDED?

correlation vs. causation

CAN WE BE SURE THAT A CAUSES B?

falsifiability

CAN THE CLAIM BE DISPROVED?

replicability

CAN THE RESULTS BE DUPLICATED IN OTHER STUDIES?

extraordinary claims

IS THE EVIDENCE AS CONVINCING AS THE CLAIM?

occam's razor

DOES A SIMPLER EXPLANATION FIT THE DATA JUST AS well?

FROM INQUIRY TO UNDERSTANDING: THE FRAMEWORK IN ACTION

As instructors, we find that students new to psychology tend to learn best when information is presented within a clear, effective, and meaningful framework—one that encourages inquiry along the path to understanding. As part of the inquiry-to-understanding framework, our pedagogical features and assessment tools work to empower students to develop a more critical eye in understanding the psychological world and their place in it.

Thinking Scientifically

In Chapter 1, we introduce readers to the **Six Principles of Scientific Thinking** that are the framework for lifelong learning of psychology. Coloured arrows appear in the margins whenever the principles are referenced to reinforce these scientific thinking principles in readers' minds. In this way, readers come to understand these principles as key skills for evaluating claims in scientific research and in everyday life.

A new feature for the third Canadian edition, **From Inquiry to Understanding**, tells the story of how psychological science has helped shed light on a longstanding psychological mystery. We begin with a question that many students may have asked at some point prior to their study of psychology, and then we step through the methods and processes used by psychological scientists to gain a better understanding of human behaviour and thought.

from inquiry to understanding

WHY DO WE PERCEIVE PATTERNS EVEN WHEN THEY DON'T EXIST?

Our tendency to see patterns in meaningless data is so profound that one science writer, Michael Shermer (2008), gave it a name: **patternicity**. Although patternicity can lead to errors, it probably stems from an evolutionarily adaptive tendency (Reich, 2010). If we eat a specific food, say a bacon cheeseburger, for lunch tomorrow and become violently ill soon afterward, we'll tend to avoid bacon cheeseburgers for a while (Chapter 6). We'll do so even though there's a very good chance that the link between the cheeseburger and our becoming ill was purely coincidental. No matter—our brains tend to seek out patterns and connections among events, because of a basic evolutionary principle: "better safe than sorry." All things being equal, it's usually better to assume that a connection between two events exists than to assume that it doesn't, especially when one of the events is physically dangerous.

wers are located at the end of the text.

HEALTH BENEFITS OF FRUITS AND VEGETABLES — Evaluating CLAIMS

We all know the importance of eating a balanced diet with plenty of fruits and vegetables. Yet many popular media sources exaggerate the health benefits of fruits and vegetables and even make dangerous claims about their ability to cure serious illnesses like diabetes or cancer. Let's evaluate some of these claims, which are modelled after actual advertisements.

dies show that ing walnuts *may* uce your risk and ay the onset of heimer's."

use of the qualifying l "may" renders the difficult or impossible lsify. What would we to know about how studies were conted to validate the claim?

"Avoid drugs or surgery and find a *completely natural* cure for your disease."

The phrase "completely natural" implies that the cure is safer than drugs or surgery. Can you think of any natural substances (including fruits and vegetables) that are dangerous or even fatal?

"These natural cures come from *ancient cultures* and have been handed down for thousands of years."

Does the fact that something has been around for a long time mean it is trustworthy? What logical fallacy does this ad commit?

psychomythology

THE HOT HAND: REALITY OR ILLUSION?

Because we're meaning-seeking organisms, we find it almost impossible *not* to detect patterns in random data. If we flip a coin four times and it comes up heads all four times, we may begin to think we're on a streak. Instead, we're probably just being fooled by randomness (Mlodinow, 2008; Taleb, 2004). The same phenomenon extends to sports.

Basketball players, coaches, and fans are fond of talking about the "hot hand." Once a player has made three or four shots in a row, he's "hot," "in the zone," and "on a roll." One television basketball announcer, former star centre Bill Walton, once criticized a team's players for not getting the ball to a fellow player who'd just made several consecutive baskets ("He's got the hot hand—get him the ball!"). It certainly *seems* as though basketball players go on streaks. Do they?

To find out, Thomas Gilovich and his colleagues got hold of the shooting records of the 1980–1981 Philadelphia 76ers, then the only basketball team to keep precise records of which player made which shot in which order (Gilovich, Vallone, & Tversky, 1985).The researchers looked at the probability of a successful shot (a hit) following three misses, then the probability of a successful shot following two misses, all the way to the probability of a successful shot following three successful shots.

Applications of Scientific Thinking

In keeping with the text's theme, the **Evaluating Claims** feature prompts students to use scientific thinking skills to evaluate claims they are likely to encounter in various forms of media. Answers are provided at the end of the text.

Apply Your Scientific Thinking Skills questions (located at the end of each chapter) invite students to investigate current topics of debate or controversy and use their scientific thinking skills to make informed judgments about them. Sample answers to these questions appear in the Instructor's Resource Manual, making them ideal for outside research and writing assignments.

Each chapter also contains a **Psychomythology** box focusing in depth on a widespread psychological misconception. In this way, students will come to recognize that their common sense intuitions about the psychological world are not always correct and that scientific methods are needed to separate accurate from inaccurate claims.

Located in the margins of every chapter, **Factoids** present interesting and surprising facts.

FACTOID

The Nobel Prize–winning physicist Luis Alvarez once had an eerie experience: While reading the newspaper, he encountered a phrase that reminded him of an old childhood friend he had not thought about for decades. A few pages later, he came upon that person's obituary! Initially stunned, Alvarez (1965) performed some calculations and determined that given the number of people on Earth and the number of people who die every day, this kind of strange coincidence probably occurs about 3000 times across the world each year.

Integrated Cultural Content

Wherever relevant, we highlight noteworthy and well-replicated research findings bearing on cultural and ethnic differences. By doing so, students should come to understand that many psychological principles have boundary conditions and that scientific psychology focuses as much on differences as commonalities.

A FOCUS ON MEANINGFUL PEDAGOGY: HELPING STUDENTS SUCCEED IN PSYCHOLOGY

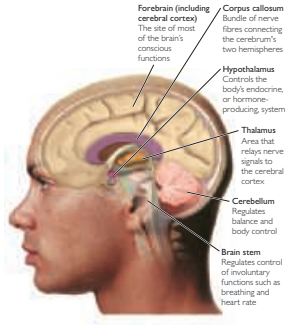
Our goal of applying scientific thinking to the psychology of everyday life is reflected in the text's pedagogical plan. The features in the text, the end-of-chapter review, our online MyPsychLab resource, and the print and media supplements were designed to help students achieve a mastery of the subject and succeed in the course.

How does the pedagogy help students identify the key concepts in psychology?

Think About It questions, located at the start of every chapter, highlight some of the common questions that students have about psychology. Together with the **Chapter Outline,** they serve to preview the key topics that will be discussed in each chapter. Each chapter is organized around **Numbered Learning Objectives,** which are listed at the start of each major section. These objectives allow instructors to assess their students' knowledge of the course material. The end-of-chapter summary and assessment material is also organized around these objectives. Students' understanding of important terminology is enhanced with our on-page **Glossary.**

How does the pedagogy help guide students' understanding of concepts?

Colour-coded biological art orients students at both the micro and macro levels as they move through the text and forge connections among concepts. **Interactive photo captions** test students on their scientific thinking skills and invite them to evaluate whether or not the photo is an accurate depiction of psychological phenomena. Answers appear at the bottom of the page.



? Like some people of Asian heritage, this person shows a pronounced flushing response after having a drink, as seen in this before and after panel. **Based on the research literature, is he likely to be at increased or decreased risk for alcohol problems in later life compared with most people?** (See answer upside down at bottom of page).

How does the pedagogy help students to reinforce what they've learned?

At the end of each major topic heading, we provide an **Assess Your Knowledge: Fact or Fiction?** review of selected material to further reinforce concept comprehension and foster students' ability to distinguish psychological fact from fiction. Throughout the text, **MyPsychLab** icons direct students to additional online study and review material such as videos, simulations, and practice quizzes and customized study plans.

assess your knowledge — **FACT or FICTION?**

1. Psychology involves studying the mind at one specific level of explanation. **True / False**
2. Psychological influences are rarely independent of one another. **True / False**
3. Single-variable explanations of behaviour are rarely found in popular psychology. **True / False**
4. An investigator studying a culture from the perspective of the insider would be using an emic approach. **True / False**
5. That we mutually influence each other's behaviour is known as multiple determinism. **True / False**

Answers: 1. F (p. xx); 2. T (p. xx); 3. F (p. xx); 4. T (p. xx); 5. F (p. xx)

Simulate
Explore
Watch
Listen

YOUR COMPLETE REVIEW SYSTEM

Answers are located at the end of the text.

WHAT IS PSYCHOLOGY? 2–5

LO 1.1 DESCRIBE HOW PSYCHOLOGY SPANS MULTIPLE LEVELS OF ANALYSIS.

Psychology is the scientific study of the mind, brain, and behaviour. To fully understand psychology, we must consider multiple levels of analysis. The levels of analysis range from molecules to brain structures to thoughts, feelings and emotions, as well as social and cultural influences.

1. If we think of the levels of analysis as rungs on a ladder, what would we consider the low rungs? (p. x)
2. Why must we consider multiple levels of analysis when we are trying to explain behaviour? (p. x)

LO 1.2 IDENTIFY THE CHALLENGES THAT MAKE THE STUDY OF MIND, BRAIN, AND BEHAVIOUR ESPECIALLY COMPLEX.

The fundamental questions of psychology can be difficult to answer. Human behaviour is hard to predict because the majority of our actions are multiply determined. In addition, psychological influences are rarely independent of each other. Culture also places limitations on the generalizations that psychologists can draw.

3. List five reasons that the study of psychology can be especially complex. (p. x)
4. A psychologist who studies culture from the perspective of an outsider is using a(n) _____ approach. (p. x)

PSYCHOLOGY'S PAST AND PRESENT: WHAT A LONG, STRANGE TRIP IT'S BEEN 5–15

LO 1.3 IDENTIFY THE MAJOR THEORETICAL FRAMEWORKS OF PSYCHOLOGY.

Five major theoretical orientations have played key roles in shaping the field. Structuralism aimed to identify the basic elements of experience through the method of introspection. Functionalism hoped to understand the adaptive purposes of behaviour. Behaviorism grew out of the belief that psychological science must be completely objective and derived from laws of learning. The cognitive view emphasized the importance of mental processes in understanding behaviour. Psychoanalysis focused on unconscious processes and urges as causes of behaviour.

5. Structuralism aimed to identify the basic elements of thought through _____. (pp. xx–xx)
6. For traditional behaviorists, the human mind is a _____. (p. xx)
7. Cognitivists believe our _____ of rewards and punishments is/are a crucial determinant of our behaviour. (p. xx)

LO 1.4 DESCRIBE DIFFERENT TYPES OF PSYCHOLOGISTS AND IDENTIFY WHAT EACH OF THEM DOES.

There are many types of psychologists. Clinical and counseling psychologists often conduct therapy. School psychologists develop intervention programs for children in school settings. Industrial organizational psychologists often work in companies and business and are involved in maximizing employee performance. Many forensic psychologists work in prisons or court settings. Many other psychologists conduct research. For example, developmental psychologists study systematic change in individuals over time. Experimental psychologists study learning and thinking, and biological psychologists study the biological basis of behaviour.

8. A(n) _____ psychologist primarily studies the physiological bases of behaviour in animals and humans. (p. xx)
9. How do developmental psychologists spend the bulk of their time? (p. xx)

Developmental Psychologist

LO 1.5 DESCRIBE THE TWO GREAT DEBATES THAT HAVE SHAPED THE FIELD OF PSYCHOLOGY.

The two great debates are the nature–nurture debate, which asks whether our behaviours are attributable mostly to our genes (nature) or to our rearing environments (nurture), and the free will–determinism debate, which asks to what extent our behaviours are freely selected rather than caused by factors outside our control. Both debates continue to shape the field of psychology.

10. _____, a discipline that applies Darwin's theory of natural selection to human and animal behaviour, has shed light on the nature–nurture debate. (p. xx)
11. Many psychologists, such as _____, believe that free will is an illusion. (p. xx)

SCIENCE VERSUS INTUITION 15–21

LO 1.6 EXPLAIN WHY PSYCHOLOGY IS MORE THAN JUST COMMON SENSE.

Although we often rely on our common sense to understand the psychological world, our intuitive understanding of ourselves and others is often mistaken. Naive realism is the error of believing that we see the world precisely as it is. It can lead us to false beliefs about ourselves and our world, such as believing that our perceptions and memories are always accurate.

12. Which would be a better description of naive realism: "seeing is believing" or "believing is seeing"? (p. x)
13. What does the top hat illusion tell us about our ability to trust our own intuitions and experiences? (p. x)

14. True or False: Common sense is rarely, if ever, correct. (p. x)

How does the pedagogy help students synthesize information and assess their knowledge?

Your Complete Review System, located at the end of every chapter, includes a summary, quiz questions, and visual activities, all organized by the major chapter sections and tied to chapter learning objectives. **Apply Your Scientific Thinking Principles** questions challenge students to research and evaluate current event topics. A complete list of key terms is also provided.

DO YOU KNOW THESE TERMS?

- psychology (p. 3)
- levels of analysis (p. 3)
- multiply determined (p. 3)
- individual differences (p. 4)
- introspection (p. 5)
- structuralism (p. 7)
- functionalism (p. 7)
- natural selection (p. 8)
- behaviourism (p. 9)
- cognitive psychology (p. 9)
- cognitive neuroscience (p. 10)
- psychoanalysis (p. 10)
- evolutionary psychology (p. 13)
- naive realism (p. 15)
- scientific theory (p. 17)
- hypothesis (p. 17)
- confirmation bias (p. 18)
- belief perseverance (p. 19)
- metaphysical claim (p. 19)
- pseudoscience (p. 22)
- ad hoc immunizing hypothesis (p. 23)
- patternicity (p. 24)
- terror management theory (p. 26)
- scientific skepticism (p. 29)
- critical thinking (p. 30)
- correlation–causation fallacy (p. 32)
- variable (p. 32)
- falsifiable (p. 32)
- risky prediction (p. 33)
- replicability (p. 33)
- basic research (p. 35)
- applied research (p. 35)

APPLY YOUR SCIENTIFIC THINKING SKILLS

Use your scientific thinking skills to answer the following questions, referencing specific scientific thinking principles and common errors in reasoning whenever possible.

1. Psychology is a discipline that spans many levels of analysis, yet the popular media often assign only a single cause to a complex issue. Locate three media articles on an issue, such as homelessness or terrorism, and compare their views on the root causes and possible solutions to this issue. How many levels of analysis does each article consider?
2. How can our scientific thinking skills help us to evaluate the seemingly conflicting news we hear about nutrition and exercise? Choose a health topic to investigate further (for example: How much exercise do we need each day? Is drinking red wine every day healthy? Should we limit our intake of carbohydrates?) and locate three articles with conflicting views on the topic. What errors or logical fallacies do the articles commit? How can you evaluate the accuracy of the articles and the advice they provide?
3. Confirmation bias is widespread in everyday life, especially in the world of politics. Take a political issue that's been controversial recently (such as privacy, approaches to terrorism, or the legalizatio of marijuana), and locate two opinion pieces that adopt opposing stances on this issue. Did each author attempt to avoid confirmatio bias—for example, by acknowledging and thoughtfully discussing arguments that might challenge his or her position—or instead fall victim to confirmation bias? Did each author try to interpret contrary evidence in a fair or in a biased fashion? Explain your answ with reference to one or more specific examples in each case.

PUTTING SCIENTIFIC THINKING TO THE TEST: INNOVATIVE AND INTEGRATED SUPPLEMENTS

Psychology: From Inquiry to Understanding is accompanied by a collection of teaching and learning supplements designed to reinforce the scientific thinking skills from the text. These supplements "put scientific thinking to the test" by reinforcing our framework for evaluating claims and assessing students' ability to think scientifically in a variety of psychological and real-world situations. Please contact your local Pearson representative for details.

Instructor Resources

The Instructor Resources are available online via the Instructor Resources section of MyPsychLab and http://catalogue.pearsoned.ca/. The following supplements are designed to facilitate lecture presentations, encourage class discussions, aid in creating tests, and foster learning:

Test Bank (Test Item File)

The thoroughly updated and revised test bank contains over 2000 multiple choice, fill-in-the-blank, short-answer, and essay questions—each referenced to the relevant page in the textbook. Many of these questions are designed to test students' scientific thinking skills. An additional feature of the test bank is the inclusion of rationales for the correct answer in the conceptual and applied multiple-choice questions. The rationales help instructors evaluate the questions they are choosing for their tests and give instructors the option to use the rationales as an answer key for their students. Feedback from customers indicates

that this unique feature is useful for ensuring quality and quick responses to student queries. A two-page Total Assessment Guide chapter overview makes creating tests easier by listing all of the test items in an easy-to-reference grid. The Total Assessment Guide organizes all test items by text section and question type/level of difficulty. All multiple-choice questions are categorized as factual, conceptual, or applied.

Computerized Test Bank

Pearson's computerized test banks allow instructors to filter and select questions to create quizzes, tests or homework. Instructors can revise questions or add their own, and may be able to choose print or online options. These questions are also available in Microsoft Word format.

PowerPoint Presentations

Our colourful electronic slides are available in Microsoft PowerPoint®. The slides highlight, illuminate, and build on key concepts in the text.

Instructor's Resource Manual

The Instructor's Resource Manual gives you unparalleled access to a huge selection of classroom-proven assets. First-time instructors will appreciate the detailed introduction to teaching an introductory psychology course, with suggestions for preparing for the course, sample syllabi, and current trends and strategies for successful teaching. Each chapter offers activities, exercises, assignments, handouts, and demos for in-class use, as well as guidelines for integrating media resources into the classroom and syllabus. The material is organized in an easy-to-use Chapter Lecture Outline. This resource saves prep work and helps you make maximum use of classroom time. A unique hyperlinking system allows for easy review of relevant sections and resources.

Image Library

The Image Library is an impressive resource to help instructors create vibrant lecture presentations. Almost every figure and table from the text is provided in electronic format and is organized by chapter for convenience. These images can be imported easily into Microsoft PowerPoint to create new presentations or to add to existing ones.

Learning Solutions Managers

Pearson's Learning Solutions Managers work with faculty and campus course designers to ensure that Pearson technology products, assessment tools, and online course materials are tailored to meet your specific needs. This highly qualified team is dedicated to helping schools take full advantage of a wide range of educational resources by assisting in the integration of a variety of instructional materials and media formats. Your local Pearson Education sales representative can provide you with more details on this service program.

Student Supplements

Student Study Guide (978-013-390382-9)
The study guide is filled with review material, in-depth activities, and self-assessments. Special sections devoted to study skills, concept mapping, and the evaluation of websites appear at the start of the guide.

MyPsychLab … where learning comes to life!

MyPsychLab is a state-of-the-art interactive and instructive solution designed to help you master introductory psychology. MyPsychLab provides access to a wealth of resources all geared to meet your learning needs.

What Is MyPsychLab?

MyPsychLab is a learning and assessment tool that enables instructors to assess student performance and adapt course content without investing additional time or resources. Instructors decide the extent of integration, from independent self-assessment for students to total course management. Students benefit from an easy-to-use site at which they can test themselves on key content, track their progress, and create individually tailored study plans. By transferring faculty members' most time-consuming tasks—content delivery, student assessment, and grading—to automated tools, MyPsychLab allows teachers to spend more quality time with students. For sample syllabi with ideas on incorporating content, go to http://www.mypsychlab.com.

MyPsychLab includes these powerful, engaging features:

- **Pearson eText:** Pearson eText gives students access to the text whenever and wherever they have online access to the Internet. eText pages look exactly like the printed text, offering powerful new functionality for students and instructors. Users can create notes, highlight text in different colours, create bookmarks, zoom, click hyperlinked words and phrases to view definitions, and view in single-page or two-page view.
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- **Gradebook for Instructors:** Automated gradebook and full course management capabilities for instructors teaching online or hybrid courses.

A FINAL WORD & THANKS

For the authors, writing this book has been a great deal of work, but it's also been a labour of love. When we began this undertaking, we could never have imagined the number of committed, selfless, and enthusiastic colleagues in the psychology community who would

join us on this path to making this textbook a reality. During the long months of writing and revising, the feedback and support from fellow instructors, researchers, and students helped keep our energy high and our minds sharp. We stand in awe of their love of the discipline and the enthusiasm and imagination each of these individuals bring to the psychology classroom every day. This text is the culmination of their ongoing support from first to final draft and then subsequent revisions, and we are forever grateful to them.

Although the authors' names enjoy real estate on the front cover, no work of this volume could ever be accomplished without the talent, dedication, and hard work of a gifted team at Pearson (in short, all the unlisted names); and to all of them we extend our heartfelt gratitude and sincere thanks. We owe special thanks to both Matthew Christian (Acquisitions Editor) and Joanne Sutherland (Developmental Editor) for their enthusiasm and creativity, for their patience and understanding, and for their rare gift to embrace a wonderful vision that this book became; and to Gary Bennett (VP) and Claudine O'Donnell (Editorial Director) for believing in this work and inspiring their team to fruition. To Claire Varley (Marketing Manager), Jessica Mifsud (Project Manager), and, of course, Madhu Ranadive (Program Manager), we owe sincere thanks for their spirit and commitment. Of course, this project warrants merit and thanks to those who paid especially close attention to the vital details we may have overlooked, including Charlotte Morrison-Reed (Copy Editor), Audrey Dorsch (Proofreader), Anthony Leung (Designer), and Lila Campbell (Media Editor)—the book stands proudly from their toil and scrutiny.

We would also like to extend our appreciation to Erik Jansen and Samantha Burton for their exhaustive research efforts.

We are indebted to the members of our review panel who evaluated chapters and provided expert analysis on critical topic areas. Their input proved invaluable to us, and we thank them for it: Elizabeth Bowering, Mount Saint Vincent University; Trevor Hamilton, MacEwan University; Antonia Henderson, Langara College; Mark Holder, University of British Columbia; Adam Howorko, MacEwan University, Concordia University College; Heather Poole, McMaster University.

We dedicate this book to Barry Lane Beyerstein (1947–2007), great scholar and valued friend.

My deepest gratitude to David Lykken, Paul Meehl, Tom Bouchard, Auke Tellegen, and my other graduate mentors for an invaluable gift that I will always cherish: scientific thinking.
—Scott Lilienfeld

To Fern Pritikin Lynn, my heart and my soul.
—Steven Jay Lynn

To DJ, who inspires me every day.
—Laura Namy

To Larry, Lawson, and Ashley.
—Nancy Woolf

To Jim Nickels — mentor, inspiration, friend.
—Kenneth Cramer

To Michelle, Devin, and Kaitlyn.
—Rodney Schmaltz

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1 PSYCHOLOGY AND SCIENTIFIC THINKING

a framework for everyday life

THINK ABOUT IT

IS PSYCHOLOGY MOSTLY JUST COMMON SENSE?

SHOULD WE TRUST MOST SELF-HELP BOOKS?

IS PSYCHOLOGY REALLY A SCIENCE?

ARE CLAIMS THAT CAN'T BE PROVEN WRONG SCIENTIFIC?

ARE ALL CLINICAL PSYCHOLOGISTS PSYCHOTHERAPISTS?

test of popular psychology knowledge

1. Most people use only about 10 percent of their brain capacity. **True / False**
2. Newborn babies are virtually blind and deaf. **True / False**
3. Hypnosis enhances the accuracy of our memories. **True / False**
4. All people with dyslexia see words backwards (like *tac* instead of *cat*). **True / False**
5. In general, it is better to express anger than to hold it in. **True / False**
6. The lie-detector (polygraph) test is 90 to 95 percent accurate at detecting falsehoods. **True / False**
7. People tend to be romantically attracted to individuals who are opposite to them in personality and attitudes. **True / False**
8. The more people present at an emergency, the more likely it is that at least one of them will help. **True / False**
9. People with schizophrenia have more than one personality. **True / False**
10. All effective psychotherapies require clients to get to the root of their problems in childhood. **True / False**

For many of you reading this text, this may be your first psychology course. If you're like most people, much of what you've learned about psychology comes from watching television programs and movies, listening to radio call-in shows, reading self-help books and popular magazines, surfing the Internet, and talking to friends. In short, most of your psychology knowledge probably derives from the popular psychology industry: a sprawling network of everyday sources of information about human behaviour.

Take a moment to review the ten test questions above. Beginning psychology students typically assume that they know the answers to most of them. That's hardly surprising, as these assertions have become part of popular psychology lore. Yet most students are surprised to learn that *all* ten of these statements are false! This exercise illustrates a take-home message we'll emphasize throughout the text: *Although common sense can be enormously useful for some purposes, it's sometimes completely wrong* (Chabris & Simons, 2010). This can be especially true in psychology, a field that strikes many of us as self-evident, even obvious. In a sense, we're *all* psychologists, because we deal with psychological phenomena, like love, friendship, anger, stress, happiness, sleep, memory, and language, in our daily lives (Lilienfeld et al., 2009). As we'll discover, everyday experience can often be helpful in allowing us to navigate the psychological world, but it doesn't necessarily make us an expert (Kahneman & Klein, 2009).

Watch IT-Video: Psychology

Watch Thinking Like a Psychologist: Debunking Myths

WHAT IS PSYCHOLOGY?

LO 1.1 Describe how psychology spans multiple levels of analysis.

LO 1.2 Identify the challenges that make the study of mind, brain, and behaviour especially complex.

William James (1842–1910), often regarded as the founder of American psychology, once described psychology as a "nasty little subject." As James noted, psychology is difficult to study, and simple explanations are few and far between. If you enrolled in this course expecting cut-and-dried answers to psychological questions, such as why you become angry or fall in love, you may be disappointed. But if you enrolled in the hopes of acquiring more insight into the hows and whys of human behaviour, stay tuned, because a host of delightful surprises are in store. When reading this textbook, prepare to find many of

your preconceptions about psychology challenged; to encounter new ways of thinking about the causes of your everyday thoughts, feelings, and actions; and to apply these ways of thinking to evaluating psychological claims in your everyday life.

Psychology and Levels of Analysis

The first question often posed in introductory psychology textbooks could hardly seem simpler: What is psychology? Although psychologists disagree about many things, they agree on one thing: psychology isn't easy to define (Henriques, 2004; Lilienfeld, 2004). For the purposes of this text, we'll simply refer to **psychology** as the scientific study of the mind, brain, and behaviour.

Psychology is a discipline that spans multiple **levels of analysis**. We can think of levels of analysis as rungs on a ladder, with the lower rungs tied most closely to biological influences and the higher rungs tied most closely to social influences (Ilardi & Feldman, 2001; Kendler, 2005). The levels of analysis in psychology stretch all the way from molecules to brain structures on the low rungs to thoughts, feelings, and emotions, and to social and cultural influences on the high rungs, with many levels in between (Cacioppo et al., 2000; Satel & Lilienfeld, 2013) (see **FIGURE 1.1**). The lower rungs are more closely tied to what we traditionally call "the brain," the higher rungs to what we traditionally call "the mind." But it is crucial to understand that "brain" and "mind" are just different ways of describing the same "stuff," but at different levels of analysis. As we'll learn in Chapter 3, the "mind" is just the brain in action. Although scientific psychologists may differ in which rungs they choose to investigate, they're united by a shared commitment to understanding the causes of human and animal behaviour.

We'll cover all of these levels of analysis in coming chapters. When doing so, we need to keep one crucial guideline in mind: *to fully understand psychology, we must consider multiple levels of analysis*. That's because each level tells us something different, and we gain new knowledge from each vantage point. Some psychologists believe that biological factors—like the actions of the brain and its billions of nerve cells—are most critical for understanding the causes of behaviour. Others believe that social factors—like parenting practices, peer influences, and culture—are most critical for understanding the causes of behaviour (Meehl, 1972). In this text, we'll steer away from these two extremes, because both biological and social factors are essential for a complete understanding of psychology (Kendler, 2005).

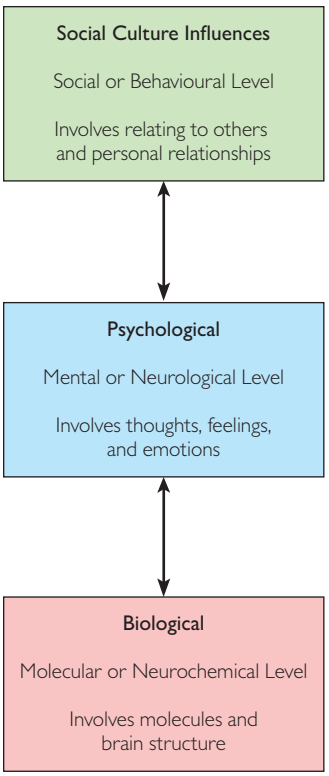


FIGURE 1.1 Levels of Psychological Analysis. We can view psychological phenomena at multiple levels of analysis, with lower levels being more biological and higher levels being more social. Each level provides us with unique information and offers us a distinctive view of the phenomenon at hand.

What Makes Psychology Distinctive—and Fascinating

A key theme of this textbook is that we can approach psychological questions scientifically, and in much the same way as we can approach questions in biology, chemistry, and physics. Yet in some ways, psychology is distinctive, if not unique, from other sciences. A host of challenges make the study of mind, brain, and behaviour especially complex; yet it's precisely these challenges that also make psychology fascinating, because they contribute to scientific mysteries that psychologists have yet to solve. Here we'll touch briefly on five especially intriguing challenges that we'll be revisiting throughout the text.

First, human behaviour is difficult to predict, in part because almost all actions are **multiply determined**—that is, produced by many factors. That's why we need to be profoundly skeptical of *single-variable explanations* of behaviour, which are widespread in popular psychology. Although it's tempting to explain complex human behaviours, like violence, in terms of a single causal factor, such as poverty or genes, we'd almost surely be wrong because such behaviours are due to the interplay of an enormous array of factors.

Second, psychological influences are rarely independent of each other, making it difficult to pin down which cause or causes are operating. Imagine yourself as a scientist attempting to explain why some women develop *anorexia nervosa*, a severe eating disorder we'll discuss in Chapter 11. You could start by identifying several factors that might contribute to anorexia nervosa, like anxiety-proneness, compulsive exercise, perfectionism, excessive concern with body image, and exposure to television programs that feature thin

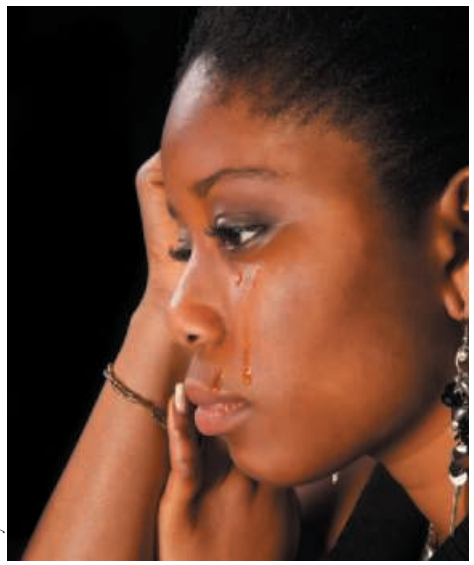
Picture Partners/Alamy

Psychology may not be one of the traditional "hard sciences," like chemistry, but many of its fundamental questions are even harder to answer.

psychology
the scientific study of the mind, brain, and behaviour

levels of analysis
rungs on a ladder of analysis, with lower levels tied most closely to biological influences and higher levels tied most closely to social influences

multiply determined
caused by many factors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Each of these panels from everyday life poses a different psychological question: (1) Why do some of us become depressed for no apparent reason? (2) What makes us angry? (3) Why do we fall in love? Although the science of psychology doesn't provide easy answers to any of these questions, it does offer valuable insights into them.

models. Let's say that you now want to focus on just one of these potential influences, like perfectionism. Here's the problem: Women who are perfectionists also tend to be anxious, to exercise a lot, to be overly concerned with their body image, to watch television programs that feature thin models, and so on. The fact that all of these factors tend to be interrelated makes it tricky to pinpoint which actually contributes to anorexia nervosa. They could all be playing a role, but it's hard to know for sure.

Third, people differ from each other in thinking, emotion, personality, and behaviour. These **individual differences** help to explain why each person responds in a different way to the same objective situation, such as an insulting comment from a boss (Harkness & Lilienfeld, 1997). Entire fields of psychology, such as the study of intelligence, interests, personality, and mental illness, focus on individual differences (Lubinski, 2000). Individual differences make psychology challenging because they make it difficult to come up with explanations of behaviour that apply to everyone; at the same time, they make psychology exciting, because people whom we assume we understand well often surprise us with their reactions to life events.

Fourth, people often influence each other, making it difficult to pin down what causes what (Wachtel, 1973). For example, if you're an extroverted person, you're likely to make the people around you more outgoing. In turn, their outgoing behaviour may "feed back" to make you even more extroverted, and so on. This is an example of what Albert Bandura (1973) called *reciprocal determinism*—the fact that we mutually influence each other's behaviour (see Chapter 14). Reciprocal determinism can make it challenging to isolate the causes of human behaviour.

Fifth, people's behaviour is often shaped by culture. Cultural differences, like individual differences, place limits on the generalizations that psychologists can draw about human nature (Henrich, Heine, & Norenzayan, 2010). To take one example, University of Alberta researcher Takahiko Masuda and his colleagues found that Western and Japanese study participants often notice different things in pictures (Masuda et al., 2008). Researchers showed participants cartoons that had a person with a happy, sad, angry, or neutral expression, surrounded by people who had either a similar or a different expression. The researchers found that the expressions of the people surrounding the target person influenced Japanese participants, but not Western ones. Using eye-tracking technology, which allows researchers to determine where subjects are moving their eyes, they found that Western participants tended to look mostly at the target person, whereas Japanese participants tended to look more at the people surrounding the target person. This research supports previous findings that indicate Westerners view emotion as stemming from the individual, whereas Easterners see an individual's emotional state as highly tied to the emotional state of the group (e.g., Markus & Kitayama, 1991; Chua, Boland, & Nisbett, 2005). This interesting work dovetails with evidence that people from a Western culture tend to focus on central details, whereas people from an Eastern culture tend to focus on peripheral or incidental details (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001). Cultural differences place further limits on the broad generalizations about human nature that psychologists can draw.

Social scientists sometimes distinguish between emic and etic approaches to cross-cultural psychology. In an *emic* approach, investigators study the behaviour of a culture from the perspective of a "native" or insider, whereas in an *etic* approach, they study the behaviour of a culture from the perspective of an outsider (Harris, 1976). A researcher using an emic approach studying the personality of inhabitants of an isolated Pacific island would probably rely on personality terms used by members of that culture. In contrast, a researcher using an etic approach would probably adapt and translate personality terms used by Western culture, like shyness and extroversion, to that culture. Each approach has its pluses and minuses. Investigators who adopt an emic approach may better understand the unique characteristics of a culture, but they may overlook characteristics that this culture shares with others. In contrast, investigators who adopt an etic approach may be better able to view this culture within the broader perspective of other cultures, but they may unintentionally impose perspectives from their own culture onto others.

individual differences
variations among people in their thinking, emotion, personality, and behaviour

assess your knowledge FACT or FICTION?

1. Psychology involves studying the mind at one specific level of explanation. **True / False**
2. Psychological influences are rarely independent of one another. **True / False**
3. Single-variable explanations of behaviour are rarely found in popular psychology. **True / False**
4. An investigator studying a culture from the perspective of the insider would be using an emic approach. **True / False**
5. That we mutually influence each other's behaviour is known as multiple determinism. **True / False**

Answers: 1. F (p. 3); 2. T (p. 3); 3. F (p. 3); 4. T (p. 4); 5. F (p. 4, 5)

PSYCHOLOGY'S PAST AND PRESENT: WHAT A LONG, STRANGE TRIP IT'S BEEN

LO 1.3 Identify the major theoretical frameworks of psychology.

LO 1.4 Describe different types of psychologists and identify what each of them does.

LO 1.5 Describe the two great debates that have shaped the field of psychology.

Beginning students often expect the history of psychology to be deadly dull. In fact, one of the first and still best-known books on the history of psychology was authored by a psychologist with the unfortunate name of E. G. Boring (1929), which may have gotten things off on the wrong foot. In reality, the history of psychology is anything but boring, because it tells the fascinating, vibrant, and still-evolving story of how we've come to understand ourselves.

Psychology's Early History

Informal attempts to study and explain how our minds work have been with us for thousands of years. But psychology as a science has existed for only about 130 years and, as you will see, many of those years were spent refining techniques to develop research methods that were free from bias (Coon, 1992). We'll start our journey with a capsule summary of psychology's bumpy road from nonscience to science. (A timeline of significant events in the evolution of scientific psychology can be seen in **FIGURE 1.2**.)

Wilhelm Wundt is generally credited with launching psychology as a laboratory science in 1879.

Archives of the History of American Psychology

For many centuries, the field of psychology was difficult to distinguish from philosophy. Most academic psychologists held positions in departments of philosophy (psychology departments didn't even exist back then) and didn't conduct experimental research. Instead, they mostly sat and contemplated the human mind from the armchair. In essence, they relied on common sense.

Beginning in the late 1800s, the landscape of psychology changed dramatically. In 1879, Wilhelm Wundt (1832–1920) developed the first full-fledged psychological laboratory in Leipzig, Germany. Most of Wundt's investigations, as well as those of his students, focused on basic questions concerning our mental experiences: How different must two colours be for us to tell them apart? How long does it take us to react to a sound? What thoughts come to mind when we solve a math problem? Wundt used a combination of experimental methods, including reaction time procedures and a technique called **introspection**, which required trained observers to reflect carefully and report on their mental experiences. Introspectionists might ask participants to look at an object—say, an apple—and carefully report everything they saw. In many respects, the pioneering work of Wundt marked the beginnings of psychology as a science. Soon, psychologists around the world followed Wundt's bold lead and opened laboratories in departments of psychology.

Milles Studio/Fotolia

In the museum of everyday life, causation isn't a one-way street. In conversations, one person influences a second person, who in turn influences the first person, who in turn influences the second person, and so on. This principle, called *reciprocal determinism*, makes it challenging to pinpoint the causes of behaviour.

Explore Psychology Timeline

In the Masuda et al. (2008) study, the researchers found that Westerners tend to focus on the emotion of the central person in the cartoons, whereas Easterners tend to focus more on the people in the surrounding area.

introspection
method by which trained observers carefully reflect and report on their mental experiences

Late 1700s: Frans Anton Mesmer discovers principles of hypnosis

1838: Dalhousie College in Halifax hosts the first Canadian psychology course

1850: Gustav Fechner experiences crucial insight linking physical changes in the external world to subjective changes in perception; leads to establishment of psychophysics

1875: William James creates small psychological laboratory at Harvard University

1881: Wundt establishes first psychology journal

1885: The first psychology text written in Canada is published

1890: William James writes *Principles of Psychology*

1896: Lightmer Witmer creates first psychological clinic at the University of Pennsylvania, launching field of clinical psychology

1905: Mary Calkins is first woman elected president of the American Psychological Association

1905: Alfred Binet and Henri Simon develop first intelligence test

1910: Ivan Pavlov discovers classical conditioning

1911: E. L. Thorndike discovers instrumental (later called operant) conditioning

1920s: Gordon Allport helps to initiate field of personality trait psychology

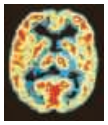
1935: Kurt Koffka writes *Principles of Gestalt Psychology*

1937: Donald Hebb begins his groundbreaking research in neuropsychology with Walter Penfield at the Montreal Neurological Institute

1953: Francis Crick and James Watson discover structure of DNA, launching genetic revolution

1953: Rapid eye movement (REM) sleep discovered

1963: Stanley Milgram publishes classic laboratory studies of obedience



1974: Positron emission tomography (PET) scanning introduced, launching field of functional brain imaging

1976: Founding of Committee for the Scientific Investigation of Claims of the Paranormal, first major organization to apply scientific skepticism to paranormal claims

1980: *Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III)* published; helps standardize the diagnosis of major mental disorders

1990: Thomas Bouchard and colleagues publish major results of Minnesota Study of Twins Reared Apart, demonstrating substantial genetic bases for intelligence, personality, interests, and other important individual differences

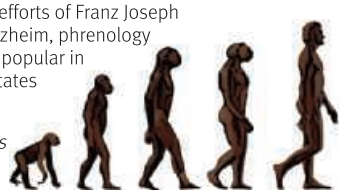
1991: The Canadian Society for Brain, Behaviour and Cognitive Science holds its first general meeting

1995: Task force of Division 12 (Society of Clinical Psychology) of American Psychological Association publishes list of, and criteria for, empirically supported psychotherapies

2004: APS members vote to change name to Association for Psychological Science

1649: René Descartes writes about the mind–body problem

Early 1800s: Due to efforts of Franz Joseph Gall and Joseph Spurzheim, phrenology becomes immensely popular in Europe and United States



1849: Charles Darwin writes *Origin of Species*

1879: Wilhelm Wundt creates world's first formal psychological laboratory, launching psychology as an experimental science

1889: Sir Francis Galton introduces concept of correlation, allowing psychologists to quantify associations among variables

1892: American Psychological Association (APA) founded

1900: Sigmund Freud writes *The Interpretation of Dreams,* landmark book in the history of psychoanalysis

1907: Oscar Pfungst demonstrates that the amazing counting horse, Clever Hans, responds to cues from observers; demonstrates power of expectancies

1913: John B. Watson writes *Psychology as Behavior,* launching field of behaviourism

1920: Jean Piaget writes *The Child's Conception of the World*

1938: B. F. Skinner writes *The Behavior of Organisms*

1939: The Canadian Psychological Association is established

1941: The University of Ottawa establishes the first bilingual program in psychology

1942: The University of Montreal introduces the first French-language program in psychology

1952: Antipsychotic drug Thorazine tested in France, launching modern era of psychopharmacology

1954: Paul Meehl writes *Clinical versus Statistical Prediction,* first major book to describe both the strengths and weaknesses of clinical judgment

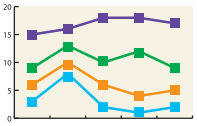
1958: Joseph Wolpe writes *Psychotherapy by Reciprocal Inhibition,* helping to launch field of behavioural therapy

1962: Brenda Milner begins her research with H.M.

1967: Ulric Neisser writes *Cognitive Psychology;* helps to launch field of cognitive psychology

1974: Elizabeth Loftus and Robert Palmer publish classic paper on the malleability of human memory, showing that memory is more reconstructive than previously believed

1977: First use of statistical technique of meta-analysis, which allows researchers to systematically combine results of multiple studies; demonstrated that psychotherapy is effective



1980s: Recovered memory craze sweeps across North America; pits academic researchers against many clinicians

1988: Many scientifically oriented psychologists break off from American Psychological Association to found American Psychological Society (APS)

2000: Human genome sequenced

2002: Daniel Kahneman becomes first Ph.D. psychologist to win Nobel Prize; honoured for his pioneering work (with the late Amos Tversky) on biases and heuristics

FIGURE 1.2 Timeline of Major Events in Scientific Psychology.

Before becoming a science, psychology also needed to break free from another influence: spiritualism. The term *psychology* literally means the "study of the psyche"—that is, the spirit or soul. In the middle and late 1800s, many were fascinated with spirit mediums, people who claimed to contact the dead, often during seances (Blum, 2006). These were group sessions that took place in darkened rooms, in which mediums attempted to "channel" the spirits of deceased individuals. People were equally enchanted with psychics, individuals who claimed to possess powers of mind reading and other extrasensory abilities (see Chapter 2). Many famous psychologists of the day invested a great deal of time and effort in the search for these paranormal capacities (Benjamin & Baker, 2004; Blum, 2006).

They ultimately failed, and psychology eventually developed a respectful distance from spiritualism. It did so largely by creating a new field: the psychology of human error and self-deception. Rather than asking whether extrasensory powers exist, a growing number of psychologists in the late 1800s began to ask the equally fascinating question of how people can fool themselves into believing things that aren't supported by evidence (Coon, 1992)—a central theme of this book.

The Great Theoretical Frameworks of Psychology

Almost since its inception, psychological science has confronted a thorny question: What unifying theoretical perspective best explains behaviour?

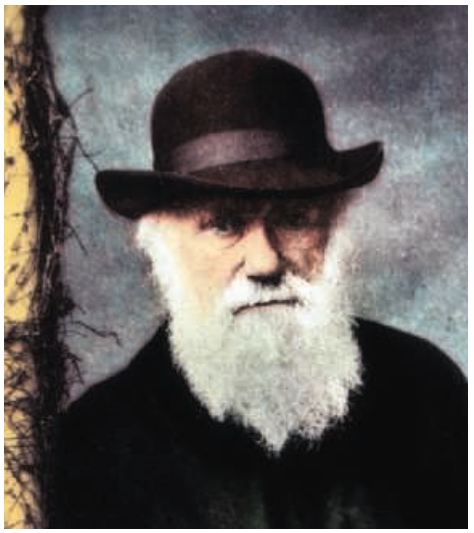
Five major theoretical perspectives—structuralism, functionalism, behaviourism, cognitivism, and psychoanalysis—have played pivotal roles in shaping contemporary psychological thought. Many beginning psychology students understandably ask, "Which of these perspectives is the right one?" As it turns out, the answer isn't entirely clear. Each theoretical viewpoint has something valuable to contribute to scientific psychology, but each has its limitations (see **TABLE 1.1**). In some cases, these differing viewpoints may not be contradictory, as they may explain behaviour at different levels of analysis. As we wind our way through these five frameworks, we'll discover that psychology's view of what constitutes a scientific approach to behaviour has changed over time. Indeed, it continues to evolve even today.

STRUCTURALISM: THE ELEMENTS OF THE MIND. Edward Bradford Titchener (1867–1927), a British student of Wundt who emigrated to the United States, founded the field of structuralism. **Structuralism** aimed to identify the basic elements, or "structures," of psychological experience. Adopting Wundt's method of introspection, structuralists dreamed of creating a comprehensive "map" of the elements of consciousness—which they believed consisted of sensations, images, and feelings—much like the periodic table of the elements we can find in every chemistry classroom (Evans, 1972).

Structuralism eventually ran out of steam. At least two major problems eventually did it in. First, even highly trained introspectionists often disagreed on their subjective reports. Second, German psychologist Oswald Kulpe (1862–1915) showed that people asked to solve certain mental problems engage in *imageless thought*: thinking unaccompanied by conscious experience. If we ask an introspecting person to add 10 and 5, she'll quickly respond "15," but she will usually be unable to report what came to her mind when performing this calculation (Hergenhahn, 2000). The phenomenon of imageless thought dealt a serious body blow to structuralism because it demonstrated that some important aspects of human psychology lie outside of conscious awareness.

Structuralism correctly emphasized the importance of *systematic observation* to the study of conscious experience. Nevertheless, structuralists went astray by assuming that a single, imperfect method—introspection—could provide all of the information needed for a complete science of psychology. In the time since introspectionism came and went, psychologists have learned that multiple methods are almost always needed to understand complex psychological phenomena (Cook, 1985; Figueredo, 1993).

FUNCTIONALISM: PSYCHOLOGY MEETS DARWIN. Proponents of **functionalism** strove to understand the adaptive purposes, or functions, of psychological characteristics, such as thoughts, feelings, and behaviours (Hunt, 1993). Whereas structuralists asked "what"



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Charles Darwin's theory of evolution by natural selection was a significant influence on functionalism, which aimed to understand the adaptive purposes of psychological characteristics.

structuralism
school of psychology that aimed to identify the basic elements of psychological experience

functionalism
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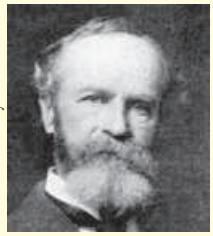
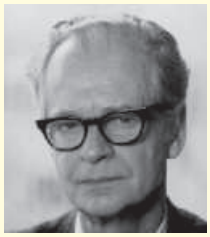
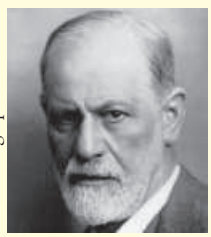
TABLE 1.1 The Theoretical Perspectives That Shaped Psychology.

PERSPECTIVE		LEADING FIGURES	SCIENTIFIC GOAL	LASTING SCIENTIFIC INFLUENCE
Structuralism	 Archives of the History of American Psychology ◀ E.B. Titchener	E.B. Titchener	Uses introspection to identify basic elements or "structures" of experience	Emphasis on the importance of systematic observation to the study of conscious experience
Functionalism	 Picture History/Newscom ◀ William James	William James; influenced by Charles Darwin	To understand the functions or adaptive purposes of our thoughts, feelings, and behaviours	Has been absorbed into psychology and continues to influence it indirectly in many ways
Behaviourism	 Photo Researchers, Inc./Science Source ◀ B.F. Skinner	John B. Watson; B.F. Skinner	To uncover the general principles of learning that explain all behaviours; focus is largely on observable behaviour	Influential in models of human and animal learning and among the first to focus on the need for objective research
Cognitivism	 Bettman/Corbis ◀ Jean Piaget	Jean Piaget; Ulric Neisser	To examine the role of mental processes on behaviour	Influential in many areas, such as language, problem solving, concept formation, intelligence, memory, and psychotherapy
Psychoanalysis	 Library of Congress Print and Photographs Division ◀ Sigmund Freud	Sigmund Freud	To uncover the role of unconscious psychological processes and early life experiences in behaviour	Understanding that much of our mental processing goes on outside of conscious awareness

questions, such as "What is conscious thought like?", functionalists asked "why" questions, such as "Why do we sometimes forget things?" The founder of functionalism, William James, rejected structuralists' approach and methods, arguing that careful introspection doesn't yield a fixed number of static elements of consciousness but rather an ever-changing "stream of consciousness," a famous phrase he coined. James is also famous for writing the influential text *Principles of Psychology* (1890), which introduced the science of psychology to the general public.

The functionalists of the late 1800s were influenced substantially by biologist Charles Darwin's (1809–1882) still-young theory of **natural selection**, which emphasized that physical and behavioural characteristics evolved because they increased the chances of an organism's survival and reproduction. The functionalists believed that Darwin's theory

natural selection
principle that organisms that possess adaptations survive and reproduce at a higher rate than other organisms

applied to psychological characteristics, too. Just as the trunk of an elephant serves useful survival functions, such as snaring distant water and food, the human memory system, for example, must similarly serve a purpose. It's the job of psychologists, functionalists maintained, to act as "detectives," figuring out the evolved functions that psychological characteristics serve for organisms.

Like structuralism, functionalism doesn't exist in its original form today. Instead, functionalism was gradually absorbed into mainstream scientific psychology and continues to influence it indirectly in many ways.

BEHAVIOURISM: THE LAWS OF LEARNING. By the early twentieth century, many psychologists were growing impatient with the touchy-feely nature of their discipline. In particular, they believed that Titchener and other introspectionists were leading psychology down a misguided path. For these critics, the study of consciousness was a waste of time because researchers could never verify conclusively the existence of the basic elements of mental experience. Psychological science, they contended, must be objective, not subjective.

Foremost among these critics was the flamboyant psychologist John B. Watson (1878–1958). Watson was a founder of the still-influential school of **behaviourism**, which focuses on uncovering the general principles of learning underlying human and animal behaviour. For Watson (1913), the proper subject matter of psychology was observable behaviour, plain and simple. Subjective reports of conscious experience should play no part in psychology. If it followed his brave lead, Watson proclaimed, psychology could become just as scientific as physics, chemistry, and other "hard" sciences.

Watson, like his follower Burrhus Frederic (B.F.) Skinner (1904–1990), insisted that psychology should aspire to uncover the general laws of learning that explain all behaviours, whether they be riding a bicycle, eating a sandwich, or becoming depressed. All of these behaviours, they proposed, are products of a handful of basic learning principles (see Chapter 6). Moreover, according to Watson and Skinner, we don't need to peer "inside" the organism to grasp these principles. We can comprehend human behaviour exclusively by looking *outside* the organism, to rewards and punishments delivered by the environment. For traditional behaviourists, the human mind is a black box: We know what goes into it and what comes out of it, but we needn't worry about what happens between the inputs and the outputs. For this reason, psychologists sometimes call behaviourism *black box psychology*.

Behaviourism has left a stamp on scientific psychology that continues to be felt today. By identifying the fundamental laws of learning that help to explain human and animal behaviour, behaviourists placed psychology on firmer scientific footing. Although early behaviourists' deep mistrust of subjective observations of conscious experience probably went too far, these psychologists properly warned us of the hazards of relying too heavily on reports that we can't verify objectively.

COGNITIVISM: OPENING THE BLACK BOX. Beginning in the 1950s and 1960s, growing numbers of psychologists grew disillusioned with behaviourists' neglect of *cognition,* the term psychologists use to describe the mental processes involved in different aspects of thinking. Although some behaviourists acknowledged that humans and even many intelligent animals do think, they viewed thinking as merely another form of behaviour. Proponents of **cognitive psychology**, in contrast, argued that our thinking affects our behaviour in powerful ways. For example, Swiss psychologist Jean Piaget (1896–1980) argued compellingly that children conceptualize the world in markedly different ways than adults (see Chapter 10). Later, led by Ulric Neisser (1928–2012), cognitivists argued that thinking is so central to psychology that it merits a separate discipline in its own right (Neisser, 1967; see Chapter 8).

According to cognitivists, a psychology based solely on rewards and punishments will never be adequate because our *interpretation* of rewards and punishments is a crucial determinant of our behaviour. Take a student who receives a B+ on his first psychology exam. A student accustomed to getting Fs on his tests might regard this grade as a reward, whereas a student accustomed to As might view it as a punishment. Without understanding how people evaluate information, cognitivists maintain, we'll never fully grasp the

FACTOID

One of James's Ph.D. students was Mary Whiton Calkins (1863–1930), who became the first female president of the American Psychological Association in 1905. Despite being an outstanding student at Harvard University, the faculty denied her tenure because of her gender—and in spite of James's recommendation of her. Calkins made significant contributions to the study of memory, sensation, and self-concept.

Archives of the History of American Psychology

John B. Watson, one of the founders of behaviourism. Watson's stubborn insistence on scientific rigour made him a hero to some and an enemy to others.

Watch The Basics: Diverse Approach

behaviourism
school of psychology that focuses on uncovering the general laws of learning by looking at observable behaviour

cognitive psychology
school of psychology that proposes that thinking is central to understanding behaviour