

A photograph of three young people laughing joyfully. They are positioned under a yellow umbrella, which is partially visible at the top of the frame. The person on the left is a man with a beard, wearing a brown and white striped shirt. The person in the center is a woman with long dark hair, wearing a light blue tank top and a beige shawl. The person on the right is a woman with curly hair, also wearing a light blue tank top. The background is a soft, out-of-focus green, suggesting an outdoor setting. The overall mood is happy and carefree.

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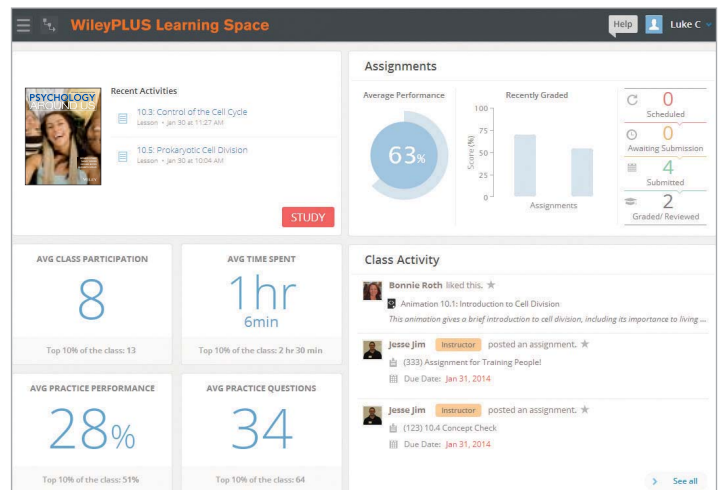
PSYCHOLOGY AROUND US

RONALD COMER
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To the Instructor

Psychology is all around us. If ever there was subject matter that permeates our everyday lives, it is psychology. Behaviour occurs everywhere, and mental processes affect all that we do; therefore the study of individual behaviour and mental processes can help shed light on a wide range of events and issues.

Psychology Around Us, Second Canadian Edition, helps open students' minds to the notion that psychology is indeed around them every day and that its principles are immediately applicable to a whole host of life's questions. It also features classroom-proven pedagogy to keep students engaged and help them master the material.

Among the four authors of this text, we have taught a wide variety of psychology courses for over 100 years combined. Throughout those years, we have always been struck by how differently students react to various areas within psychology. For example, students are fascinated by failures in thought (schizophrenia), communication (autism), or coping (posttraumatic stress disorder), yet almost nonchalant about the fact that people mostly attend, think, communicate, and cope quite well.

We are committed to demonstrating for students the relevance and interconnectedness of all areas of psychology. The textbook aims to encourage students to examine not only what they know about human behaviour but how they know it, and seeks to open students up to an appreciation of how psychology pervades the world around them.

About the Text

As instructors and researchers, we (the authors) are passionate about the study of psychology and genuinely fascinated by behaviour, thought, and emotion and the way they interact. When we teach a course, we consider ourselves successful if we have engaged our students in the rigorous study of psychology while simultaneously transferring our passion for the subject. These same criteria of success should be applied to a textbook in psychology: It should broaden the reader's knowledge about the field and, at the same time, move, excite, and motivate the student. To achieve this goal, our textbook includes a range of features—some traditional, others innovative.

Our textbook is unique in that while each topic is still covered in its own separate chapter, the integrated nature of psychology permeates every chapter. How can students get a full appreciation of memory without discussing the vital role of the hippocampus, or how memory develops, or Alzheimer's disease? *Psychology Around Us, Second Canadian Edition* is the first book available that is truly integrated—that actually brings all of these elements together into one, complete discussion of any given topic of psychology.

This integration is accomplished by offering a thorough presentation of the nature, explanations, applications, and research (including key Canadian research) of each topic, but also includes sections on neuroscience, development, dysfunctions, and individual differences that illustrate how each of these key areas is tied to other areas of psychology. These sections present psychology as a united and integrated discipline, therefore allowing students to see “the big picture.”

New to this Edition

Writing a textbook is an iterative process. Our goal for the second Canadian edition of *Psychology Around Us* was to continue to make it as engaging as possible for students and

as supportive as possible for instructors. To this end we used an extensive review process, involving many instructors as an editorial peer advisory panel in preparing this edition. We asked reviewers to provide us with constructive input in terms of the strong science base of the book, their own concerns regarding key topics for inclusion, and what their students found engaging about the material—what they wanted to know, what questions they asked, and what seemed to most pique their interest. We have incorporated many of the suggestions made by reviewers.

Currency

To incorporate developments across a wide range of fields, numerous new references have been added to the text, with the majority of these references reflecting research completed in the past three years. Many of the additional references emphasize Canadian research. As well, a number of changes were made throughout the text to reflect the changes in the assessment, diagnosis, and treatment of disorders due to revisions made in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* (American Psychiatric Association, 2013).

Content Changes

Information about biology and psychopathology continues to be integrated throughout the text but in a more understated and clear manner, with the bulk of information moved to Chapters 3 Neuroscience, 15 Psychological Disorders, and 16 Treatment of Psychological Disorders. Chapters 3 and 4 from the first edition were switched, so that Chapter 3 is now Neuroscience and Chapter 4 is now Human Development. As well, individual chapters on motivation and emotion have been combined into a single chapter to form Chapter 11 Motivation and Emotion. In merging these two chapters we have streamlined the content covered, yet maintained the vibrancy and focus of the original two chapters.

Wholesale changes were made to update content in a number of chapters, including:

- Chapter 3 Neuroscience: The information was completely reorganized, updated, and modified, with a particular focus on areas of the brain, to increase readability and understanding.
- Chapter 4 Human Development: Information regarding age categories and cutoffs was reorganized and modified to avoid repetition and to increase readability and understanding.
- Chapter 13 Social Psychology: Information on the emerging field of positive psychology was added.
- Chapter 15 Psychological Disorders: Modifications as they related to the *DSM-5* were made throughout the chapter.
- Chapter 16 Treatment of Psychological Disorders: Modifications as they related to the *DSM-5* were made throughout the chapter and a significantly expanded modification was made to the section on drug therapy.

Canadian Content

One aim of this edition was to more obviously highlight Canadian researchers in meaningful ways. Examples of trailblazing Canadian work highlighted include fMRI research on creativity from Melissa Ellamil and her colleagues at the University of British Columbia (Chapter 3); the work of Lili-Naz Hazrati and her colleagues at the University Toronto on chronic traumatic encephalopathy (Chapter 3); Kevin Englehart and colleagues

at the University of New Brunswick's work on neural machine interface for control of artificial limbs (Chapter 3); the work of E. David Klonsky and his colleagues at the University of British Columbia on the mechanisms of self-harm (Chapter 7); research on memory and aging by Fergus Craik and colleagues at the Rotman Research Institute in Toronto (Chapter 8), research on prejudice by Bertram Gawronski and his colleagues at Western University and by Kerry Kawakami and others at York University (Chapter 13); research by Jitender Saren and colleagues at the University of Manitoba on socio-economic class and psychopathology (Chapter 15); and the work of Paul Whitehead and colleagues at Western University on the effects of deinstitutionalization (Chapter 16).

Special Pedagogical Tools



Tying It Together

To achieve our goal of showing students how psychology is indeed all around us, and to bring our textbook in line with the course curricula of most professors, we have structured each of the chapters in our textbook in a very particular way—with a cross-sectional presentation. Using a **Tying It Together** approach, every chapter on a substantive area of psychology includes icons highlighting the integration of the four subfields of psychology—*development*, *brain function*, *individual differences*, and *dysfunctions*. These icons, entitled **How We Develop**, **What Happens in the Brain?**, **How We Differ**, and **Facing Adversity**, enable students to readily integrate the material into what they already know.

Your Brain and Behaviour

Many introductory psychology students consider the study of neuroscience to be difficult and at times irrelevant to the study of human behaviour. In recent years, however, neuroscience has been tied to virtually every subfield of psychology. Remarkable brain imaging studies, in conjunction with animal studies, have helped us to identify the neural mechanisms of everyday experience. Accordingly, *Psychology Around Us, Second Canadian Edition*, incorporates neuroscience information into chapters where it has traditionally been absent, such as social psychology and consciousness.

In addition, the text offers a key teaching feature that helps bring neuroscience directly into the lives of readers: Exciting and accessible two-page layouts appear throughout the book illustrating the link between the brain and behaviour when people are performing such common activities as eating pizza, learning to play a video game, acquiring a second language, giving a speech in public, or running a marathon. These layouts, which include neuroimages and findings from both human studies and relevant animal experiments, draw students into the brain and provide them with up-to-date information about the neural mechanisms at work during their everyday experiences. And to make sure they have a firm understanding of the concepts, each feature includes questions that allow students to test their knowledge (answers are available on the book companion site or *WileyPLUS Learning Space*). Regardless of their background in neuroscience, students come away intrigued by material that has traditionally been considered difficult.

Additional Features

Chapter Opener Outline

Every chapter begins with an outline of the main headings in the chapter, with the accompanying learning objective. Each chapter also starts with a description about a person or situation to introduce concepts and excite students about the chapter content. This introductory material helps to give readers a big picture overview of the chapter and helps to prepare them for the material they will need to learn.

Guided Learning

A **Learning Objective** for each chapter section identifies the most important material for students to understand while reading that section. These learning objectives also serve as the driving principle in *WileyPLUS Learning Space*.

Following each section is a **Before You Go On** feature with questions that help students check their mastery of the important items covered. Answers to the Before You Go On questions are available online, through *WileyPLUS Learning Space* or the textbook's companion website. **What Do You Know?** questions prompt students to stop and review the key concepts just presented. **What Do You Think?** questions encourage students to think critically on key questions in the chapter.

Special Topics on Psychology Around Us

Each chapter highlights interesting news stories, current controversies in psychology, and relevant research findings that demonstrate psychology around us. The number of these features has been reduced from the previous edition and they have been streamlined to ensure they are topical, relevant, and engaging.

- The **Psychology Around Us** boxes highlight how psychology affects us in our everyday lives, in every way, with examples from Canada and around the world.
- The **Practically Speaking** box emphasizes the practical application of everyday psychology.

Thorough Coverage

Psychology Around Us, Second Canadian Edition, contains 16 chapters that cover all the topics of psychology in depth. Instead of combining chapters on stress and emotion, or psychological disorders and their treatment, each topic is given full coverage in its own, separate chapter. This gives you ultimate flexibility in determining how much time you want your students to devote to each topic. If you want to cover neuroscience briefly, then simply assign the relevant pages from that chapter; but if you want to cover neuroscience in depth, you have a full chapter at your disposal that contains detailed and integrated coverage of the topic.

Helpful Study Tools

- **Key Terms** are listed at the end of each chapter with page references.
- **Marginal Definitions** define the key terms discussed in the text.
- **Marginal Notes** present interesting facts and quotes throughout the chapter.

Chapter Summary

The end-of-chapter summary reviews the main concepts presented in the chapter with reference to the specific Learning Objectives. It provides students with another opportunity to review what they have learned as well as to see how the key topics within the chapter fit together. New to this edition, end-of-chapter Self-Study Questions have been added, with answers provided, to help students do a quick check of key concepts covered.

Resources

Psychology Around Us, Second Canadian Edition, is accompanied by a host of instructor and student resources and ancillaries designed to facilitate a mastery of psychology.

Resources can be found within the *Psychology Around Us*, Second Canadian Edition, *WileyPLUS Learning Space* course and on the text's companion website, www.wiley.com/go/comercanada.

WileyPLUS Learning Space

WileyPLUS Learning Space

The factors that contribute to success—both in university and college and in life—aren't composed of intellectual capabilities alone. In fact, there are other traits, strategies, and even daily habits that contribute to the overall picture of success. Studies show that people who can delay instant gratification, work through tasks even if they are not immediately rewarding, and follow through with a plan have the skills that are not only valuable in the classroom, but also in the workplace and their personal lives. A place where students can define their strengths and nurture these skills, *WileyPLUS Learning Space* transforms course content into an online learning community. *WileyPLUS Learning Space* invites students to experience learning activities, work through self-assessment, ask questions, and share insights. As they interact with the course content, peers, and their instructor, *WileyPLUS Learning Space* creates a personalized study guide for each student.

As research shows, when students collaborate with each other, they make deeper connections to the content. When students work together, they also feel part of a community so that they can grow in areas beyond topics in the course. With *WileyPLUS Learning Space*, students are invested in their learning experience and can use their time efficiently as they develop skills like critical thinking and teamwork.

Through a flexible course design, you can quickly organize learning activities, manage student collaboration, and customize your course—having full control over content as well as the amount of interactivity between students.

WileyPLUS Learning Space lets you:

- Assign activities and add your own materials
- Guide your students through what's important in the interactive e-textbook by easily assigning specific content
- Set up and monitor group learning
- Assess student engagement
- Gain immediate insights to help inform teaching

Defining a clear path to action, the visual reports in *WileyPLUS Learning Space* help both you and your students gauge problem areas and act on what's most important.

With the visual reports, you can:

- See exactly where your students are struggling for early intervention
- Help students see exactly what they don't know to better prepare for exams
- Give students insight into their strengths and weaknesses so that they can succeed in your course

Videos

The *Psychology Around Us* series of psychology and concept (or “lecture-launcher”) videos help bring lectures to life and, most important, engage students. They help demonstrate that psychology is all around us and that thought and behaviour, from the everyday to the abnormal, is truly fascinating. Averaging about five minutes in length, this collection of videos covers a range of relevant topics. Each video is a high-quality excerpt from various agencies or independent video libraries chosen from a televised news report, documentary, lab study, or the like, and illustrating a particular lecture point, bringing the topic to life in exciting ways.

The large selection of clips in this package focus on topics ranging from the split-brain phenomenon to conformity and obedience, emotions of fear or disgust, sensations of taste and smell, infant facial recognition, gender orientation, and brain development.

The video program is readily accessible and easily integrated into any introductory psychology course through the *Psychology Around Us, Second Canadian Edition, WileyPLUS Learning Space* course. If instructors choose not to use any or all of the videos

in the classroom they have the option of assigning videos to students for viewing outside of class. Instructors can also use the prepared quizzes that test understanding of the video's content and relevance.

Psychology Around Us Video Lab Activities

Psychology Around Us, Second Canadian Edition, offers a series of active learning video projects that students can conduct on their own. Traditionally, such exercises have been presented in book form, with *written* exercises guiding students through paper-and-pencil tasks. Today students can *interact* with computerized exercises, become more engaged by video and animated material, and receive immediate feedback about the effects and accuracy of their choices.

These lab activities use extensive video material to drive student learning. The combination of video footage and digital interactive technology brings the lab exercises to life for students, actively engaging the students and helping them to better process the lesson at hand. The kinds of video material included in the *Video Lab Activities* range from laboratory footage about the brain to videos of everyday events to psychology documentary excerpts.

For example, one video lab exercise on *Memory Manufacturing and Eyewitness Testimony* unfolds as a cluster of video-digital lab exercises on memory. They guide the student to also explore (1) pre-event and post-event memory interference, (2) childhood memory limits, (3) snapshot memories, and (4) the creation of false memories.

As with the videos, the Video Labs are accessible through the *Psychology Around Us, Second Canadian Edition*, WileyPLUS Learning Space course. Should instructors so choose, they have the option of assigning the Video Labs to students for completion outside of class; the student's work is then viewable by the instructor in the Gradebook section.

Instructor's Manual

Prepared by Evelyn Field, Mount Royal University

This Instructor's Manual is designed to help instructors maximize student learning and encourage critical thinking. It presents teaching suggestions for every chapter using the book's objectives as well as including ideas for lecture classroom discussions, demonstrations, and videos. This manual will also share activity-based applications to everyday life.

PowerPoint Presentations

Prepared by Evelyn Field, Mount Royal University

Every chapter contains a PowerPoint Presentation with a combination of key concepts, figures and tables, and problems and examples from the textbook. The instructor's version also includes notes for additional discussion points or activities you can use during your lecture.

In addition, each PowerPoint contains links to videos and animation tutorials available for that chapter. Using these presentations in your class means that the rich array of videos discussed above are simply a mouse-click away.

Test Bank

Prepared by Cheryl Techentin, Mount Royal University

The Test Bank contains over 200 questions per chapter with a variety of question types—multiple choice, true/false, short answer, and essay. The Test Bank is available in a Word® document format, as well as a Computerized Test Bank, which allows you to upload the test bank into your learning management system. The questions are available to instructors to create and print multiple versions of the same test by scrambling the order of all questions found in the Word version of the test bank. This allows users to customize exams by altering or adding new problems.

Practice Quizzes

Prepared by **Wendy Tarrel**, *Nova Scotia Community College*

This resource offers 20 questions per chapter that students can use to test their knowledge of the chapter content.

Clicker Questions

Prepared by **Wendy Tarrel**, *Nova Scotia Community College*

This resource offers 10 to 15 questions per chapter that can be used with a variety of personal response (or “clicker”) systems.

Wiley Psychology Weekly Updates Site

This site (<http://wileypsychologyupdates.ca>) features articles and videos to help keep learners up to date on the field of psychology and illustrates the real-world significance of psychology in everyday life. Discussion questions are provided to help guide an understanding of the article or video and to encourage class participation.

Online Study Tools

Psychology Around Us, Second Canadian Edition, provides students with a website containing resources to help them enhance their understanding of chapter concepts, such as answers to Before You Go On questions and web resources. The website can be accessed at www.wiley.com/go/comercanada.

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To the Student

How to Use This Book

This book includes features that are intended to promote your reading comprehension, reflection, problem-solving skills, and critical-thinking skills. These skills are key to success in the course and in your life beyond. In addition, interspersed with the text material at just the right points on each page are elements such as relevant, exciting boxes, current controversies in psychology, relevant research, and perfectly selected photos, all from Canada and around the world.

Let's walk through the pedagogical features that will help you learn the material in this book.



Chapter Opener

Every chapter begins with an outline of the main headings in the chapter, with the accompanying learning objective. This helps to give readers a big picture overview of the chapter and helps to prepare them for the material they will need to learn.

Guided Learning

Chapter Learning Objectives summarize what you should be able to do once you have studied the chapter. You can use the learning goals in two ways. First, study them before reading the chapter to get an overall picture of how the concepts in the chapter are related to each other and what you will be learning. Then, after reading the chapter, use the learning objectives to review what you have learned, either individually or in peer study groups. You can improve learning and retention without significantly increasing study time.

Helpful Study Tools

Following each section is a **Before You Go On** feature that helps you check your mastery of the important items covered. Answers to the Before You Go On questions are available online, through *WileyPLUS Learning Space* or the textbook's companion website. **What Do You Know?** questions ask you to stop and review the key concepts just presented. **What Do You Think?** questions encourage you to think critically about key questions in the chapter.



Before You Go On

www.wiley.com/go/comercanada

What Do You Know?

6. Describe three main categories of biological hunger signals.
7. What non-biological factors affect our eating behaviour?
8. What is obesity and what factors can contribute to it?
9. What are the characteristics of anorexia nervosa and bulimia nervosa?

What Do You Think? As a public-health effort to combat obesity, some jurisdictions are considering regulations that would require restaurants to provide calorie and other nutritional information about food on their menus. What are some potential advantages and disadvantages of providing this information to diners?

Margin Notes present interesting facts and quotes throughout the chapter.

Research suggests that actions in dreams run in real time—that is, it takes you as long to accomplish something in the dream as it would if you were performing the action while you were awake.

Could the dream and the poor midterm grade be related? Some psychologists would say yes, while others would be skeptical (Duesbury, 2011). Dream content varies widely as can be seen in **Table 6-1**, which shows the percentage of people who recall dreaming about particular events or experiences. It is easy to see why we might assume there is life-relevant meaning in the content of our dreams. In this section we will examine ways in which different theorists and researchers have come to understand dreams (Cartwright, 2010; Moorcroft, 2003).

information-processing theory hypothesis that dreams are the mind's attempt to sort out and organize the day's experiences and to fix them in memory.

Information-Processing Theory

Information-processing theory offers a cognitive view of dreaming. According to this view, dreams are the mind's attempt to sort out and organize the day's experiences and to fix them in memory. Consistent with this perspective, studies have revealed that interrupting REM sleep—and so interrupting dreams—impedes a person's ability to remember material learned just before going to sleep (Empson, 2002). Also, in support of this view,

Margin Definitions define the key terms discussed in the text.

Key Terms are listed at the end of each chapter with page references.

Each chapter includes feature box discussions, entitled **Psychology Around Us** and **Practically Speaking**, that demonstrate the real-world relevance of psychology to students' lives.

psychology Around Us

Goalie Psychology

The Yerkes-Dodson law has obvious applications to sports. Athletes who fail to get sufficiently “psyched up” or aroused may never even get into the game. On the other hand, getting too “revved up” or over-aroused might lead to “choking.” Ryan Gelinis and Krista Munroe-Chandler at the University of Windsor have examined how this and other psychological issues in motivation can impact the performance of hockey goaltenders (Gelinis & Munroe-Chandler, 2006; Hallman & Munroe-Chandler, 2009). They point out that each goalie (and each athlete in general) has an optimal level of arousal at which

they perform their best. Some goalies need to get “psyched up” or excited to reach that optimal level, while others need to calm down so as not to become over-aroused. High levels of arousal, especially when associated with anxiety, lead to muscle tension that can slow a goalie down. It can also narrow the goalie's visual attentional field, making it less likely that the individual will take in all the information needed to properly position him or herself in the net. The aim for goaltenders is to keep them in the “zone” of optimal arousal so that they can consistently perform at their best throughout the game.

practically Speaking

Getting a Good Start Sometimes Means Getting a Head Start

The school dropout rate for Canadian Aboriginal and Métis youth is three times that of the general population (25 percent versus 8 percent) (Bushnick, 2003; Gingras, 2002). In an effort to address this issue, the government of Canada has provided funds for the development of Aboriginal Head Start (AHS) preschool programs in urban and northern communities across Canada. These programs provide a half-day preschool experience for 3- to 5-year-old Aboriginal and Métis children. Parents are encouraged to participate as well, to become optimal supporters of and advocates for their children's academic and social development. In addition, the program provides support for development of Aboriginal

culture and language, education, and school readiness programming, along with health promotion, nutrition, and social support (Mashford-Pringle, 2012; Public Health Agency of Canada (PHAC), 2011).

Early evaluation data gathered at Alberta Aboriginal Head Start sites (dela Cruz, 2010) showed that AHS participants perform at or above the averages for children their age in the general Canadian population as they enter the school system. This indicates that the AHS program is meeting its immediate goals. Next researchers need to follow these children through school to see if the AHS program also helps to reduce Canadian Aboriginal and Métis youth school dropout rates.

Seeing the “Big Picture” in Psychology

Tying It Together

Psychology is an integrated discipline. Everything is connected to everything else—your ability to react with fear or excitement is tied to neuroscience and your past development, for example. Every chapter on a substantive area of psychology in this text not only offers a thorough presentation of the nature, explanations, and applications of that area, but also includes sections on the development, brain function, individual differences, and dysfunctions that occur in that realm of mental life. Your success in this course will depend on how well you can integrate this information meaningfully. The more often you review your prior knowledge and connect it with new knowledge, the more automatic and refined learned knowledge and skills become.

We can also experience sensory adaptation, resulting in reduced tactile sensation from depression of the skin that continues for a period of time. This happens to you every day when you put on your clothing: shortly after getting dressed, you are no longer aware of the tactile stimulus your clothing provides (unless, of course, it is too tight).

pressure and joint movement
Pacinian corpuscles sense receptors that respond to vibrations and heavy pressure

Tactile Senses and the Brain

Our brains use a variety of related processes to help us perceive general information about a range of non-painful touch sensations, including pressure, temperature, and general touch. Pain perception is also an important function.



The Touching Brain

When we touch something, or something touches us, our free nerve endings send tactile information into the spinal cord. The signals travel up the spinal cord to the brain, as shown in Figure 5-6. In the brain, touch information is first received in the thalamus, and then routed from there to the somatosensory cortex (located in the parietal lobe). Information about pressure and vibration is generally transmitted to the brain in a similar way, after being converted to neural impulses by the specialized receptors described above.

Our brain processes tactile information *contralaterally*, or on the opposite side of the brain from the side of the body where the touch occurred. So, if you touch something with your left hand, the information is processed by the somatosensory cortex on the right side of your brain.

Tactile Senses: Individual Differences



Humans differ greatly in their ability to detect physical stimuli on the skin. In addition, they differ in the degree to which they find certain tactile stimulation pleasurable or aversive. For example, some people enjoy an intense back massage, while others do not. Of all the somatosensory experiences, the one that has received the most research attention is that of pain. Pain management for surgical procedures and other medical conditions is a critical part of patient care. There are dramatic differences in both the threshold to detect pain and the degree to which pain causes emotional suffering.

Although learning plays some role, people also differ in the actual sensation and perception of pain as a result of physical differences in their sensory systems. Studies have shown, for example, that women have a lower threshold for detecting pain than do men. They report greater pain intensity than men in response to the same stimulus (Garcia et al., 2007). One interpretation of this sex difference is that women are just less able to cope psychologically with painful stimuli since they haven't been "toughened up." In fact, research suggests that women may have about twice as many pain receptors in their facial skin than men (Miner, 2005). This suggests a physical cause for at least some of the differences in pain sensitivity.

Neuroimaging studies show that people's brains react differently depending on their sensitivity to pain (Dubé et al.,

Attitudes



Early in life, parents play a major role in shaping children's beliefs and opinions about things and people (Simpkins et al., 2012; Day et al., 2006). As we observed in Chapter 4, children are socialized when they acquire beliefs and behaviours considered desirable or appropriate by the family to which they belong. You are reading this textbook right now because you have been socialized in a number of ways—perhaps to believe in the value of a post-secondary education or the need for hard work to achieve your goals. This socialization may have occurred by direct transmission (your parents lecturing you about these values) or in subtler ways (Egan et al., 2007). Perhaps your mother or father praised you for your grades or punished you for not doing your homework. Over time, you might generalize these individual experiences into an overall attitude about the value of what you are doing.

As children mature, their peers, their teachers, and the media also begin to significantly influence their attitudes (Prislin & Crano, 2012; Prislin & Wood, 2005). Recall that in vicarious learning, children observe their classmates and take note of the rewards and punishments those students experience based on their behaviour. If a child sees a classmate rejected by the rest of the class for making disparaging remarks about a particular ethnic group, for example, the child may develop an attitude that such remarks are inappropriate and unacceptable. Similarly, seeing a favourite television character get whatever he wants by bullying people might foster an attitude that aggression is an acceptable way to achieve one's goals. Thus children learn attitudes in similar ways to the way they learn about other aspects of the



Hunger and Eating Disorders

obesity overweight characterized as a body mass index of over 30.

body mass index (BMI) weight-to-height ratio.

We have seen that our motivation to eat is very complex, affected not only by intricate biological processes, but also by psychological, social, and cultural influences. As with any complex system, we face the potential for problems in our eating behaviour. Two of the most common problems include obesity, often related to too much eating, and eating disorders, which often involve eating too little.

Obesity

Obesity, a condition of extreme overweight, is determined on the basis of a weight-to-height ratio, called the **body mass index (BMI)**. Adults with a BMI of 30 or higher are considered obese, and those with BMIs between 25 and 30 are categorized as *overweight* (Health Canada, 2003). Obesity is a major health problem in North America. Twenty-five percent of the adult Canadian population is obese (Navaneelan & Janz, 2014). Being overweight or obese is associated with a variety of health problems, most notably diabetes and heart disease (Poirier et al., 2006; Huang, 2005). In addition to the physical risks they face, obese people are also more likely than those of normal weight to suffer from mood disorders, such as depression and anxiety (Friedlander et al., 2003).

Obese people are also often the victims of discrimination. A study found that people describe obese individuals as less attractive than thinner people, and ascribe a number of other unfavourable characteristics to people who are obese (Puhl & Heuer, 2010). Although overweight people are often considered as "friendly" and "happy," they are also judged more often as "lazy," "stupid," and "incompetent" than are people of normal weight (Puhl et al., 2008; Friedman et al., 2005). Obese individuals are more often turned down for jobs (NAAFA, 2009). This discrimination can even affect normal-weight individuals associated with obese people. One study looked at the hiring rate of normal-weight job



Your Brain and Behaviour

It's our hope that you will come to see the fascination of psychology and develop a passion for this field of study. One example of how we demonstrate this to you is a regular feature throughout the textbook—a two-page spread called **Tying It Together: Your Brain and Behaviour**. Centring on a common everyday activity, these lively spreads clarify the remarkable brain events that help give life to the activity and serve as awe-inspiring reminders that psychology is everywhere.

Tying It Together: **Your Brain and Behaviour**

Eating Pizza

Is this the best pizza you have ever had or does it fall short? When you dig into a slice of pizza, several neural circuits are activated to give you the overall experience. The appearance of your food can play an important role in its enjoyment. Photoreceptors in the eye transmit this information to the brain via the optic nerve, which passes through the brainstem, followed by the thalamus, and finally the visual cortex. Taste receptor cells, as well as sensory cells that respond to touch and temperature, are activated on your tongue. These nerves carry impulses into the brain where they pass through the brainstem, thalamus, and sensory cortex (gustatory

cortex and somatosensory cortex). Taste is combined with smell information to produce flavour. Olfactory receptor neurons transduce pizza odorants and send this information on to the olfactory bulb and then to the olfactory cortex (smell is the only sensory modality that bypasses the thalamus on its way to the cortex).

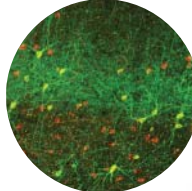
Information about taste, smell, texture, temperature, and appearance is integrated in various association regions of the neocortex. These circuits, together with those that store memories related to your previous pizza experiences, work to produce your perception of this particular slice.

Questions

- 1 Explain how multiple senses (vision, smell, taste, touch) are involved in our experience of eating.
- 2 Explain how the taste of food may be enhanced if we close our eyes.
- 3 Which areas of the brain are responsible for integrating information about various components of eating (e.g., taste, smell, texture)?



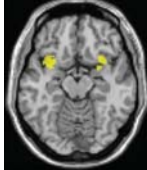
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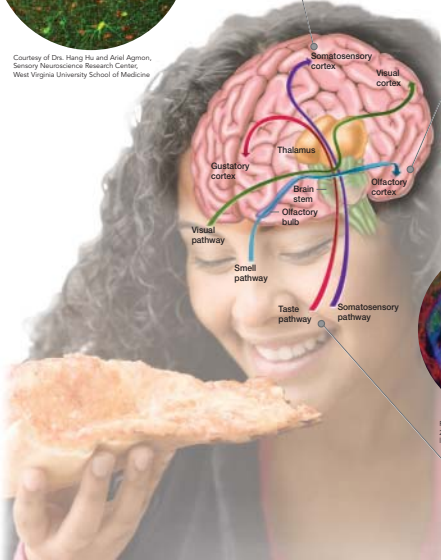
Courtesy of Drs. Ming Hu and Axel Agmon, Sensory Neuroscience Research Center, West Virginia University School of Medicine

SENSING MORE THAN TASTE

A large part of somatosensory cortex (shown here with neurons genetically engineered to produce fluorescent dyes) is devoted to processing information about texture, temperature, and pain from the tongue. Somatosensory information from the tongue is critical for the enjoyment of food; many people prefer their crust crispy while others like it soft.

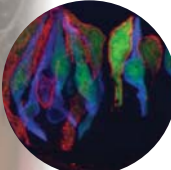


Neuroscience Research Center, West Virginia University School of Medicine



MAXIMIZING THE EXPERIENCE

When you eat something delicious and close your eyes, you may be maximizing the experience by turning up the activity in certain parts of cortex. When your eyes are open, activity in parts of cortex serving nonvisual senses is decreased. Closing your eyes increases activity in these areas, including in taste and smell cortex. This fMRI image shows such increased activation in the olfactory cortex (yellow).



From Marco Tizzano et al., BMC Neuroscience, 2008, 9:10, Figure 5, ©2008 Tizzano et al.; licensee BioMedCentral Ltd.

BURNING YOUR TONGUE

Taste buds contain taste receptor cells (shown here marked with fluorescent dyes) that continually regenerate. The process is hastened when tissue is damaged, such as when you burn your tongue.

Masturillo

Review Main Concepts

Chapter Summary

Each chapter ends with a summary and list of key terms aimed at representing the scope and emphasis of a relatively large amount of material in an efficient and concise form. The end-of-chapter summary reviews the main concepts presented in the chapter with reference to the specific Learning Objectives. It provides you with another opportunity to review what you have learned as well as to see how the key topics within the chapter fit together. You can write your own summary first, as a review strategy, and then check your work against the text summary to self-evaluate your understanding of the big picture in each chapter. As well, new end-of-chapter Self-Study Questions will help you to do a quick check of key concepts covered in the chapter. Answers to the questions are provided in the appendix at the end of the book.

Summary

What Is Stress?

LEARNING OBJECTIVE 1 Define stress and describe the ways in which people experience stress and the kinds of situations that typically cause stress.

- Stress is a state brought on by any situation that threatens or appears to threaten a person's sense of well-being, thus challenging the person's ability to cope. A situation that triggers the stress response is a stressor. A stressor may be acute (short term) or chronic (long term).
- People may experience stress as frustration, pressure, conflict, or danger.
- Kinds of stressors include daily hassles, life changes (which can be measured by use of the Social Readjustment Rating Scale), traumatic events, chronic negative situations, and special socio-cultural conditions.
- Cognitive appraisal is an important element in responses to stress. Richard Lazarus identified two steps in this process: *primary appraisal*, in which people assess the severity of the stressor, and *secondary appraisal*, in which they evaluate how well they can cope with it.
- Individuals vary greatly in their responses to stress. Areas of difference include autonomic activity, explanatory style, personality, and availability of social support.

Coping with Stress

LEARNING OBJECTIVE 3 Discuss and evaluate several ways in which people cope with stress.

- Coping describes efforts to manage, reduce, or tolerate stress.
- Dealing with stress by lashing out at others, using defence mechanisms such as repression, and engaging in self-indulgent behaviours such as smoking or drinking alcohol can be destructive when used in excess.
- More constructive coping strategies include directly confronting a stressor in hopes of changing the situation (*problem-focused coping*) and changing how you feel or think about the stressor to reduce its impact (*emotion-focused coping*).

Stress and Health

LEARNING OBJECTIVE 4 Explain how stress can cause physical illness, and discuss situations in which stress may be beneficial.

- Stress can increase risk for a number of health problems. People with *Type A* personalities are prone to stress and appear to be at greater risk for coronary heart disease than the more relaxed *Type B* personalities. Using the Social Readjustment Rating Scale, researchers have found that

Responding to Stress

LEARNING OBJECTIVE 2 Describe the physiological, emotional, and cognitive responses to stress, and explain how individual responses to stress differ.

- There are two main physiological pathways of stress: the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis. Both lead to activation of the fight-or-flight response, which is an immediate response to a stressor.
- Hans Selye first described the effects of chronic stress, which he called the general adaptation syndrome (GAS). The syndrome has three stages: alarm, resistance, and exhaustion.
- Emotional responses to stress generally involve negative emotions. The more stress a person experiences, the more negative the emotions.
- stress-producing life changes also increase the risk of illness. *Type C* personalities are more vulnerable as they tend to internalize their anger and cope badly with relationship challenges.
- Psychoneuroimmunology is an area of study that examines the links between stress, the immune system, and health.
- Severe stress may interfere with the activity of lymphocytes, a component of the immune system that helps the body to overcome invaders, such as bacteria and viruses.
- Stress-related biochemical changes in the body, such as changes in the activity of norepinephrine and cortisol, can eventually slow the functioning of the immune system.
- Behaviour, personality, and social support are additional factors affecting how much the immune system is slowed down by stress.
- Unlike *distress*, or negative stress, *eustress* offers benefits. Optimal levels of stress can promote the development of resilience and facilitate performance, especially for easy or moderately difficult tasks.

Posttraumatic Stress Disorder

LEARNING OBJECTIVE 5 Describe the symptoms and causes of posttraumatic stress disorder, and discuss some risk factors for developing it.

- Posttraumatic stress disorder is characterized by persistent, frightening thoughts or memories of a traumatic event, along with anxiety, depression, and other symptoms.
- Combat, natural disasters, and abuse and victimization are among the events most likely to cause posttraumatic stress disorder.
- Not everyone affected by unusual trauma develops posttraumatic stress disorder. Factors that affect the likelihood of developing the disorder include biological factors, personality factors, childhood experiences, and the availability of social support.

Self-Study Questions

Multiple Choice

- A given field of study is defined as a science by virtue of its
 - scientific methods.
 - equipment.
 - subject matter.
 - findings.
- Most psychologists today use a type of reasoning termed _____ reasoning.
 - theoretico-inductive
 - theoretico-deductive
 - hypothetico-inductive
 - hypothetico-deductive
- Which approach to psychology advocated focus on observable behaviours only?
 - hypothetico-deductive
 - inductive reasoning
 - pseudopsychology
 - behaviourism
- Which of the following is an example of pseudopsychology?
 - astronomy
 - astrology
 - Gestalt
 - Maharishi
- A researcher observed the eating patterns of laboratory rats while manipulating the amount of sleep they received during a week-long study. In this example, what type of variable is "sleep"?
 - observable
 - dependent
 - independent
 - extraneous
- Which of the following is not a descriptive research method?
 - case study
 - experiment
 - naturalistic observation
 - survey
- What method do psychologists use to analyze study data?
 - logic
 - induction
 - statistics
 - deduction
- Which of the following statistical procedures can be used to determine to what degree participants' scores within a group vary?
 - standard deviation
 - mean
 - t-test
 - analysis of variance
- Researchers may use deception in their study designs
 - only when no alternative method is available
 - only if they inform their participants before they begin the study
 - under no circumstances
 - only if they obtain permission from their college or university counselling centre.
- Which of the following sequences best reflects the order of events in a typical experimental session?
 - informed consent → debriefing → experiment
 - informed consent → experiment → debriefing
 - debriefing → informed consent → experiment
 - debriefing → experiment informed → consent

Fill-in-the-Blank

- The natural law of _____ suggests that when something is set in motion, it has an effect on other things.
- Ideas that psychologists develop about the laws that govern processes and behaviour are called _____.
- The field of _____ is often credited with shifting psychology from a philosophy to a science.
- Forced sterilization and controlled breeding are two consequences of _____.
- A subset of a population is known as a(n) _____.
- The research methodology that asks participants to answer a series of questions is called a(n) _____.
- Analyzing data through the use of _____ allows researchers to describe and measure relationships between variables.
- Researchers are able to conclude more broadly from their results through the use of _____ statistics.
- Before a researcher can test his hypotheses by collecting data, a(n) _____ must provide ethical oversight.
- Protecting the identity and information collected from individual respondents in a research study refers to maintaining _____.

Key Terms

acute stressor 543	coping 562	inoculation 573	secondary appraisal 558
approach-approach conflict 545	daily hassles 546	life changes 548	stress 543
approach-avoidance conflict 546	distress 572	lymphocytes 570	stressor 543
avoidance-avoidance conflict 545	emotion-focused coping 568	posttraumatic stress disorder (PTSD) 551	traumatic events 551
chronic stressor 543	eustress 573	pressure 544	Type A 560
conflict 545	frustration 544	primary appraisal 558	Type B 561
	general adaptation syndrome (GAS) 556	problem-focused coping 568	Type C 561
	immune system 570	psychoneuroimmunology 570	



CHAPTER 1

PSYCHOLOGY: YESTERDAY AND TODAY

CHAPTER OUTLINE

What Is Psychology?

LEARNING OBJECTIVE 1 Define *psychology* and describe the goals and levels of analysis psychologists use.

Psychology's Roots in Philosophy

LEARNING OBJECTIVE 2 Describe the influences of early myths and ancient Greek philosophies on psychology.

The Early Days of Psychology

LEARNING OBJECTIVE 3 Name important early psychologists and describe their major theories and research methods.

Twentieth-Century Approaches

LEARNING OBJECTIVE 4 Summarize the major principles of the psychoanalytical, behaviourist, humanistic, cognitive, and neuroscience approaches to psychology.

Psychology Today

LEARNING OBJECTIVE 5 Describe the three major branches of psychology and summarize key trends in psychology.

How many friends do you have on Facebook? Are they your friends or are they “friends?” Are Facebook friends the same as “real” friends? Are there consequences to the way people share information on Facebook that could actually be changing how we think about friendship and other important human relationships?

Psychologists have studied friendship for many years, but additional research may be needed to better understand how Facebook friendships are similar to and different from more traditional friendship. Ninety-eight percent of Canadian 16- to 24-year-olds were on the Internet in 2009, placing them among the most connected in the world. Most (96 percent) use a home computer, and even more have access to computers through their schools or libraries (Statistics Canada, 2010). Moreover, 67 percent of Canadian teens who log on to the Internet say that they participate in online social networking (Statistics Canada, 2010). This social phenomenon is providing many opportunities for fascinating psychological research.

A study by Amy Muise, Emily Christofides, and Serge Desmariais (2009) at the University of Guelph suggested that more Facebook use leads to more jealousy in close relationships. They found that people in relationships who reported spending more time looking at each other’s Facebook pages also reported experiencing more feelings of jealousy based on what they were seeing on their partner’s Facebook page.

Social networks like Facebook are also changing other aspects of our relationships. For example, do online contact opportunities help us get started in new relationships? A study by Robert Stephure and Susan Boon at the University of Calgary and Stacey MacKinnon at UPEI (2009) showed that those who use online contacts to start a relationship process (dating, etc.) are more likely to be older (middle aged and beyond). Younger Canadians also make use of social media within their relationships, but they seem to move more easily back and forth between their real and virtual lives. Think about your own experiences. What are some of the ways in which you use social media in and around your friendships and other relationships?

American anthropologist Ilana Gershon, in her book *The Breakup 2.0: Disconnecting over New Media* (2010), demonstrated that university students see clear roles for social media in their “real world” relationships. For example, students reported that Facebook might best be seen as a place for initiating *casual* relationships, while texting moves relationships up to another level of seriousness. Texting, in turn, may lead to cell phone calls, and ultimately to a face-to-face date. In addition, Gershon’s students indicated that they would sometimes fake information on their own Facebook page by exaggerating some claims and minimizing others to make themselves look better. However, despite this they also said they tended to trust what others had posted on their own Facebook pages.

While psychology can help us try to understand new behaviour, like having hundreds of Facebook “friends,” it also helps us to understand far more common things that we all do. Why do people use Facebook in the first place, for example? As you read this book, you’ll see that all the topics we examine contribute not only to our understanding of unusual or problematic behaviours, but also to things that happen all around us, every day.

We’ll discuss human development, examining how we mature and what shapes us as we age. Maybe the ease of online communication helps some otherwise shy children gain early confidence and establish more and better social relationships. We’ll look at motivation and emotion, getting some ideas about why people do things and how we experience our feelings. What drives people to spend hours every day on the Internet, for example? We’ll look at theories of intelligence, including one that suggests that the kind of intelligence needed to hack into websites and steal social insurance numbers is different from the kind of intelligence needed to empathize with people such



CJG – Technology/Alamy

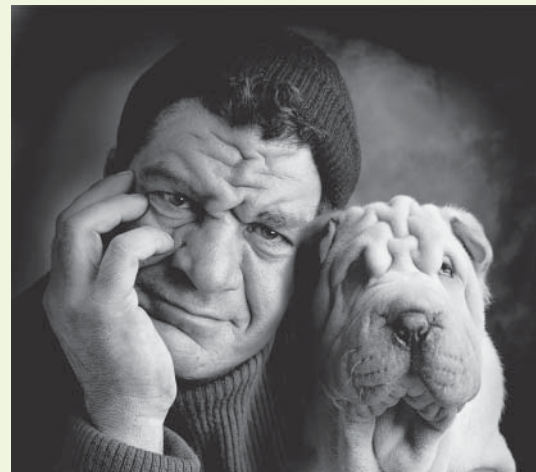
Online friendships. Psychologists study all kinds of mental processes and behaviours, including using social media.

Have you ever heard anyone refer to “psycho-babble?” We have. This is usually a term applied to a speaker when the listener feels that the speaker is using psychological jargon to create an illusion of credibility about the issue at hand. Generally the assumption is that the speaker, an “arm chair psychologist” (Kelly, 1955), is using concepts they are unqualified to use and that they do not understand. We hope that by the time you finish reading this book you will have a good idea of how to tell pseudoscience from real science. Why does this matter? In their book, *50 Great Myths of Popular Psychology: Shattering Widespread Misconceptions about Human Nature*, Lilienfeld, Lynn, Ruscio, and Beyerstein (2010) say that it is important to know about myths for three reasons: (1) they can be harmful; (2) myths can create indirect damage; and (3) accepting myths in one area impedes thinking in other areas. We will present research data throughout the book to counter common myths, but first let’s examine a few common myths and misperceptions and also identify data that refute these beliefs.

- *People use only 10 percent of their brains.* Electrical brain stimulations have not identified *any* inactive areas in the brain (Beyerstein, 1999).
- *It is better to express anger than to bottle it up.* When people behave in an angry way their levels of aggression go up, not down (Bushman, Baumeister, & Stack, 1999).
- *Some people are primarily right brained whereas others are primarily left brained.* The typical brain works in an integrated fashion (Corballis, 2007).
- *You can recall forgotten information under hypnosis.* Forensic psychologists believe that hypnosis either has

no effect on memory or that it distorts recall (Erdelyi, 1994; Lynn, Neuschatz, Fite, & Rhue, 2001).

- *People with schizophrenia have two personalities.* People with schizophrenia have only one personality; people with a form of dissociative identity disorder may have more than one personality, although even this idea is controversial (Lilienfeld & Lynn, 2003).
- *Opposites attract.* People are far more likely to choose romantic partners and friends who share similar personality traits (Lewak, Wakefield, & Briggs, 1985; Nangle, Erdley, Zeff, Stanchfield, & Gold, 2004).
- *Some look like their purebred dogs.* True (Roy & Christenfeld, 2004).



Vedros & Associates/Getty Images

as parents who have lost a child. Along the way, our goal is to help you gain insight not only into the attention-grabbing and sometimes bizarre things that can go wrong, but also into the often-overlooked but miraculous things that often go right.

Every journey begins with a first step, and in this chapter, the first step is to learn what psychology is and how it developed into the discipline we have now. After that, we’ll discuss where psychology originated and how it developed. Finally, we’ll learn more about psychology today, including what psychologists do, where they do it, and what’s new and changing in what they do.

What Is Psychology?

From our earliest beginnings, people have been curious about the inner workings of the mind and have attempted to explain and predict the thoughts and emotions of themselves and of others. Today, the science of studying *mental processes* and *behaviour* is known as **psychology**. Psychology as a discipline is concerned with empirically examining the mind and behaviour and determining how each is influenced by the psychobiology of the organism as well as the effects of the external environment.

LEARNING OBJECTIVE 1 Define *psychology* and describe the goals and levels of analysis psychologists use.

psychology the study of mental processes and behaviours.

mental processes activities of our brain when engaged in thinking, observing the environment, and using language.

behaviour observable activities of an organism, often in response to environmental cues.

Mental processes describe the activity of our brains when we are engaged in thinking, processing information, and using language. Mental processes include complex experiences such as thinking, imagining, and remembering. During psychology's early history, the primary method for exploring internal mental processes was to observe outward **behaviour**, our observable actions, and make inferences, or guesses, about what was happening in the mind. Since psychology became an experimental science in the nineteenth century, however, psychological researchers have sought more direct ways to examine mental processes. In fact, the advent of brain imaging and other forms of technology have enabled scientists to uncover fascinating connections between behaviour and mental processes and to move toward a more comprehensive view of how mental processes occur in various individuals and situations.

When psychologists study mental processes and behaviour, they generally have one of four goals in mind:

- **Description.** Psychologists seek to *describe* very specifically the things that they observe. As you read this book, you'll see that psychologists have described phenomena ranging from how babies learn to talk to how we fall in love, how a human being is affected by early experience to how we make decisions, and more.
- **Explanation.** Telling what, where, when, and how is sometimes not enough. A key goal for many psychologists is to answer the question of "Why?" As we'll see, psychologists have developed hypotheses and theories to *explain* a huge variety of events, from why people develop addictions to substances to why we get hungry.
- **Prediction.** Psychologists also seek to *predict* the circumstances under which a variety of behaviours and mental processes are likely to occur. You'll learn later in this book, for example, about research that predicts the conditions under which we are most likely to offer help to a stranger in need.
- **Control.** We often encounter situations in which we want to either limit or increase certain behaviours or mental processes—whether our own or those of others. Psychology can give students advice on controlling their own behaviours that ranges from how to limit unhealthy stress to how to increase what you remember from a class.

To describe, explain, predict, or control mental processes and behaviours, we need to recognize the many influences on them. All our thoughts and actions, down to the simplest tasks, involve complex activation and coordination of a number of levels—the levels of the *brain*, the *individual*, and the *group*. As you will see throughout this textbook, no psychological process occurs solely at one of these levels. Analyzing how the brain, the individual, and the group influence each other reveals much about how we function—insights that might be overlooked if we were to focus on only one of these levels alone (see **Table 1-1**).

“Man is the only animal for whom his own existence is a problem which he has to solve.”

—Erich Fromm, *psychologist and philosopher*

At the *level of the brain*, psychologists consider the neuronal (brain cell) activity that occurs during the transmission and storage of information. They also focus on the structure of the brain and the genes that guide its formation. As we'll see later in this chapter, technological advances in the fields of molecular biology and brain imaging have made it possible to study how brain structure and activity differ from person to person and situation to situation. For example, a psychologist studying the brain can now look at what parts of the brain are activated by the administration of a drug, or the brain changes that accompany anxiety and depression (Damsa et al., 2009).

At the *level of the person*, psychologists analyze how the *content* of mental processes—including emotions, thoughts, and ideas—form and influence behaviour. To use a computer analogy, this level relates to the software rather than the mechanical functioning, or hardware, of the brain. The level of the person includes ideas such as consciousness, intelligence, personality, and motivation. Although internal biological structures of the brain allow such person-level processes to occur, we cannot understand the

TABLE 1-1 The Levels of Analysis in Psychology

Level	What Is Analyzed	Example: Using Social Media
The brain	How brain structure and brain cell activity differ from person to person and situation to situation	What are the patterns of brain activation as people interact with “friends” online?
The person	How the content of the individual’s mental processes form and influence behaviour	Are there personality factors that influence how much people use different types of social media? Can online social support or crisis resources improve people’s decision-making and quality of life?
The group	How behaviour is shaped by the social and cultural environments	What features of social networking sites, such as relative anonymity, ease of access, and lack of face-to-face contact, increase or decrease users’ feelings of belonging and connectedness?

Source: Adapted from Gardner, 1993.

processes unique to each individual, such as personality or motivation, without also studying this level.

Psychologists must also look beyond the individual to the *level of the group*. This perspective recognizes that humans are shaped by their social environment and that this environment changes over time. A *group* can be made up of friends, family members, or a large population. Often a large group shares a **culture**, a set of common beliefs, practices, values, and history that are transmitted across generations. The groups to which people belong or perceive themselves to belong can influence their thoughts and behaviours in fundamental ways (Prinstein & Dodge, 2008). Canadian culture is rooted in the history of the First Nations as well as of the early settlers and of immigrants, resulting in a diverse population of mixed ethnic groups and cultures.

When they conduct research, psychologists may focus on a single level of analysis. It is important to recognize, however, that activity does not take place only at one level or another. During even our most everyday activities, we are operating at all three levels at once. The levels also interact. Brain activity is affected by other levels, even by our broad cultural contexts. Similarly, changes in the biology of our brains can cause significant changes in our general state of being.

Let’s go back for a moment to our earlier discussion of virtual relationships on Facebook. If psychologists set out to understand behaviour involved in virtual relationships, they could examine it at various levels. Operating at the level of the brain, they could explore patterns of brain activation in Facebook users to see what brain changes occur when they go online or seek to link to or interact with others. At the level of the person, psychologists could explore questions of intelligence and personality to see whether there are certain characteristics related to the type and extent of Facebook use. Finally, at the level of the group, psychologists might examine how anonymity buffers Facebook groups if they bend general standards of polite behaviour, or how users’ participation on Facebook strengthens bonds to other users and decreases (or perhaps increases) their broader sense of connection to the population at large. As you’ll see throughout this book, the notion of multiple levels of analysis has played an important role in the development of psychological theories (Fodor, 2007, 2006, 1968).

“Everything that irritates us about others can lead us to an understanding of ourselves.”

—Carl Jung, psychiatrist and philosopher

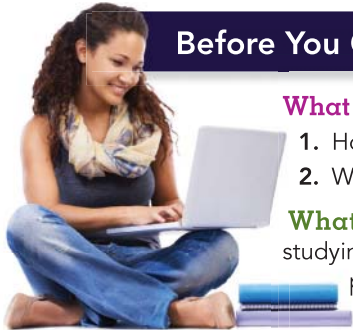
culture a set of shared beliefs and practices that are transmitted across generations.



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Diversity of Canadian culture. Canadian culture is often characterized as multicultural, encompassing influences from a wide range of nationalities as well as from its own indigenous culture.

Having examined what psychologists study and how they do it, let's next consider how psychology got its start, how historical and societal factors affected the way psychologists studied the mind and behaviour, and how perspectives and approaches vacillated over the discipline's rich and varied history. We'll examine how psychologists shifted their focus among the different goals and levels of analysis throughout psychology's history. You cannot truly appreciate psychology as it is now without a brief review of the growth and development of the field as it was shaped to become the discipline we have today.



Before You Go On

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What Do You Know?

1. How is behaviour different from mental processes? How are they the same?
2. What are the three levels of analysis in psychology?

What Do You Think? What would be the focus of each of the four goals of psychology when studying the use of Facebook and other social media? How would the questions and actions of a psychologist who seeks to describe social media use differ from those of someone who wants to limit children's and adolescents' use levels, for example?

Psychology's Roots in Philosophy

LEARNING OBJECTIVE 2

Describe the influences of early myths and ancient Greek philosophies on psychology.

Historically, humans have attempted to explain inexplicable events in their natural environments through *myths*. Myths are stories of forgotten origin that seek to explain or rationalize the fundamental mysteries of life and are universal, that is, common to all cultures. Myths seek to explain topics such as the reason for earthquakes, why crops are poor or plentiful, how humans came to be, and so on. A number of ceremonies and rituals based on these beliefs were then devised. Some theorists today believe that myths developed into some systems of religion, and that myths reflect an innate human need to understand and make sense of people and the natural world. In fact, according to these theorists, science is somewhat similar to mythology in that science represents our attempt to describe, explain, predict, and control our reality (Waterfield, 2000).

Although they focused on supernatural, life-giving forces, early belief systems as well as the cosmogonies (studies of the origin of the universe) of the Near East contributed to the intellectual curiosity and quest for knowledge that characterized the early Greek philosophers in the fourth and fifth centuries B.C.E. Although they did not consistently rely on empirical methods to examine questions, the great thinkers of ancient Greece moved beyond supernatural explanations. Instead, they tried to find ways to determine the nature of reality and the limitations of human awareness. To accomplish these difficult goals, they engaged in open, critical discussions of each other's ideas.

The intellectual history of psychology (like much of Western thought) starts with the history of Greek philosophy because unlike other important world philosophies, the Greeks had a recorded language (Boeree, 2006). *Philosophy* is defined as the study of knowledge, reality, and the nature and meaning of life. Among many other questions, the ancient philosophers such as Socrates, Plato, and Aristotle queried how the human mind



Chuck Stoody/The Canadian Press

Rituals. Many ceremonies and celebrations developed as a way to understand the natural and human world. The Coast Salish peoples of British Columbia passed down their oral history, including customs and beliefs, through stories, songs, and dances.

worked, how the human body related to the mind, and whether knowledge was inborn or had to be learned from experience (Hothersall, 1995). In addition, the Greek philosophers developed a method of introducing problems and then questioning proposed solutions that is at the core of modern scientific methods; methods we will discuss in greater detail in Chapter 2. Greek philosophers also emphasized that theories, ideas about the way things work, are never final, but rather are always capable of improvement. Psychologists still take this view.

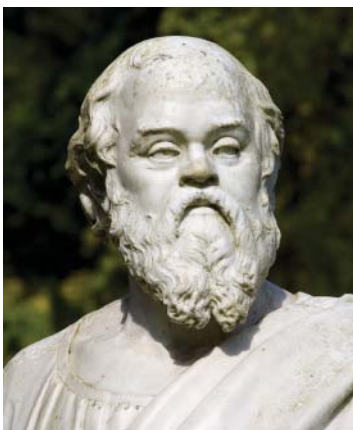
Hippocrates (ca. 460–377 B.C.E.), a Greek physician, believed that disease had a physical and rational explanation and that it was not caused by evil spirits or as a punishment from the gods. He erroneously suggested that an individual's physical and psychological health is influenced by an excess or a lack of bodily *humors*. He believed that these four bodily fluids (blood, phlegm, yellow bile, and black bile) collectively determined a person's personality and character, and predicted the individual's well-being and responses to environmental events. Although Hippocrates' medical theory of *humorism* was wrong, he was the first to recognize the importance of good food, fresh air, and rest, and he accurately diagnosed the symptoms for pneumonia and epilepsy. He also correctly identified the brain as the organ of mental life, and argued that thoughts, ideas, and feelings originated in the brain and not in the heart—as was commonly believed at the time. Hippocrates tested his theories with direct observation and some dissections. Because of such early efforts, academic study became rooted firmly in detailed scientific methods of study.

Other Greek philosophers, such as Socrates (ca. 469–399 B.C.E.) and Plato (ca. 427–347 B.C.E.), considered whether the mind and the body were one thing or whether each functioned separately. They concluded that the mind and body are distinct and that the mind continues after the body dies. They believed that “truth” lies in the mind and that this knowledge was innate—that is, inborn or existing within a person from birth—and is highly dependent upon our perceived, or subjective, states. Socrates therefore looked for concepts that were the “essence” of human nature and searched for elements that various concepts had in common. He tried, for example, to identify *why* something was beautiful, and what essential factors an object must possess in order to be beautiful. His student, Plato, believed that certain ideas and concepts were pure and signified an ultimate reality. Plato believed that we could use reasoning to uncover the core ideas deeply imbedded in every human soul. The ideas of these two philosophers represented early studies of mental states and processes.

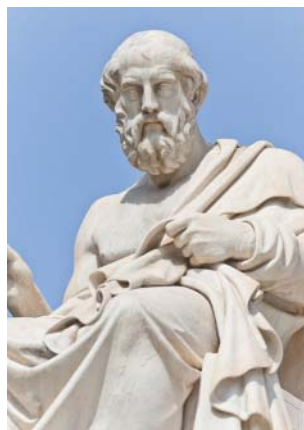


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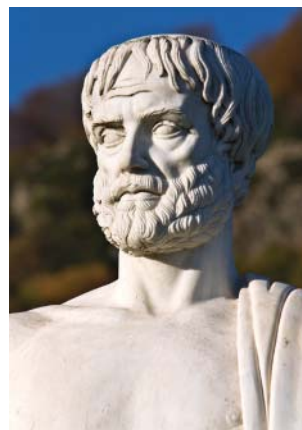
Hippocrates' psychological theory. This medieval manuscript illustrates the psychological effects of the humors proposed by the Greek physician. The illustration on the left demonstrates the melancholia produced by black bile, while the one on the right depicts the joyous, musical, and passionate personality produced by blood.



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Greek philosophers. Socrates mentored Plato who, in turn, mentored, Aristotle.

Similarly, Aristotle (ca. 384–322 B.C.E.), a student of Plato's, and one of the most famous thinkers of the Greek period, made key contributions to the foundations of psychology. His writings represent some of the first important theories about many of the topics discussed throughout this book, such as sensations, dreams, sleep, and learning (Lorusso, 2010). Aristotle was one of the first to promote empirical, or testable, investigations of the natural world. He looked inward at sensory experiences and also scrutinized his environment carefully, searching for the basic purpose of all objects and creatures. In his studies, he formed ideas about how living things are hierarchically categorized, concluding—centuries before Charles Darwin—that humans are closely related to animals.

Psychology's Roots in Physiology and Psychophysics

As Europe emerged from the Dark Ages, the philosophies of the ancient Greek scientists and philosophers were rediscovered approximately 2,000 years after they lived and re-emerged to influence European thinkers throughout the Renaissance. Although mysticism declined as a form of explanation for human nature, there remained great confusion and disagreement regarding human motives and origins.

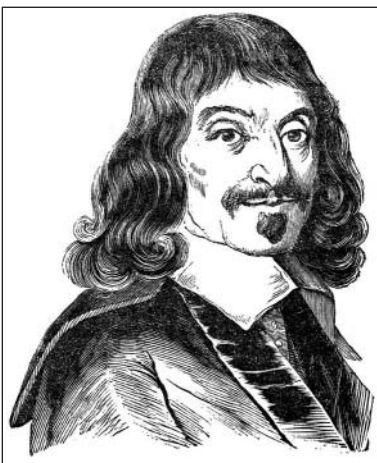
In the centuries both during and after the Renaissance through to Associationism, European society underwent a scientific revolution. A spiritual worldview, which had dominated for several centuries, was increasingly replaced by a view of the world based on mathematics and mechanics. By the 1600s, modern science began to thrive and over time both the universe and human beings were viewed as machines subject to fixed natural laws. The dominant view was that the brain controlled the body by moving fluids from one area to another. The roles of magic and mysticism in science essentially disappeared (Leahey, 2000).

During this time, Francis Bacon (1561–1626), an English philosopher, scientist, and statesman who was fascinated by the human mind, became a prominent figure in scientific methodology and natural philosophy. He is widely regarded as the creator of *empiricism*: the view that all knowledge originates in experience. He established and popularized the scientific method, gathering data, analyzing data, and performing experiments.

Like Socrates and Plato, René Descartes (1596–1650), the first of the modern philosophers and an early scientist, viewed all truths as ultimately linked and believed that the meaning of the natural world could be understood through science and mathematics. Descartes contemplated the nature of existence and dualism of the mind and body, believing the mind to be distinct from the body. He identified the point of contact between the two as the pineal gland, and he believed that the mind (which he viewed as synonymous with the soul) would survive the death of the body and was therefore the “province of God” (Pickren & Rutherford, 2010, p. 5).

The theories of both Bacon and Descartes influenced the work of British philosopher John Locke (1632–1704), who believed that we learn by our experiences. He notably argued that the mind at birth is a *tabula rasa*—a blank slate—“a white paper, void of all characters, without any ideas” (Locke, 1689), waiting for experience to imprint knowledge. That is, Locke thought that at birth the human mind has no innate ideas but instead acquires all knowledge through experience.

While philosophers debated about the nature of the human experience, other researchers believed that important insights about the brain and body could be understood by combining empirically established facts with philosophical thinking. The area of psychophysics, pioneered by prominent physiologist Johannes Müller (1801–1858), maintained that researchers needed to study the relationship between physical stimuli and their psychological effects, that is, the sensations and perceptions they affect. Psychophysics examined questions such as how much sound or light needs to be present to be detected, and how much sound or light must be added to an initial signal before we notice the change. Herman von Helmholtz (1821–1894), a student of Müller's, was the first to measure the speed of a



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René Descartes. First of the modern philosophers.

nerve impulse and determined that nerve impulses occur over time rather than instantaneously. This finding led to the understanding that thought and movement are linked, but are not the same thing. The work of von Helmholtz contributed to the foundation of modern physiological psychology and neuroscience (Benjamin, 2007).

Gustav Fechner (1801–1887) was a German philosopher and physicist who is considered to be one of the founders of experimental psychology. He published a book summarizing this work in 1860, called *Elements of Psychophysics*. In the book, Fechner (1860) lays out many of the methods and study techniques that would come to be used in the emerging field of psychology. His evidence of the relationship between physical and mental events demonstrated that psychology had the potential to become a quantified science. While Fechner completed his manuscript, a physiologist, Wilhelm Wundt (1832–1920), came to work in the laboratory with Helmholtz. As we will see, these two events contributed to the foundation of psychology as a discipline.



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What Do You Know?

3. What do the earliest myths have in common with today's scientific studies?
4. Greek philosophers who believed reasoning would uncover ideals or core ideas were focused on which aspect of psychology?
5. How did the Greek philosopher Hippocrates explain mental processes and behaviour? How did Hippocrates's research methods influence today's study of psychology?

What Do You Think? What advantages do you think a scientific approach has for explaining behaviour and mental processes compared to a supernatural approach?

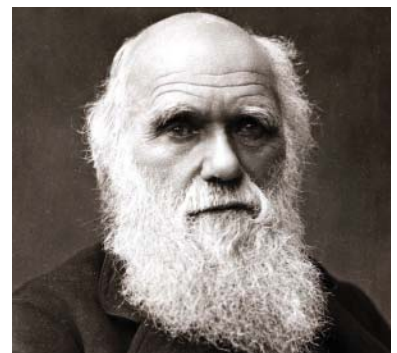
The Early Days of Psychology

In the latter part of the nineteenth century, Charles Darwin (1809–1882), in his book *The Origin of Species* (1859, 1872), proposed the theory of evolution, making the radical suggestion that all life on Earth was related and that human beings were just one outcome of many variations from a common ancestral point. Darwin also suggested natural selection as the mechanism through which some variations survive over the years while other variations fall out of existence. *Natural selection* proposes that chance variations are passed down from parent to offspring, and that some of these variations are *adaptive*—better suited to an organism's environment. These adaptive variations help the organism to survive and reproduce in their specific environment. On the other hand, less-adaptive variations reduce the ability of an organism to survive.

The Founding of Psychology

In this atmosphere of heightened interest in the mind–body duality debate and the nature–nurture debate among philosophers, physicians, and scientists, psychology emerged as a distinct scientific field of investigation. As we have observed, prior to the late nineteenth century, psychology was virtually indistinguishable from the study of philosophy. In 1879, however, the physiologist Wilhelm Wundt (1832–1920) opened a laboratory in Leipzig, Germany, dedicated exclusively to the study of psychology. As a natural scientist, Wundt believed that the study of mind and behaviour ought to be conducted using the experimental methods of other sciences such as chemistry and physics, so he established a program that trained students to perform empirically-driven experiments in psychology.

LEARNING OBJECTIVE 3 Name important early psychologists and describe their major theories and research methods.



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Charles Darwin (1809–1882). The theories by the English naturalist about human evolution shifted scientific attention toward human origins and behaviour.