

Chapter 1. Introducing Psychology

1. Introducing Psychology

Psychology is the *scientific study of mind and behaviour*. The word “psychology” comes from the Greek words “psyche,” meaning *life*, and “logos,” meaning *explanation*. Psychology is a popular major for students, a popular topic in the public media, and a part of our everyday lives. Television shows such as *Dr. Phil* feature psychologists who provide personal advice to those with personal or family difficulties. Psychological television crime dramas such as *Cracked*, *Criminal Minds*, *Psyche*, *CSI*, and others feature the work of forensic psychologists who use psychological principles to help solve crimes. And many people have direct knowledge of psychology because they have visited psychologists, such as school counsellors, family therapists, and religious, marriage, or bereavement counsellors.

Because we are frequently exposed to the work of psychologists in our everyday lives, we all have an idea about what psychology is and what psychologists do. In many ways I am sure that your conceptions are correct. Psychologists do work in forensic fields, and they do provide counselling and therapy for people in distress. But there are hundreds of thousands of psychologists in the world, and most of them work in other places, doing work that you are probably not aware of.

Most psychologists work in research laboratories, hospitals, and other field settings where they study the behaviour of humans and animals. For instance, my colleagues in the Psychology Department at the University of Maryland study such diverse topics as anxiety in children, the interpretation of dreams, the effects of caffeine on thinking, how birds recognize each other, how praying mantises hear, how people from different cultures react differently in negotiation, and the factors that lead people to engage in terrorism. Other psychologists study topics such as alcohol and drug addiction, memory, emotion, hypnosis, love, what makes people aggressive or helpful, and the psychologies of politics, prejudice, culture, and religion. Psychologists also work in schools and businesses, and they use a variety of methods, including observation, questionnaires, interviews, and laboratory studies, to help them understand behaviour.

This chapter provides an introduction to the broad field of psychology and the many approaches that psychologists take to understanding human behaviour. We will consider how psychologists conduct scientific research, with an overview of some of the most important approaches used and topics studied by psychologists, and also consider the variety of fields in which psychologists work and the careers that are available to people with psychology degrees. I expect that you may find that at least some of your preconceptions about psychology will be challenged and changed, and you will learn that psychology is a field that will provide you with new ways of thinking about your own thoughts, feelings, and actions.

Attributions

Figure 1.1:

- “Friendly smoking” by [Valentin Ottone](http://www.flickr.com/photos/saneboy/3595175373/) (<http://www.flickr.com/photos/saneboy/3595175373/>) is licensed under [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/).



Figure 1.1 Psychology is in part the study of behaviour. Why do you think these people are behaving the way they are? [\[Long Description\]](#)

- “At the beach” by [Julian Schüngel](#) (<http://www.flickr.com/photos/medevac71/4468071278/>) is licensed under [CC BY-NC-ND 2.0](#).
- “Bar Trek and friends” by [Jim H](#) (<http://www.flickr.com/photos/greyloch/10970542456/in/photostream/>) is licensed under [CC BY-SA 2.0](#).
- “Physical therapist” by U.S. Navy photo (http://commons.wikimedia.org/wiki/File:US_Navy_081610-A-6522B-002_Physical_therapist_Lt._Cmdr._Mitchel_Ideue,_Officer_in_Charge_of_Inpatient_Servic) is in the [public domain](#).
- “couple yelling at each other” by [Vic](#) (<http://www.flickr.com/photos/59632563@N04/6238711264/in/photostream/>) is licensed under [CC BY 2.0](#).

Long Descriptions

Figure 1.1 long description: Five photos:

1. Man in hospital bed with broken leg; a soldier is lifting his leg as if to give physical therapy.
2. Young girl smoking a cigarette.
3. A man doing a hand stand on a beach with sun setting in background.
4. A man and woman yelling at each other with their heads touching.
5. One man and four women dressed up like Star Trek characters and aliens. [\[Return to Figure 1.1\]](#)

1.1 Psychology as a Science

Learning Objectives

1. Explain why using our intuition about everyday behaviour is insufficient for a complete understanding of the causes of behaviour.
2. Describe the difference between values and facts and explain how the scientific method is used to differentiate between the two.

Despite the differences in their interests, areas of study, and approaches, all psychologists have one thing in common: they rely on scientific methods. **Research psychologists** *use scientific methods to create new knowledge about the causes of behaviour*, whereas **psychologist-practitioners**, such as clinical, counselling, industrial-organizational, and school psychologists, *use existing research to enhance the everyday life of others*. The science of psychology is important for both researchers and practitioners.

In a sense all humans are scientists. We all have an interest in asking and answering questions about our world. We want to know *why* things happen, when and if they are likely to happen again, and how to reproduce or change them. Such knowledge enables us to predict our own behaviour and that of others. We may even collect **data** (i.e., *any information collected through formal observation or measurement*) to aid us in this undertaking. It has been argued that people are “everyday scientists” who conduct research projects to answer questions about behaviour (Nisbett & Ross, 1980). When we perform poorly on an important test, we try to understand what caused our failure to remember or understand the material and what might help us do better the next time. When our good friends Monisha and Charlie break up, despite the fact that they appeared to have a relationship made in heaven, we try to determine what happened. When we contemplate the rise of terrorist acts around the world, we try to investigate the causes of this problem by looking at the terrorists themselves, the situation around them, and others’ responses to them.

The Problem of Intuition

The results of these “everyday” research projects can teach us many principles of human behaviour. We learn through experience that if we give someone bad news, he or she may blame us even though the news was not our fault. We learn that people may become depressed after they fail at an important task. We see that aggressive behaviour occurs frequently in our society, and we develop theories to explain why this is so. These insights are part of everyday social life. In fact, much research in psychology involves the scientific study of everyday behaviour (Heider, 1958; Kelley, 1967).

The problem, however, with the way people collect and interpret data in their everyday lives is that they are not always particularly thorough. Often, when one explanation for an event seems right, we adopt that explanation as the truth even when other explanations are possible and potentially more accurate. For example, eyewitnesses to violent crimes are often extremely confident in their identifications of the perpetrators of these crimes. But research

finds that eyewitnesses are no less confident in their identifications when they are incorrect than when they are correct (Cutler & Wells, 2009; Wells & Hasel, 2008). People may also become convinced of the existence of extrasensory perception (ESP), or the predictive value of astrology, when there is no evidence for either (Gilovich, 1993). Furthermore, psychologists have also found that there are a variety of cognitive and motivational biases that frequently influence our perceptions and lead us to draw erroneous conclusions (Fiske & Taylor, 2007; Hsee & Hastie, 2006). In summary, accepting explanations for events without testing them thoroughly may lead us to think that we know the causes of things when we really do not.

Research Focus: Unconscious Preferences for the Letters of Our Own Name

A study reported in the *Journal of Consumer Research* (Brendl, Chattopadhyay, Pelham, & Carvalho, 2005) demonstrates the extent to which people can be unaware of the causes of their own behaviour. The research demonstrated that, at least under certain conditions (and although they do not know it), people frequently prefer brand names that contain the letters of their own name to brand names that do not contain the letters of their own name.

The research participants were recruited in pairs and were told that the research was a taste test of different types of tea. For each pair of participants, the experimenter created two teas and named them by adding the word stem “oki” to the first three letters of each participant’s first name. For example, for Jonathan and Elisabeth, the names of the teas would have been Jonoki and Elioki.

The participants were then shown 20 packets of tea that were supposedly being tested. Eighteen packets were labelled with made-up Japanese names (e.g., Mataku; Somuta), and two were labelled with the brand names constructed from the participants’ names. The experimenter explained that each participant would taste only two teas and would be allowed to choose one packet of these two to take home.

One of the two participants was asked to draw slips of paper to select the two brands that would be tasted at this session. However, the drawing was rigged so that the two brands containing the participants’ name stems were always chosen for tasting. Then, while the teas were being brewed, the participants completed a task designed to heighten their need for self-esteem, and that was expected to increase their desire to choose a brand that had the letters of their own name. Specifically, the participants all wrote about an aspect of themselves that they would like to change.

After the teas were ready, the participants tasted them and then chose to take a packet of one of the teas home with them. After they made their choice, the participants were asked why they chose the tea they had chosen, and then the true purpose of the study was explained to them.

The results of this study found that participants chose the tea that included the first three letters of their own name significantly more frequently (64% of the time) than they chose the tea that included the first three letters of their partner’s name (only 36% of the time). Furthermore, the decisions were made unconsciously; the participants did not know why they chose the tea they chose. When they were asked, more than 90% of the participants thought that they had chosen on the basis of taste, whereas only 5% of them mentioned the real cause — that the brand name contained the letters of their name.

Once we learn about the outcome of a given event (e.g., when we read about the results of a research project), we frequently believe that we would have been able to predict the outcome ahead of time. For instance, if half of a class of students is told that research concerning attraction between people has demonstrated that “opposites attract” and the other half is told that research has demonstrated that “birds of a feather flock together,” most of the

students will report believing that the outcome that they just read about is true, and that they would have predicted the outcome before they had read about it. Of course, both of these contradictory outcomes cannot be true. (In fact, psychological research finds that “birds of a feather flock together” is generally the case.) The problem is that just reading a description of research findings leads us to think of the many cases we know that support the findings, and thus makes them seem believable. *The tendency to think that we could have predicted something that has already occurred that we probably would not have been able to predict* is called the **hindsight bias**.

Why Psychologists Rely on Empirical Methods

All scientists, whether they are physicists, chemists, biologists, sociologists, or psychologists, use *empirical methods* to study the topics that interest them. **Empirical methods** include the processes of collecting and organizing data and drawing conclusions about those data. The empirical methods used by scientists have developed over many years and provide a basis for collecting, analyzing, and interpreting data within a common framework in which information can be shared. We can label the **scientific method** as *the set of assumptions, rules, and procedures that scientists use to conduct empirical research*.

Although scientific research is an important method of studying human behaviour, not all questions can be answered using scientific approaches. Statements that cannot be objectively measured or objectively determined to be true or false are not within the domain of scientific inquiry. Scientists therefore draw a distinction between values and facts. *Values* are personal statements such as “Abortion should not be permitted in this country,” “I will go to heaven when I die,” or “It is important to study psychology.” **Facts** are *objective statements determined to be accurate through empirical study*. Examples are “There were more than 21,000 homicides in Canada in 2009” or “Research demonstrates that individuals who are exposed to highly stressful situations over long periods of time develop more health problems than those who are not.”

Because values cannot be considered to be either true or false, science cannot prove or disprove them. Nevertheless, as shown in Table 1.1, research can sometimes provide facts that can help people develop their values. For instance, science may be able to objectively measure the impact of unwanted children on a society or the psychological trauma suffered by women who have abortions. The effect of imprisonment on the crime rate in Canada may also be determinable. This factual information can and should be made available to help people formulate their values about abortion and incarceration, as well as to enable governments to articulate appropriate policies. Values also frequently come into play in determining what research is appropriate or important to conduct. For instance, the Canadian government has recently increased funding for university research, designating \$37 million annually to the three major research councils dealing with health, social science, and the sciences (Research Canada, 2014).

Table 1.1 Examples of Values and Facts in Scientific Research.¹

[Skip Table]	
Personal value	Scientific fact
The environment should be protected.	The Canadian government has reduced environmental funding by \$200 million but annually pays more than \$1.4 billion in subsidies to the oil and gas industry.
Practical work experience helps to develop skilled workers.	More than \$100 million for interest-free loans will be available in 2014 through the Canada Apprentice Loan program, an expansion of the Canada Student Loans Program.
Technology is increasingly necessary.	The federal government in Canada will invest \$305 million over five years to extend high-speed broadband to some 280,000 homes in 2014.
It is important to quit smoking.	The Canadian government will raise the cost of cigarettes by more than \$4 on a carton in 2014.

Although scientists use research to help establish facts, the distinction between values and facts is not always clear-cut. Sometimes statements that scientists consider to be factual turn out later, on the basis of further research, to be partially or even entirely incorrect. Although scientific procedures do not necessarily guarantee that the answers to questions will be objective and unbiased, science is still the best method for drawing objective conclusions about the world around us. When old facts are discarded, they are replaced with new facts based on newer and more correct data. Although science is not perfect, the requirements of empiricism and objectivity result in a much greater chance of producing an accurate understanding of human behaviour than is available through other approaches.

Levels of Explanation in Psychology

The study of psychology spans many different topics at many different **levels of explanation**, which are *the perspectives that are used to understand behaviour*. Lower levels of explanation are more closely tied to biological influences, such as genes, neurons, neurotransmitters, and hormones, whereas the middle levels of explanation refer to the abilities and characteristics of individual people, and the highest levels of explanation relate to social groups, organizations, and cultures (Cacioppo, Berntson, Sheridan, & McClintock, 2000).

The same topic can be studied within psychology at different levels of explanation, as shown in Table 1.2, “Levels of Explanation.” For instance, the psychological disorder known as **depression** affects millions of people worldwide and is known *to be caused by biological, social, and cultural factors*. Studying and helping alleviate depression can be accomplished at low levels of explanation by investigating how chemicals in the brain influence the experience of depression. This approach has allowed psychologists to develop and prescribe drugs, such as Prozac, which may decrease depression in many individuals (Williams, Simpson, Simpson, & Nahas, 2009). At the middle levels of explanation, psychological therapy is directed at helping individuals cope with negative life experiences that may cause depression. And at the highest level, psychologists study differences in the prevalence of depression between men and women and across cultures. The occurrence of psychological disorders, including depression, is substantially higher for women than for men, and it is also higher in Western cultures, such as in Canada, the United States, and Europe, than in Eastern cultures, such as in India, China, and Japan (Chen, Wang, Poland, & Lin, 2009; Seedat et al., 2009). These sex and cultural differences provide insight into the factors that cause depression. The study of depression in psychology helps remind us that no one level of explanation can explain everything. All levels of explanation, from biological to personal to cultural, are essential for a better understanding of human behaviour.

Table 1.2 Levels of Explanation

[\[Skip Table\]](#)

Level of Explanation	Underlying Process	Examples
Lower	Biological	<ul style="list-style-type: none"> • Depression is in part genetically influenced. • Depression is influenced by the action of neurotransmitters in the brain.
Middle	Interpersonal	<ul style="list-style-type: none"> • People who are depressed may interpret the events that occur to them too negatively. • Psychotherapy can be used to help people talk about and combat depression
Higher	Cultural and social	<ul style="list-style-type: none"> • Women experience more depression than do men. • The prevalence of depression varies across cultures and historical time periods.

The Challenges of Studying Psychology

Understanding and attempting to alleviate the costs of psychological disorders such as depression is not easy because psychological experiences are extremely complex. The questions psychologists pose are as difficult as those posed by doctors, biologists, chemists, physicists, and other scientists, if not more so (Wilson, 1998).

A major goal of psychology is to predict behaviour by understanding its causes. Making predictions is difficult, in part because people vary and respond differently in different situations. **Individual differences** are *the variations among people on physical or psychological dimensions*. For instance, although many people experience at least some symptoms of depression at some times in their lives, the experience varies dramatically among people. Some people experience major negative events, such as severe physical injuries or the loss of significant others, without experiencing much depression, whereas other people experience severe depression for no apparent reason. Other important individual differences that we will discuss in the chapters to come include differences in extraversion, intelligence, self-esteem, anxiety, aggression, and conformity.

Because of the many individual difference variables that influence behaviour, we cannot always predict who will become aggressive or who will perform best in graduate school or on the job. The predictions made by psychologists (and most other scientists) are only probabilistic. We can say, for instance, that people who score higher on an intelligence test will, on average, do better than people who score lower on the same test, but we cannot make very accurate predictions about exactly how any one person will perform.

Another reason that it is difficult to predict behaviour is that almost all behaviour is **multiply determined**, or *produced by many factors*. And these factors occur at different levels of explanation. We have seen, for instance, that depression is caused by lower-level genetic factors, by medium-level personal factors, and by higher-level social and cultural factors. You should always be skeptical about people who attempt to explain important human behaviours, such as violence, child abuse, poverty, anxiety, or depression, in terms of a single cause.

Furthermore, these multiple causes are not independent of one another; they are associated such that when one cause is present, other causes tend to be present as well. This overlap makes it difficult to pinpoint which cause or causes

are operating. For instance, some people may be depressed because of biological imbalances in neurotransmitters in their brain. The resulting depression may lead them to act more negatively toward other people around them, which then leads those other people to respond more negatively to them, which then increases their depression. As a result, the biological determinants of depression become intertwined with the social responses of other people, making it difficult to disentangle the effects of each cause.

Another difficulty in studying psychology is that much human behaviour is caused by factors that are outside our conscious awareness, making it impossible for us, as individuals, to really understand them. The role of unconscious processes was emphasized in the theorizing of the Austrian neurologist Sigmund Freud (1856-1939), who argued that many psychological disorders were caused by memories that we have **repressed** and thus *remain outside our consciousness*. Unconscious processes will be an important part of our study of psychology, and we will see that current research has supported many of Freud's ideas about the importance of the unconscious in guiding behaviour.

Key Takeaways

- Psychology is the scientific study of mind and behaviour.
- Though it is easy to think that everyday situations have commonsense answers, scientific studies have found that people are not always as good at predicting outcomes as they think they are.
- The hindsight bias leads us to think that we could have predicted events that we actually could not have predicted.
- People are frequently unaware of the causes of their own behaviours.
- Psychologists use the scientific method to collect, analyze, and interpret evidence.
- Employing the scientific method allows the scientist to collect empirical data objectively, which adds to the accumulation of scientific knowledge.
- Psychological phenomena are complex, and making predictions about them is difficult because of individual differences and because they are multiply determined at different levels of explanation.

Exercises and Critical Thinking

1. Can you think of a time when you used your intuition to analyze an outcome, only to be surprised later to find that your explanation was completely incorrect? Did this surprise help you understand how intuition may sometimes lead us astray?
2. Describe the scientific method in a way that someone who knows nothing about science could understand it.
3. Consider a behaviour that you find to be important and think about its potential causes at different levels of explanation. How do you think psychologists would study this behaviour?

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Notes

1. Source: Huffington Post, 2014.

1.2 The Evolution of Psychology: History, Approaches, and Questions

Learning Objectives

1. Explain how psychology changed from a philosophical to a scientific discipline.
2. List some of the most important questions that concern psychologists.
3. Outline the basic schools of psychology and how each school has contributed to psychology.

In this section we will review the history of psychology with a focus on the important questions that psychologists ask and the major approaches (or schools) of psychological inquiry. The schools of psychology that we will review are summarized in Table 1.3, “The Most Important Approaches (Schools) of Psychology,” while Table 1.4, “History of Psychology,” presents a timeline of some of the most important psychologists, beginning with the early Greek philosophers and extending to the present day. Table 1.3 and Table 1.4 both represent a selection of the most important schools and people; to mention all the approaches and all the psychologists who have contributed to the field is not possible in one chapter. The approaches that psychologists have used to assess the issues that interest them have changed dramatically over the history of psychology. Perhaps most importantly, the field has moved steadily from speculation about behaviour toward a more objective and scientific approach as the technology available to study human behaviour has improved (Benjamin & Baker, 2004). There has also been an influx of women into the field. Although most early psychologists were men, now most psychologists, including the presidents of the most important psychological organizations, are women.

Table 1.3 The Most Important Approaches (Schools) of Psychology.

[Skip Table]

School of Psychology	Description	Important Contributors
Structuralism	Uses the method of introspection to identify the basic elements or “structures” of psychological experience	Wilhelm Wundt, Edward B. Titchener
Functionalism	Attempts to understand why animals and humans have developed the particular psychological aspects that they currently possess	William James
Psychodynamic	Focuses on the role of our unconscious thoughts, feelings, and memories and our early childhood experiences in determining behaviour	Sigmund Freud, Carl Jung, Alfred Adler, Erik Erickson
Behaviourism	Based on the premise that it is not possible to objectively study the mind, and therefore that psychologists should limit their attention to the study of behaviour itself	John B. Watson, B. F. Skinner
Cognitive	The study of mental processes, including perception, thinking, memory, and judgments	Hermann Ebbinghaus, Sir Frederic Bartlett, Jean Piaget
Social-cultural	The study of how the social situations and the cultures in which people find themselves influence thinking and behaviour	Fritz Heider, Leon Festinger, Stanley Schachter

Although most of the earliest psychologists were men, women are increasingly contributing to psychology. Here are some examples:

- 1968: Mary Jean Wright became the first woman president of the Canadian Psychological Association.
- 1970: Virginia Douglas became the second woman president of the Canadian Psychological Association.
- 1972: The Underground Symposium was held at the Canadian Psychological Association Convention. After having their individual papers and then a symposium rejected by the Program Committee, a group of six graduate students and non-tenured faculty, including Sandra Pyke and Esther Greenglass, held an independent research symposium that showcased work being done in the field of the psychology of women.
- 1976: The Canadian Research Institute for the Advancement of Women was founded.
- 1987: Janet Stoppard led the Women and Mental Health Committee of the Canadian Mental Health Association.

Although it cannot capture every important psychologist, the following timeline shows some of the most important contributors to the history of psychology. (Adapted by J. Walinga.)

Table 1.4 History of Psychology.

[\[Skip Table\]](#)

Date	Psychologist(s)	Description
428 to 347 BCE	Plato	Greek philosopher who argued for the role of nature in psychological development.
384 to 432 BCE	Aristotle	Greek philosopher who argued for the role of nurture in psychological development.
1588 to 1679 CE	Thomas Hobbes	English philosopher.
1596 to 1650	René Descartes	French philosopher.
1632 to 1704	John Locke	English philosopher.
1712 to 1778	Jean-Jacques Rousseau	French philosopher.
1801 to 1887	Gustav Fechner	German experimental psychologist who developed the idea of the “just noticeable difference” (JND), which is considered to be the first empirical psychological measurement.
1809 to 1882	Charles Darwin	British naturalist whose theory of natural selection influenced the functionalist school and the field of evolutionary psychology.
1832 to 1920	Wilhelm Wundt	German psychologist who opened one of the first psychology laboratories and helped develop the field of structuralism.
1842 to 1910	William James	American psychologist who opened one of the first psychology laboratories and helped develop the field of functionalism.
1849 to 1936	Ivan Pavlov	Russian psychologist whose experiments on learning led to the principles of classical conditioning.
1850 to 1909	Hermann Ebbinghaus	German psychologist who studied the ability of people to remember lists of nonsense syllables under different conditions.
1856 to 1939	Sigmund Freud	Austrian psychologist who founded the field of psychodynamic psychology.
1867 to 1927	Edward Bradford Titchener	American psychologist who contributed to the field of structuralism.
1878 to 1958	John B. Watson	American psychologist who contributed to the field of behaviorism.
1886 to 1969	Sir Frederic Bartlett	British psychologist who studied the cognitive and social processes of remembering.
1896 to 1980	Jean Piaget	Swiss psychologist who developed an important theory of cognitive development in children.
1904 to 1990	B. F. Skinner	American psychologist who contributed to the school of behaviourism.

[Skip Table]

Date	Psychologist(s)	Description
1926 to 1993	Donald Broadbent	British cognitive psychologist who was pioneer in the study of attention.
20th and 21st centuries	Linda Bartoshuk; Daniel Kahneman; Elizabeth Loftus; Geroge Miller.	American psychologists who contributed to the cognitive school of psychology by studying learning, memory, and judgment. An important contribution is the advancement of the field of neuroscience. Daniel Kahneman won the Nobel Prize in Economics for his work on psychological decision making.
1850	Dorothea Dix	Canadian psychologist known for her contributions to mental health and opened one of the first mental hospitals in Halifax, New Brunswick.
1880	William Lyall; James Baldwin	Canadian psychologists who wrote early psychology texts and created first Canadian psychology lab at the University of Toronto.
1950	James Olds; Brenda Milner; Wilder Penfield; Donald Hebb; Endel Telving	Canadian psychologists who contributed to neurological psychology and opened the Montreal Neurological Institute.
1960	Albert Bandura	Canadian psychologist who developed ‘social learning theory’ with his Bobo doll studies illustrating the impact that observation and interaction has on learning.
1970	Hans Selye	Canadian psychologist who contributed significantly in the area of psychology of stress.

Although psychology has changed dramatically over its history, the most important questions that psychologists address have remained constant. Some of these questions follow, and we will discuss them both in this chapter and in the chapters to come:

- *Nature versus nurture.* Are genes or environment most influential in determining the behaviour of individuals and in accounting for differences among people? Most scientists now agree that both genes and environment play crucial roles in most human behaviours, and yet we still have much to learn about how nature (our biological makeup) and nurture (the experiences that we have during our lives) work together (Harris, 1998; Pinker, 2002). *The proportion of the observed differences of characteristics among people (e.g., in terms of their height, intelligence, or optimism) that is due to genetics* is known as the **heritability of the characteristic**, and we will make much use of this term in the chapters to come. We will see, for example, that the heritability of intelligence is very high (about .85 out of 1.0) and that the heritability of extraversion is about .50. But we will also see that nature and nurture interact in complex ways, making the question “Is it nature or is it nurture?” very difficult to answer.
- *Free will versus determinism.* This question concerns the extent to which people have control over their own actions. Are we the products of our environment, guided by forces out of our control, or are we able to choose the behaviours we engage in? Most of us like to believe in free will, that we are able to do what we want—for instance, that we could get up right now and go fishing. And our legal system is premised on the concept of free will; we punish criminals because we believe that they have choice over their behaviours and freely choose to disobey the law. But as we will discuss later in the research focus in this section, recent research has suggested that we may have less control over our own behaviour than we think we do (Wegner, 2002).
- *Accuracy versus inaccuracy.* To what extent are humans good information processors? Although it

appears that people are good enough to make sense of the world around them and to make decent decisions (Fiske, 2003), they are far from perfect. Human judgment is sometimes compromised by inaccuracies in our thinking styles and by our motivations and emotions. For instance, our judgment may be affected by our desires to gain material wealth and to see ourselves positively and by emotional responses to the events that happen to us. Many studies have explored decision making in crisis situations such as natural disasters, or human error or criminal action, such as in the cases of the Tylenol poisoning, the Maple Leaf meats listeriosis outbreak, the SARS epidemic or the Lac-Mégantic train derailment (Figure 1.2).



Figure 1.2 Lac-Mégantic Derailment. Psychologists study the causes of poor judgments such as those made by executives like the three criminally charged in relation to the Lac-Mégantic train derailment in 2013. This picture was taken from a Sûreté du Québec helicopter on the day of the derailment.

- *Conscious versus unconscious processing.* To what extent are we conscious of our own actions and the causes of them, and to what extent are our behaviours caused by influences that we are not aware of? Many of the major theories of psychology, ranging from the Freudian psychodynamic theories to contemporary work in cognitive psychology, argue that much of our behaviour is determined by variables that we are not aware of.
- *Differences versus similarities.* To what extent are we all similar, and to what extent are we different? For instance, are there basic psychological and personality differences between men and women, or are men and women by and large similar? And what about people from different ethnicities and cultures? Are people around the world generally the same, or are they influenced by their backgrounds and environments in different ways? Personality, social, and cross-cultural psychologists attempt to answer these classic questions.

Early Psychologists

The earliest psychologists that we know about are the Greek philosophers Plato (428-347 BC) and Aristotle (384-322 BC). These philosophers (see Figure 1.3) asked many of the same questions that today's psychologists ask;

for instance, they questioned the distinction between nature and nurture and the existence of free will. In terms of the former, Plato argued on the nature side, believing that certain kinds of knowledge are innate or inborn, whereas Aristotle was more on the nurture side, believing that each child is born as an “empty slate” (in Latin, a *tabula rasa*) and that knowledge is primarily acquired through learning and experience.

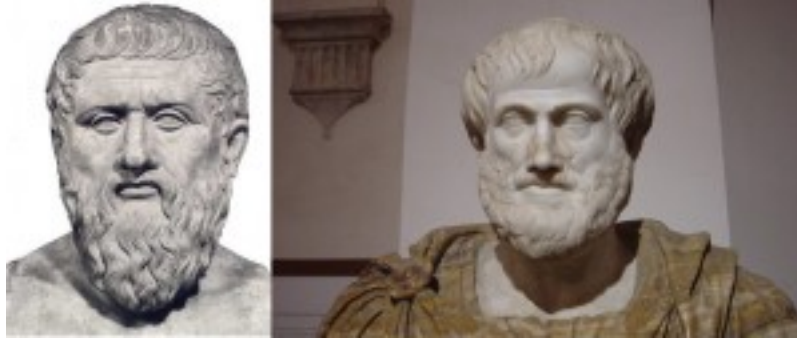


Figure 1.3 Early Psychologists. The earliest psychologists were the Greek Philosophers Plato (left) and Aristotle (right). Plato believed that much knowledge was innate, whereas Aristotle thought that each child was born as an “empty slate” and that knowledge was primarily acquired through learning and experience.

European philosophers continued to ask these fundamental questions during the Renaissance. For instance, the French philosopher René Descartes (1596-1650) also considered the issue of free will, arguing in its favour and believing that the mind controls the body through the pineal gland in the brain (an idea that made some sense at the time but was later proved incorrect). Descartes also believed in the existence of innate natural abilities. A scientist as well as a philosopher, Descartes dissected animals and was among the first to understand that the nerves controlled the muscles. He also addressed the relationship between mind (the mental aspects of life) and body (the physical aspects of life). Descartes believed in the principle of **dualism**: *that the mind is fundamentally different from the mechanical body*. Other European philosophers, including Thomas Hobbes (1588-1679), John Locke (1632-1704), and Jean-Jacques Rousseau (1712-1778), also weighed in on these issues. The fundamental problem that these philosophers faced was that they had few methods for settling their claims. Most philosophers didn’t conduct any research on these questions, in part because they didn’t yet know how to do it, and in part because they weren’t sure it was even possible to objectively study human experience. But dramatic changes came during the 1800s with the help of the first two research psychologists: the German psychologist Wilhelm Wundt (1832-1920), who developed a psychology laboratory in Leipzig, Germany, and the American psychologist William James (1842-1910), who founded a psychology laboratory at Harvard University.

Structuralism: Introspection and the Awareness of Subjective Experience

Wundt’s research in his laboratory in Leipzig focused on the nature of consciousness itself. Wundt and his students believed that it was possible to analyze the basic elements of the mind and to classify our conscious experiences scientifically. Wundt began the field known as **structuralism**, *a school of psychology whose goal was to identify the basic elements or structures of psychological experience*. Its goal was to create a periodic table of the elements of sensations, similar to the periodic table of elements that had recently been created in chemistry. Structuralists used the method of *introspection* to attempt to create a map of the elements of consciousness. **Introspection** involves *asking research participants to describe exactly what they experience as they work on mental tasks*, such as viewing colours, reading a page in a book, or performing a math problem. A participant who is reading a book might report, for instance, that he saw some black and coloured straight and curved marks on a white background. In other studies the structuralists used newly invented reaction time instruments to systematically assess not only what the participants were thinking but how long it took them to do so. Wundt discovered that it took people longer to report

what sound they had just heard than to simply respond that they had heard the sound. These studies marked the first time researchers realized that there is a difference between the *sensation* of a stimulus and the *perception* of that stimulus, and the idea of using reaction times to study mental events has now become a mainstay of cognitive psychology.

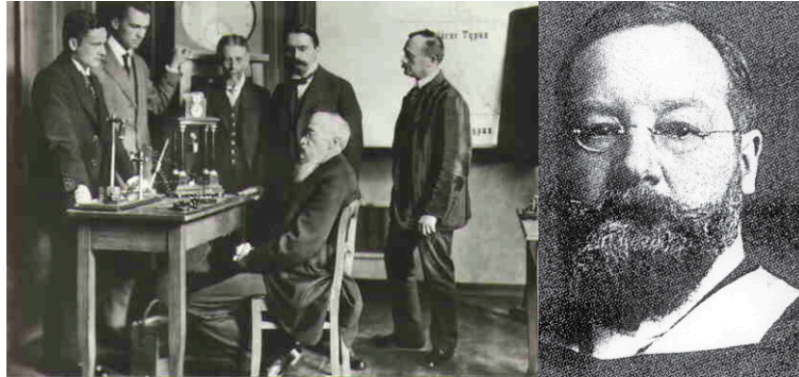


Figure 1.4 Wundt and Titchener. Wilhelm Wundt (seated at left) and Edward Titchener (right) helped create the structuralist school of psychology. Their goal was to classify the elements of sensation through introspection.

Perhaps the best known of the structuralists was Edward Bradford Titchener (1867-1927). Titchener was a student of Wundt's who came to the United States in the late 1800s and founded a laboratory at Cornell University (Figure 1.4). (Titchener was later rejected by McGill University (1903). Perhaps he was ahead of his time; Brenda Milner did not open the Montreal Neurological Institute until 1950.) In his research using introspection, Titchener and his students claimed to have identified more than 40,000 sensations, including those relating to vision, hearing, and taste. An important aspect of the structuralist approach was that it was rigorous and scientific. The research marked the beginning of psychology as a science, because it demonstrated that mental events could be quantified. But the structuralists also discovered the limitations of introspection. Even highly trained research participants were often unable to report on their subjective experiences. When the participants were asked to do simple math problems, they could easily do them, but they could not easily answer how they did them. Thus the structuralists were the first to realize the importance of unconscious processes—that many important aspects of human psychology occur outside our conscious awareness, and that psychologists cannot expect research participants to be able to accurately report on all of their experiences.

Functionalism and Evolutionary Psychology

In contrast to Wundt, who attempted to understand the nature of consciousness, William James and the other members of the **school of functionalism** aimed to *understand why animals and humans have developed the particular psychological aspects that they currently possess* (Hunt, 1993). For James, one's thinking was relevant only to one's behaviour. As he put it in his psychology textbook, "My thinking is first and last and always for the sake of my doing" (James, 1890). James and the other members of the functionalist school (Figure 1.5) were influenced by Charles Darwin's (1809-1882) **theory of natural selection**, which *proposed that the physical characteristics of animals and humans evolved because they were useful, or functional*. The functionalists believed that Darwin's theory applied to psychological characteristics too. Just as some animals have developed strong muscles to allow them to run fast, the human brain, so functionalists thought, must have adapted to serve a particular function in human experience.

Although functionalism no longer exists as a school of psychology, its basic principles have been absorbed into psychology and continue to influence it in many ways. The work of the functionalists has developed into the field



Figure 1.5 Functionalist School. The functionalist school of psychology, founded by the American psychologist William James (left), was influenced by the work of Charles Darwin (right).

of **evolutionary psychology**, a branch of psychology that applies the Darwinian theory of natural selection to human and animal behaviour (Dennett, 1995; Tooby & Cosmides, 1992). Evolutionary psychology accepts the functionalists' basic assumption, namely that many human psychological systems, including memory, emotion, and personality, serve key adaptive functions. As we will see in the chapters to come, evolutionary psychologists use evolutionary theory to understand many different behaviours, including romantic attraction, stereotypes and prejudice, and even the causes of many psychological disorders. A key component of the ideas of evolutionary psychology is *fitness*. **Fitness** refers to *the extent to which having a given characteristic helps the individual organism survive and reproduce at a higher rate than do other members of the species who do not have the characteristic*. Fitter organisms pass on their genes more successfully to later generations, making the characteristics that produce fitness more likely to become part of the organism's nature than characteristics that do not produce fitness. For example, it has been argued that the emotion of jealousy has survived over time in men because men who experience jealousy are more fit than men who do not. According to this idea, the experience of jealousy leads men to be more likely to protect their mates and guard against rivals, which increases their reproductive success (Buss, 2000). Despite its importance in psychological theorizing, evolutionary psychology also has some limitations. One problem is that many of its predictions are extremely difficult to test. Unlike the fossils that are used to learn about the physical evolution of species, we cannot know which psychological characteristics our ancestors possessed or did not possess; we can only make guesses about this. Because it is difficult to directly test evolutionary theories, it is always possible that the explanations we apply are made up after the fact to account for observed data (Gould & Lewontin, 1979). Nevertheless, the evolutionary approach is important to psychology because it provides logical explanations for why we have many psychological characteristics.

Psychodynamic Psychology

Perhaps the school of psychology that is most familiar to the general public is the *psychodynamic approach* to understanding behaviour, which was championed by Sigmund Freud (1856-1939) and his followers. **Psychodynamic psychology** is an *approach to understanding human behaviour that focuses on the role of unconscious thoughts, feelings, and memories*. Freud (Figure 1.6) developed his theories about behaviour through

extensive analysis of the patients that he treated in his private clinical practice. Freud believed that many of the problems that his patients experienced, including anxiety, depression, and sexual dysfunction, were the result of the effects of painful childhood experiences that they could no longer remember.

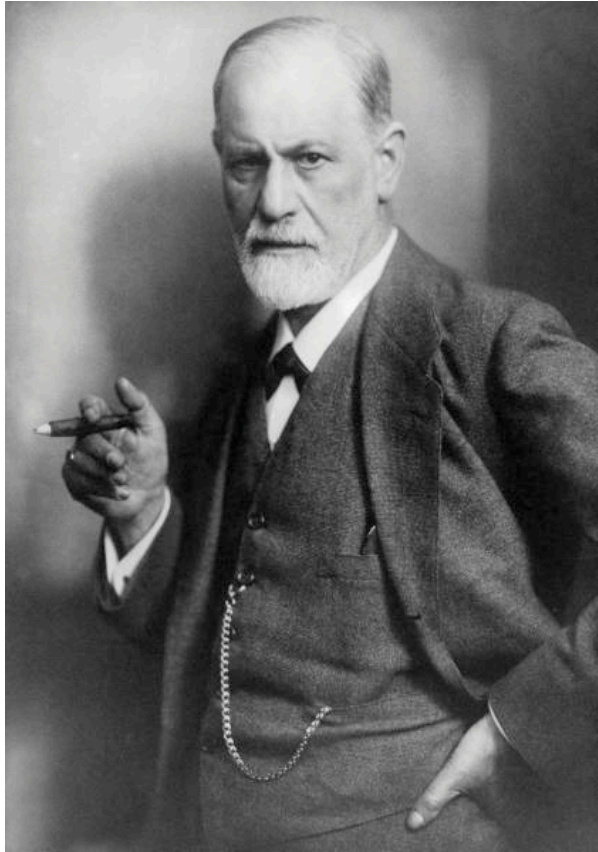


Figure 1.6 Sigmund Freud. Sigmund Freud and the other psychodynamic psychologists believed that many of our thoughts and emotions are unconscious. Psychotherapy was designed to help patients recover and confront their “lost” memories.

Freud’s ideas were extended by other psychologists whom he influenced, including Carl Jung (1875-1961), Alfred Adler (1870-1937), Karen Horney (1855-1952), and Erik Erikson (1902-1994). These and others who follow the psychodynamic approach believe that it is possible to help the patient if the unconscious drives can be remembered, particularly through a deep and thorough exploration of the person’s early sexual experiences and current sexual desires. These explorations are *revealed through talk therapy and dream analysis in a process called psychoanalysis*. The founders of the school of psychodynamics were primarily practitioners who worked with individuals to help them understand and confront their psychological symptoms. Although they did not conduct much research on their ideas, and although later, more sophisticated tests of their theories have not always supported their proposals, psychodynamics has nevertheless had substantial impact on the field of psychology, and indeed on thinking about human behaviour more generally (Moore & Fine, 1995). The importance of the unconscious in human behaviour, the idea that early childhood experiences are critical, and the concept of therapy as a way of improving human lives are all ideas that are derived from the psychodynamic approach and that remain central to psychology.

Behaviourism and the Question of Free Will

Although they differed in approach, both structuralism and functionalism were essentially studies of the mind. The psychologists associated with the school of *behaviourism*, on the other hand, were reacting in part to the difficulties psychologists encountered when they tried to use introspection to understand behaviour. **Behaviourism** is a school of psychology that is based on the premise that it is not possible to objectively study the mind, and therefore that psychologists should limit their attention to the study of behaviour itself. Behaviourists believe that the human mind is a black box into which stimuli are sent and from which responses are received. They argue that there is no point in trying to determine what happens in the box because we can successfully predict behaviour without knowing what happens inside the mind. Furthermore, behaviourists believe that it is possible to develop laws of learning that can explain all behaviours. The first behaviourist was the American psychologist John B. Watson (1878-1958). Watson was influenced in large part by the work of the Russian physiologist Ivan Pavlov (1849-1936), who had discovered that dogs would salivate at the sound of a tone that had previously been associated with the presentation of food. Watson and the other behaviourists began to use these ideas to explain how events that people and other organisms experienced in their environment (*stimuli*) could produce specific behaviours (*responses*). For instance, in Pavlov's research the *stimulus* (either the food or, after learning, the tone) would produce the *response* of salivation in the dogs. In his research Watson found that systematically exposing a child to fearful stimuli in the presence of objects that did not themselves elicit fear could lead the child to respond with a fearful behaviour to the presence of the objects (Watson & Rayner, 1920; Beck, Levinson, & Irons, 2009). In the best known of his studies, an eight-month-old boy named Little Albert was used as the subject. Here is a summary of the findings: The boy was placed in the middle of a room; a white laboratory rat was placed near him and he was allowed to play with it. The child showed no fear of the rat. In later trials, the researchers made a loud sound behind Albert's back by striking a steel bar with a hammer whenever the baby touched the rat. The child cried when he heard the noise. After several such pairings of the two stimuli, the child was again shown the rat. Now, however, he cried and tried to move away from the rat. In line with the behaviourist approach, the boy had learned to associate the white rat with the loud noise, resulting in crying.

The most famous behaviourist was Burrhus Frederick (B. F.) Skinner (1904 to 1990), who expanded the principles of behaviourism and also brought them to the attention of the public at large. Skinner (Figure 1.7) used the ideas of stimulus and response, along with the application of rewards or *reinforcements*, to train pigeons and other animals. And he used the general principles of behaviourism to develop theories about how best to teach children and how to create societies that were peaceful and productive. Skinner even developed a method for studying thoughts and feelings using the behaviourist approach (Skinner, 1957, 1972).

Research Focus: Do We Have Free Will?

The behaviourist research program had important implications for the fundamental questions about nature and nurture and about free will. In terms of the nature-nurture debate, the behaviourists agreed with the nurture approach, believing that we are shaped exclusively by our environments. They also argued that there is no free will, but rather that our behaviours are determined by the events that we have experienced in our past. In short, this approach argues that organisms, including humans, are a lot like puppets in a show who don't realize that other people are controlling them. Furthermore, although we do not cause our own actions, we nevertheless believe that we do because we don't realize all the influences acting on our behaviour.

Recent research in psychology has suggested that Skinner and the behaviourists might well have been right, at least in the sense that we overestimate our own free will in responding to the events around us (Libet, 1985; Matsuhashi & Hallett, 2008; Wegner, 2002). In one demonstration of the misperception of our own



Figure 1.7 Skinner. B. F. Skinner was a member of the behaviourist school of psychology. He argued that free will is an illusion and that all behaviour is determined by environmental factors.

free will, neuroscientists Soon, Brass, Heinze, and Haynes (2008) placed their research participants in a *functional magnetic resonance imaging (fMRI)* brain scanner while they presented them with a series of letters on a computer screen. The letter on the screen changed every half second. The participants were asked, whenever they decided to, to press either of two buttons. Then they were asked to indicate which letter was showing on the screen when they decided to press the button. The researchers analyzed the brain images to see if they could predict which of the two buttons the participant was going to press, even before the letter at which he or she had indicated the decision to press a button. Suggesting that the intention to act occurred in the brain before the research participants became aware of it, the researchers found that the prefrontal cortex region of the brain showed activation that could be used to predict the button pressed as long as 10 seconds before the participants said that they had decided which button to press.

Research has found that we are more likely to think that we control our behaviour when the desire to act occurs immediately prior to the outcome, when the thought is consistent with the outcome, and when there are no other apparent causes for the behaviour. Aarts, Custers, and Wegner (2005) asked their research participants to control a rapidly moving square along with a computer that was also controlling the square independently. The participants pressed a button to stop the movement. When participants were exposed to words related to the location of the square just before they stopped its movement, they became more likely to think that they controlled the motion, even when it was actually the computer that stopped it. And Dijksterhuis, Preston, Wegner, and Aarts (2008) found that participants who had just been exposed to first-person singular pronouns, such as “I” and “me,” were more likely to believe that they controlled their actions than were people who had seen the words “computer” or “God.” The idea that we are more likely to take ownership for our actions in some cases than in others is also seen in our attributions for success and failure.

Because we normally expect that our behaviours will be met with success, when we are successful we easily believe that the success is the result of our own free will. When an action is met with failure, on the other hand, we are less likely to perceive this outcome as the result of our free will, and we are more likely to blame the outcome on luck or our teacher (Wegner, 2003).

The behaviourists made substantial contributions to psychology by identifying the principles of learning. Although the behaviourists were incorrect in their beliefs that it was not possible to measure thoughts and feelings, their ideas provided new ideas that helped further our understanding regarding the nature-nurture debate and the question of free will. The ideas of behaviourism are fundamental to psychology and have been developed to help us better understand the role of prior experiences in a variety of areas of psychology.

The Cognitive Approach and Cognitive Neuroscience

Science is always influenced by the technology that surrounds it, and psychology is no exception. Thus it is no surprise that beginning in the 1960s, growing numbers of psychologists began to think about the brain and about human behaviour in terms of the computer, which was being developed and becoming publicly available at that time. The analogy between the brain and the computer, although by no means perfect, provided part of the impetus for a new school of psychology called *cognitive psychology*. **Cognitive psychology** is a field of psychology that studies mental processes, including perception, thinking, memory, and judgment. These actions correspond well to the processes that computers perform. Although cognitive psychology began in earnest in the 1960s, earlier psychologists had also taken a cognitive orientation. Some of the important contributors to cognitive psychology include the German psychologist Hermann Ebbinghaus (1850-1909), who studied the ability of people to remember lists of words under different conditions, and the English psychologist Sir Frederic Bartlett (1886-1969), who studied the cognitive and social processes of remembering. Bartlett created short stories that were in some ways logical but also contained some very unusual and unexpected events. Bartlett discovered that people found it very difficult to recall the stories exactly, even after being allowed to study them repeatedly, and he hypothesized that the stories were difficult to remember because they did not fit the participants' expectations about how stories should go. The idea that our memory is influenced by what we already know was also a major idea behind the cognitive-developmental stage model of Swiss psychologist Jean Piaget (1896-1980). Other important cognitive psychologists include Donald E. Broadbent (1926-1993), Daniel Kahneman (1934-), George Miller (1920-2012), Eleanor Rosch (1938-), and Amos Tversky (1937-1996).

The War of the Ghosts

The War of the Ghosts is a story that was used by Sir Frederic Bartlett to test the influence of prior expectations on memory. Bartlett found that even when his British research participants were allowed to read the story many times, they still could not remember it well, and he believed this was because it did not fit with their prior knowledge. One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: "Maybe this is a war-party." They escaped to the shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles and saw one canoe coming up to them. There were five men in the canoe, and they said: "What do you think? We wish to take you along. We are going up the river to make war on the people." One of the young men said, "I have no arrows." "Arrows are in the canoe," they said. "I will not go along. I might be killed. My relatives do not know where I have gone. But you," he said, turning to the other, "may go with

them.” So one of the young men went, but the other returned home. And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water and they began to fight, and many were killed. But presently the young man heard one of the warriors say, “Quick, let us go home: that Indian has been hit.” Now he thought: “Oh, they are ghosts.” He did not feel sick, but they said he had been shot. So the canoes went back to Egulac and the young man went ashore to his house and made a fire. And he told everybody and said: “Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick.” He told it all, and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried. He was dead. (Bartlett, 1932)

In its argument that our thinking has a powerful influence on behaviour, the cognitive approach provided a distinct alternative to behaviourism. According to cognitive psychologists, ignoring the mind itself will never be sufficient because people interpret the stimuli that they experience. For instance, when a boy turns to a girl on a date and says, “You are so beautiful,” a behaviourist would probably see that as a reinforcing (positive) stimulus. And yet the girl might not be so easily fooled. She might try to understand why the boy is making this particular statement at this particular time and wonder if he might be attempting to influence her through the comment. Cognitive psychologists maintain that when we take into consideration how stimuli are evaluated and interpreted, we understand behaviour more deeply. Cognitive psychology remains enormously influential today, and it has guided research in such varied fields as language, problem solving, memory, intelligence, education, human development, social psychology, and psychotherapy. The cognitive revolution has been given even more life over the past decade as the result of recent advances in our ability to see the brain in action using *neuroimaging* techniques. **Neuroimaging** is *the use of various techniques to provide pictures of the structure and function of the living brain* (Ilardi & Feldman, 2001). These images are used to diagnose brain disease and injury, but they also allow researchers to view information processing as it occurs in the brain, because the processing causes the involved area of the brain to increase metabolism and show up on the scan. We have already discussed the use of one neuroimaging technique, functional magnetic resonance imaging (fMRI), in the research focus earlier in this section, and we will discuss the use of neuroimaging techniques in many areas of psychology in the chapters to follow.

Social-Cultural Psychology

A final school, which takes a higher level of analysis and which has had substantial impact on psychology, can be broadly referred to as the *social-cultural approach*. The field of **social-cultural psychology** is *the study of how the social situations and the cultures in which people find themselves influence thinking and behaviour*. Social-cultural psychologists are particularly concerned with how people perceive themselves and others, and how people influence each other’s behaviour. For instance, social psychologists have found that we are attracted to others who are similar to us in terms of attitudes and interests (Byrne, 1969), that we develop our own beliefs and attitudes by comparing our opinions to those of others (Festinger, 1954), and that *we frequently change our beliefs and behaviours to be similar to those of the people we care about*—a process known as **conformity**. An important aspect of social-cultural psychology are **social norms**—*the ways of thinking, feeling, or behaving that are shared by group members and perceived by them as appropriate* (Asch, 1952; Cialdini, 1993). Norms include customs, traditions, standards, and rules, as well as the general values of the group. Many of the most important social norms are determined by the *culture* in which we live, and these cultures are studied by *cross-cultural psychologists*. A **culture** represents *the common set of social norms, including religious and family values and other moral beliefs, shared by the people who live in a geographical region* (Fiske, Kitayama, Markus, & Nisbett, 1998; Markus, Kitayama, & Heiman, 1996; Matsumoto, 2001). Cultures influence every aspect of our lives, and it is not inappropriate to say that our culture defines our lives just as much as does our evolutionary experience (Mesoudi, 2009). Psychologists have found that there is a fundamental difference in social norms between Western cultures (including those in Canada, the United

States, Western Europe, Australia, and New Zealand) and East Asian cultures (including those in China, Japan, Taiwan, Korea, India, and Southeast Asia). Norms in Western cultures are primarily oriented toward **individualism**, which is about *valuing the self and one's independence from others*. Children in Western cultures are taught to develop and to value a sense of their personal self, and to see themselves in large part as separate from the other people around them. Children in Western cultures feel special about themselves; they enjoy getting gold stars on their projects and the best grade in the class. Adults in Western cultures are oriented toward promoting their own individual success, frequently in comparison to (or even at the expense of) others. Norms in the East Asian culture, on the other hand, are oriented toward interdependence or **collectivism**. In these cultures children are taught to *focus on developing harmonious social relationships with others*. The predominant norms relate to group togetherness and connectedness, and duty and responsibility to one's family and other groups. When asked to describe themselves, the members of East Asian cultures are more likely than those from Western cultures to indicate that they are particularly concerned about the interests of others, including their close friends and their colleagues (Figure 1.8, "East vs West").



Figure 1.8 East vs West. In Western cultures social norms promote a focus on the self (individualism), whereas in Eastern cultures the focus is more on families and social groups (collectivism).

Another important cultural difference is the extent to which people in different cultures are bound by social norms and customs, rather than being free to express their own individuality without considering social norms (Chan, Gelfand, Triandis, & Tzeng, 1996). Cultures also differ in terms of personal space, such as how closely individuals stand to each other when talking, as well as the communication styles they employ. It is important to be aware of cultures and cultural differences because people with different cultural backgrounds increasingly come into contact with each other as a result of increased travel and immigration and the development of the Internet and other forms of communication. In Canada, for instance, there are many different ethnic groups, and the proportion of the population that comes from minority (non-White) groups is increasing from year to year. The social-cultural approach to understanding behaviour reminds us again of the difficulty of making broad generalizations about human nature. Different people experience things differently, and they experience them differently in different cultures.

The Many Disciplines of Psychology

Psychology is not one discipline but rather a collection of many subdisciplines that all share at least some common approaches and that work together and exchange knowledge to form a coherent discipline (Yang & Chiu, 2009). Because the field of psychology is so broad, students may wonder which areas are most suitable for their interests and which types of careers might be available to them. Table 1.5, "Some Career Paths in Psychology," will help you consider the answers to these questions. You can [learn more about these different fields of psychology and the careers associated with them](http://www.psycareers.com/) at <http://www.psycareers.com/>.

Table 1.5 Some Career Paths in Psychology.

[Skip Table]

Psychology field	Description	Career opportunities
Biopsychology and neuroscience	This field examines the physiological bases of behaviour in animals and humans by studying the functioning of different brain areas and the effects of hormones and neurotransmitters on behaviour.	Most biopsychologists work in research settings—for instance, at universities, for the federal government, and in private research labs.
Clinical and counselling psychology	These are the largest fields of psychology. The focus is on the assessment, diagnosis, causes, and treatment of mental disorders.	Clinical and counseling psychologists provide therapy to patients with the goal of improving their life experiences. They work in hospitals, schools, social agencies, and private practice. Because the demand for this career is high, entry to academic programs is highly competitive.
Cognitive psychology	This field uses sophisticated research methods, including reaction time and brain imaging, to study memory, language, and thinking of humans.	Cognitive psychologists work primarily in research settings, although some (such as those who specialize in human-computer interactions) consult for businesses.
Developmental psychology	These psychologists conduct research on the cognitive, emotional, and social changes that occur across the lifespan.	Many work in research settings, although others work in schools and community agencies to help improve and evaluate the effectiveness of intervention programs such as Head Start.
Forensic psychology	Forensic psychologists apply psychological principles to understand the behaviour of judges, lawyers, courtroom juries, and others in the criminal justice system.	Forensic psychologists work in the criminal justice system. They may testify in court and may provide information about the reliability of eyewitness testimony and jury selection.
Health psychology	Health psychologists are concerned with understanding how biology, behaviour, and the social situation influence health and illness.	Health psychologists work with medical professionals in clinical settings to promote better health, conduct research, and teach at universities.
Industrial-organizational and environmental psychology	Industrial-organizational psychology applies psychology to the workplace with the goal of improving the performance and well-being of employees.	There are a wide variety of career opportunities in these fields, generally working in businesses. These psychologists help select employees, evaluate employee performance, and examine the effects of different working conditions on behaviour. They may also work to design equipment and environments that improve employee performance and reduce accidents.
Personality psychology	These psychologists study people and the differences among them. The goal is to develop theories that explain the psychological processes of individuals, and to focus on individual differences.	Most work in academic settings, but the skills of personality psychologists are also in demand in business—for instance, in advertising and marketing. PhD programs in personality psychology are often connected with programs in social psychology.
School and educational psychology	This field studies how people learn in school, the effectiveness of school programs, and the psychology of teaching.	School psychologists work in elementary and secondary schools or school district offices with students, teachers, parents, and administrators. They may assess children’s psychological and learning problems and develop programs to minimize the impact of these problems.

[\[Skip Table\]](#)

Psychology field	Description	Career opportunities
Social and cross-cultural psychology	This field examines people's interactions with other people. Topics of study include conformity, group behaviour, leadership, attitudes, and personal perception.	Many social psychologists work in marketing, advertising, organizational, systems design, and other applied psychology fields.
Sports psychology	This field studies the psychological aspects of sports behaviour. The goal is to understand the psychological factors that influence performance in sports, including the role of exercise and team interactions.	Sports psychologists work in gyms, schools, professional sports teams, and other areas where sports are practiced.

Psychology in Everyday Life: How to Effectively Learn and Remember

One way that the findings of psychological research may be particularly helpful to you is in terms of improving your learning and study skills. Psychological research has provided a substantial amount of knowledge about the principles of learning and memory. This information can help you do better in this and other courses, and can also help you better learn new concepts and techniques in other areas of your life. The most important thing you can learn in college is how to better study, learn, and remember. These skills will help you throughout your life, as you learn new jobs and take on other responsibilities. There are substantial individual differences in learning and memory, such that some people learn faster than others. But even if it takes you longer to learn than you think it should, the extra time you put into studying is well worth the effort. And you can learn to learn—learning to study effectively and to remember information is just like learning any other skill, such as playing a sport or a video game.

To learn well, you need to be ready to learn. You cannot learn well when you are tired, when you are under stress, or if you are abusing alcohol or drugs. Try to keep a consistent routine of sleeping and eating. Eat moderately and nutritiously, and avoid drugs that can impair memory, particularly alcohol. There is no evidence that stimulants such as caffeine, amphetamines, or any of the many “memory-enhancing drugs” on the market will help you learn (Gold, Cahill, & Wenk, 2002; McDaniel, Maier, & Einstein, 2002). Memory supplements are usually no more effective than drinking a can of sugared soda, which releases glucose and thus improves memory slightly.

Psychologists have studied the ways that best allow people to acquire new information, to retain it over time, and to retrieve information that has been stored in our memories. One important finding is that learning is an active process. To acquire information most effectively, we must actively manipulate it. One active approach is rehearsal—repeating the information that is to be learned over and over again. Although simple repetition does help us learn, psychological research has found that we acquire information most effectively when we actively think about or elaborate on its meaning and relate the material to something else. When you study, try to elaborate by connecting the information to other things that you already know. If you want to remember the different schools of psychology, for instance, try to think about how each of the approaches is different from the others. As you compare the approaches, determine what is most important about each one and then relate it to the features of the other approaches.

In an important study showing the effectiveness of elaborative encoding, Rogers, Kuiper, and Kirker (1977) found that students learned information best when they related it to aspects of themselves (a phenomenon known as the *self-reference effect*). This research suggests that imagining how the material relates to your own interests and goals will help you learn it. An approach known as the *method of loci* involves linking each of the pieces of information

that you need to remember to places that you are familiar with. You might think about the house that you grew up in and the rooms in it. You could put the behaviourists in the bedroom, the structuralists in the living room, and the functionalists in the kitchen. Then when you need to remember the information, you retrieve the mental image of your house and should be able to “see” each of the people in each of the areas.

One of the most fundamental principles of learning is known as the *spacing effect*. Both humans and animals more easily remember or learn material when they study the material in several shorter study periods over a longer period of time, rather than studying it just once for a long period of time. Cramming for an exam is a particularly ineffective way to learn. Psychologists have also found that performance is improved when people set difficult yet realistic goals for themselves (Locke & Latham, 2006). You can use this knowledge to help you learn. Set realistic goals for the time you are going to spend studying and what you are going to learn, and try to stick to those goals. Do a small amount every day, and by the end of the week you will have accomplished a lot.

Our ability to adequately assess our own knowledge is known as *metacognition*. Research suggests that our metacognition may make us overconfident, leading us to believe that we have learned material even when we have not. To counteract this problem, don’t just go over your notes again and again. Instead, make a list of questions and then see if you can answer them. Study the information again and then test yourself again after a few minutes. If you made any mistakes, study again. Then wait for a half hour and test yourself again. Then test again after one day and after two days. Testing yourself by attempting to retrieve information in an active manner is better than simply studying the material because it will help you determine if you really know it. In summary, everyone can learn to learn better. Learning is an important skill, and following the previously mentioned guidelines will likely help you learn better.

Key Takeaways

- The first psychologists were philosophers, but the field became more empirical and objective as more sophisticated scientific approaches were developed and employed.
- Some basic questions asked by psychologists include those about nature versus nurture, free will versus determinism, accuracy versus inaccuracy, and conscious versus unconscious processing.
- The structuralists attempted to analyze the nature of consciousness using introspection.
- The functionalists based their ideas on the work of Darwin, and their approaches led to the field of evolutionary psychology.
- The behaviourists explained behaviour in terms of stimulus, response, and reinforcement, while denying the presence of free will.
- Cognitive psychologists study how people perceive, process, and remember information.
- Psychodynamic psychology focuses on unconscious drives and the potential to improve lives through psychoanalysis and psychotherapy.
- The social-cultural approach focuses on the social situation, including how cultures and social norms influence our behaviour.

Exercises and Critical Thinking

1. What type of questions can psychologists answer that philosophers might not be able to answer as completely or as accurately? Explain why you think psychologists can answer these questions better than philosophers can.
2. Choose one of the major questions of psychology and provide some evidence from your own experience that supports one side or the other.
3. Choose two of the fields of psychology discussed in this section and explain how they differ in their approaches to understanding behaviour and the level of explanation at which they are focused.

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1.3 Chapter Summary

Psychology is the scientific study of mind and behaviour. Most psychologists work in research laboratories, hospitals, and other field settings where they study the behaviour of humans and animals. Some psychologists are researchers and others are practitioners, but all psychologists use scientific methods to inform their work.

Although it is easy to think that everyday situations have commonsense answers, scientific studies have found that people are not always as good at predicting outcomes as they often think they are. The hindsight bias leads us to think that we could have predicted events that we could not actually have predicted.

Employing the scientific method allows psychologists to objectively and systematically understand human behaviour.

Psychologists study behaviour at different levels of explanation, ranging from lower biological levels to higher social and cultural levels. The same behaviours can be studied and explained within psychology at different levels of explanation.

The first psychologists were philosophers, but the field became more objective as more sophisticated scientific approaches were developed and employed. Some of the most important historical schools of psychology include structuralism, functionalism, behaviourism, and psychodynamic psychology. Cognitive psychology, evolutionary psychology, and social-cultural psychology are some important contemporary approaches.

Some of the basic questions asked by psychologists, both historically and currently, include those about the relative roles of nature versus nurture in behaviour, free will versus determinism, accuracy versus inaccuracy, and conscious versus unconscious processing.

Psychological phenomena are complex, and making predictions about them is difficult because they are multiply determined at different levels of explanation. Research has found that people are frequently unaware of the causes of their own behaviours.

There are a variety of available career choices within psychology that provide employment in many different areas of interest.