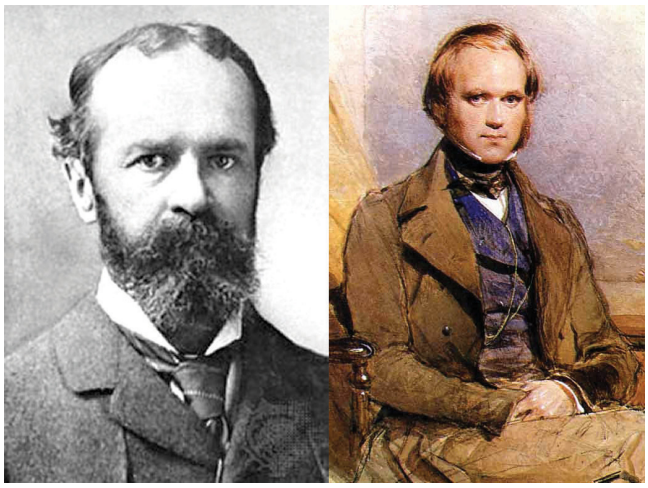


Figure 1.5 Functionalist School. The functionalist school of psychology, founded by the American psychologist William James (left), was influenced by the work of Charles Darwin (right).

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.

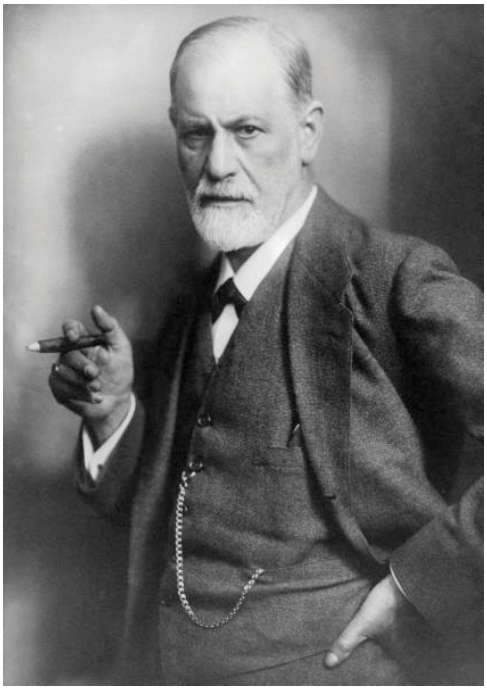


Figure 1.6 Sigmund Freud. Sigmund Freud and the other psychodynamic psychologists believed that many of our thoughts and emotions are unconscious. Psychotherapy was designed to help patients recover and confront their "lost" memories.

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

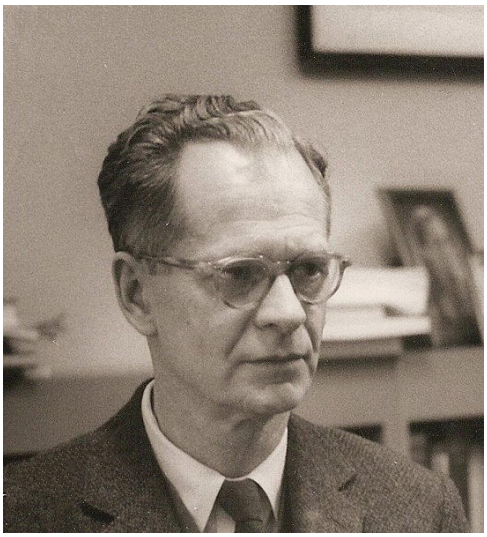


Figure 1.7 Skinner. B. F. Skinner was a member of the behaviourist school of psychology. He argued that free will is an illusion and that all behaviour is determined by environmental factors.

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 at http://www.psyccareers.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.

Chapter 2. Introduction to Major Perspectives

2. Introduction to Major Perspectives

Jennifer Walinga

Scientific areas of study are often guided by a **paradigm** (*prevailing model*). In astronomy, Ptolemy placed Earth at the centre of the universe and thereby shaped the way people conceived of all things related to that science. Later, the Copernican paradigm placed the Sun at the centre of the universe, which shifted perspectives and understandings. A paradigm presents a generally accepted approach to the whole field during a particular era. A paradigm equips scientists and practitioners with a set of assumptions about what is to be studied as well as a set of research methods for how those phenomena should be examined. In physics, the Aristotelian view of the composition of matter prevailed until Newton's 17th-century mechanical model emerged and overtook it, which in turn was expanded by Einstein's 20th-century relativity paradigm (Watson, 1967). With each shift in knowledge and insight, a form of revolution occurs (Kuhn, 1970).

However, psychology lacks a guiding or prevailing paradigm due to its youth and scope. Instead, the field of psychology has travelled the course of several movements, schools of thought, or perspectives, which provide frameworks for organizing data and connecting theories but no overall guidance or stance. In psychology, each new line of thinking emerges in response to another. New ideas or ways of thinking challenge prior thinking and require further research in order to resolve, clarify, or expand tensions between concepts. Often, new **methodologies**[1] emerge as well, and new questions demand new tools or approaches in order to be answered.

Major psychological perspectives discussed by researchers and practitioners today include biological, psychodynamic, behaviouristic, humanistic, cognitive, and evolutionary perspectives (Figure 2.1, "Major Psychological Perspectives Timeline"). It appears that a new perspective emerges every 20 to 30 years.



Figure 2.1 Major Psychological Perspectives Timeline [Long Description] (by J. Walinga)

This list of perspectives changes, of course, as the field of psychology grows and evolves, and as our conceptualization of psychology expands and develops. The first structuralist psychologists, such as Wilhelm Wundt and Edward B. Titchener of the late 1800s, thought of psychology in biological or physiological terms and focused on the elements of human experience and sensation — the "what" of human experience. But the wave of functionalist, behavioural, and cognitive psychologists to follow began to include the "how" of human experience. Influenced by Charles Darwin's theories, William James and others later began to consider the "why" of human experience by focusing on interactions between mind and body, including perceptions and emotions, as well as the influence of environment on human experience (Figure 2.2, "The Elements of Psychology").

Reflecting on psychological developments today (e.g., positive psychology, multiple intelligences, systems thinking), we can foresee psychology moving toward an integrative approach that incorporates much of the prior learning that has come before it. Dr. Evan Thompson, a professor of philosophy at the University of British Columbia, who works in the fields of cognitive science, philosophy of mind, phenomenology, and cross-cultural philosophy, especially Asian philosophy and contemporary Buddhist philosophy in dialogue with Western philosophy and science, speaks and writes about an **integrative psychology**, which is *psychology that combines the*

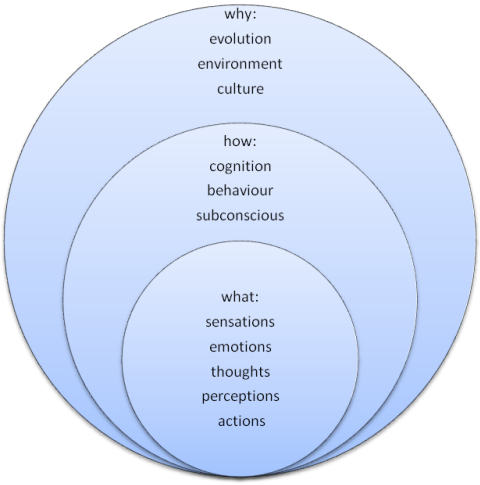


Figure 2.2 The Elements of Psychology [Long Description] (by J. Walinga)

nature and actions of mind, body, and spirit (Varela, Rosch, & Thompson, 1992). Perhaps an integrative perspective will be the next developmental stage for the field of psychology and will move the field that much closer to its own established paradigm.

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Long Descriptions

Figure 2.1 Long Description – Major Psychological Perspectives Timeline.

Physiological Perspective	Year	Person
Biological – Physiological Psychology	1874	Wundt
	1898	Titchener
Phsychodynamic – Interpretation of Dreams	1990	Freud
Behaviouristic – Stimulus and Response	1927	Pavlov
	1938	Skinner
Humanistic – Self Actualization	1942	Rogers
	1954	Maslow
Cognitive – Information Processing	1967	Neisser
Evolutionary – Adaptation	1999	Buss

[Return to Figure 2.1]

Figure 2.2 long description: There are three elements of psychology: Why? How? and What? “Why” deals with things like evolution, environment, and culture. “How” deals with things like cognition, behaviour, and subconscious. “What” deals with sensations, emotions, thoughts, perceptions, and actions. [Return to Figure 2.2]

Notes

1. Research study design principles.

Jennifer Walinga

Learning Objectives

1. Understand the core premises of biological psychology and the early thinkers.
2. Critically evaluate empirical support for various biological psychology theories.
3. Explore applications and implications of key concepts from this perspective.

Biological psychologists *are interested in measuring biological, physiological, or genetic variables in an attempt to relate them to psychological or behavioural variables.* Because all behaviour is controlled by the central nervous system, biological psychologists seek to understand how the brain functions in order to understand behaviour. Key areas of focus include sensation and perception; motivated behaviour (such as hunger, thirst, and sex); control of movement; learning and memory; sleep and biological rhythms; and emotion. As technical sophistication leads to advancements in research methods, more advanced topics such as language, reasoning, decision making, and consciousness are now being studied.

Biological psychology has its roots in early structuralist and functionalist psychological studies, and as with all of the major perspectives, it has relevance today. In section 1.2, we discuss the history and development of functionalism and structuralism. In this chapter, we extend this discussion to include the theoretical and methodological aspects of these two approaches within the biological perspective and provide examples of relevant studies.

The early structural and functional psychologists believed that the study of conscious thoughts would be the key to understanding the mind. Their approaches to the study of the mind were based on systematic and rigorous observation, laying the foundation for modern psychological experimentation. In terms of research focus, Wundt and Titchener explored topics such as attention span, reaction time, vision, emotion, and time perception, all of which are still studied today.

Wundt's primary method of research was **introspection**, which involves training people to *concentrate and report on their conscious experiences as they react to stimuli.* This approach is still used today in modern neuroscience research; however, many scientists criticize the use of introspection for its lack of empirical approach and objectivity. Structuralism was also criticized because its subject of interest – the conscious experience – was not easily studied with controlled experimentation. Structuralism's reliance on introspection, despite Titchener's rigid guidelines, was criticized for its lack of reliability. Critics argued that self-analysis is not feasible, and that introspection can yield different results depending on the subject. Critics were also concerned about the possibility of retrospection, or the memory of sensation rather than the sensation itself.

Today, researchers argue for introspective methods as crucial for understanding certain experiences and contexts.Two Minnesota researchers (Jones & Schmid, 2000) used **autoethnography,** *a narrative approach to introspective analysis* (Ellis, 1999), to study the phenomenological experience of the prison world and the consequent adaptations and transformations that it evokes. Jones, serving a year-and-a-day sentence in a maximum

security prison, relied on his personal documentation of his experience to later study the psychological impacts of his experience.

From Structuralism to Functionalism

As structuralism struggled to survive the scrutiny of the scientific method, new approaches to studying the mind were sought. One important alternative was functionalism, founded by William James in the late 19th century, described and discussed in his two-volume publication *The Principles of Psychology* (1890) (see Chapter 1.2 for details). Built on structuralism's concern for the anatomy of the mind, functionalism led to greater concern about the functions of the mind, and later on to behaviourism.

One of James's students, James Angell, captured the functionalist perspective in relation to a discussion of free will in his 1906 text *Psychology: An Introductory Study of the Structure and Function of Human Consciousness*:

> Inasmuch as consciousness is a systematising, unifying activity, we find that with increasing maturity our impulses are commonly coordinated with one another more and more perfectly. We thus come to acquire definite and reliable habits of action. Our wills become formed. Such fixation of modes of willing constitutes character. The really good man is not obliged to hesitate about stealing. His moral habits all impel him immediately and irrepressibly away from such actions. If he does hesitate, it is in order to be sure that the suggested act is stealing, not because his character is unstable. From one point of view the development of character is never complete, because experience is constantly presenting new aspects of life to us, and in consequence of this fact we are always engaged in slight reconstructions of our modes of conduct and our attitude toward life. But in a practical common-sense way most of our important habits of reaction become fixed at a fairly early and definite time in life.

Functionalism considers mental life and behaviour in terms of active adaptation to the person's environment. As such, it provides the general basis for developing psychological theories not readily testable by controlled experiments such as applied psychology. William James's functionalist approach to psychology was less concerned with the composition of the mind than with examining the ways in which the mind adapts to changing situations and environments. In functionalism, the brain is believed to have evolved for the purpose of bettering the survival of its carrier by acting as an **information processor**.[1] In processing information the brain is considered to execute functions similar to those executed by a computer and much like what is shown in Figure 2.3 below of a complex adaptive system.

The functionalists retained an emphasis on conscious experience. John Dewey, George Herbert Mead, Harvey A. Carr, and especially James Angell were the additional proponents of functionalism at the University of Chicago. Another group at Columbia University, including James McKeen Cattell, Edward L. Thorndike, and Robert S. Woodworth, shared a functionalist perspective.

Biological psychology is also considered *reductionist*. For the **reductionist**, *the simple is the source of the complex*. In other words, to explain a complex phenomenon (like human behaviour) a person needs to reduce it to its elements. In contrast, for the **holist**, *the whole is more than the sum of the parts*. Explanations of a behaviour at its simplest level can be deemed reductionist. The experimental and laboratory approach in various areas of psychology (e.g.,

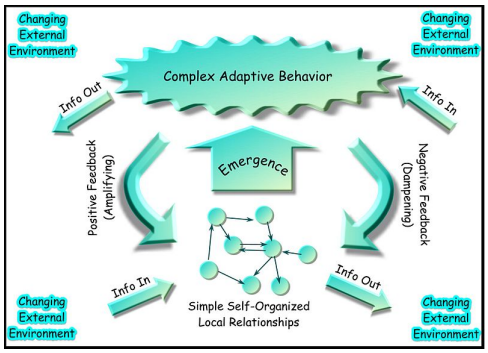


Figure 2.3 Complex Adaptive System. Behaviour is influenced by information gathered from a changing external environment.

behaviourist, biological, cognitive) reflects a reductionist position. This approach inevitably must reduce a complex behaviour to a simple set of variables that offer the possibility of identifying a cause and an effect (i.e., the biological approach suggests that psychological problems can be treated like a disease and are therefore often treatable with drugs).

The brain and its functions (Figure 2.4) garnered great interest from the biological psychologists and continue to be a focus for psychologists today. **Cognitive psychologists** *rely on the functionalist insights in discussing how* **affect,** or *emotion*, and *environment or events interact and result in specific perceptions*. Biological psychologists study the human brain in terms of specialized parts, or systems, and their exquisitely complex relationships. Studies have shown **neurogenesis**[2] in the hippocampus (Gage, 2003). In this respect, the human brain is not a static mass of nervous tissue. As well, it has been found that influential environmental factors operate throughout the life span. Among the most negative factors, traumatic injury and drugs can lead to serious destruction. In contrast, a healthy diet, regular programs of exercise, and challenging mental activities can offer long-term, positive impacts on the brain and psychological development (Kolb, Gibb, & Robinson, 2003).

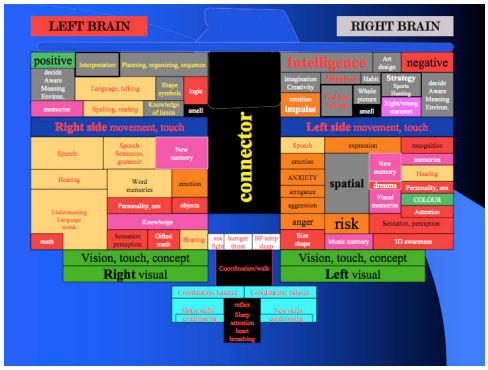


Figure 2.4 Functions of the Brain. Different parts of the brain are responsible for different things.

The brain comprises four lobes:

1. **Frontal lobe:** *also known as the motor cortex, this portion of the brain is involved in motor skills, higher level cognition, and expressive language*.
2. **Occipital lobe:** *also known as the visual cortex, this portion of the brain is involved in interpreting visual stimuli and information*.
3. **Parietal lobe:** *also known as the somatosensory cortex, this portion of the brain is involved in the processing of other tactile sensory information such as pressure, touch, and pain.*
4. **Temporal lobe:** *also known as the auditory cortex, this portion of the brain is involved in the interpretation of the sounds and language we hear*.

Another important part of the nervous system is the **peripheral nervous system**, which is divided into two parts:

1. The **somatic nervous system,** which *controls the actions of skeletal muscles*.
2. The **autonomic nervous system,** which *regulates automatic processes such as heart rate, breathing, and blood pressure*. The autonomic nervous system, in turn has two parts:
    a. The **sympathetic nervous system**, which controls the **fight-or-flight response**, a *reflex that prepares the body to respond to danger in the environment*.
    b. The **parasympathetic nervous system**, which works to bring the body back to its normal state after a fight-or-flight response.

Research Focus: Internal versus External Focus and Performance

Within the realm of sport psychology, Gabrielle Wulf and colleagues from the University of Las Vegas Nevada have studied the role of internal and external focus on physical performance outcomes such as balance, accuracy, speed, and endurance. In one experiment they used a ski-simulator and directed participants' attention to either the pressure they exerted on the wheels of the platform on which they were standing (external focus), or to their feet that were exerting the force (internal focus). On a retention test, the external focus group demonstrated superior learning (i.e., larger movement amplitudes) compared with both the internal focus group and a control group without focus instructions. The researchers went on to replicate findings in a subsequent experiment that involved balancing on a stabilometer. Again, directing participants' attention externally, by keeping markers on the balance platform horizontal, led to more effective balance learning than inducing an internal focus, by asking them to try to keep their feet horizontal. The researchers showed that balance performance or learning, as measured by deviations from a balanced position, is enhanced when the performers' attention is directed to minimizing movements of the platform or disk as compared to those of their feet. Since the initial studies, numerous researchers have replicated the benefits of an external focus for other balance tasks (Wulf, Höß, & Prinz, 1998).

Another balance task, riding a paddle boat, was used by Totsika and Wulf (2003). With instructions to focus on pushing the pedals forward, participants showed more effective learning compared to participants with instructions to focus on pushing their feet forward. This subtle difference in instructions is important for researchers of attentional focus. The first instruction to push the pedal is external, with the participant focusing on the pedal and allowing the body to figure out how to push the pedal. The second instruction to push the feet forward is internal, with the participant concentrating on making his or her feet move.

In further biologically oriented psychological research at the University of Toronto, Schmitz, Cheng, and De

Rosa (2010) showed that **visual attention** — *the brain's ability to selectively filter unattended or unwanted information from reaching awareness* — diminishes with age, leaving older adults less capable of filtering out distracting or irrelevant information. This age-related "leaky" attentional filter fundamentally impacts the way visual information is encoded into memory. Older adults with impaired visual attention have better memory for "irrelevant" information. In the study, the research team examined brain images using functional magnetic resonance imaging (fMRI) on a group of young (mean age = 22 years) and older adults (mean age = 77 years) while they looked at pictures of overlapping faces and places (houses and buildings). Participants were asked to pay attention only to the faces and to identify the gender of the person. Even though they could see the place in the image, it was not relevant to the task at hand (Read about the study's findings at http://www.artsci.utoronto.ca/main/newsitems/brains-ability).

The authors noted:

> In young adults, the brain region for processing faces was active while the brain region for processing places was not. However, both the face and place regions were active in older people. This means that even at early stages of perception, older adults were less capable of filtering out the distracting information. Moreover, on a surprise memory test 10 minutes after the scan, older adults were more likely to recognize what face was originally paired with what house.

The findings suggest that under attentionally demanding conditions, such as a person looking for keys on a cluttered table, age-related problems with "tuning in" to the desired object may be linked to the way in which information is selected and processed in the sensory areas of the brain. Both the relevant sensory information — the keys — and the irrelevant information — the clutter — are perceived and encoded more or less equally. In older adults, these changes in visual attention may broadly influence many of the cognitive deficits typically observed in normal aging, particularly memory.

Key Takeaways

- Biological psychology – also known as biopsychology or psychobiology – is the application of the principles of biology to the study of mental processes and behaviour.
- Biological psychology as a scientific discipline emerged from a variety of scientific and philosophical traditions in the 18th and 19th centuries.
- In *The Principles of Psychology* (1890), William James argued that the scientific study of psychology should be grounded in an understanding of biology.
- The fields of behavioural neuroscience, cognitive neuroscience, and neuropsychology are all subfields of biological psychology.
- Biological psychologists are interested in measuring biological, physiological, or genetic variables in an attempt to relate them to psychological or behavioural variables.

Exercises and Critical Thinking

1. Try this exercise with your group: Take a short walk together without talking to or looking at one another. When you return to the classroom, have each group member write down what they saw, felt, heard, tasted, and smelled. Compare and discuss reflecting on some of the assumptions and beliefs of the structuralists. Consider what might be the reasons for the differences and similarities.
2. Where can you see evidence of insights from biological psychology in some of the applications of psychology that you commonly experience today (e.g., sport, leadership, marketing, education)?
3. Study the functions of the brain and reflect on whether you tend toward left- or right-brain tendencies.

Image Attributions

Figure 2.3: Complex Adaptive System by Acadac (http://commons.wikimedia.org/wiki/File:Complex-adaptive-system.jpg) is in the public domain.

Figure 2.4: Left and Right Brain by Webber (http://commons.wikimedia.org/wiki/File:Left_and_Right_Brain.jpg) is in the public domain.

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Notes

1. A system for taking information in one form and transforming it into another.
2. The generation or growth of new brain cells, specifically when neurons are created from neural stem cells.

2.2 Psychodynamic Psychology

Jennifer Walinga

Learning Objectives

1. Understand some of the psychological forces underlying human behaviour.
2. Identify levels of consciousness.
3. Critically discuss various models and theories of psychodynamic and behavioural psychology.
4. Understand the concept of psychological types and identify applications and examples in daily life.

Sigmund Freud

The psychodynamic perspective in psychology proposes that there are psychological forces underlying human behaviour, feelings, and emotions. Psychodynamics originated with Sigmund Freud (Figure 2.5) in the late 19th century, who suggested that psychological processes are flows of psychological energy (libido) in a complex brain. In response to the more reductionist approach of biological, structural, and functional psychology movements, the psychodynamic perspective marks a pendulum swing back toward more holistic, systemic, and abstract concepts and their influence on the more concrete behaviours and actions. Freud's theory of psychoanalysis assumes that much of mental life is unconscious, and that past experiences, especially in early childhood, shape how a person feels and behaves throughout life.

Consciousness is the *awareness of the self in space and time*. It can be defined as human awareness of both internal and external stimuli. Researchers study states of human consciousness and differences in perception in order to understand how the body works to produce conscious awareness. Consciousness varies in both arousal and content, and there are two types of conscious experience: **phenomenal**, or *in the moment*, and **access**, which *recalls experiences from memory*.

First appearing in the historical records of the ancient Mayan and Incan civilizations, various theories of multiple levels of consciousness have pervaded spiritual, psychological, medical, and moral speculations in both Eastern and Western cultures. The ancient Mayans were among the first to propose an organized sense of each level of consciousness, its purpose, and its temporal connection to humankind. Because consciousness incorporates stimuli from the environment as well as internal stimuli, the Mayans believed it to be the most basic form of existence, capable of evolution. The Incas, however, considered consciousness to be a progression, not only of awareness but of concern for others as well.

Sigmund Freud divided human consciousness into three levels of awareness: the *conscious*, *preconscious*, and *unconscious*. Each of these levels corresponds to and overlaps with Freud's ideas of the id, ego, and superego. The

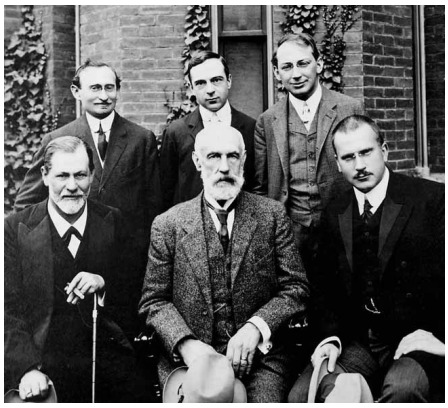


Figure 2.5 Group Photo. Front row (left to right): Sigmund Freud, G. Stanley Hall, Carl Jung; Back row (left to right): Abraham A. Brill, Ernest Jones, Sándor Ferenczi.

conscious level consists of *all those things we are aware of,* including things that we know about ourselves and our surroundings. The **preconscious** consists of *those things we could pay conscious attention to if we so desired, and where many memories are stored for easy retrieval*. Freud saw the **preconscious** as *those thoughts that are unconscious at the particular moment in question, but that are not repressed and are therefore available for recall and easily capable of becoming conscious* (e.g., the "tip of the tongue" effect). The **unconscious** consists of *those things that are outside of conscious awareness, including many memories, thoughts, and urges of which we are not aware.* Much of what is stored in the unconscious is thought to be unpleasant or conflicting; for example, sexual impulses that are deemed "unacceptable." While these elements are stored out of our awareness, they are nevertheless thought to influence our behaviour.

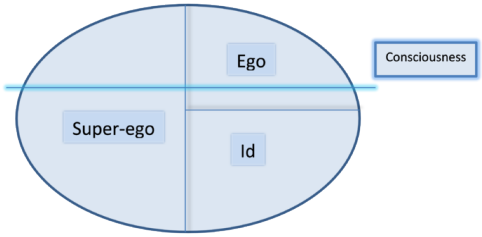


Figure 2.6 The Levels of Consciousness.

Figure 2.6 illustrates the respective levels of id, ego, and superego. In this diagram, the bright blue line represents the divide between consciousness (above) and unconsciousness (below). Below this line, but above the id, is the preconscious level. The lowest segment is the unconscious. Like the ego, the superego has conscious and unconscious elements, while the id is completely unconscious. When all three parts of the personality are in dynamic equilibrium, the individual is thought to be mentally healthy. However if the ego is unable to mediate between the id and the superego, an imbalance occurs in the form of psychological distress.

While Freud's theory remains one of the best known, various schools within the field of psychology have developed their own perspectives. For example:

- **Developmental psychologists** view consciousness not as a single entity, but as a developmental process with potential higher stages of cognitive, moral, and spiritual quality.
- **Social psychologists** view consciousness as a product of cultural influence having little to do with the individual.
- **Neuropsychologists** view consciousness as ingrained in neural systems and organic brain structures.
- **Cognitive psychologists** base their understanding of consciousness on computer science.

Most psychodynamic approaches use *talk therapy,* or *psychoanalysis,* to examine maladaptive functions that developed early in life and are, at least in part, unconscious. **Psychoanalysis** is *a type of analysis that involves attempting to affect behavioural change through having patients talk about their difficulties*. Practising psychoanalysts today collect their data in much the same way as Freud did, through case studies, but often without the couch. The analyst listens and observes, gathering information about the patient. Psychoanalytic scientists today also collect data in formal laboratory experiments, studying groups of people in more restricted, controlled ways (Cramer, 2000; Westen, 1998).

Carl Jung

Carl Jung (1875-1961) expanded on Freud's theories, introducing the concepts of the *archetype*, the *collective unconscious*, and *individuation* — or the psychological process of integrating the opposites, including the conscious with the unconscious, while still maintaining their relative autonomy (Figure 2.7). Jung focused less on infantile development and conflict between the id and superego, and more on integration between different parts of the person.

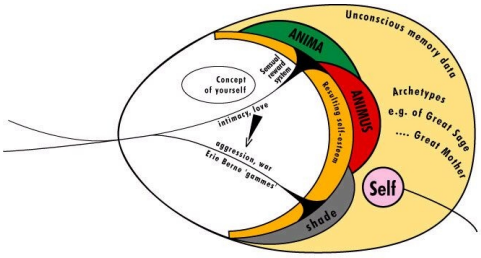


Figure 2.7 Jung's Theory.

The following are Jung's concepts that are still prevalent today:

Active imagination: This refers to activating our imaginal processes in waking life in order to tap into the unconscious meanings of our symbols.

Archetypes: These primordial images reflect basic patterns or universal themes common to us all and that are present in the unconscious. These symbolic images exist outside space and time. Examples are the shadow, animus, anima, the old wise person, and the innocent child. There are also nature archetypes, like fire, ocean, river, mountain.

1. **Anima** is the *archetype symbolizing the unconscious female component of the male psyche*. Tendencies or qualities often thought of as feminine.
2. **Animus** is the *archetype symbolizing the unconscious male component of the female psyche*. Tendencies or qualities often thought of as masculine.
3. **Self** is the *archetype symbolizing the totality of the personality*. It represents the striving for unity, wholeness, and integration.
4. **Persona** is the *mask or image a person presents to the world*. It is designed to make a particular impression on others, while concealing a person's true nature.
5. **Shadow** is the *side of a personality that a person does not consciously display in public*. It may have positive or negative qualities.
6. **Dreams** are *specific expressions of the unconscious that have a definite, purposeful structure indicating an underlying idea or intention*. The general function of dreams is to restore a person's total psychic equilibrium.
7. **Complexes** are usually *unconscious and repressed emotionally toned symbolic material that is incompatible with consciousness*. Complexes can cause constant psychological disturbances and symptoms of neurosis. With intervention, they can become conscious and greatly reduced in their impact.

Individuation: Jung believed that a human being is inwardly whole, but that most people have lost touch with important parts of themselves. Through listening to the messages of our dreams and waking imagination, we can contact and reintegrate our different parts. The goal of life is individuation, which is *the process of integrating the conscious with the unconscious, synergizing the many components of the psyche.* Jung asserted: "Trust that which gives you meaning and accept it as your guide" (Jung, 1951, p. 3). Each human being has a specific nature and calling uniquely his or her own, and unless these are fulfilled through a union of conscious and unconscious, the person can become sick. Today, the term "individuation" is used in the media industry to describe new printing and online technologies that permit "mass customization" of media (newspaper, online, television) so that its contents match each individual user's unique interests, shifting from the mass media practice of producing the same contents for all readers, viewers, listeners, or online users (Chen, Wang, & Tseng, 2009). Marshall McLuhan, the communications theorist, alluded to this trend in customization when discussing the future of printed books in an electronically interconnected world (McLuhan & Nevitt, 1972).

Mandala: For Jung, the mandala (which is the Sanskrit word for "circle") was a *symbol of wholeness, completeness, and perfection*, and symbolized the self.

Mystery: For Jung, life was a great mystery, and he believed that humans know and understand very little of it. He never hesitated to say, "I don't know," and he always admitted when he came to the end of his understanding.

Neurosis: Jung had a hunch that what passed for normality often was the very force that shattered the personality of the patient. He proposed that trying to be "normal" violates a person's inner nature and is itself a form of pathology. In the psychiatric hospital, he wondered why psychiatrists were not interested in what their patients had to say.

Story: Jung concluded that every person has a story, and when derangement occurs, it is because the personal story has been denied or rejected. Healing and integration come when the person discovers or rediscovers his or her own personal story.

Symbol: A symbol is a name, term, or picture that is familiar in daily life, but for Jung it had other connotations besides its conventional and obvious meaning. To Jung, a symbol implied something vague and partially unknown

or hidden, and was never precisely defined. Dream symbols carried messages from the unconscious to the rational mind.

Unconscious: This basic tenet, as expressed by Jung, states that all products of the unconscious are symbolic and can be taken as guiding messages. Within this concept, there are two types:

1. **Personal unconscious:** This aspect of the psyche does not usually enter an individual's awareness, but, instead, appears in overt behaviour or in dreams.
2. **Collective unconscious:** This aspect of the unconscious manifests in universal themes that run through all human life. The idea of the collective unconscious assumes that the history of the human race, back to the most primitive times, lives on in all people.

Word association test: This is a *research technique that Jung used to explore the complexes in the personal unconscious*. It consisted of reading 100 words to someone, one at a time, and having the person respond quickly with a word of his or her own.

Psychological Types

According to Jung, people differ in certain basic ways, even though the instincts that drive us are the same. Jung distinguished two general attitudes–introversion and extraversion–and four functions–thinking, feeling, sensing, and intuiting:

1. **Introvert:** *Inner-directed*; needs privacy and space; chooses solitude to recover energy; often reflective.
2. **Extravert:** *Outer-directed*; needs sociability; chooses people as a source of energy; often action-oriented.
3. **Thinking function:** *Logical*; sees cause and effect relations; cool, distant, frank, and questioning.
4. **Feeling function:** *Creative, warm, intimate*; has a sense of valuing positively or negatively. (Note that this is not the same as emotion.)
5. **Sensing function:** *Sensory*; oriented toward the body and senses; detailed, concrete, and present.
6. **Intuitive:** *Sees many possibilities in situations*; goes with hunches; impatient with earthy details; impractical; sometimes not present

The **Myers-Briggs Type Indicator** (MBTI) assessment is a *psychometric questionnaire designed to measure psychological preferences in how people perceive the world and make decisions*. The original developers of the Myers-Briggs personality inventory were Katharine Cook Briggs and her daughter, Isabel Briggs-Myers (1980, 1995). Having studied the work of Jung, the mother-daughter team turned their interest in human behaviour into a practical application of the theory of psychological types. They began creating the indicator during World War II, believing that a knowledge of personality preferences would help women who were entering the industrial workforce for the first time to identify the sort of wartime jobs that would be "most comfortable and effective."

The initial questionnaire became the Myers-Briggs Type Indicator (MBTI), first published in 1962 and emphasizing the value of naturally occurring differences (CAPT, 2012). These preferences were extrapolated from the typological theories proposed by Jung and first published in his 1921 book *Psychological Types* (Adler & Hull, 2014). Jung theorized that there are four principal psychological functions by which we experience the world: sensation, intuition, feeling, and thinking, with one of these four functions being dominant most of the time. The MBTI provides individuals with a measure of their dominant preferences based on the Jungian functions.

Research Focus: The Theory of Buyer Behaviour

Jungian theory influenced a whole realm of social psychology called Consumer Behaviour (Howard & Sheth, 1968). Consumer behaviour is the study of individuals, groups, or organizations and the processes they use to select, secure, and dispose of products, services, experiences, or ideas to satisfy needs, and the impacts that these processes have on the consumer and society. Blending psychology, sociology, social anthropology, marketing, and economics, the study of consumer behaviour attempts to understand the decision-making processes of buyers, such as how emotions affect buying behaviour (Figure 2.8); it also studies characteristics of individual consumers, such as demographics, and behavioural variables and external influences, such as family, education, and culture, in an attempt to understand people's desires.

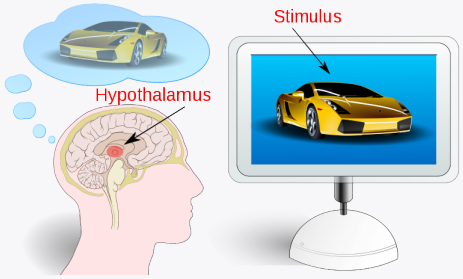


Figure 2.8 Neuromarketing.

The **black box model** (Sandhusen, 2000) captures this *interaction of stimuli, consumer characteristics, decision processes, and consumer responses*. Stimuli can be experienced as interpersonal stimuli (between people) or intrapersonal stimuli (within people). The black box model is related to the black box theory of behaviourism, where the focus is set not on the processes inside a consumer, but on the relation between the stimuli and the response of the consumer. The marketing stimuli are planned and processed by the companies, whereas the environmental stimuli are based on social, economic, political, and cultural circumstances of a society. The buyer's black box contains the buyer characteristics and the decision process, which determines the buyer's response (Table 2.1).

Table 2.1 Environmental Factors and Buyer's Black Box[1]

[Skip Table]

Environmental Factors		Buyer's Black Box		
Marketing Stimuli	**Environmental Stimuli**	**Buyer Characteristics**	**Decision Process**	**Buyer's Response**
• product • price • place • promotion	• economic • technological • political • cultural • demographic • natural	• attitudes • motivation • perceptions • personality • lifestyle • knowledge	• problem recognition • information search • alternative evaluation • purchase decision • post-purchase behaviour	• product choice • brand choice • dealer choice • purchase timing • purchace amount

Dreaming and Psychodynamic Psychology

Freud showed a great interest in the interpretation of human dreams, and his theory centred on the notion of repressed longing — the idea that dreaming allows us to sort through unresolved, repressed wishes. Freud's theory described dreams as having both latent and manifest content. **Latent content** relates to *deep unconscious wishes or fantasies,* while **manifest content** is *superficial and meaningless*. Manifest content often masks or obscures latent content.

Theories emerging from the work of Freud include the following:

Threat-simulation theory s*uggests that dreaming should be seen as an ancient biological defence mechanism*. Dreams are thought to provide an evolutionary advantage because of their capacity to repeatedly simulate potential threatening events. This process enhances the neurocognitive mechanisms required for efficient threat perception and avoidance. During much of human evolution, physical and interpersonal threats were serious enough to reward reproductive advantage to those who survived them. Therefore, dreaming evolved to replicate these threats and continually practice dealing with them. This theory suggests that dreams serve the purpose of allowing for the rehearsal of threatening scenarios in order to better prepare an individual for real-life threats.

Expectation fulfillment theory *posits that dreaming serves to discharge emotional arousals (however minor) that haven't been expressed during the day*. This practice frees up space in the brain to deal with the emotional arousals of the next day and allows instinctive urges to stay intact. In effect, the expectation is fulfilled (i.e., the action is completed) in the dream, but only in a metaphorical form so that a false memory is not created. This theory explains why dreams are usually forgotten immediately afterwards.

Other neurobiological theories also exist:

Activation-synthesis theory: One prominent neurobiological theory of dreaming is the activation-synthesis theory, which states that *dreams don't actually mean anything*. They are merely electrical brain impulses that pull random thoughts and imagery from our memories. The theory posits that humans construct dream stories after they wake up, in a natural attempt to make sense of the nonsensical. However, given the vast documentation of realistic aspects to human dreaming as well as indirect experimental evidence that other mammals (e.g., cats) also dream, evolutionary psychologists have theorized that dreaming does indeed serve a purpose.

Continual-activation theory: The continual-activation theory of dreaming proposes that *dreaming is a result of brain activation and synthesis*. Dreaming and REM sleep are simultaneously controlled by different brain mechanisms. The hypothesis states that the function of sleep is to process, encode, and transfer data from short-term memory to long-term memory through a process called "consolidation." However, there is not much evidence to back up consolidation as a theory. **NREM (non-rapid eye movement or non-REM) sleep** *processes the conscious-related memory (declarative memory)*, and **REM (rapid eye movement) sleep** *processes the unconscious-related memory (procedural memory)*.

The underlying assumption of continual-activation theory is that during REM sleep, the unconscious part of a brain is busy processing procedural memory. Meanwhile, the level of activation in the conscious part of the brain descends to a very low level as the inputs from the senses are basically disconnected. This triggers the "continual-activation" mechanism to generate a data stream from the memory stores to flow through to the conscious part of the brain.

Nielsen and colleagues (2003) investigated the dimensional *structure of dreams* by administering the Typical Dreams Questionnaire (TDQ) to 1,181 first-year university students in three Canadian cities. A profile of themes was found that varied little by age, gender, or region; however, differences that were identified correlated with developmental milestones, personality attributes, or sociocultural factors. Factor analysis found that women's dreams related mostly to negative factors (failure, loss of control, snakes/insects), while men's dreams related primarily to positive factors (magic/myth, alien life).

Research Focus: Can Dreaming Enhance Problem Solving?

Stemming from Freudian and Jungian theories of dream states, researchers in Lancaster, UK (Sio & Ormerod, 2009; Sio Monaghan, & Ormerod, 2013) and in Alberta, Canada (Both, Needham, & Wood, 2004) explored the role of "incubation" in facilitating problem solving. Incubation is the concept of "sleeping on a problem," or disengaging from actively and consciously trying to solve a problem, in order to allow, as the theory goes, the unconscious processes to work on the problem. Incubation can take a variety of forms, such as taking a break, sleeping, or working on another kind of problem either more difficult or less challenging. Findings suggest that incubation can, indeed, have a positive impact on problem-solving outcomes. Interestingly, lower-level cognitive tasks (e.g., simple math or language tasks, vacuuming, putting items away) resulted in higher problem-solving outcomes than more challenging tasks (e.g., crossword puzzles, math problems). Educators have also found that taking active breaks increases children's creativity and problem-solving abilities in classroom settings.

There are several hypotheses that aim to explain the conscious-unconscious effects on problem solving:

1. **Spreading activation**: When problem solvers disengage from the problem-solving task, they naturally expose themselves to more information that can serve to inform the problem-solving process. Solvers

are sensitized to certain information and can benefit from conceptual combination of disparate ideas related to the problem.

2. **Selective forgetting:** Once disengaged from the problem-solving process, solvers are freer to let go of certain ideas or concepts that may be inhibiting the problem-solving process, allowing a cleaner, fresher view of the problem and revealing clearer pathways to solution.

3. **Problem restructuring**: When problem solvers let go of the initial problem, they are then freed to restructure or reorganize their representation of the problem and thereby capitalize on relevant information not previously noticed, switch strategies, or rearrange problem information in a manner more conducive to solution pathways.

The study of **neural correlates of consciousness (NCC)** seeks to *link activity within the brain to subjective human experiences in the physical world*. Progress in **neurophilosophy** has come from *focusing on the body rather than the mind* (Squire, 2008). In this context, the neuronal correlates of consciousness may be viewed as its causes, and consciousness may be thought of as a state-dependent property of some undefined complex, adaptive, and highly interconnected biological system. The NCC constitute the smallest set of neural events and structures sufficient for a given conscious percept or explicit memory (Figure 2.9).

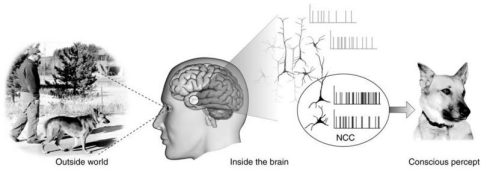


Figure 2.9 The Neuronal Correlates of Consciousness.

In the investigation into the NCC, our capacity to manipulate visual percepts in time and space has made vision a focus of study. Psychologists have perfected a number of techniques in which the seemingly simple relationship between a physical stimulus in the world and its associated principle in the subject's mind is disturbed and therefore open for understanding. In this manner the neural mechanisms can be isolated, permitting visual consciousness to be tracked in the brain. In a perceptual illusion, the physical stimulus remains fixed while the perception fluctuates. The best known example is the Necker Cube (Koch, 2004): the 12 lines in the cube can be perceived in one of two different ways in depth (Figure 2.10).

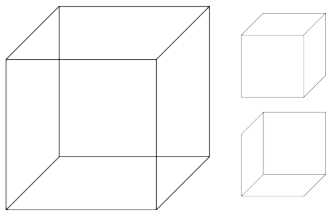


Figure 2.10 The Necker Cube.

A number of functional magnetic resonance imaging (fMRI) experiments have identified the activity underlying visual consciousness in humans and demonstrated quite conclusively that activity in various areas of the brain follows the mental perception and not the retinal stimulus (Rees & Frith, 2007), making it possible to link brain activity with perception (Figure 2.11).

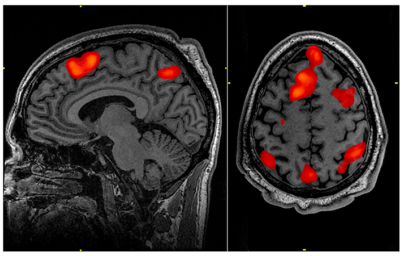


Figure 2.11 fMRI scan.

Key Takeaways

- Psychodynamic psychology emphasizes the systematic study of the psychological forces that underlie human behaviour, feelings, and emotions and how they might relate to early experience.
- Consciousness is the awareness of the self in space and time and is defined as human awareness to both internal and external stimuli.
- Sigmund Freud divided human consciousness into three levels of awareness: the conscious, preconscious, and unconscious. Each of these levels corresponds and overlaps with his ideas of the id, ego, and superego.
- Most psychodynamic approaches use talk therapy to examine maladaptive functions that developed early in life and are, at least in part, unconscious.
- Carl Jung expanded upon Freud's theories, introducing the concepts of the archetype, the collective unconscious, and individuation.
- Freud's theory describes dreams as having both latent and manifest content. Latent content relates to deep unconscious wishes or fantasies while manifest content is superficial and meaningless.
- Unconscious processing includes several theories: threat simulation theory, expectation fulfillment theory, activation synthesis theory, continual activation theory.
- One application of unconscious processing includes incubation as it relates to problem solving: the concept of "sleeping on a problem" or disengaging from actively and consciously trying to solve a problem in order to allow one's unconscious processes to work on the problem.
- The study of neural correlates of consciousness seeks to link activity within the brain to subjective human experiences in the physical world.
- In a perceptual illusion, like the Necker Cube, the physical stimulus remains fixed while the perception fluctuates, allowing the neural mechanisms to be isolated and permitting visual consciousness to be tracked in the brain.
- Activity in the brain can be studied and captured using functional magnetic resonance imaging (fMRI) scans.

Exercises and Critical Thinking

1. Utilize the principles of the psychodynamic school of thought to reflect on a recent dream you experienced. What might the dream imply or represent? Try to trace one of your qualities or characteristics to a prior experience or learning.
2. Jung has influenced a variety of practices in psychology today including therapeutic and organizational. Can you identify other areas of society where "archetypes" may play a role?
3. Debate with your group the value or danger of "mass customization." What issues or controversies does the concept of customized marketing and product development pose?

Image Attributions

Figure 2.5: Freud Jung in front of Clark Hall (http://upload.wikimedia.org/wikipedia/commons/b/b5/Hall_Freud_Jung_in_front_of_Clark.jpg) is in the public domain.

Figure 2.6: Visual representation of Freud's id, ego and superego and the level of consciousness (http://commons.wikimedia.org/wiki/File:Id_ego_superego.png) used under CC BY SA 3.0 license (http://creativecommons.org/licenses/by-sa/3.0/deed.en).

Figure 2.7: Graphical model of Carl Jung's theory – English version by Andrzej Brodziak (http://commons.wikimedia.org/wiki/File:Scheme-Jung.jpg) used under CC-BY-SA 2.5 Generic license (http://creativecommons.org/licenses/by-sa/2.5/deed.en).

Figure 2.8: Neuromarketing schema by Benoit Rochon (http://commons.wikimedia.org/wiki/File:Neuromarketing_fr.svg) used under CC BY 3.0 license (http://creativecommons.org/licenses/by/3.0/deed.en).

Figure 2.9: Neural Correlates Of Consciousness by Christof Koch (http://commons.wikimedia.org/wiki/File:Neural_Correlates_Of_Consciousness.jpg) used under CC BY SA 3.0 license (http://creativecommons.org/licenses/by-sa/3.0/deed.en).

Figure 2.10: Necker's cube, a type of optical illusion by Stevo-88 (http://commons.wikimedia.org/wiki/File:Necker%27s_cube.svg) is in the public domain.

Figure 2.11: FMRI scan during working memory tasks by John Graner (http://commons.wikimedia.org/wiki/File:FMRI_scan_during_working_memory_tasks.jpg) is in the public domain.

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Notes

1. Adapted from http://en.wikipedia.org/wiki/Consumer_behaviour by J. Walinga.

2.3 Behaviourist Psychology

Jennifer Walinga

Learning Objectives

1. Understand the principles of behaviourist psychology and how these differ from psychodynamic principles in terms of theory and application.
2. Distinguish between classical and operant conditioning.
3. Become familiar with key behaviourist theorists and approaches.
4. Identify applications of the behaviourist models in modern life.

Emerging in contrast to psychodynamic psychology, **behaviourism** *focuses on observable behaviour as a means to studying the human psyche.* The primary tenet of behaviourism is that psychology should concern itself with the observable behaviour of people and animals, not with unobservable events that take place in their minds. The behaviourists criticized the mentalists for their inability to demonstrate empirical evidence to support their claims. The behaviourist school of thought maintains that behaviours can be described scientifically without recourse either to internal physiological events or to hypothetical constructs such as thoughts and beliefs, making behaviour a more productive area of focus for understanding human or animal psychology.

The main influences of behaviourist psychology were Ivan Pavlov (1849-1936), who investigated classical conditioning though often disagreeing with behaviourism or behaviourists; Edward Lee Thorndike (1874-1949), who introduced the concept of reinforcement and was the first to apply psychological principles to learning; John B. Watson (1878-1958), who rejected introspective methods and sought to restrict psychology to experimental methods; and B.F. Skinner (1904-1990), who conducted research on operant conditioning.

The first of these, Ivan Pavlov, is known for his work on one important type of learning, **classical conditioning**. *As we learn, we alter the way we perceive our environment, the way we interpret the incoming stimuli, and therefore the way we interact, or behave*. Pavlov, a Russian physiologist, actually discovered classical conditioning accidentally while doing research on the digestive patterns in dogs. During his experiments, he would put meat powder in the mouth of a dog who had tubes inserted into various organs to measure bodily responses. Pavlov discovered that the dog began to salivate before the meat powder was presented to it. Soon the dog began to salivate as soon as the person feeding it entered the room. Pavlov quickly began to gain interest in this phenomenon and abandoned his digestion research in favour of his now famous classical conditioning study.

Basically, Pavlov's findings support the idea that we develop responses to certain stimuli that are not naturally occurring. When we touch a hot stove, our reflex pulls our hand back. We do this instinctively with no learning involved. The reflex is merely a survival instinct. Pavlov discovered that we make associations that cause us to generalize our response to one stimuli onto a neutral stimuli it is paired with. In other words, hot burner = ouch; stove = burner; therefore, stove = ouch.

In his research with the dogs, Pavlov began pairing a bell sound with the meat powder and found that even when the meat powder was not presented, a dog would eventually begin to salivate after hearing the bell. In this case, since the meat powder naturally results in salivation, these two variables are called the *unconditioned stimulus* (UCS) and the *unconditioned response* (UCR), respectively. In the experiment, the bell and salivation are *not* naturally occurring; the dog is conditioned to respond to the bell. Therefore, the bell is considered the *conditioned stimulus* (CS), and the salivation to the bell, the *conditioned response* (CR).

Many of our behaviours today are shaped by the pairing of stimuli. The smell of a cologne, the sound of a certain song, or the occurrence of a specific day of the year can trigger distinct memories, emotions, and associations. *When we make these types of associations*, we are experiencing **classical conditioning**.

Operant conditioning is another type of learning that refers to *how an organism operates on the environment or how it responds to what is presented to it in the environment* (Figure 2.12).

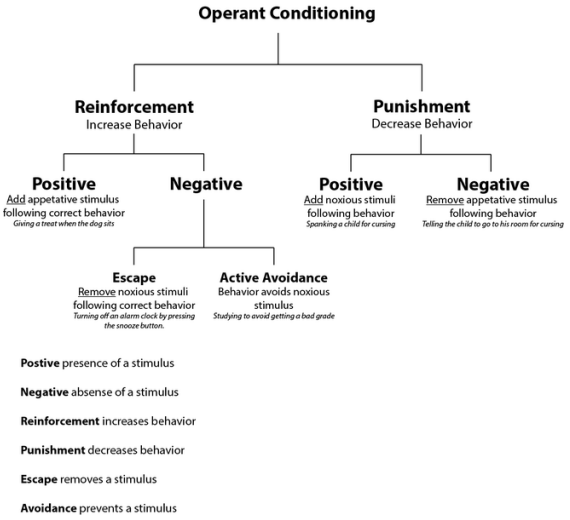


Figure 2.12 Operant Conditioning.

Examples of operant conditioning include the following:

Reinforcement means to strengthen, and is used in psychology to *refer to any stimulus which strengthens or increases the probability of a specific response*. For example, if you want your dog to sit on command, you may give him a treat every time he sits for you. The dog will eventually come to understand that sitting when told to will result in a treat. This treat is reinforcing the behaviour because the dog likes it and will result in him sitting when instructed to do so. There are four types of reinforcement: positive, negative, punishment, and extinction.

- **Positive reinforcement** involves *adding something in order to increase a response*. For example, adding a treat will increase the response of sitting; adding praise will increase the chances of your child cleaning his or her room. The most common types of positive reinforcement are praise and reward, and most of us have experienced this as both the giver and receiver.
- **Negative reinforcement** involves *taking something negative away in order to increase a response*. Imagine a teenager who is nagged by his parents to take out the garbage week after week. After

complaining to his friends about the nagging, he finally one day performs the task and, to his amazement, the nagging stops. The elimination of this negative stimulus is reinforcing and will likely increase the chances that he will take out the garbage next week.

- **Punishment** refers to *adding something aversive in order to decrease a behaviour*. The most common example of this is disciplining (e.g., spanking) a child for misbehaving. The child begins to associate being punished with the negative behaviour. The child does not like the punishment and, therefore, to avoid it, he or she will stop behaving in that manner.
- **Extinction** involves *removing something in order to decrease a behaviour.* By having something taken away, a response is decreased.

Research has found positive reinforcement is the most powerful of any of these types of operant conditioning responses. Adding a positive to increase a response not only works better, but allows both parties to focus on the positive aspects of the situation. Punishment, when applied immediately following the negative behaviour, can be effective, but results in extinction when it is not applied consistently. Punishment can also invoke other negative responses such as anger and resentment.

Thorndike's (1898) work with cats and puzzle boxes illustrates the concept of conditioning. The puzzle boxes were approximately 50 cm long, 38 cm wide, and 30 cm tall (Figure 2.13). Thorndike's puzzle boxes were built so that the cat, placed inside the box, could escape only if it pressed a bar or pulled a lever, which caused the string attached to the door to lift the weight and open the door. Thorndike measured the time it took the cat to perform the required response (e.g., pulling the lever). Once it had learned the response he gave the cat a reward, usually food.

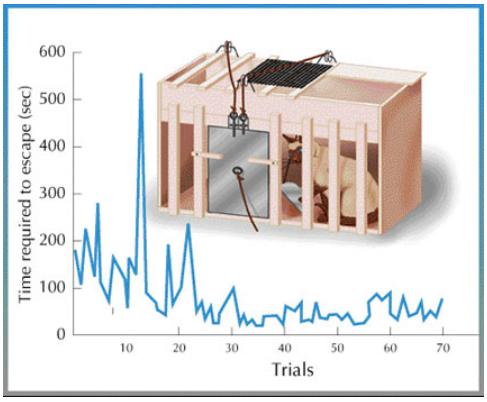


Figure 2.13 Thorndike's Puzzle Box.

Thorndike found that once a cat accidentally stepped on the switch, it would then press the switch faster in each succeeding trial inside the puzzle box. By observing and recording how long it took a variety of animals to escape through several trials, Thorndike was able to graph the learning curve (graphed as an S-shape). He observed that most animals had difficulty escaping at first, then began to escape faster and faster with each successive puzzle box trial, and eventually levelled off in their escape times. The learning curve also suggested that different species learned in the same way but at different speeds. His finding was that cats, for instance, consistently showed gradual learning.

From his research with puzzle boxes, Thorndike was able to create his own theory of learning (1932):

1. Learning is incremental.
2. Learning occurs automatically.
3. All animals learn the same way.
4. **Law of effect.** *If an association is followed by satisfaction, it will be strengthened, and if it is followed by annoyance, it will be weakened*.
5. **Law of use.** *The more often an association is used, the stronger it becomes*.
6. **Law of disuse.** *The longer an association is unused, the weaker it becomes*.
7. **Law of recency.** *The most recent response is most likely to reoccur*.
8. **Multiple response.** *An animal will try multiple responses (trial and error) if the first response does not lead to a specific state of affairs.*
9. **Set or attitude**. *Animals are predisposed to act in a specific way.*
10. **Prepotency of elements.** *A subject can filter out irrelevant aspects of a problem and focus on and respond to significant elements of a problem*.
11. **Response by analogy**. *Responses from a related or similar context may be used in a new context*.
12. **Identical elements theory of transfer**. *The more similar the situations are, the greater the amount of information that will transfer*. Similarly, if the situations have nothing in common, information learned in one situation will not be of any value in the other situation.
13. **Associative shifting**. *It is possible to shift any response from occurring with one stimulus to occurring with another stimulus*. Associative shift maintains that a response is first made to situation A, then to AB, and then finally to B, thus shifting a response from one condition to another by associating it with that condition.
14. **Law of readiness**. *A quality in responses and connections that results in readiness to act*. Behaviour and learning are influenced by the readiness or unreadiness of responses, as well as by their strength.
15. **Identifiability.** *Identification or placement of a situation is a first response of the nervous system, which can recognize it*. Then connections may be made to one another or to another response, and these connections depend on the original identification. Therefore, a large amount of learning is made up of changes in the identifiability of situations.
16. **Availability**. *The ease of getting a specific response*. For example, it would be easier for a person to learn to touch his or her nose or mouth with closed eyes than it would be to draw a line five inches long with closed eyes.

John B. Watson promoted a change in psychology through his address, Psychology as the Behaviorist Views It (1913), delivered at Columbia University. Through his behaviourist approach, Watson conducted research on animal behaviour, child rearing, and advertising while gaining notoriety for the controversial "Little Albert" experiment. Immortalized in introductory psychology textbooks, this experiment set out to show how the recently discovered principles of classical conditioning could be applied to condition fear of a white rat into Little Albert, an 11-month-old boy. Watson and Rayner (1920) first presented to the boy a white rat and observed that the boy was not afraid. Next they presented him with a white rat and then clanged an iron rod. Little Albert responded by crying. This second presentation was repeated several times. Finally, Watson and Rayner presented the white rat by itself and the boy showed fear. Later, in an attempt to see if the fear transferred to other objects, Watson presented Little Albert with a rabbit, a dog, and a fur coat. He cried at the sight of all of them. This study demonstrated how emotions could become conditioned responses.

Burrhus Frederic Skinner called his particular brand of behaviourism *radical behaviourism* (1974). **Radical**

behaviourism is the *philosophy of the science of behaviour*. It seeks to understand behaviour as a function of environmental histories of reinforcing consequences. This applied behaviourism does not accept private events such as thinking, perceptions, and unobservable emotions in a causal account of an organism's behaviour.

While a researcher at Harvard, Skinner invented the *operant conditioning chamber*, popularly referred to as the **Skinner box** (Figure 2.14), *used to measure responses of organisms* (most often rats and pigeons) *and their orderly interactions with the environment*. The box had a lever and a food tray, and a hungry rat inside the box could get food delivered to the tray by pressing the lever. Skinner observed that when a rat was first put into the box, it would wander around, sniffing and exploring, and would usually press the bar by accident, at which point a food pellet would drop into the tray. After that happened, the rate of bar pressing would increase dramatically and remain high until the rat was no longer hungry.

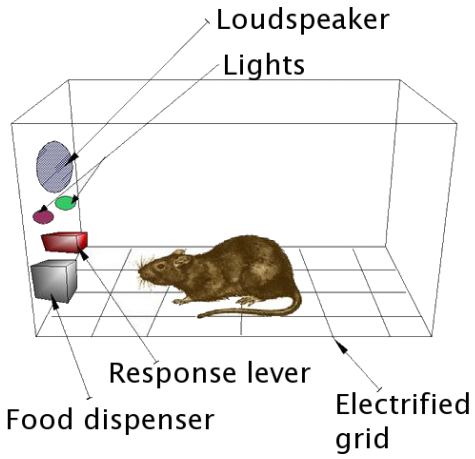


Figure 2.14 Skinner Box.

Negative reinforcement was also exemplified by Skinner placing rats into an electrified chamber that delivered unpleasant shocks. Levers to cut the power were placed inside these boxes. By running a current through the box, Skinner noticed that the rats, after accidentally pressing the lever in a frantic bid to escape, quickly learned the effects of the lever and consequently used this knowledge to stop the currents both during and prior to electrical shock. These two learned responses are known as **escape learning** and **avoidance learning** (Skinner, 1938). The operant chamber for pigeons involved a plastic disk in which the pigeon pecked in order to open a drawer filled with grain. The Skinner box led to the principle of reinforcement, which is the probability of something occurring based on the consequences of a behaviour.

Research Focus

Applying game incentives such as prompts, competition, badges, and rewards to ordinary activities, or **gamification,** is a growing approach to behaviour modification today. Health care has also applied some early innovative uses of gamification — from a Sony PS3 Move motion controller used to help children diagnosed with cancer to the launch of *Games for Health*, the first peer-reviewed journal dedicated to the

research and design of health games and behavioural health strategies. Gamification is the process of taking an ordinary activity (like jogging or car sharing) and adding game mechanisms to it, including prompts, rewards, leader-boards, and competition between different players.

When used in social marketing and online health-promotion campaigns, gamification can be used to encourage a new, healthy behaviour such as regular exercise, improved diet, or completing actions required for treatment. Typically, gamification is web-based, usually with a mobile app or as a micro-site. Behavioural change campaigns require an understanding of human psychology, specifically the benefits and barriers associated with a behaviour. There have been several campaigns using gamification techniques that have had remarkable results. For example, organizations that wanted employees to exercise regularly have installed gyms in their offices and created a custom application that rewards employees for "checking in" to the gyms. Employees can form regionally based teams, check in to workouts, and chart their team's progress on a leader-board. This has a powerful effect on creating and sustaining a positive behavioural change.

Similar game mechanics have been used in sustainability campaigns aimed at increasing household environmental compliance. Such sites use game mechanics such as points, challenges, and rewards to increase daily "green" habits like recycling and conserving water. Other behavioural change campaigns that have applied social gaming include using cameras to record speeding cars, which reduce the incidence of speeding, and offering products that allow users to track their healthy behaviours through the day, including miles travelled, calories burned, and stairs climbed.

Key Takeaways

- Behaviourist psychology should concern itself with the observable behaviour of people and animals, not with unobservable events that take place in their minds.
- The main influences of behaviourist psychology were Ivan Pavlov (1849-1936), Edward Lee Thorndike (1874-1949), John B. Watson (1878-1958), and B.F. Skinner (1904-1990).
- The idea that we develop responses to certain stimuli that are not naturally occurring is called "classical conditioning."
- Operant conditioning refers to how an organism operates on the environment or how it responds to what is presented to it in the environment.
- Reinforcement means to strengthen, and is used in psychology to refer to any stimulus that strengthens or increases the probability of a specific response.
- There are four types of reinforcement: positive, negative, punishment, and extinction.
- Behaviourist researchers used experimental methods (puzzle box, operant conditioning or Skinner box, Little Albert experiment) to investigate learning processes.
- Today, behaviourism is still prominent in applications such as gamification.