

INTRODUCTION

Psychology is the scientific study of mental processes and behaviour. It is the objective of this book to introduce students to this fascinating subject and the subfields into which it is divided. It has matured through the centuries from its beginnings in supernatural beliefs, magic and taboo to its development as a scientific discipline.

Students gain insight into the varied fields of psychology. They come to see how all of the branches help humans in their attempt to “know ourselves”.

The self-directed activities emphasise higher-level thinking skills and the activities have been keyed to Bloom’s taxonomy for your convenience. Although not so marked, other higher-level skills, such as fluency, originality and risk-taking, are also encouraged.

I hope you and your students enjoy learning about the most fascinating animal of all—the human species!

BLOOM’S REVISED TAXONOMY

REMEMBERING:	Retrieving, recognising and recalling relevant knowledge from long-term memory.
UNDERSTANDING:	Constructing meaning from oral, written and graphic messages through interpreting, exemplifying, classifying, summarising, inferring, comparing and explaining.
APPLYING:	Carrying out or using a procedure through executing or implementing.
ANALYSING:	Breaking material or concepts into constituent parts, determining how the parts relate or interrelate to one another or to an overall structure through differentiating, organising and attributing.
EVALUATING:	Making judgments based on criteria and standards through checking and critiquing.
CREATING:	Putting elements together to form a coherent or functional whole; reorganising elements into a new pattern or structure through generating, planning or producing.

WHAT IS PSYCHOLOGY?

From the beginnings of civilisation, human beings have striven to “know themselves”. Psychology is an attempt to do just that! It is the science of mental processes and behaviour.

Modern psychology comprises many subject areas: sensation-perception, motivation, emotion, innate patterns (those possessed at birth), learning, thinking, intelligence, personality, group dynamics and behaviour pathology. The sub-branch known as physiological psychology emphasises the physiological variables which affect behaviour and mental processes. Like in other sciences, research in psychology is observational and experimental and is done both in the field and in the laboratory. Psychologists analyse the data they obtain by statistical methods. Of course, there are obvious limits to the type and amount of experimentation which can be ethically performed. Psychologists differ in their research methods and clinical techniques. These differences are dependent upon their theoretical and philosophical views. For example, some psychologists show a preference for the psychoanalytic therapies set forth by Sigmund Freud; they focus on the early, mostly unconscious, developmental origins of personality. Others, known as behaviourists, focus upon overt, observable behaviour; their theories are based upon the principles of conditioning and adaptive behaviour.

Psychology has matured through the centuries from its beginnings in supernatural beliefs, magic and taboo to its development as a scientific discipline. In fact, it has become so broad that it has become essential for psychologists to specialise in one of the numerous and varied subfields. Each in his or her way attempts to help people “know themselves”.

HUMAN DEVELOPMENT

HEREDITY AND ENVIRONMENT

For many years psychologists argued whether human behaviour tendencies were caused by a person’s heredity or environment. It became known as the nature–nurture controversy. Today we no longer speak of heredity *versus* environment. Although some psychologists place more or less emphasis on one or the other, it is generally agreed that heredity and environment interact to contribute to the making of distinct individuals. Your genes do set limits upon your physical and intellectual development; however, your environment determines how you develop within those limits.

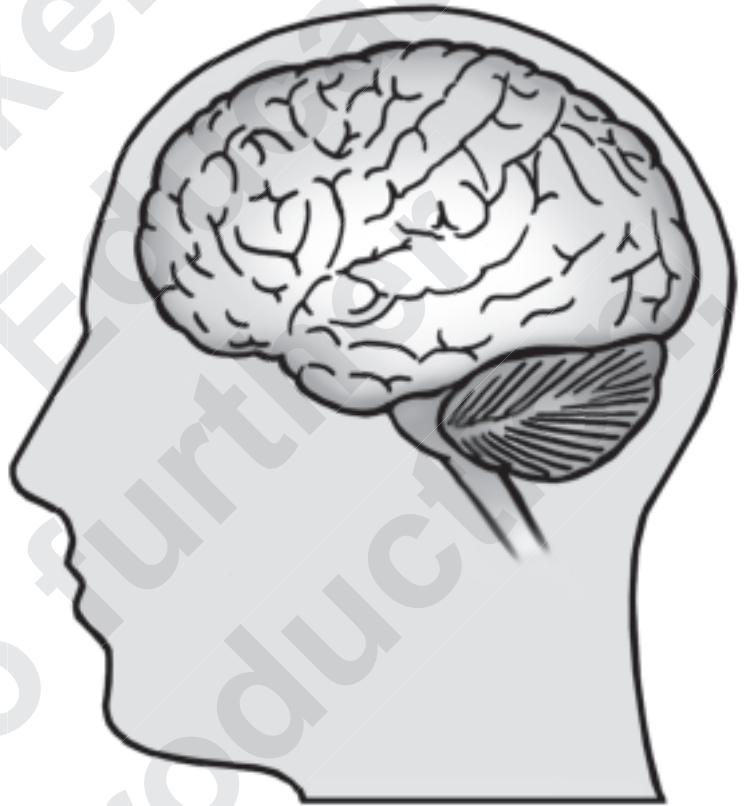
1. It is usually difficult to determine the importance of heredity upon an individual’s intelligence. The presence of “trisomy-21” is an exception. Explain what is meant by “trisomy-21”

THE BRAIN

Your brain probably weighs about 1.3 kilograms, but they are the most important in your body! In the embryonic stage the human brain has three main divisions: the forebrain, the midbrain and the hindbrain. The adult brain, however, is divided into five major sections: the cerebrum; the thalamus and hypothalamus; the medulla; the pons and cerebellum; and the midbrain. The cerebrum, thalamus and hypothalamus develop from the forebrain. The pons, cerebellum and medulla develop from the hindbrain.

The folded surface layer of the brain is called the **cortex**. The cerebral cortex comprises the folded area of the cerebrum, and the cerebellar cortex comprises the surface area of the cerebellum. The cortex is where most of the neurons, or nerve cells, are concentrated. It is believed that an individual is born with about 10 billion or more neurons in the cortex, but that at about age twenty, some of those neurons begin to atrophy, or deteriorate. By about seventy-five years of age, the weight of the brain decreases about 10 per cent.

The **cerebrum**, the largest part of the human brain, is where most of your important mental functions take place. It is divided into two symmetrical, protruding pouches, which are called the **left and right hemispheres**. Because of the crossing of nerve fibres, the left half of the brain controls the right side of the body and vice versa. Each hemisphere is covered with a grey mantle—the cerebral cortex; it is about one-quarter of a centimetre thick. Deep within each cerebral hemisphere, beneath the cortex, are large masses of grey matter composed of nerve-cell bodies. These structures, known collectively as the **basal ganglia**, help control motor responses. Much of the interior of the hemispheres is made up of white matter, or tissue, consisting mostly of nerve fibres.



The hemispheres are connected by tracts of nerve fibres called **commissures**. The largest commissure is the **corpus callosum**. If the commissures became damaged, one side of the brain would not know what the other side is doing.

The **thalamus**, located between the cerebral hemispheres, is a large, egg-shaped mass of grey matter. Its main function seems to be that of a central receiving station for incoming sensory messages (with the exception of the olfactory system). It receives this input from the sensory nerves and sends impulses to the cortex, where the sensory areas are located.

The **hypothalamus** is a small structure which lies below the thalamus. It regulates body temperature, some metabolic processes and other autonomic (involuntary) activities. Studies indicate that the hypothalamus is involved in the control of emotion and motivation.

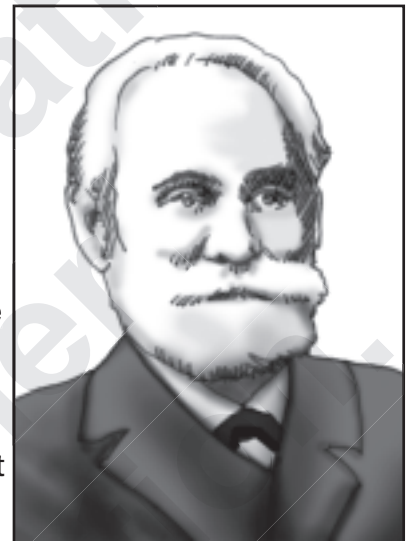
CONDITIONING, LEARNING AND MEMORY

There are many ways in which we learn, remember and forget. Some might consider habituation to be the simplest form of learning. **Habituation** is the decrease in response to a specific stimulus. It makes it possible to ignore strong, repeated stimuli that would otherwise interfere with other types of learning. When we speak of learning, however, most people consider it to be more than getting used to a new stimulus; they think of learning as being a direct, lasting result of certain experiences.

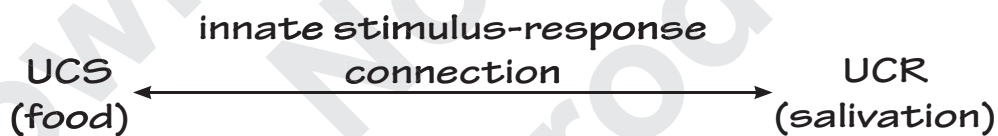
CLASSIC CONDITIONING

Conditioning involves the training of an individual to respond in a specific way to a specific stimulus. The scientist who did the most to enhance our understanding of this type of learning was Russian physiologist Ivar Pavlov (1849–1936). He became interested in the phenomenon while experimenting with dogs in his study of digestion.

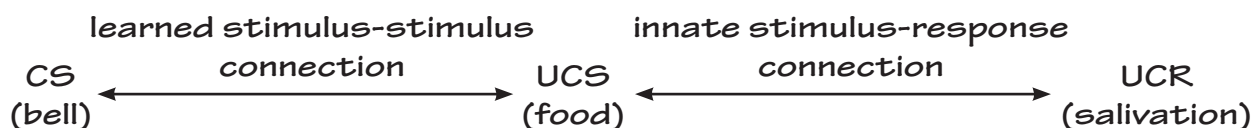
Pavlov was trying to measure the amount of saliva produced by the dogs. He put them in a harness and then gave them the food. (Animals salivate automatically when given food; they do not have to be taught.) Pavlov noticed, however, that the dogs soon began to salivate before they were given the food. They salivated at the mere rattle of the dish or even at the oncoming footsteps of the experimenter. What he learned from this is what we call **conditioned-response learning**.



The food is called an **unconditional or unconditioned stimulus (UCS)** because its power to evoke salivation is not conditional upon learning. Salivation, which is innately determined, is called an **unconditional response or reflex (UCR)**. It may be diagrammed in this way:

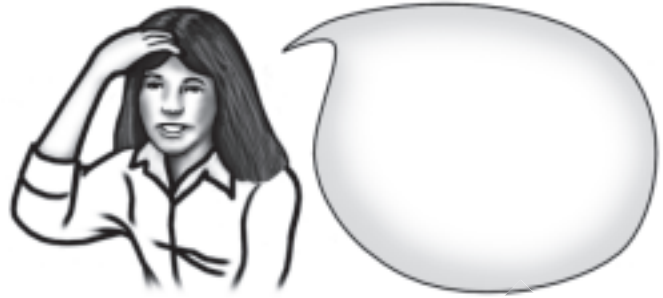


Suppose you want to train the dog to salivate at a neutral stimulus, such as the sound of a bell. A neutral stimulus is one that does not normally evoke a particular unconditional response. If you pair the neutral stimulus (bell) with the unconditional stimulus (food) enough times, the animal comes to associate the two. The pairing procedure is called **reinforcement**. When the animal hears the bell, it anticipates that it is about to be fed and, therefore, salivates to the tone of the bell. The bell is called a **conditional, or conditioned, stimulus (CS)** because its power is conditional upon its being paired with the food. We can diagram the situation like this:



MEMORY

Your memory is a storage system for all your past experiences. Without memory you would not be able to re-create or reproduce your past perceptions, emotions, thoughts and actions. There seem to be at least three different kinds of memory: sensory memory, short-term memory and long-term memory.



Sensory memory represents the first stage of memory. Your sensory receptors store an exact copy of a stimulus, but hold the input in storage for only a fraction of a second. It is then “erased” by the next input. After-images are examples of sensory memory.

Short-term memory is longer than sensory memory, but is still of a short duration. It stores the input for a few seconds (a minute at most) while your brain interprets the meaning of the stimulus. Many psychologists believe that the input is often stored in the form of auditory codes. Short-term memory has a very limited capacity. For example, if an individual is given a list of items, such as a string of digits, to repeat immediately, he will most likely have trouble remembering more than six or seven items. This is because each new item that is added interferes with the preceding ones.

If an item drops out of short-term memory storage, it is usually lost unless your brain decides to enter the input in **long-term memory**. Any memory that lasts longer than a minute is considered part of this system. Long-term memory seems to involve very complex processes of organising material for storage, such as clustering. **Clustering** is the tendency to recall items in meaningful groups. This phenomenon occurs even when the items are presented in a random manner. During the retention period the items are grouped in such a way as to form meaningful clusters. These clusters include such categories as the item’s identity, class, attributes, context, function and sensory associations. They may also include the sound and visual pattern of the words used to represent the item.

1. The average person has trouble repeating more than six or seven random digits; however, many can remember a new mobile phone number even though it involves ten digits. Ask ten people to immediately recall a series of ten digits. Ask another ten people of similar educational background to immediately recall the same ten digits, but present them as a telephone number. Analyse your results.
2. Some studies have indicated that short-term memory involves acoustic coding of stimuli even when they are presented visually. An experiment performed by R. Conrad in the mid-1960s involved the rapid visual presentations of the letters B-C-F-M-N-P-S-Y-V-X in six-letter sequences. Subjects were required to immediately recall the letters. Most mistakes involved substitution of sound-alikes rather than look-alikes. Do this or a similar experiment with at least ten subjects and analyse your results.