Part 3 **COGNITIVE PSYCHOLOGY**

**7 Learning**

What is learning?

* Learning takes place when the organism acquires some new knowledge or behaviour as a result of experience.
* The changes in behaviour or knowledge that occur in learning are relatively enduring.
* The capacity to learn is innate and unlearned, even if the result of some particular learning is cultural or experiential. Organisms are born ‘biologically prepared’ to learn certain things but not other things.
* Habituation is the simplest form of learning. Habituation occurs when a stimulus at first produces a strong response from an organism, but this response is lessened over time due to repeated exposure.
* Associative learning occurs when an organism comes to associate two or more stimuli or events that occur close together in space and time.
* Associative learning encompasses classical conditioning, operant conditioning, and observational learning.

Classical conditioning

* In classical conditioning, a neutral stimulus comes to elicit an unconditioned response (UCR) after it has been repeatedly paired with an unconditioned stimulus (UCS). After conditioning, the neutral stimulus is termed the conditioned stimulus (CS) and the unconditioned response is termed the conditioned response (CR).
* In classical conditioning, the neutral stimulus must be presented before the UCS, and the UCS must follow immediately after the neutral stimulus. Second-order conditioning involves the pairing of a CS with a new neutral stimulus until the UCR is elicited when the new neutral stimulus is presented.
* Extinction occurs when a CS is repeatedly presented over time without the UCS. However, if, after the CS is presented again later (without the UCS), the UCR may once again occur; this is known as spontaneous recovery. Renewal is the resurgence of an extinguished behaviour in a different context from the one in which extinction originally occurred. Generalization has occurred when an organism displays a CR when exposed to a neutral stimulus that is similar, but not identical, to the original CS. Discrimination occurs when one neutral stimulus produces a CR, but another similar neutral stimulus does not.
* Evaluative learning is either similar to or a subtype of classical conditioning in which a neutral stimulus becomes paired with the emotional valence of an unconditional stimulus so that it comes to elicit the same emotional response.
* Contrary to the assertions of early behaviourists it appears that classical conditioning involves cognition, and various cognitive elements must be in place for strong conditioning to occur.
* Also contrary to the assertions of early behaviourists it appears that some responses are much easier to condition than others because of their survival value in the evolutionary past.
* Classical conditioning cannot condition new behaviours; it can only elicit innate or reflexive behaviours.

Operant conditioning

* Thorndike’s law of effect provided the basis for B.F. Skinner’s development of operant conditioning techniques. In operant conditioning, the organism teaches itself by coming to associate a behaviour with its consequences.
* Reinforcement of a behaviour increases the likelihood that the behaviour will continue or be repeated, while punishment decreases this likelihood. Reinforcers tend to be rewarding and punishers unpleasant or aversive, but this is not always the case.
* Operant conditioning frequently involves shaping through successive approximation.
* The Premack principle states that high-probability behaviours are good reinforcers for low-probability behaviours.
* Primary reinforcers are suitable for conditioning with virtually all members of a species because they are essential for survival or reproduction. A secondary nreinforcer is not intrinsically associated with survival or reproduction, but has become associated with a primary reinforcer through conditioning.
* Reinforcement schedules affect conditioning. Continuous reinforcement is reinforcement that occurs every time a behaviour occurs. Partial reinforcement refers to situations where reinforcement occurs periodically.
* Partial reinforcement schedules include fixed-interval schedules, variable-interval schedules, fixed-ratio schedules, and variable-ratio schedules.
* Punishment can be effective in operant conditioning if it is immediate, severe, and consistent. However, it may pose ethical problems, and can result in retaliation or other negative side effects rather than conditioning. Reinforcement is generally preferable as a conditioner.
* As with classical conditioning, cognition and the evolutionary history of the organism may set limits on operant conditioning. For example, cognitive activity including latent learning can either interfere with or hasten operant behaviour, and conditioning may fail if it runs counter to an animal’s instinctual patterns of behaviour.

Observational learning

* Observational learning describes ways in which an organism might learn by observing the experiences of others. Modelling is a type of observational learning where a child might acquire behaviours he or she observes in an admired adult.
* Other factors appear to influence the probability of a model being imitated, including their gender and social status. These effects can be seen in animals as well as humans.
* Vicarious conditioning involves learning through observing the consequences of others’ behaviour.

Mirror neurons may help explain how observational learning occurs.