



OPERANT CONDITIONING

Voluntary (instrumental) conditioning as a mechanism of learning

Classical conditioning is only concerned with *involuntary, reflex* behaviour. However, **operant conditioning** looks at *voluntary* behaviour. It is a type of learning in which future behaviour is determined by the consequences of past behaviour. In classical conditioning, the stimulus comes before the behaviour; in operant conditioning the behaviour comes before the consequence.

The central component of operant conditioning is **reinforcement**. Behaviours are learned by reinforcement:

- a **positive reinforcement** involves being given a reward for showing a certain desired behaviour (e.g. a child tidies his room as his mother asks him to, and so receives additional pocket money that week)
- a **negative reinforcement** involves having something negative taken away for showing a certain behaviour (e.g. a mother not shouting at her child for behaving well whilst on a car journey)

Also to consider are **punishments**. A punishment is *not* the same as reinforcement. A reinforcement encourages desired behaviour (as it has pleasant effects); and a punishment discourages undesired behaviour (as it has unpleasant consequences). An example of a punishment therefore might be a naughty child not being allowed to play with his toys.

HOW IS OPERANT CONDITIONING STUDIED?

Operant conditioning has mainly been studied through **animal experimentation**. There are two researchers in the field which you should know about.

Edward Thorndike (1911) used a *puzzle box* to which the exit could only be opened when the cat inside pressed the levers which would open the door. Thorndike's experiment placed a cat inside a box, and a dish of cat food just outside the box. The cat would want to reach the food, but could not. As the cat moved around inside the box, it accidentally pressed the levers, and eventually learned by **trial and error** how to get the food.

B.F. Skinner (1935) was a leading researcher into operant conditioning, who was responsible for developing the theory to what it is today. He used much animal experimentation. The most famous example is his use of rats, and food pellets as reinforcement (because the rats are hungry, the pellets are a reward). A **Skinner box** was used in these experiments (named after B.F. Skinner), where the rat is inside, with a light, lever and food dispenser. Skinner controlled the experiment so that if the rat pulled the lever when the light was red, a food pellet would be dispensed, and if the rat pulled the lever when the light was green, it would not dispense food. The rat would soon learn to pull the lever only when the light was red.

It is important that you know and understand the strengths and weaknesses of using animals in experiments for research. For more information on the topic, refer to **M8 Animal Experiments**.

PRIMARY AND SECONDARY REINFORCEMENT

Not only is there positive and negative reinforcement, but also **primary reinforcement** and **secondary reinforcement**. Primary reinforcement occurs when the reward is a *basic need* (i.e. food, drink, warmth or shelter). For example, a rat learning how to correctly dispense food pellets is primary reinforcement.

Secondary reinforcement provides a reward that can *satisfy a basic need*, but is not a basic need itself. For example, if a child behaves well and is given pocket money – this is not a basic need, but could be used to buy food – a basic need.

One important aspect of operant conditioning is that the complete desired behaviour may not be exhibited immediately so that it can be reinforced. The process of **shaping** involves reinforcing each stage towards the completed behaviour. With shaping, there is a reward for moving towards the desired behaviour; then a wait for an action that is closer to the desired behaviour; and finally, the wait for the actual behaviour, before offering the reinforcement.