

LEARNING BEHAVIOUR

Q. 1. Describe in brief the learning behaviour. (Garhwal 2001; Kanpur 2002)

What is learning? Describe different types of learning behaviour with the help of suitable examples. (Allahabad 1991, 92, 98; Kanpur 99)

Describe the phenomenon and types of imprinting among animals. (Garhwal 1999)

Give an account of imprinting behaviour. (Garhwal 2001)

Learning behaviour is the behaviour that is more or less permanently acquired or modified as a result of the experience of the individual. According to many ethologists, learning represents an adaptive change in behaviour by which we acquire new responses and new capacities. It is of the following types :

1. Habituation

Animals are able to learn not to respond to stimuli which have proven to be harmless. This phenomenon is known as **habituation** and is an example of true learning.

Examples :

- (a) A young puppy of 3-4 weeks of age will suddenly lift its ears and draw back from any loud and sudden noise. If such a noise is repeated and no harm is done to the puppy, it will respond less and less violently and finally gives no reaction at all.
- (b) *Hydra* living in a shallow dish of water will quickly retract its tentacles and shorten its body if the dish is tapped. But after a few such taps, their reaction slows down and ultimately may stop.
- (c) Snail, *Helix albolabris*, immediately withdraws its tentacles for a short time whenever the surface on which it is crawling is subjected to mechanical shocks. If such shocks of the same intensity are repeated at regular intervals, the snail learns the new behaviour of not withdrawing its tentacles on shock on the surface.
- (d) All animals are naturally frightened by sudden strong stimuli e.g., loud sounds, flashes of light, etc. All the animals gradually learn the behaviour

of disregarding and not being frightened by sudden rustling of leaves, thunders, snapping of twigs or sudden appearance of harmless animals.

2. Associative Learning

This is acquired through experience. It involves development of association between a stimulus and a response that had not existed previously. Most of the studies of this type of behaviour have been done in laboratories. As a result of these studies, three basic concepts of associative behaviour have evolved.

1. Classical conditioning
2. Operant conditioning
3. Trial and error

1. Classical Conditioning : This response is caused by a stimulus different from that which originally triggered it. Credit for understanding the mechanism of conditioned reflex goes to Russian physiologist **Ivan Pavlov**. He placed food in the mouth of a dog, where upon the dog salivated (unconditioned response). This was due to a simple reflex, made up of the taste buds, sensory neurons, association neurons and motor neurons. This caused the glands to salivate. Thereafter, each time before the dog was fed a bell was sounded. Eventually the dog salivated upon the sounding of the bell without being given the food. The dog learned to respond to a substituted stimulus. This behaviour is known as **conditioned response**.

Experiments on conditioning have taught us a good deal about the learning process in man. Conditioning occurs most rapidly when (1) the unconditioned stimulus and conditioned stimulus are present together frequently, (2) when there are no distractions, and (3) when a reward of some sort is given for successful performance of the conditioned response.

2. Operant or Instrumental Conditioning : In this type of conditioning, a single apparatus called the skinner box is used. It is a box containing an object which the animal can manipulate, such as a lever or bar that a rat can press or a disc or key that a pigeon can peck. The animal is placed in the box, the animal depresses the bar or pecks the disc, and a pellet of food drops into the box. The number of responses increases rapidly as a result of receiving the food. The apparatus can be designed so that food is dropped only after the lever is pressed a given number of times, or after a given period of time. Through the use of this technique animals have learned to perform a complex series of behaviour patterns such as acrobatics, intricate movements or manipulation of certain devices.

3. Trial and Error : Trial and error behaviour occurs when there is an unsatisfactory response to a stimulus. After responding in different ways, a satisfactory response may be attained. For example, a young toad may strike at all flying insects, some of which may have a disagreeable taste. By trial and error the toad will learn to distinguish between the edible and inedible insects. Another example is of a rat placed in a maze. By trying various passageways he eventually finds the one that leads to the food source. After a series of trials the rat will eventually learn to run the maze without error.

3. Latent Learning

It develops by latent learning which involves the association of indifferent stimuli or situations without patent reward. The motivation in latent learning seems simply to be a desire to get to know the surroundings (exploring).

Example : If a rat not being hungry is put in a maze, it explores through it, sniffing into corners, running down blind alleys, retracting its steps and so on. Though, it does not get reward at the end of maze, it learns the maze anyway, but very slowly. However, if food begins to appear, the same rat will be able to run the maze after only a few trials. Apparently, it was learning all along but it was latent learning which was not evident until it was activated by a patent reward.

Latent learning is no doubt adaptive, as for example, many young mammals benefit greatly from exploring the area around their protected den. While doing so, they are being cared by their parents, so they need not learn with a reward in mind. The result of such exploration by the young ones is that the chances of survival and finding food are increased because they operate in familiar surroundings.

Thus the young or adult becomes quickly adaptive as and when the need arises.

4. Insight or Reasoning

It is the complex and highest type of learning. In this case organism gains information about the environment without necessarily making any response. In other words, the organism will perceive the immediate situation, call upon past experience, deduce a logical solution, and makes response. It is essentially a problem solving situation. For example, when chimpanzee is put in a cage with boxes and a banana which cannot be reached by merely using arm. The chimpanzee will pile one box upon another and will climb up to reach the banana.

Thus insight is the ability to respond correctly without trial and error by applying previous learning to the new situation through a mental process.

5. Imprinting

Imprinting is a rapid type of learning and can occur only at early stages of behavioural development, at a time when the animal is experiencing its first encounters with the complex world outside the egg or the womb. It is a modified behaviour developed due to identification by one animal with another animal. Normally such identification occurs between individuals of the same species particularly between parents and children or kins in the groups, but it may also occur between members of two different species, e.g. between a bird and a human.

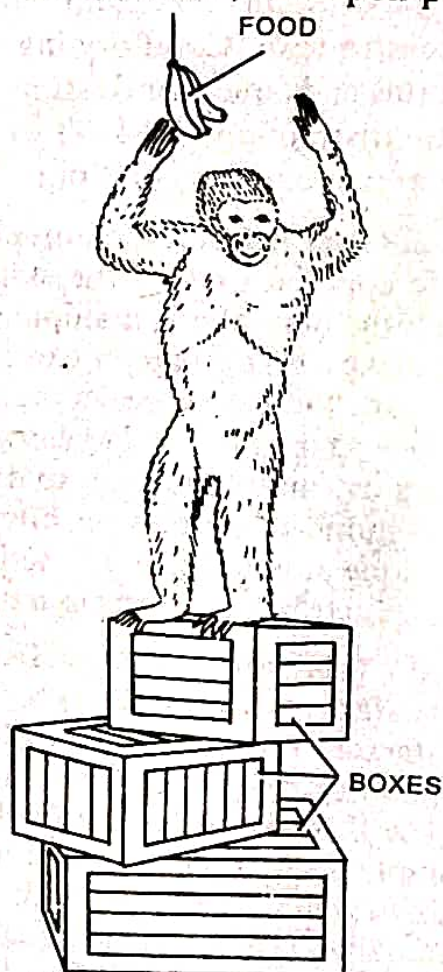


Fig. 1. Insight or reasoning behaviour in chimpanzee

Examples : Learning of species specific songs in birds and male choice behaviour are best examples of imprinting behaviours. The young ones of a species identify with adults of their own species and show the behaviour of following a particular adult, the mother. Some times a young animal of one species may identify with an adult of another species and then it shows the behaviour of following and depending on that individual. Now it may even ignore the members of its own species. For example, a dog reared by a human shows imprinting of human and a similar behaviour towards that human as a normal dog shows towards other dogs. Similarly, if a bird of a particular species is exposed to song of other species, it may become imprinted to that song.

Imprinting is species specific and occurs only during a particular sensitive period of animal's development. Imprinting cannot occur before or after the sensitive period. The imprinted behaviour is highly stable and is fixed for the whole life of the animal. Sensitive period for imprinting of different stimuli may be different even in one species. Social, sexual and parental behaviours are mostly imprinted.

Biological Significance of Imprinting

1. It provides an alternative to an innate the recognition of members of one's own species.
2. It enables the young animal to establish recognition of its parents and other members of its species.
3. Learning of characteristics of one's parent is involved both in sexual and filial imprinting.
4. In sexually dimorphic species, females are generally less susceptible to imprinting, innately recognising the members of the opposite sex.
5. From evolutionary point of view, in imprinting is important in a way that mating should occur only between the members of the same species.
6. It occurs in those species where the social organisation is governed by attachment to parents, to the family group and to the members of the opposite sex.
7. Imprinting improves with repeated trials and imprinted animals show normal type of discrimination and generalization about their imprinting object.
8. Imprinting does not require any reinforcement. It starts with an inherent tendency to approach conspicuous features of the environment.

6. Initiative Behaviours

These behaviour patterns are learnt by an animal through copying the behaviour of another animal of its own or of different species. Such behaviours are of following types.

1. Social Facilitation : Such behaviour pattern is performed only when an animal sees the same behaviour being performed by other individuals e.g. yawning in man.

2. Load Enhancement : These behaviours involve increase in tendency to respond to a stimulus as a consequence of seeing other individual's response to the

same stimulus. For example, green finch though having learnt to discriminate and avoid unpalatable food may start to eat it again on seeing another individual who has not learnt doing so.

3. True Imitation : These are restricted to higher mammals and primates including man. These involve learning different behaviour patterns by copying them from other individuals. For example, cats, weasels and other hunting animals learn complex but best suited methods of hunting and killing prey by observing and copying their parents.