

## 9. BEHAVIORAL APPROACHES

**9.1 PAVLOV:** Ivan Petrovich Pavlov was a Russian physiologist known primarily for his work in classical conditioning. From his childhood days Pavlov demonstrated intellectual brilliance along with an unusual energy which he named "the instinct for research". Inspired by the progressive ideas which D. I. Pisarev, the most eminent of the Russian literary critics of the 1860s and I. M. Sechenov, the father of Russian physiology, were spreading, Pavlov abandoned his religious career and decided to devote his life to science. In 1870 he enrolled in the physics and mathematics faculty at the University of Saint Petersburg to take the course in natural science. Ivan Pavlov devoted his life to the study of physiology and sciences, making several remarkable discoveries and ideas that were passed on from generation to generation. He won the Nobel Prize for Physiology or Medicine in 1904.

After completing his doctorate, Pavlov went to Germany where he studied in Leipzig with Carl Ludwig in the Heidenhain laboratories in Breslau. He remained there from 1884 to 1886. Heidenhain was studying digestion in dogs, using an exteriorized section of the stomach. However, Pavlov perfected the technique by overcoming the problem of maintaining the external nerve supply. The exteriorized section became known as the Heidenhain or Pavlov pouch.

Pavlov was invited to the Institute of Experimental Medicine in 1891 to organize and direct the Department of Physiology. Over a 45 year period, under his direction it became one of the most important centers of physiological research. While Pavlov directed the Department of Physiology at the Institute, he also transferred to the chair of physiology at the Medical Military Academy. This change in positions at the Academy occurred in 1895. He headed the physiology department at the Academy continuously for three decades. Also, starting in 1901, Pavlov was nominated for the Nobel Prize in Physiology or Medicine for four successive years. However, he did not win because his nominations were not specific to any discovery and were based on a variety of laboratory findings. In 1904, Pavlov was awarded the Nobel laureate"in recognition of his work on the physiology of digestion, through which knowledge on vital aspects of the subject has been transformed and enlarged"

### **Pavlovian Conditioning**

Pavlov (1902) started from the idea that there are some things that a dog does not need to learn. For example, dogs don't learn to salivate whenever they see food. This reflex is 'hard wired' into the dog. In behaviorist terms, it is an unconditioned

response (i.e. a stimulus-response connection that required no learning). In behaviorist terms, we write:

**Unconditioned Stimulus (Food) > Unconditioned Response (Salivate)**

Pavlov showed the existence of the unconditioned response by presenting a dog with a bowl of food and the measuring its salivary secretions (see image below). However, when Pavlov discovered that any object or event which the dogs learnt to **associate** with food (such as the lab assistant) would trigger the same response, he realized that he had made an important scientific discovery, and he devoted the rest of his career to studying this type of learning.

Pavlov knew that somehow, the dogs in his lab had learned to associate food with his lab assistant. This must have been learned, because at one point the dogs did not do it, and there came a point where they started, so their behavior had changed. A change in behavior of this type must be the result of learning.

In behaviorist terms, the lab assistant was originally a neutral stimulus. It is called neutral because it produces no response. What had happened was that the neutral stimulus (the lab assistant) had become associated with an unconditioned stimulus (food).

In his experiment, Pavlov used a bell as his neutral stimulus. Whenever he gave food to his dogs, he also rang a bell. After a number of repeats of this procedure, he tried the bell on its own. As you might expect, the bell on its own now caused an increase in salivation.

So the dog had learned an association between the bell and the food and a new behavior had been learnt. Because this response was learned (or conditioned), it is called a conditioned response. The neutral stimulus has become a conditioned stimulus.

Pavlov found that for associations to be made, the two stimuli had to be presented close together in time. He called this the law of temporal contiguity. If the time between the conditioned stimulus (bell) and unconditioned stimulus (food) is too great, then learning will not occur.

Pavlov and his studies of classical conditioning have become famous since his early work between 1890-1930. Classical conditioning is "classical" in that it is the first systematic study of basic laws of learning / conditioning.

### Summary

To summarize, classical conditioning (later developed by John Watson) involves learning to associate an unconditioned stimulus that already brings about a particular response (i.e. a reflex) with a new (conditioned) stimulus, so that the new stimulus brings about the same response.

Pavlov developed some rather unfriendly technical terms to describe this process. The unconditioned stimulus (or UCS) is the object or event that originally produces the reflexive / natural response.

The response to this is called the unconditioned response (or UCR). The neutral stimulus (NS) is a new stimulus that does not produce a response.

Once the neutral stimulus has become associated with the unconditioned stimulus, it becomes a conditioned stimulus (CS). The conditioned response (CR) is the response to the conditioned stimulus.

**9.2 BANDURA:** In social learning theory Albert Bandura (1977) states behavior is learned from the environment through the process of observational learning. Unlike Skinner, Bandura (1977) believes that humans are active information processors and think about the relationship between their behavior and its consequences. Observational learning could not occur unless cognitive processes were at work.

Children observe the people around them behaving in various ways. This is illustrated during the famous bobo doll experiment (Bandura, 1961). Individuals that are observed are called models. In society children are surrounded by many influential models, such as parents within the family, characters on children's TV, friends within their peer group and teachers at school. These models provide examples of behavior to observe and imitate, e.g. masculine and feminine, pro and anti-social etc.

Children pay attention to some of these people (models) and encode their behavior. At a later time they may imitate (i.e. copy) the behavior they have observed. They may do this regardless of whether the behavior is 'gender

appropriate' or not but there are a number of processes that make it more likely that a child will reproduce the behavior that its society deems appropriate for its sex.

First, the child is more likely to attend to and imitate those people it perceives as similar to itself. Consequently, it is more likely to imitate behavior modeled by people of the same sex.

Second, the people around the child will respond to the behavior it imitates with either reinforcement or punishment. If a child imitates a model's behavior and the consequences are rewarding, the child is likely to continue performing the behavior. If parent sees a little girl consoling her teddy bear and says "what a kind girl you are", this is rewarding for the child and makes it more likely that she will repeat the behavior. Her behavior has been reinforced (i.e. strengthened). Reinforcement can be external or internal and can be positive or negative.

If a child wants approval from parents or peers, this approval is an external reinforcement, but feeling happy about being approved of is an internal reinforcement. A child will behave in a way which it believes will earn approval because it desires approval.

Positive (or negative) reinforcement will have little impact if the reinforcement offered externally does not match with an individual's needs. Reinforcement can be positive or negative, but the important factor is that it will usually lead to a change in a person's behavior.

Third, the child will also take into account of what happens to other people when deciding whether or not to copy someone's actions. This is known as vicarious reinforcement.

This relates to attachment to specific models that possess qualities seen as rewarding. Children will have a number of models with whom they identify. These may be people in their immediate world, such as parents or elder siblings, or could be fantasy characters or people in the media. The motivation to identify with a particular model is that they have a quality which the individual would like to possess.

Identification occurs with another person (the model) and involves taking on (or adopting) observed behaviors, values, beliefs and attitudes of the person with whom you are identifying. The term identification as used by Social Learning Theory is similar to the Freudian term related to the Oedipus complex. For example, they both involve internalizing or adopting another person's behavior.

However, during the Oedipus complex the child can only identify with the same sex parent, whereas with Social Identity Theory the person (child or adult) can potentially identify with any other person. Identification is different to imitation as it may involve a number of behaviors being adopted whereas imitation usually involves copying a single behavior.

9.3 B.F. SKINNER: Operant Conditioning: Skinner is regarded as the father of Operant Conditioning, but his work was based on Thorndike's law of effect. Skinner introduced a new term into the Law of Effect - Reinforcement. Behavior which is reinforced tends to be repeated (i.e. strengthened); behavior which is not reinforced tends to die out-or be extinguished (i.e. weakened).

Skinner (1948) studied operant conditioning by conducting experiments using animals which he placed in a "*Skinner Box*" which was similar to Thorndike's puzzle box.

B.F. Skinner (1938) coined the term operant conditioning; it means roughly changing of behavior by the use of reinforcement which is given after the desired response. Skinner identified three types of responses or operant that can follow behavior.

- **Neutral operants:** responses from the environment that neither increase nor decrease the probability of a behavior being repeated.
- **Reinforcers:** Responses from the environment that increase the probability of a behavior being repeated. Reinforcers can be either positive or negative.
- **Punishers:** Response from the environment that decrease the likelihood of a behavior being repeated. Punishment weakens behavior.

We can all think of examples of how our own behavior has been affected by reinforcers and punishers. As a child you probably tried out a number of behaviors and learnt from their consequences.

For example, if when you were younger you tried smoking at school, and the chief consequence was that you got in with the crowd you always wanted to hang out

with, you would have been positively reinforced (i.e. rewarded) and would be likely to repeat the behavior. If, however, the main consequence was that you were caught, caned, suspended from school and your parents became involved you would most certainly have been punished, and you would consequently be much less likely to smoke now.

Reinforcement (strengthens behavior)

Skinner showed how **positive reinforcement** worked by placing a hungry rat in his Skinner box. The box contained a lever in the side and as the rat moved about the box it would accidentally knock the lever. Immediately it did so a food pellet would drop into a container next to the lever. The rats quickly learned to go straight to the lever after a few times of being put in the box. The consequence of receiving food if they pressed the lever ensured that they would repeat the action again and again.

Positive reinforcement strengthens a behavior by providing a consequence an individual finds rewarding. For example, if your teacher gives you £5 each time you complete your homework (i.e. a reward) you are more likely to repeat this behavior in the future, thus strengthening the behavior of completing your homework.

The removal of an unpleasant reinforcer can also strengthen behavior. This is known as **negative reinforcement** because it is the removal of an adverse stimulus which is 'rewarding' to the animal. Negative reinforcement strengthens behavior because it stops or removes an unpleasant experience.

**For example**, if you do not complete your homework you give your teacher £5. You will complete your homework to avoid paying £5, thus strengthening the behavior of completing your homework.

Skinner showed how negative reinforcement worked by placing a rat in his Skinner box and then subjecting it to an unpleasant electric current which caused it some discomfort. As the rat moved about the box it would accidentally knock the lever. Immediately it did so the electric current would be switched off. The rats quickly learned to go straight to the lever after a few times of being put in the box. The

consequence of escaping the electric current ensured that they would repeat the action again and again.

In fact Skinner even taught the rats to avoid the electric current by turning on a light just before the electric current came on. The rats soon learned to press the lever when the light came on because they knew that this would stop the electric current being switched on. These two learned responses are known as Escape Learning and Avoidance Learning.

### **Punishment (weakens behavior)**

Punishment is defined as the opposite of reinforcement since it is designed to weaken or eliminate a response rather than increase it.

Like reinforcement, punishment can work either by directly applying an unpleasant stimulus like a shock after a response or by removing a potentially rewarding stimulus, for instance, deducting someone's pocket money to punish undesirable behavior.

**Note:** It is not always easy to distinguish between punishment and negative reinforcement.

### **Behavior Modification**

Behavior modification is a set of therapies / techniques based on operant conditioning (Skinner, 1938, 1953). The main principle comprises changing environmental events that are related to a person's behavior. For example, the reinforcement of desired behaviors and ignoring or punishing undesired ones.

This is not as simple as it sounds — always reinforcing desired behavior, for example, is basically bribery.

There are different types of positive reinforcements. Primary reinforcement is when a reward strengthens a behavior by itself. Secondary reinforcement is when something strengthens a behavior because it leads to a primary reinforcer.

Examples of behavior modification therapy include token economy and behavior shaping

### **Token Economy**

The token economy is a system in which targeted behaviors are reinforced with tokens (secondary reinforcers) and are later exchanged for rewards (primary reinforcers).

Tokens can be in the form of fake money, buttons, poker chips, stickers, etc. While rewards can range anywhere from snacks to privileges/activities.

Token economy has been found to be very effective in managing psychiatric patients. However, the patients can become over reliant on the tokens, making it difficult for them once they leave prisons, hospital etc.

Teachers use token economy at primary school by giving young children stickers to reward good behavior.

### **Operant Conditioning in the Classroom**

Behavior modification therapy is much used in clinical and educational psychology, particularly with people with learning difficulties. In the conventional learning situation it applies largely to issues of class- and student management, rather than to learning content. It is very relevant to shaping skill performance.

A simple way of giving positive reinforcement in behavior modification is in providing compliments, approval, encouragement, and affirmation; a ratio of five compliments for every one complaint is generally seen as being the most effective in altering behavior in a desired manner.

### **Operant Conditioning Summary**

Looking at Skinner's classic studies on pigeons' behavior we can identify some of the major assumptions of behaviorists approach.



- Psychology should be seen as a science, to be studied in a scientific manner. Skinner's study of behavior in rats was conducted under carefully controlled laboratory conditions.
- Behaviorism is primarily concerned with observable behavior, as opposed to internal events like thinking and emotion. Note that Skinner did not say that the rats learnt to press a lever because they wanted food. He instead concentrated on describing the easily observed behavior that the rats acquired.
- The major influence on human behavior is learning from our environment. In the Skinner study, because food followed a particular behavior the rats learned to repeat that behavior, e.g. classical and operant conditioning.
- There is little difference between the learning that takes place in humans and that in other animals. Therefore research (e.g. classical conditioning) can be carried out on animals (Pavlov's dogs) as well as on humans (Little Albert). Skinner proposed that the way humans learn behavior is much the same as the way the rats learned to press a lever.

So, if your layperson's idea of psychology has always been of people in laboratories wearing white coats and watching hapless rats try to negotiate mazes in order to get to their dinner, then you are probably thinking of behavioral psychology.

Behaviorism and its offshoots tend to be among the most scientific of the psychological perspectives. The emphasis of behavioral psychology is on how we learn to behave in certain ways. We are all constantly learning new behaviors and how to modify our existing behavior. Behavioral psychology is the psychological approach that focuses on how this learning takes place.

#### Critical Evaluation

Operant conditioning can be used to explain a wide variety of behavior, from the process of learning, to addiction and language acquisition. It also has practical application (such as token economy) which can be applied in classrooms, prisons and psychiatric hospitals.

However, operant conditioning fails to take into account the role of inherited and cognitive factors in learning, and thus is an incomplete explanation of the learning process in humans and animals.

For example, Kohler (1924) found that primates often seem to solve problems in a flash of insight rather than by trial and error learning. Also, social learning theory (Bandura, 1977) suggests that humans can learn automatically through observation rather than through personal experience.

The use of animal research in operant conditioning studies also raises the issue of extrapolation. Some psychologists argue we cannot generalize from studies on animals to humans as their anatomy & physiology is different from humans, & they cannot think about their experiences and invoke reason, patience, memory or self-comfort.

**9.4 JOSEPH WOLPE:** Joseph Wolpe is best known for developing theories and experiments about what is now called systematic desensitization and assertiveness training. He came up with the concept now known as desensitization. Reasoning that much of our behavior, both good and bad, is learned, there was no reason why it could not be unlearned. Wolpe's initial experiments were with cats. These animals were given mild electric shocks accompanied by specific sounds and visual stimuli. Once the cats knew to equate the unpleasant shock with these images or sounds, the images and sounds created a feeling of fear. By gradually exposing the cats to these same sights and sounds—with food being given instead of shocks—the cats gradually "unlearned" their fear.

Those who suffer phobias—whether rational or unfounded—know that exposure to the object of fear can be crippling. Modern desensitization techniques include teaching patients relaxation techniques and gradually rehearsing stressful situations, until the patient is finally able to handle the fear-inducing objects.

Sometimes, as Wolpe found out, the problem may not be fear of the object per se, but a negative association coming from another source. In one instance, Wolpe tried to desensitize a woman to an inordinate fear of insects. The usual methods did not work; then Wolpe found out that the woman's husband, with whom she had not been getting along, was nicknamed for an insect. The key then was to work on the

marital problems. Once these had been dealt with, the woman's phobia gradually disappeared.

Wolpe's research also led to assertiveness training. As with desensitization, it requires a gradual move into new behaviors. People who have trouble asserting themselves are very much like phobics in that they fear confrontation and conflict, anger in others, and rejection. Assertiveness training gives them the framework to build their confidence, relax in formerly stressful situations, and conquer their fear.

Perhaps Wolpe's most important contribution to psychiatry was that he managed to combine two seemingly disparate disciplines. Many psychologists and psychiatrists felt that methods based in applied science lacked the humanistic touch they felt was so important when dealing with people. What Wolpe did was show that effective, compassionate therapy could be combined with empirical methods in a way that used both to their best advantage. Among his writings, his books *Psychotherapy by Reciprocal Inhibition* (1958) and *The Practice of Behavior Therapy* (1969) are considered classics in behavioral therapy studies.