
UNIT 2 OPERANT CONDITIONING BY SKINNER

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2.0 INTRODUCTION

".....the traditional view supports Hamlet's exclamation, '*How like a god!*' Pavlov, the behavioural scientist emphasised '*How like a dog!*' But that was a step forward.....".

These lines are from the book 'Beyond Freedom and Dignity' by Burrhus Frederick Skinner.

Did you smile as you read the above quotation? If you did, why? "Oh, the lines are humorous", you would say. Professor Skinner would object immediately. "It explains nothing", he would affirm, "lines cannot be humorous by themselves". If you modify your answer and state that you were simply tickled by the contrast of man as god and man as dog, Skinner would accuse you of being vague and mentalist.

Analyse how you have learnt to laugh in response to inconsistent stimuli, Skinner would suggest. What were the antecedents of your smile? What followed it? Did you, now or earlier, get any positive feedback after learning to laugh in response to incongruous ideas? Did the similarity of the letters used to spell 'god' and 'dog' add to your 'fun'? How did you learn that when similar things connote the opposites it is funny? Would you still laugh if you get an electric shock after every smile?

You learn to laugh, to cry, to love, to hate as a result of rewards and punishments, Skinner opines. You learn, from environmental feedback, every single habit and attitude that makes you what you are. You learn through getting rewards and punishments. The duty of a psychologist is to analyse behaviour and to identify the environmental contingencies that made your learning possible. Nothing is granted, nothing is given just because you are born a human. You must make the tortuous journey of learning at each single step of life. If, as a scientist, you can observe these elements of learning in an individual and analyse the antecedents and consequents of each unit of behaviour, Skinner asserts that you have moved a step forward.

2.1 OBJECTIVES

After going through this unit, you should be able to:

- 1 Discuss the concept of operant conditioning;
- 1 Describe Skinner's classic experiment on operant conditioning;
- 1 Explain the concept of functional analysis of behaviour;
- 1 Discuss skinner's view pertaining to human nature, psychopathology and social attitudes;
- 1 Discuss the application of operant conditioning in psychotherapeutic settings; and
- 1 Critically evaluate Skinner's operant conditioning approach to personality.

2.2 CONCEPT OF OPERANT BEHAVIOUR AND OPERANT CONDITIONING

B. F. Skinner's (1904 - 1990) was an American. His experiments on operant conditioning won him world wide fame. Skinner defined operant conditioning as the process of learning that elicits operant behaviour. So, what is operant behaviour?

According to Skinner, there are two types of behaviours, namely *respondent behaviour and operant behaviour*. You blink your eye in response to a flash of light. This reflexive behaviour is elicited directly by the environment. So this is respondent behaviour - spontaneous response to stimuli. But most of our behaviours are not so simply generated by the environment. You are not forced by the environment to look at this book, to talk, to sing, and to eat. These behaviours are emitted by you, the individual. Through such behaviours, you operate upon the environment. These are called operant behaviours.

You might argue that we eat because we are hungry, and so it cannot be operant behaviour. But eating as a process is not a direct response to hunger, as is gastric secretion. To eat, you have to locate the bread on the plate on your table, stretch your hand, grab it and bring the hand back to your mouth, put the bread in your mouth and chew and swallow. How did you know that you have to go through this complicated chain of behavioural units to reduce the uncomfortable sensation in

your stomach? You have seen from your experiences, that if you put certain kinds of things in your mouth and chew and swallow it, your hunger pang reduces. This had been a rewarding experience for you. You have also seen that the food does not automatically jump into your mouth. You have to pick it up and put it in your mouth. Thus, a series of rewards have taught you this process of finding, picking and eating. Again, you would not grab the food by hand if it were burning hot. You had learnt that the pain of touching something hot is unpleasant. The punishment had taught you to pick it with a fork. Skinner claims that we learn most of our operant behaviours through this kind of consequences. If the consequence is favourable, we tend to repeat the behaviour. If the consequence is unpleasant we tend to refrain from doing it.

2.3 SKINNER'S EXPERIMENT ON CLASSICAL CONDITIONING

Skinner as a young research scholar at Harvard University conducted a series of experiments on animals to formalise his idea of operant conditioning. Some of you may have heard of the '*Skinner Box*', which is a sort of mini laboratory for acquiring operant behaviour. In this section you would learn how Skinner conducted his experiments with the help of this box and what its implications are for behaviour modification.

2.3.1 The Experiment

The Skinner box is a simple box used to condition operant behaviour in animals. This box usually contains a lever, or some other device which must be manipulated to get some reward. In his classic experiment Skinner placed a semi-starved rat in the box. There was a lever which, after being pressed, released a mechanism to deliver a pellet of food to the rat. Initially, the rat is engaged in a number of random behaviours like walking, sniffing and scratching. None of these helped to get the food. At some point of time, the rat accidentally hit the lever and the food was delivered. Of course, for the semi-starved rat, this was a big reward. Skinner observed that after a few accidental manipulations of the lever, the rat started spending more time near the lever, and then deliberately pressed the lever whenever it was hungry. So now pressing the lever became a new operant for the rat.

Skinner further noted that if the pressing of the lever did not deliver food any longer, the operant behaviour by the rat decreased and gradually stopped altogether. This is known as *experimental extinction* of operant conditioning. You may note its similarity with the concept of extinction in classical conditioning that you learnt in the Unit 1.

2.3.2 Interpretations of the Results of the Experiment

You have now learnt about Skinner's experiment, but what does it imply? In Skinnerian terms, every random behaviour that the rat demonstrated within the box was also some kind of operant behaviour. But these have been conditioned in the rat prior to your working upon it. The rat had been rewarded earlier for each of these behaviours. For example, earlier, it had scratched a paper packet and food had spilled from it. But now, within the Skinner box, none of them succeeded to reduce its hunger. Then accidentally another behaviour (pressing of lever), which was completely new for the rat, brought about the reward. The food served as the reinforcer to strengthen this new operant. As in successive trials, the newly acquired behaviour continued to be rewarded, the probability of its occurrence also increased.

Skinner developed his thesis of environmental determination of behaviour. The first pressing of the lever by the rat was accidental. But this accidental behaviour could be '*shaped*' into a relatively long lasting modification in behavioural repertoire by manipulating its consequences in a specified direction. One significant point in Skinner's view is that *learning is determined by the consequences of the behaviour and not by the antecedents*. Antecedents provide the context, but consequents really decide whether the behaviour would be conditioned or not. You may readily understand that this is a rather provocative statement and opens up a large number of possibilities for manipulation of human behaviour.

2.3.3 Measuring Operant Behaviour

Quantification of operant behaviour was crucial to Skinner's work. He needed to demonstrate that through appropriate use of reward and punishment you can actually increase the probability of occurrence of a conditioned operant behaviour. Therefore Skinner introduced the *rate of occurrence of the target behaviour* as the measure of operant conditioning. He simply counted how many times the learnt behaviour has taken place within a given time. In fact, he used the *cumulative frequency* of the operant behaviour as the final indicator. If you put it in a graphical form you will readily see whether the probability of the occurrence of that behaviour has actually increased over time.

Take for example, the lever pressing behaviour of the rat which it learnt in three hours. Let us say we divide the total time in three equal units, one hour each. In the first hour the rat was more engaged in random behaviour. At the end of the first hour it accidentally pressed the lever and food was delivered. During this second hour, it also pressed the lever three times more. Then it started staying close to the lever, and in the third and final hour pressed the lever deliberately ten times.

When the rat pressed the lever 10 times it clearly indicated that the rat has learnt that behaviour which Skinner wanted it to learn – that is, pressing the lever when hungry in order to satiate the hunger.

Self Assessment Questions 1

1) What is an operant?

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2) Tick the correct answer:

- a) Skinner's theory states that if a behaviour is rewarded its probability of occurrence is
 - (i) stabilized (ii) increased (iii) decreased (iii) tending to zero
- b) The Skinner Box is a box where the rat is
 - (i) fed and tended (ii) observed for natural behaviour (iii) taught to follow instructions (iv) taught new behaviour
- c) Skinner suggested that as a measure of operant conditioning we should use
 - (i) the number of reinforcements given for training (ii) the number of errors committed (iii) the number of frequency of occurrence of the behaviour (iv) none of the above.

2.4 FUNCTIONAL ANALYSIS OF BEHAVIOUR

Skinner stated that Psychology is as yet unprepared for theory building as we do not have enough data to justify our theory. Therefore he suggested that instead of proposing a readymade theory of personality we should go for *Functional Analysis of Behaviour*. To conduct functional analysis of behaviour you must intensively observe the behaviour of the organism and conduct repeated experiments to establish the relationship of a behaviour with its antecedents and consequents. If during this observation, you hypothesize any inner state like 'thinking' or 'feeling', Skinner would disapprove them as redundant. You are supposed to observe only what you can measure in terms of rate of occurrence.

Thus, according to Skinner, the functional analysis of behaviour must be done in terms of two observable things – the operant defined as specific observable behaviour and the consequence that lies outside the organism in the environment.

Skinner's main interest in functional analysis of behaviour lies in its potential to divide complex chunks of behaviours in manageable smaller units. For example, your act of reading this paragraph. You can divide it in reading of letters, words and sentences. The discrete straight and curve lines make the letters. You had learnt it through earlier reward punishment process. As you read letters, you may form words. Similarly each word joins to make a meaningful sentence. All these have been conditioned into you in your childhood through manipulating consequences. So if you report your difficulty in reading this paragraph, based on functional analysis of behaviour you would analyse which part is problematic for you, letters, words, sentences and with appropriate reinforcement condition you can correct the problem and shape it your desired way. In fact, this is exactly what you would need to do with a child with learning disorder.

2.4.1 Shaping

Have you ever seen a potter making an earthen doll? Have you seen how he takes fistfuls of wet earth, makes a clumsy elongated mass around a bamboo or wooden frame, and then with the skill and quick pressure of his fingers gradually brings out the intended shape? You may not recognise at first what he is working about, but soon you recognise the head and body, the hands and legs separately. You may observe him working on the doll's face. You would see the specific parts emerging from the mass - the nose, the forehead, the cheek, the chin, the lips, even the parting of the hair. You recognize the eyes too. Soon it is a face - waiting to be coloured. The potter, through his skill, slowly but surely approximates the final shape by changing small aspects of the original shapeless lump. According to Skinner, animals and human beings behaviour are also shaped by the environment.

Shaping is an extremely important concept in operant conditioning as it refers to the application of its principles of behaviour modification. Shaping means modification of the organism's behaviour to the experimenter's desired end. Shaping does not occur all in one go, Skinner says. It takes place only through '*successive approximations*'. Suppose you are trying to modify a child's behaviour by selectively rewarding the response desired by you. Before the ultimate desired behaviour is enacted, the child's usually engaged in numerous other behaviours which may be considered as steps to the final behaviour. They are close to the target, but not the target per se. If these approximate target behaviours are rewarded, shaping is facilitated.

Skinner discovered this principle of successive approximation rather accidentally. He was conditioning a pigeon to swipe a ball with its beak movement which in turn would release a food magazine. The pigeon was not lucky enough. After waiting for the accidental success to happen for a long time Skinner was bored. So, just casually, he decided to reward any behaviour that might lead toward the target behaviour, even if it is as simple as glancing at the ball. As these approximate behaviours were successively rewarded, to Skinner's surprise, the total process was quickened. Very soon 'the ball was caroming off the walls of the box as if the pigeon had been a champion squash player' (Skinner, 1938, p. 38). Rewarding of the simpler step has automatically led to the next higher step and so on. (This is successive approximation)

How would you know which behaviours are approximating the target? Skinner proposed that you need to do the functional analysis of behaviour for understanding and controlling shaping. This analysis will help you to identify the elements of the final behaviour as well as the possible successive steps to it. For each small step you must identify the antecedents and consequents. The antecedent will lead to the next step and the consequent will reinforce it. This kind of breaking down of behaviour into *antecedent - behaviour - consequent* chain is famously known as *ABC technique*.

As each step is rewarded (or punished), the learner automatically proceeds to the next step. Thus through successive approximation to the target she finally reaches the desired behaviour. This is, according to Skinner, the fundamental principle of shaping. Furthermore, for shaping, you need to deliver reinforcements and punishments in an intelligently pre-determined manner. In the following subsections you would learn about different types of reinforcements and punishments.

2.4.2 Reinforcements in Operant Conditioning and its Schedules

In the Unit 1 on Classical conditioning you have been acquainted with the concept of reinforcement. It is defined as those events, which through their absence or presence, increase the probability of the target behaviour. In the context of operant conditioning also, reinforcement has a significant role. However, reinforcement takes on somewhat different meanings in classical and operant conditioning. In classical conditioning, reinforcement is identical with unconditioned stimulus. For Pavlov's dog, food was the UCS as well as positive reinforcer, and electric shock was the UCS and the negative reinforcer. But in operant conditioning, the concept of CS and UCS are not applicable, as we are concerned with shaping of target behaviour. So here reinforcement comes separately as a consequence of desirable behaviour. It simply serves to strengthen the response. The food pellet emerges only if the lever is pressed, and not otherwise. So it is contingent upon operant behaviour and strengthens the same.

Positive and negative reinforcement: As in classical conditioning, reinforcements can be positive and negative in operant conditioning also. Positive reinforcers are those pleasurable consequences of behaviour that make the behaviour more probable. Example is praise from the teacher after being able to tell the square root of 169. Negative reinforcers are those unpleasurable consequences of not producing the target behaviour that makes the behaviour more probable. For example, the teacher asks you the square root of 169 and looks with fiery eyes at you. He will continue to do it till you give the correct answer. By producing the desired response, you terminate the look - the negative reinforcer.

Primary and secondary reinforcement: Reinforcements may be primary – that is concerned with our basic needs. Or it can be secondary or conditioned, acquiring its reinforcement value only through association with the primary reinforcer. Food is a primary reinforcer. But if you make me work for money or for sweet words, you are using the secondary or conditioned reinforcer. We can neither eat nor drink nor sleep money; yet we are all reinforced by money because of its symbolic value through association. The famous tale of King Midas actually highlights the significance of primary reinforcer (food and water) over the secondary one (gold).

Schedules of reinforcement: You may wonder whether in operant conditioning we *always* reinforce the ‘correct’ behaviour? Does it work properly? What would happen if we decide to stop it? Indeed, you might think of your son whom you reinforce with a toffee for ‘being a good boy’, and after a few days, he just loses interest in the candy. He would neither be a good boy, nor would he care for your bribe. Can’t the same happen with rats and pigeons? The Skinnerians also attended to this problem and suggested that proper conditioning depends on intelligent scheduling of reinforcement.

You can schedule reinforcement for your operant conditioning experiment in various ways. Basically, it can be *Continuous or Intermittent*. In continuous reinforcement, the target behaviour is reinforced every time it occurs. Just as you always gave a candy to your son if he behaved. Intermittent or partial reinforcement means you reinforce the target behaviour at times, and not always.

What will be the basis of intermittent reinforcement? It may be based on *interval of time or ratio of responses*. Each of these again may be subdivided in *fixed or variable* scheduling.

Let us now consider the nature and example of each subtype of schedule of intermittent reinforcement.

Interval schedule: Interval scheduling means that reinforcement would be given after a certain time interval following the target behaviour. In *fixed interval schedule of reinforcement*, for example, you may decide to reinforce the rat’s first lever pressing response after every fifteen minutes. It is possible that within the fifteen minutes the rat had pressed the lever twice. But you wait for the fifteen minutes to pass and give the food pellet only after the first response after fifteen minutes. Again you wait for fifteen minutes irrespective of the rat’s behaviour. But you reward again the first desired response that occurs after the fifteen minutes had elapsed.

In *variable interval schedule of reinforcement*, the deliverance of the food pellet is varied randomly around an average time interval. For example, you may decide to reinforce the target behaviour of your subject around an average of 12 minutes interval. You can reinforce at a random schedule of 5, 12, 7, 20 and 16 minutes, the average of these being 12. So you reward the first target response, then wait for 5 minutes and reinforce the immediate next target response. Then you wait for 12 minutes and again reinforce the next immediate target response that takes place and so on. You can go for a completely different set of random variations if you wish.

Ratio Schedule: Ratio schedule refers to reinforcing the target behaviour after a specified number of behaviours. In *fixed ratio schedule*, you reinforce the target response after, say every five correct response, irrespective of the time elapsed. In *variable ratio schedule*, as in variable interval schedule, you reinforce the target behaviour after an unpredictable number of responses, but around an average number of responses.

Rate of learning in different schedules: The rate of learning differs in these different schedules. In fixed interval schedules, greater target behaviour is observed near the end of the schedule, but the rate falls down immediately after the delivery of the reward. The variable interval schedule produces a slow steady rate of response. In general, ratio scheduling produces better response than interval scheduling. Fixed ratio schedule results in a steady and high rate of response. The variable ratio scheduling has been found to be the best as it maintains a high level of expectation and thus produces a very high and steady rate of response.

Examples of different schedules of reinforcement from real life: Let us consider some examples from our school days to understand the application of various schedules of reinforcements in human life. Everyday and every time you greet a teacher by saying 'Good morning, teacher', you get a reply 'Good morning'. This is *continuous reinforcement*. You know this pleasant interaction is always there for you if you behave. Now let us try a few examples of intermittent or partial reinforcement. Remember the happiness you felt during the last ten minutes of the class? The bell for the end of class would sound after every one hour, and you would be released for a break. This is an example of *fixed interval reinforcement*. Suppose you love Madam B's classes, but she takes your class only when some regular teacher is absent. However, every week, usually two regular teachers are absent, and you get about 2 to 3 weekly classes of Madam B on an average. This is *variable interval reinforcement*.

Now for ratio scheduling. Consider your examination time. You have some questions which do not allow part marking. You have to answer all three components of the question and you get either 1 or 0 depending on whether you have done them all correct or not. So every three correct responses you earn a reward of one mark. This is a *fixed ratio reinforcement*.

For *variable ratio reinforcement*, consider the most knowledgeable but moody teacher you had. On some occasions, he/she would simply grunt if you give the correct answer. But sometimes, when you happen to satisfy he/her by a brilliant stroke of idea, he/she would beam all over and heap praises on you. Getting a word of appreciation from her makes you feel special that day. Since he/her praise means a lot to you and you never know which answer would satisfy her most, you always try to give your best to her.

Outside the school premise and in the adult world, gambling is one example of variable ratio reinforcement. So are adventures in unpredictable conditions. Have you seen Charlie Chaplin in 'Gold rush' or Omar Sharif in 'Mackenna's Gold'? Did you ever wonder why people went at all for such indefinite prospects? An answer lies in the effectiveness of variable ratio scheduling of reinforcements. You know that out of thousands, some excavations would be rewarded with heaps of gold. And since there is no fixed rule, who knows, you might be the chosen one.

2.4.3 Punishment

All of us have been punished sometime or other in school for being inattentive or disobedient. How far those punishments have been successful in controlling the unruly behaviour? In the parlance of operant conditioning, punishment is that event or condition which, if consistently delivered following a response, will reduce the likelihood of the occurrence of that response. Each time you talk with your friend during the class you would be required to remain standing for five minutes. The teacher expects that this will reduce the probability of your chatting with your friend

while the class is going on. So *punishment is an aversive consequent of undesired behaviour*.

Like reinforcement, punishment can be positive or negative. Positive punishment is the situation when an unpleasant thing, presented as a consequence of a behaviour, decreases the probability of that behaviour. If you scold your child for her misbehaviour it is positive punishment. Negative punishment occurs when the withdrawal or removal of a pleasant thing as a consequence of a specific behaviour decreases the probability of that behaviour. If you do not greet your child your usual smiling way because of her misbehaviour, it is negative punishment.

You have already learnt about negative reinforcement which also uses aversive stimuli. Are negative reinforcement and punishment synonymous? *Negative reinforcement is used to elicit a desired behaviour*. Pavlov wanted the dog to learn withdrawal of paw. The shock as an unpleasant stimulus was given and the dog learnt to withdraw the paw. So in this case the shock was a negative reinforcer as it increased the probability of paw withdrawal. *Punishment, on the other hand, is used to stop undesirable behaviour*. If we suppose that walking of the dog in the laboratory is an undesirable behaviour and deliver the shock every time the dog starts walking, expectedly the dog's probability of walking would be reduced. In this instance, shock will be punishment. In other words, when negative reinforcer is given, you act in a desired way to stop the unpleasant condition. When punishment is given you associate it with whatever undesirable thing you did before, and refrain from repeating it.

Remember that negative reinforcement and punishment differ depending on their purpose. The same unpleasant stimulus of electric shock can be used as a negative reinforcer for one purpose and punishment for another.

Controversy remains as to how effective punishment is. Traditional child rearing practices are often punishment based. 'Spare the rod and spoil the child', they say. But don't we often see that the abused child becomes seasoned to beatings and continues with the disruptive behaviour? Skinner himself was not too much in favour of punishment. He considered positive reinforcement as the best technique for training, and considered punishment to have too much side effects. Some recent researchers however have reported that punishment delivered without hostility and to a measured amount in a consistent manner may bring about desired result without much harm.

2.4.4 Generalisation and Discrimination in Operant Conditioning

As in case of classical conditioning, you can have your subject's behaviour generalised to situations similar to the conditioned one. You learnt to wash your hands before taking food at home, and you generalised it at school. In fact, if it were not so, we had to condition each and every operant conditioning separately for every context.

Discrimination is the opposite of generalisation. Through manipulation of consequences, we learn to respond to one stimulus which is rewarded / punished and not to a similar stimulus which is not rewarded / not punished. For example, you talk and laugh when Mr. M. is taking classes, but you think twice before moving your neck when Mr. N. is in charge.

Self Assessment Questions 2

- 1) Tick the correct answer.
 - a) Functional analysis of behaviour means
 - (i) specifying the functions of a behaviour (ii) a mathematical model of behaviour (iii) establishing a relationship between organism and environment (iv) establishing a relationship of behaviour with antecedents and consequences
 - b) Shaping takes place through
 - (i) successive approximation (ii) functional analysis of behaviour (iii) operant conditioning (iv) practice
 - c) Intermittent positive reinforcement means
 - (i) reinforcing every correct response only (ii) reinforcing some of the correct responses and not all (iii) reinforcing some correct and some incorrect responses (iv) Suddenly stopping giving reinforcements.
- 2) Write True (T) or False (F)
 - a) Gambling is an example of variable interval schedule of reinforcement. ()
 - b) ABC analysis stands for Appropriate Behaviour Control. ()
 - c) Variable ratio scheduling is the best technique for learning through reinforcement. ()
 - d) Negative punishment means punishing very hard. ()

2.5 OPERANT CONDITIONING AND HUMAN BEHAVIOUR

In the following sections you would learn about application of principles of operant conditioning in real life.

2.5.1 Skinner's View of Human Nature

Skinner considers the world as a large version of the Skinner box within which 'technology of behaviour' plays its role. You learn everything here through reinforcements and punishments. Skinner, in his book 'Beyond freedom and dignity' (1971) presents his view of human existence as a series of learning processes. You may wonder what 'personality' is from Skinner's point of view? Skinner does not use the word 'personality'. But he speaks on human nature in general. According to Skinner, human being is completely determined by his conditioning history. There is nothing called free will. One does what one is reinforced to do. There is also no point in debating whether man is rational or irrational. Both are inner states, and hence outside the domain of scientific analysis of behaviour.

Skinner opines that human behaviour is changeable, and this change constitutes what we think as 'personality growth'. It does not occur from within, but from manipulation of reinforcements from outside. There is no mystery in human existence. It is completely objective and knowable through scientific investigation. We know a person so far we know his/her environmental contingencies.

Skinner also comments in his book that usually we think that those who manipulate human behaviour are evil persons. Those who manipulate for evil purpose may be condemned. But manipulation of human behaviour is something which cannot be avoided. Indeed, we have no other alternative than to be controlled and manipulated.

2.5.2 Psychopathology from Operant Conditioning Perspective

From Skinnerian perspective, psychopathology is the resultant of faulty conditioning with improper reinforcement. No individual is sick; only he/she has not learnt to elicit the right behaviour at the right moment.

Take the case of compulsion. Suppose the client needs to wash his/her hands with soap thirty times a day, otherwise he/she does not feel clean. Skinner would assume that cleaning is a correct response in some situations. But for this particular client, cleaning has been conditioned erroneously to situations where it is actually not required and has been overgeneralised.

Depression from Skinner's perspective is absence of reinforcement from the environment. The quick fatigueability of depression has been explained by Skinner as low rate of response as there had been too much withdrawal of positive reinforcers.

Some of you may have seen children and adolescents with conduct disorder. Imagine a boy who demands a costly video game. When his/her parents object to the unreasonable demand, he/she threatens to destroy his/her school books. After some efforts to pacify him/her, the parents buy the game. Similar extortions continue. At one point she/he demands a costly mobile with many features. Unless she/he gets it, she/he would burn the wardrobe, she/he threatens. The distraught parents yield again. Now, she/he is a big boy, and she/he wants a car for his/her own use. If she/he is not given a car he/she would create problems for her/his mother. From she/he a Skinnerian perspective such cases may be explained by reinforcement of the wrong behaviour. Every time, from his/her childhood days, aggressive outburst and threat of violence had won him his desired object. Her antisocial trend has been positively reinforced.

2.5.3 Operant Conditioning of Social Attitudes

Do you wear a particular ring whenever you go to face an interview? "My little luck" – you say indulgently. It may sober you up to learn that Skinner observed development of 'superstition' in pigeons. He found that if reinforcements are completely unpredictable and any random behaviour is accidentally reinforced, the pigeon may develop an association between the behaviour and the reward. Suppose a pigeon was flapping its wings when the food pellet was given. If it accidentally occurs a few times, the pigeon would start flapping its wings whenever it is hungry.

Do you believe in the ideals of a specific political party? You think you have enough justification? Skinner would say that it is not your much advocated rational self, but a mere series of conditioning that made you declare your affiliation to those 'ideals'. If you are repeatedly rewarded for chanting a particular slogan, you will soon start 'believing' in that slogan and chant it frequently.

2.6 APPLICATIONS OF SKINNERIAN PRINCIPLES TO PSYCHOTHERAPY

You have already learnt how psychopathology has been conceptualised by Skinner as faulty learning. From this premise, you may readily conclude that psychotherapy would consist of unlearning of the faulty conditioning and relearning of correct operants through appropriate reinforcement. In fact, the major bulk of behaviour therapy depends on Skinnerian principles.

You may observe the applications of Skinner's principles in behaviour therapy at two stages. One is in setting and defining the targets of modification, and the second is in executing the change process itself.

The basic requisite of behaviour therapy is to identify the short term and long term targets by analysing the maladaptive behaviour. Essentially, you need to conduct the functional analysis of behaviour for this purpose. If a child is brought to you for aggressive outbursts, you need to make a thorough record of her behaviour from herself and from his/her informants. You need to identify the contexts of his/her unsocialised aggressive behaviour – and identify the feedback he/she gets from her social environment. Once these are identified you break down the total behaviour in successive stages from easy to difficult. You approach the small and easy targets first, reinforce the adaptive responses and through the principles of shaping reach the final goal of changing her behaviour.

What kind of reinforcements should be given? While the reinforcements can be of different kinds – verbal and non-verbal, one particular mode of reinforcement has been closely linked with Skinnerian principle. This is known as 'token economy'. This is most applicable for children and in-patients under strict hospital supervision, in other words for those whose reinforcements can be maintained within a structured environment. In this method, plastic or paper tokens are given to the person for desirable behaviour. Tokens are charged from the person for undesirable behaviour. For example, during lunch time you get 2 tokens for standing in line, 1 token for taking the plate and napkin in the correct order, 3 tokens for eating cleanly and so on. If you grab food out of turn 3 tokens are taken back. With the tokens you can buy candy, pictures, an hour out with a friend and other things you enjoy. An extensive application of token economy was conducted by Atthowe and Krasner (1968) in a hospital set up and considerable behaviour gains were reported. Token economy is still found useful in training hyperactive children, children with mental retardation and developmental disorders.

Self Assessment Questions 3

1) What is 'technology of behaviour'?

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2) Write 'True' (T) or 'False' (F)

- a) Skinner thinks that human beings can escape manipulation by environment due to their free will.

()

- b) In behaviour therapy easier and smaller targets should be approached before harder targets. ()
- c) Token economy is best applicable under structured condition. ()

2.7 CRITICAL ANALYSIS OF SKINNER'S APPROACH TO PERSONALITY

Even within behavioural paradigm, Skinner's approach has been criticized for excessive emphasis on consequence and less on the stimulus. However, Skinner has been critiqued mainly from the cognitive perspective. Noam Chomsky (1959) severely criticized Skinner's thesis by saying that his experiments were inapplicable to human beings, and the approach was 'scientistic', but not scientific. Chomsky also accused Skinner of supporting a totalitarian political face. That cognitive learning does exist was also proved through Edward Tolman's (1932) famous experiment on latent learning that demonstrates that learning is possible even without any reinforcer. The biological critics have observed that certain species are predisposed to learn certain types of things. Everything cannot be taught to every species.

These criticisms limit the generalisability of Skinner's approach, but do not downgrade its impact in applied psychology. Indeed, if we use the Skinnerian principles judiciously, behavioural gains may be obtained in many areas of educational and clinical psychology.

2.8 LET US SUM UP

In this unit we have learnt about the concept of operant behaviour and its conditioning. We now know about the basic experiment of Skinner where rats were conditioned to press a lever to obtain food, and this was done by manipulation of reinforcement. We have also learnt Skinnerian principles of functional analysis of behaviour and shaping through successive approximation. The nature of reinforcements and their schedules have been discussed in detail. We have learnt about punishment and the distinction between punishment and negative reinforcement. We have discussed Skinner's view of human nature as completely determined by reinforcements from the environment. We have also discussed the nature of psychopathology and social attitude formation from Skinner's point of view. We have learnt how Skinnerian principles can be used in Behaviour therapy, particularly in the context of token economy and time out procedures. Finally we engaged in a critical evaluation of Skinner's point of view.

2.9 GLOSSARY

- | | |
|---|---|
| Operant Conditioning | : Operant conditioning refers to a learning paradigm where the desired behaviour is taught to the organism by discriminatively reinforcing the correct responses. |
| Functional Analysis of behaviour | : In operant conditioning paradigm, functional analysis of behaviour is the breaking down of the complex behaviour in small units and to |

Shaping	relate each unit of behaviour to its antecedents and consequences. : Shaping refers to the conditioning of a desired behaviour through the technique of successive approximation. Here the behaviours approximating the final target are successively reinforced.
Schedule of Reinforcement	: In operant conditioning paradigm, schedule of reinforcement refers to the rate of reinforcement delivered in response to the correct responses.
Continuous Reinforcement	: In operant conditioning paradigm, continuous reinforcement refers to delivering the reinforcement every time the correct response occurs.
Intermittent Reinforcement	: In operant conditioning paradigm, intermittent reinforcement refers to the non-continuous reinforcement of desired behaviour based on a pre-designed schedule. It can be based on time interval or number of correct responses. It can also be at a fixed rate or a variable rate.
Punishment	: In operant conditioning paradigm, punishment is the negative consequence of undesired behaviour delivered by the experimenter to reduce probability of occurrence of that behaviour.
Token Economy	: A technique in behaviour therapy where the principles of reinforcement are used. Tokens are given to the clients for desired behaviour and taken away for undesired behaviour. Probability of occurrence of desired behaviour is expected as it becomes associated with positive outcome of getting tokens.

2.10 UNIT END QUESTIONS

- 1) Describe with the help of Skinner's classic experiment the nature and principles of operant conditioning.
- 2) Discuss the role of Functional Analysis of Behaviour in operant conditioning.
- 3) Define shaping. Illustrate in this context the principle of successive approximation.
- 4) Discuss with suitable examples the different schedules of reinforcement.
- 5) Distinguish between negative reinforcement and punishment with examples from everyday life.
- 6) Discuss the Skinnerian view of human nature.
- 7) Discuss from Skinnerian perspective the genesis of psychopathology and its treatment.

2.11 SUGGESTED READINGS

Hall, C.S., Lindzey, G., Campbell, J. B. (1997) *Theories of Personality*. New York: Wiley.

Hjelle, L. A. & Zeigler, D. J. (1981) *Personality Theories: Basic Assumptions, Research and Applications*. Auckland: McGraw Hill.

Liebert, R. M. & Spiegler, M. D. (1987) *Personality: Strategies and Issues*. Homewood, IL: The Dorsey Press.

Internet source: <http://www.youtube.com/watch?v=lpG_NM88fjY>

<<http://www.youtube.com/watch?v=mm5FGrQEYBY>>

2.12 ANSWERS TO SELF ASSESSMENT QUESTIONS

Self Assessment Questions 1

- 1) An operant is a behaviour that is emitted by the individual to operate upon the environment. According to Skinner, these behaviours are learnt through conditioning.
- 2) a) increased, b) taught new behaviour, c) the number of frequency of occurrence of the behaviour.

Self Assessment Questions 2

- 1) a) establishing a relationship of behaviour with antecedents and consequences
b) successive approximation c) reinforcing some of the correct responses and not all
- 2) a) False b) False c) True d) False.

Self Assessment Questions 3

- 1) Technology of behaviour is a Skinnerian term for manipulation of human behaviour to reach a desired end.
- 2) a) False b) True c) True.