

Course Title: Introduction to Psychology

Learning

In Psychology a relevant or permanent change in behavior is called learning.

The following are some of the major figures associated with learning and the behavioral school of psychology.

- Edward Thorndike (Trial and Error /Law of effect Theory)
- John B. Watson (School of Thought Behaviorism)
- Ivan Pavlov (Classical Conditioning)
- B.F. Skinner (Operant Conditioning)
- Albert Bandura (Social Learning Theory / Observational Learning)

Psychology defines learning as a relatively permanent change in behavior as a result of experience. The psychology of learning focuses on a range of topics related to how people learn and interact with their environments.

One of the first thinkers to study how learning influences behavior, was the psychologist **John B. Watson** who suggested that all behaviors are a result of the learning process. The school of thought that emerged from Watson's work was known **as behaviorism**. The behavioral school of thought proposed studying internal thoughts, memories, and other mental processes was too subjective. Psychology, the behaviorists believed, should be the scientific study of observable behavior. Behaviorism thrived during the first half of the twentieth-century and contributed a great deal to our understanding of some important learning processes.

Nature and characteristics of learning

1. Learning is the change in behavior.
2. Learning is a continuous life long process.
3. Learning is a universal process.
4. Learning is purposive and goal directed.
5. Learning involves reconstruction of experiences.
6. Learning is the product of activity and environment.
7. Learning is transferable from one situation to another.
8. Learning helps in the proper growth and development.
9. Learning helps in the balanced development of the personality.
10. Learning helps in proper adjustment.

Basic Types of Learning

1. Motor learning:

Most of activities used in our daily life refer to motor activities. The individual has to learn them in order to maintain his regular life,

Example: Walking, running, skating, driving, climbing, etc. All these activities involve the muscular coordination are motor learning.

2. Verbal learning:

Verbal learning involves the person's own association, experiences and relations with the words, things situations and environment that have been learned.

This type of learning involves the language we speak. We use words for communication signs, pictures, symbols, figures, sounds, are the tools used in such activities.

3. Concept learning:

It is the form of learning which requires higher order mental processes like thinking, reasoning, intelligence, etc. we learn different concepts from childhood.

Example: When we see a dog and attach the term '**dog**', we learn that the word dog refers to a particular animal. Concept learning involves two processes, viz. abstraction and generalization. This learning is very useful in recognizing, identifying things.

4. Discrimination learning:

Learning to differentiate between stimuli and showing an appropriate response to these stimuli is called discrimination learning.

Example: Sound horns of different vehicles like bus, car, ambulance, etc.

5. Learning of principles:

Individuals learn certain principles related to science, mathematics, grammar, etc. in order to manage their work effectively. These principles always show the relationship between two or more concepts.

Example: Formulas, laws, associations, correlations, etc.

6. Problem solving:

This is a higher order learning process. This learning requires the use of cognitive abilities-such as thinking, reasoning, observation, imagination, generalization, etc. This is very useful to overcome difficult problems encountered by the people.

Trial and Error Method of Learning – Thorndike (1874-1949)

THEORY

Learning means establishing proper bond between stimulus and response. This theory is also called connectionism. According to Thorndike Learning is a mechanical process. We learn from mistakes. The correct responses are rewarded and they are stamped in.

- Learning is a process of acquiring and stabilizing successful or rewarded responses and of eliminating the unsuccessful or unrewarded responses.
- Education is the process of acquiring and stabilizing successful habit pattern through rewarded responses.

Thorndike's Experiment

He used a 24 hours hungry cat. The cat was fully fed 24 hours back. He used a puzzle box which had a door that could be opened by a device – by pressing a lever, the latch or pulling a string. The box had ventilation. The hungry cat was put inside the box and a fish was placed outside. The cat tried to come out by random movements. These random movements and actions are called exploratory movements. By chance it happens to press the lever – the door opens, it comes out and eats the fish. The cat is starved again and put in the box and the whole thing is repeated many times. The cat learns the method to open the door. Now if it is put in the box, it can easily open the door. It is called trial and error.

This is chance of learning or S.R. (Stimulus Response) learning. This is also called Associative learning.

Thorndike's laws of learning

Thorndike has described the following laws of learning.

1. Law of Readiness
2. Law of Exercise
3. Law of Effect

Law of Readiness

According to this law, if the learner is mentally and physically prepared to learn a task, he will learn it quickly. On the contrary, the individual who is not ready to learn is more likely to forget it soon.

Law of Exercise

This law is also known as law of frequency. Frequency refers to number of repetitions of learning. Thorndike believed that repeated exercising of a response strengthens its connection with stimulus.

This aspect refers to law of use and disuse, which explains that, anything not in use will perish/todie. So also if the response is not repeated, its bond with stimulus gets weakened. This is also according to the statement that ‘practice makes man perfect’. doing something repeatedly improves learning.

Law of Effect

This law states that when a connection is accomplished by satisfying effect- its strength is increased. By this, Thorndike meant that the probability of its occurrence is greater.

Example: Rewards always strengthen connections between stimuli and responses, and on the other hand, punishment weakens connections.

How learning process brings change in behaviors.

Learning can bring about of behavioral changes.

1. Mental Changes
2. Physiological changes
3. Psychological changes

1. Mental changes mean changes based on intelligence, education and experience, such a change modifies one`s thought and power of reasoning. e.g the individual develops narrow-mindedness, broad-mindedness, prejudice, aggression and competitive spirit.

- (a) **Modifies** A person thought/thing that makes partial or minor changes in behavior/things.
- (b) **Narrow-mindedness** A type of person who is not willing to listen or tolerate to others.
- (c) **Broad-mindedness** A type of person who is willing to accept different behaviors of others.
- (d) **Prejudice** Any thought or opinion that is not based on reason or actual experience against individual or group.
- (e) **Competitive spirit** Drive to win, desire to succeed and be the best.

Example: both players were talented but the one is with the most competitive spirit.

2. Physiological changes relate to physical and muscular changes; tissues and muscles adapt to the learned skill and get used to work. The physical elasticity acquired in exercise, games and gymnastics etc.

3. Psychological changes Include changes in feelings and emotions. The learning process continues throughout life. The individual continues learning as long as he lives. Though his priorities keep changing with the passage of time, the ingredients of learning (observation, repetition and reinforcement) remain the same at each stage.

Majors Types of Learning

Learning by Conditioning:

- **Classical Conditioning**
- **Operant conditioning**

Conditioning: An essential requirement of the environment which we behave or response.

Classical Conditioning

Classical conditioning (also known as Pavlovian conditioning) is learning through association and was discovered by Pavlov, a Russian physiologist. In simple terms two stimuli are linked together to produce a new learned response in a person or animal.

This method of conditioning got its name from the fact that, it is a kind of learning situation that existed in the early classical experiments of Ivan P Pavlov (1849-1936), Russian physiologist who was awarded Nobel Prize, in 1904 for his experiments.

Definition

Classical conditioning is a learning process in which an association is made between a previously neutral stimulus and a stimulus that naturally evokes a response.

For example: In **Pavlov's classic experiment**, the smell of food was the naturally occurring stimulus that was paired with the previously neutral ringing of the bell. Once an association had been made between the two, the sound of the bell alone could lead to a response.

Stimulus

A physical energy source that has an effect on a sense organs, thus producing a response. Any feature of the environment that affects behavior.

Example: In Pavlov's experiments food was a stimulus.

Response

The action, behavior or reaction triggered by a stimulus is called response. The behavior elicited by the stimulus.

Example: In Pavlov's experiments salivation was a response.

Conditioned Stimulus (CS)

In classical conditioning, the conditioned stimulus is a previously neutral stimulus that, after becoming associated with the unconditioned stimulus, eventually comes to trigger a conditioned response.

For example: Suppose that the smell of food is an unconditioned stimulus and a feeling of hunger is the unconditioned response. Now, imagine that when you smelled your favorite food, you also heard the sound of a whistle. While the whistle is unrelated to the smell of the food, if the sound of the whistle was paired multiple times with the smell, the sound alone would eventually trigger the conditioned response. In this case, the sound of the whistle is the conditioned stimulus.

A feature of the environment that has an effect through its association with a U.C.S. E.g., Pavlov's dog learned to salivate at the sound of a bell.

Unconditioned Stimulus (UCS)

Feature of the environment that causes a natural reflex action. In the learning process known as classical conditioning, the unconditioned stimulus (UCS) is one that unconditionally, naturally, and automatically triggers a response.

For example: When you smell one of your favorite foods, you may immediately feel hungry. In this example, the smell of the food is the unconditioned stimulus.

In Ivan Pavlov's classic experiment with dogs, the smell of food was the unconditioned stimulus.

Conditioned Response (CR)

The behavior elicited by the (C.S). In classical conditioning, the conditioned response is the learned response to the previously neutral stimulus.

For example: let's suppose that the smell of food is an unconditioned stimulus, a feeling of hunger in response to the smell is an unconditioned response, and the sound of a whistle when you smell the food is the conditioned stimulus. The conditioned response would be feeling hungry when you heard the sound of the whistle

Unconditioned Response (UCR)

In classical conditioning, an unconditioned response is an unlearned response that occurs naturally in reaction to the unconditioned stimulus.

For example: If the smell of food is the unconditioned stimulus, the feeling of hunger in response to the smell of food is the unconditioned response.

Principles of Classical Conditioning

1. Acquisition

Acquisition is the initial stage of learning when a response is first established and gradually strengthened. During the acquisition phase of classical conditioning, a neutral stimulus is repeatedly paired with an unconditioned stimulus. As you may recall, an unconditioned stimulus is something that naturally and automatically triggers a response without any learning. After an association is made, the subject will begin to emit a behavior in response to the previously neutral stimulus, which is now known as a conditioned stimulus. It is at this point that we can say that the response has been acquired.

For example: Imagine that you are conditioning a dog to salivate in response to the sound of a bell. You repeatedly pair the presentation of food with the sound of the bell. You can say the response has been acquired as soon as the dog begins to salivate in response to the bell tone.

Once the response has been established, you can gradually reinforce the salivation response to make sure the behavior is well learned.

2. Extinction

Extinction is when the occurrences of a conditioned response decreases or disappears. In classical conditioning, this happens when a conditioned stimulus is no longer paired with an unconditioned stimulus.

For example: If the smell of food (UCS) had been paired with the sound of a whistle (CS), it would eventually come to evoke the conditioned response of hunger. However, if the unconditioned stimulus (the smell of food) were no longer paired with the conditioned stimulus (Bell), eventually the conditioned response (hunger) would disappear.

3. Spontaneous Recovery

Sometimes a learned response can suddenly reemerge even after a period of extinction. Spontaneous recovery is the reappearance of the conditioned response after a rest period or period of lessened response.

For example: Imagine that after training a dog to salivate to the sound of a bell, you stop reinforcing the behavior and the response eventually becomes extinct. After a rest period during which the conditioned stimulus is not presented, you suddenly ring the bell and the animal spontaneously recovers the previously learned response.

If the conditioned stimulus and unconditioned stimulus are no longer associated, extinction will occur very rapidly after a spontaneous recovery.

4. Generalization

Stimulus generalization is the tendency for the conditioned stimulus to evoke similar responses after the response has been conditioned.

For example: If a dog has been conditioned to salivate at the sound of a bell, the animal may also exhibit the same response to stimuli that are similar to the conditioned stimulus.

In John B. Watson's famous Little Albert Experiment, for example, a small child was conditioned to fear a white rat. The child demonstrated stimulus generalization by also exhibiting fear in response to other fuzzy white objects including stuffed toys and Watson own hair.

5. Discrimination

The opposite side of generalization. The ability of the subject to tell the difference between two similar stimuli.

Discrimination is the ability to differentiate between a conditioned stimulus and other stimuli that have not been paired with an unconditioned stimulus.

For example: If a bell tone were the conditioned stimulus, discrimination would involve being able to tell the difference between the bell tone and other similar sounds. Because the subject is able to distinguish between these stimuli, he or she will only respond when the conditioned stimulus is presented.

Classical conditioning basically involves forming an association between two stimuli resulting in a learned response. There are three basic phases of this process:

Phase 1: Before Conditioning

The first part of the classical conditioning process requires a naturally occurring stimulus that will automatically elicit a response. Salivating in response to the smell of food is a good example of a naturally occurring stimulus.

During this phase of the processes, the unconditioned stimulus (UCS) results in an unconditioned response (UCR).

For example, presenting food (the UCS) naturally and automatically triggers a salivation response (the UCR).

At this point, there is also a neutral stimulus that produces no effect - yet. It isn't until this neutral stimulus is paired with the UCS that it will come to evoke a response.

Let's take a closer look at the two critical components of this phase of classical conditioning.

The unconditioned stimulus is one that unconditionally, naturally, and automatically triggers a response. For example, when you smell one of your favorite foods, you may immediately feel very hungry. In this example, the smell of the food is the unconditioned stimulus.

The unconditioned response is the unlearned response that occurs naturally in response to the unconditioned stimulus. In our example, the feeling of hunger in response to the smell of food is the unconditioned response.

Phase 2: During Conditioning

During the second phase of the classical conditioning process, the previously neutral stimulus is repeatedly paired with the unconditioned stimulus. As a result of this pairing, an association between the previously neutral stimulus and the UCS is formed. At this point, the once neutral stimulus becomes known as the conditioned stimulus (CS).

The subject has now been conditioned to respond to this stimulus.

The conditioned stimulus is previously neutral stimulus that, after becoming associated with the unconditioned stimulus, eventually comes to trigger a conditioned response. In our earlier example, suppose that when you smelled your favorite food, you also heard the sound of a whistle. While the whistle is unrelated to the smell of the food, if the sound of the whistle was paired multiple times with the smell, the sound would eventually trigger the conditioned response. In this case, the sound of the whistle is the conditioned stimulus.

Phase 3: After Conditioning

Once the association has been made between the UCS and the CS, presenting the conditioned stimulus alone will come to evoke a response even without the unconditioned stimulus. The resulting response is known as the conditioned response (CR).

The conditioned response is the learned response to the previously neutral stimulus. In our example, the conditioned response would be feeling hungry when you heard the sound of the whistle.

Operant Conditioning

Is a type of learning in which behaviors are modified in the presence of specific stimuli to earn rewards or avoid punishment.

A learning process in which the probability of response occurring is increased or decreased due to reinforcement or punishment. First studied by Edward Thorndike and later by **B.F. Skinner**, **Skinner** described how reinforcement could lead to increases in behaviors where punishment would result in decreases. This theory is also known as 'Instrumental conditioning', because the animals use certain operations or actions as instruments to find solution.

B. F. Skinner was an American psychologist best-known for his influence on behaviorism. Skinner referred to his own philosophy as 'radical behaviorism' and suggested that the concept of free will was simply an illusion. All human action, he instead believed, was the direct result of conditioning.

"The consequences of behavior determine the probability that the behavior will occur again" -B. F. Skinner

Skinner Box

Skinner conducted his famous experiment by placing a hungry rat in a box called after his name 'Skinner box'. This box was containing a lever and a food tray in a corner of the box. It was so arranged, that the animal was free to move inside the box, but the pressing of the lever would get the animal a pellet of food in the tray as reinforcement.

Definition

Operant conditioning (sometimes referred to as instrumental conditioning) is a method of learning that occurs through rewards and punishments for behavior.

For example: When a lab rat presses a blue button, he receives a food pellet as a reward, but when he presses the red button he receives a mild electric shock. As a result, he learns to press the blue button but avoid the red button.

Principles of Operant Conditioning

There are several key concepts in operant conditioning.

Reinforcement

- A stimulus that follows a behavior and increases the likelihood, that the behavior will be repeated.
- Reinforcement is any event that strengthens or increases the behavior it follows.

There are two kinds of reinforcement:

Positive reinforcement

- Any event whose presence increases the likelihood that ongoing behavior will occur again and again.
- Any favorable events or outcomes that are presented after the behavior. In situations that reflect positive reinforcement, a response or behavior is strengthened by the addition of something, such as praise or a direct reward.

For example: After performing a good speech in front of the audience, student received clapping from the audience. This acts as a positive reinforcement inspiring the student to try out for more performance speeches or roles.

Negative reinforcement

- Any event whose reduction termination increases the likelihood, that ongoing behavior will be repeated again.
- Involve the removal of an unfavorable events or outcomes after the showing of a behavior. In these situations, a response is strengthened by the removal of something considered unpleasant.

For example: If a child acts out during a shopping trip, parents might give him a treat to get him to be quiet. Because parents have positively reinforced the misbehavior, he will probably be more likely to act out again in the future in order to receive another treat.

In both of these cases of reinforcement, the behavior increases.

Punishment in Operant Conditioning

- A stimulus that follows a behavior and decreases the likelihood, that the behavior will not be repeated.
- Punishment is any event whose presence decreases the likelihood that ongoing behavior will not be repeated

There are two kinds of punishment:

Positive punishment, sometimes referred to as punishment by application, presents an unfavorable event or outcome in order to weaken the response it follows.

For example: If the student comes late in the classroom and teacher just warns him strictly that he will never come late again otherwise he will be struck-off from the class.

Negative punishment, also known as punishment by removal, occurs when a favorable event or outcome is removed after a behavior occurs.

For example: If a boy does not prepare his homework as he was asked, so his parents take away his phone for the rest of the day. This is an example of a negative punishment in which a positive stimulus is taken away.

Differences between Operant and Classical Conditioning

- In classical conditioning, the conditional behavior (CR) is triggered by the particular stimulus (CS) and is therefore called an elicited behavior. Operant behavior is an emitted behavior in the sense that it occurs in a situation containing many stimuli and seems to be initiated by the organism. In a sense the subject chooses when and how to respond.
- In classical conditioning, behavior (CR) is affected by something that occurs before the behavior (the CS-UCS pairing). In contrast, the operant response is affected by what happens after the behavior that is by its consequences.