

# Learning

**learning** is generally defined as the relatively permanent change in knowledge or behavior that is the result of experience. When we hear the word *learning*, most of us think of studying and school. We think about subjects or skills we intend to master, such as algebra, Spanish, chemistry, etc. But, **learning is not limited to school and could be deliberate or unintentional**. We learn every day of our lives. Babies learn to kick their legs to make the mobile move, teenagers learn the lyrics of their favorite songs, we learn to avoid hot stoves, to find our way home, etc.

## Theories of Learning

### 1. The Behavioural Theory

**Behaviorism** is a theory of learning that is concerned with **observable behavior**, that is concrete (rather than thinking and feelings that are abstract). According to behaviorists, the **mind is a black box**, and learning occurs only when a correct response is demonstrated following the presentation of a specific environmental stimulus.

Two early leaders in the behaviorist school are John B. Watson and B. F. Skinner. These psychologists focused their research entirely on behavior, excluding mental processes. For behaviorists, learning is a process of **conditioning** which means that *the response to a specific stimulus can be learned*.

#### 1.1. Classical Conditioning

In the early part of the 20th century, Russian physiologist **Ivan Pavlov (1849–1936)** was studying the digestive system of dogs when he noticed an interesting behavioral phenomenon: The dogs began to salivate as soon as the lab technicians who normally fed them entered the room. Pavlov realized that the dogs were salivating because they knew that they were about to be fed; the dogs had begun to associate the arrival of the technicians with the food that soon followed their appearance in the room.

With his team of researchers, Pavlov began studying this process in more detail. He conducted a series of experiments in which, over a number of trials, dogs were exposed to a sound immediately before receiving food. He systematically controlled the onset of the sound and the timing of the delivery of the food, and recorded the amount of the dogs' salivation. Initially the dogs salivated only when they saw or smelled the food, but after several pairings of the sound and the food, the dogs began to salivate as soon as they heard the sound. The animals had learned to associate the sound with the food that followed.

Pavlov had identified a fundamental associative learning process called classical conditioning. **Classical conditioning** refers to *learning that occurs when a neutral stimulus becomes associated with a stimulus that naturally produces a behavior*. After the association is learned, the previously neutral stimulus is sufficient to produce the behavior.

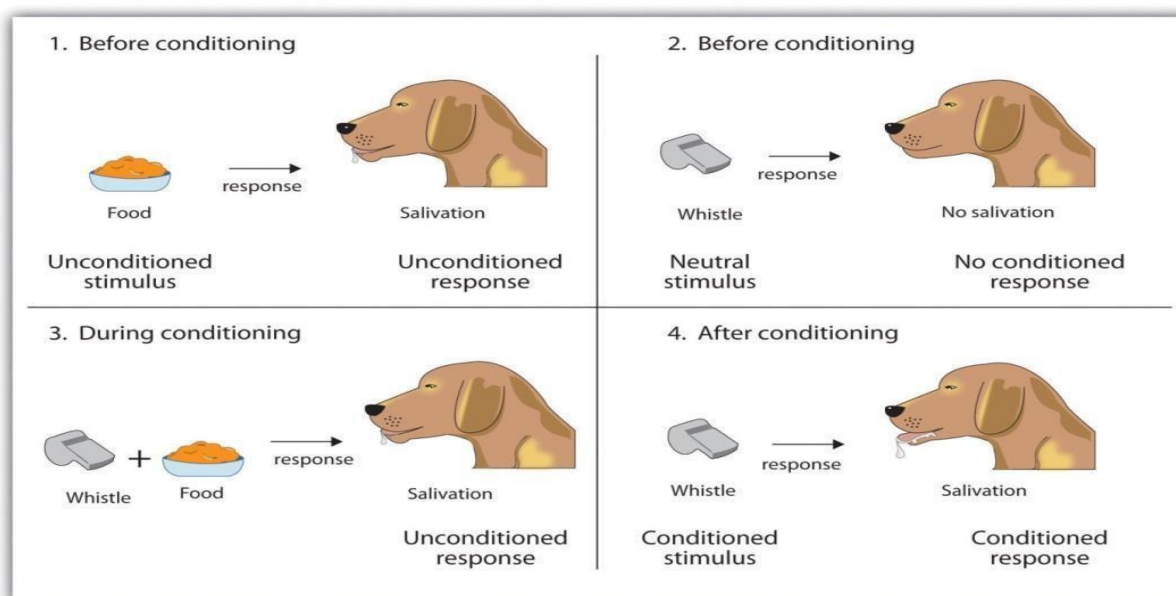
Psychologists use specific terms to identify the stimuli and the responses in classical conditioning.

- **Unconditioned stimulus (US)** is something that triggers a naturally occurring response.
- **Unconditioned response (UR)** is the naturally occurring response that follows the unconditioned stimulus. Some examples of the US-UR pairs include:

- Sneezing (UR) to pepper (US)
- Shivering (UR) to cold (US)
- Blinking (UR) to a bright light (US)

\*Notice how all of these responses are reflexive and unlearned, which is why we refer to them as being unconditioned.

- **Neutral stimulus (NS)** is something that does not naturally produce a response.
- **Conditioned stimulus (CS)** is a once neutral stimulus that has been repeatedly presented prior to the unconditioned stimulus and evokes a similar response as the unconditioned stimulus.
- **Conditioned Response (CR)** is the acquired response to the conditioned stimulus, which was the formerly neutral stimulus.



**1.2. Operant Conditioning** is learning that occurs based on the consequences of behavior and can involve the learning of new actions. It is based on the principle of **law and effect**, relying mostly on **reinforcement** and **punishment**.

**Reinforcement:** There are two ways of reinforcing a behavior:

- *Positive reinforcement* strengthens a response by presenting something pleasant after the response.  
e.g. giving a child praise for completing his homework is positive reinforcement.
- *Negative reinforcement* strengthens a response by reducing or removing something unpleasant.  
e.g. taking aspirin to reduce the pain of a headache is negative reinforcement.

**Punishment:** There are two ways to punish a behavior:

- *Positive punishment* weakens a response by presenting something unpleasant after the response.

e.g. A child who is given housework after fighting with a sibling.

- *Negative punishment* weakens a response by reducing or removing something pleasant.

e.g. A child who loses out on the opportunity to go to recess after getting a poor grade, a type of negative punishment, is less likely to repeat these behaviors.

Operant conditioning term	Description	Outcome	Example
Positive reinforcement	Add or increase a pleasant stimulus	Behavior is strengthened	Giving a student a prize after he gets an A on a test
Negative reinforcement	Reduce or remove an unpleasant stimulus	Behavior is strengthened	Taking painkillers that eliminate pain increases the likelihood that you will take painkillers again
Positive punishment	Present or add an unpleasant stimulus	Behavior is weakened	Giving a student extra homework after she misbehaves in class
Negative punishment	Reduce or remove a pleasant stimulus	Behavior is weakened	Taking away a teen's computer after he misses curfew

## 2. The Cognitive Theory

This theory of learning, also referred to as the *cognitivist theory* or *cognitivism*, is a general approach that views **learning as an active mental process of acquiring, remembering and using knowledge**. Advocates of this theory hold that the outcome of learning is a **change in knowledge, not an observable behavior**. This theory views the mind as an “information processor” (a computer). It emphasizes **retention** and **recall** through the use of effective teaching practices. In other words, the information comes as an input which should be organized, sequenced and presented in a manner that is understandable and meaningful to the learner. Then, the mind of the learner processes the information using prior knowledge to build new information. Ultimately, the information is stored to be retrieved later, and that could be best achieved through the use of effective teaching practices such as creating interest and attaining attention through the use of visual aid (posters) to cue the memory of students. The cognitive theory believes that reinforcement and punishment affect learners’ motivation, rather than directly cause behavior.