verywell mind

Classical vs. Operant Conditioning

2 Important Concepts Central to Behavioral Psychology

By Kendra Cherry | Reviewed by David Susman, PhD on June 04, 2020

Table of Contents

Classical and operant conditioning are two important concepts central to behavioral psychology. While both result in learning, the processes are quite different. To understand how each of these behavior modification techniques can be used, it is also essential to understand how classical and operant conditioning differ from one another.

Verywell / Joshua Seong

Overview

Let's start by looking at some of the most basic differences.

Classical Conditioning

- First described by Ivan Pavlov, a Russian physiologist
- Focuses on involuntary, automatic behaviors

- Involves placing a neutral signal before a reflex

Operant Conditioning

- First described by B. F. Skinner, an American psychologist
- Involves applying reinforcement or punishment after a behavior
- Focuses on strengthening or weakening voluntary behaviors

Classical Conditioning

Even if you are not a psychology student, you have probably at least heard about Pavlov's dogs. In his famous experiment, Ivan Pavlov noticed dogs began to salivate in response to a tone after the sound had repeatedly been paired with presenting food. Pavlov quickly realized that this was a learned response and set out to further investigate the conditioning process.

Classical conditioning is a process that involves creating an association between a naturally existing stimulus and a previously neutral one. Sounds confusing, but let's break it down:

> The classical conditioning process involves pairing a previously neutral stimulus (such a the sound of a bell) with an unconditioned stimulus (the taste of food).

This unconditioned stimulus naturally and automatically triggers salivating as a response to the food, which is known as the unconditioned response. After associating the neutral stimulus and the unconditioned stimulus, the sound of the bell alone will start to evoke salivating as a response.

The sound of the bell is now known as the conditioned stimulus and salivating in response to the bell is known as the conditioned response.

> Imagine a dog that salivates when it sees food. The animal does this automatically. He does not need to be trained to perform this behavior; it simply occurs naturally. The food is the naturally occurring stimulus. If you started to ring a bell every time you presented the dog with food, an association would be formed between the food and the bell. Eventually the bell alone, a.k.a. the conditioned stimulus would come to evoke the salivation response.

Classical conditioning is much more than just a basic term used to describe a method of learning; it can also explain how many behaviors form that can impact your health. Consider how a bad habit might form. Even though you have been working out and eating healthy, nighttime overeating keeps tripping up your dieting efforts.

Thanks to classical conditioning, you might have developed the habit of heading to the kitchen for a snack every time a commercial comes on while you are watching your favorite television program.

While commercial breaks were once a neutral stimulus, repeated pairing with an unconditioned stimulus (having a delicious snack) has turned the commercials into a conditioned stimulus. Now every time you see a commercial, you crave a sweet treat.

Related: Classical Conditioning: In Depth

Operant Conditioning

Operant conditioning (or instrumental conditioning) focuses on using either reinforcement or punishment to increase or decrease a behavior. Through this process, an association is formed between the behavior and the consequences of that behavior.

Imagine that a trainer is trying to teach a dog to fetch a ball. When the dog successfully chases and picks up the ball, the dog receives praise as a reward. When the animal fails to retrieve the ball, the trainer withholds the praise. Eventually, the dog forms an association between the behavior of fetching the ball and receiving the desired reward.

> For example, imagine that a schoolteacher punishes a student for talking out of turn by not letting the student go outside for recess. As a result, the student forms an associatic between the behavior (talking out of turn) and the consequence (not being able to go outside for recess). As a result, the problematic behavior decreases.

A number of factors can influence how quickly a response is learned and the strength of the response. How often the response is reinforced, known as a schedule of reinforcement, can play an important role in how quickly the behavior is learned and how strong the response becomes. The type of reinforcer used can also have an impact on the response.

For example, while a variable-ratio schedule will result in a high and steady rate of response, a variable-interval schedule will lead to a slow and steady response rate.

In addition to being used to train people and animals to engage in new behaviors, operant conditioning can also be used to help people eliminate unwanted ones. Using a system of rewards and punishments, people can learn to overcome bad habits that might have a negative impact on their health such as smoking or overeating.

Related: Operant Conditioning: In Depth

Classical vs. Operant Conditioning

One of the simplest ways to remember the differences between classical and operant conditioning is to focus on whether the behavior is involuntary or voluntary.

> Classical conditioning involves associating an involuntary response and a stimulus, whi operant conditioning is about associating a voluntary behavior and a consequence.

In operant conditioning, the learner is also rewarded with incentives, while classical conditioning involves no such enticements. Also, remember that classical conditioning is passive on the part of the learner, while operant conditioning requires the learner to actively participate and perform some type of action in order to be rewarded or punished.

For operant conditioning to work, the subject must first display a behavior that can then be either rewarded or punished. Classical conditioning, on the other hand, involves forming an association with some sort of already naturally occurring event.

Today, both classical and operant conditioning are utilized for a variety of purposes by teachers, parents, psychologists, animal trainers, and many others. In animal conditioning, a trainer might utilize classical conditioning by repeatedly pairing the sound of a clicker with the taste of food. Eventually, the sound of the clicker alone will begin to produce the same response that the taste of food would.

In a classroom setting, a teacher might utilize operant conditioning by offering tokens as rewards for good behavior. Students can then turn in these tokens to receive some type of reward, such as a treat or extra playtime. In each of these instances, the goal of conditioning is to produce some sort of change in behavior.

A Word From Verywell

Classical conditioning and operant conditioning are both important learning concepts that originated in behavioral psychology. While these two types of conditioning share some similarities, it is important to understand some of the key differences in order to best determine which approach is best for certain learning situations.

Article Sources

Verywell Mind uses only high-quality sources, including peer-reviewed studies, to support the facts within our articles. Read our editorial process to learn more about how we fact-check and keep our content accurate, reliable, and trustworthy.

1. Dunsmoor JE, Murphy GL. Categories, concepts, and conditioning: how humans generalize fear. Trends Cogn Sci (Regul Ed). 2015;19(2):73-7. doi:10.1016/j.tics.2014.12.003

2. Segers E, Beckers T, Geurts H, Claes L, Danckaerts M, Van der oord S. Working Memory and Reinforcement Schedule Jointly Determine Reinforcement Learning in Children: Potential Implications for Behavioral Parent Training. Front Psychol. 2018;9:394. doi:10.3389/fpsyg.2018.00394

3. Franzoi S. Psychology: A Discovery Experience. South-Western CENGAGE Learning. 2015.

4. Boutelle KN, Bouton ME. Implications of learning theory for developing programs to decrease overeating. Appetite. 2015;93:62-74. doi:10.1016/j.appet.2015.05.013

5. Silverman K, Jarvis BP, Jessel J, Lopez AA. Incentives and Motivation. Transl Issues Psychol Sci. 2016;2(2):97-100. doi:10.1037/tps0000073

6. Hulac D, Benson N, et al. Using Variable Interval Reinforcement Schedules to Support Students in the Classroom: An Introduction With Illustrative Examples. Journal of Educational Research and Practice. 2016;6(1):90–96.

Additional Reading

- McSweeney, FK & Murphy, ES. The Wiley Blackwell Handbook of Operant and Classical

Conditioning. Oxford: John Wiley & Sons; 2014.

- Nevid, JS. Essentials of Psychology: Concepts and Applications. Belmont, CA: Wadsworth; 2012.