Encyclopedia of School Psychology

Conditioning: Classical And Operant

Classical conditioning, also known as respondent conditioning, is defined as a procedure in which a previously neutral stimulus comes to elicit a response after it is paired with a stimulus that automatically elicits that response (Martin & Pear, 2003). The principle of classical conditioning is based on the fact that certain stimuli (unconditioned stimuli) automatically elicit certain responses without learning (unconditioned responses). Humans exhibit many reflexes that are not learned behaviors. For example, when exposed to our favorite foods, we salivate and when exposed to high temperatures, we sweat. These are natural, unconditioned responses to natural, unconditioned stimuli found in the environment. However, when these unconditioned stimuli are paired with neutral stimuli, the neutral stimuli will begin to elicit the same response as the unconditioned stimuli and will become conditioned stimuli. This sounds confusing, but a review of the most recognized classical conditioning experiment, Ivan Pavlov's study that employed a dog and a bell, will help. Pavlov found that a dog would naturally salivate when exposed to meat powder. The meat powder was the unconditioned stimuli, and the resulting salivation was the unconditioned response. To condition the ringing of the bell to elicit salivation, Pavlov began ringing the bell as the dog was exposed to the meat powder. The result of this pairing was that the dog began to salivate upon hearing the ringing bell, even when not exposed to the meat powder. The ringing bell had become a conditioned stimuli that evoked the same response (salivation) as the exposure to the meat powder (unconditioned stimuli).

With operant conditioning, behavior is modified by environmental consequences, such as peer attention, removal of aversive stimuli, and punishment. Behaviors operate on the environment to generate consequences and, in turn, are controlled by those consequences. Behaviors can be reinforced or punished, which will result in the repetition of the behaviors or in the termination of behaviors, respectively. If reinforcement is delivered following a behavior, the behavior is more likely to be repeated. However, if punishment is delivered following a behavior, the behavior is not likely to be repeated. An example of operant conditioning is putting gas into a car. When an individual does not put gas in his or her car, the consequence is that the individual's car runs out of gas and the car stops. Therefore, the individual's behavior is controlled by the consequence—next time the individual's car is low on gas, the person will fill the gas tank. When environmental consequences are manipulated, behaviors in the environment are also modified to respond to the contingencies (Miltenberger, 2001). If a child misbehaves at home, he or she knows punishment will follow. However, at school, the negative behaviors are rewarded by peer attention and approval. This child will behave differently in these two environments based on the consequences available in each.

When contrasting classical and operant conditioning, it is clear that both approaches are distinct and allude to different types of learning. There are three main distinctions between classical and operant conditioning—the procedure, the behavioral response, and the amount of control issued during the procedure (Malott & Trojan Suarez, 2004).

First, both conditioning procedures involve a type of pairing. In classical conditioning, behaviors are exhibited by pairing a neutral stimulus with an unconditioned stimulus; whereas in operant conditioning, behavior is controlled by pairing a behavior and a consequence. For example, in classical conditioning, antecedent events are environmental influences that occur before a behavior is exhibited, and the result is the development of a conditioned stimulus from a newly acquired stimulus, such as in the

example of Pavlov's study. In contrast, behavior is controlled by consequences (reinforcers and punishers) in operant conditioning. For example, if a child is reinforced for raising his hand in class, he will repeat that behavior. However, if a child is ignored or punished for raising her hand, she will be less likely to repeat that behavior.

Second, exhibition of the behavioral response prior to conditioning is not required in each conditioning procedure. In classical conditioning, the behavior does not have to exist prior to the conditioning procedure. However, in operant conditioning, the behavioral response must occur to experience the consequence and allow for conditioning. Many people are not afraid of small white animals. Neither was "Little Albert" until John Watson classically conditioned a fear of white mice by pairing his reaching for the animal with a loud, startling noise. In this situation, fear of small white animals was not required prior to the conditioning procedures. Instead, the procedure (e.g., loud noise) elicited the behavior (i.e., fear). However, if a fear response was to be operantly conditioned, it would have to be exhibited prior to the conditioning procedures. Using operant procedures, fear would occur first and then the procedures of reinforcement or punishment would be used to maintain the behavior.

Finally, traditional psychologists have said that classical conditioning generally is *involuntary* while operant conditioning involves more *voluntary* learning.

For example, in classical conditioning, unconditioned responses are typically reflexive behaviors such as salivating, sneezing, sweating, and coughing. However, in operant conditioning, behaviors are controlled by consequences and involve behaviors such as running, walking, or talking.

In our daily lives, many examples of classical and operant conditioning are at work. Food aversions and fears may be learned through classical conditioning. Additionally, these conditioned behaviors can be operantly maintained. As an example, consider children responding to a teacher turning on and off the classroom lights. The students learn that the flickering lights are a cue to get in their seats, sit down, and be quiet. How did they learn this behavior and how is this behavior maintained over time? Initially, the behaviors were classically conditioned. The first time the teacher turned the lights on and off she paired this neutral stimulus with an unconditioned stimulus. The unconditioned stimulus was probably a verbal command to "get in your seat and be quiet." Following several of these pairings between the unconditioned stimulus and the neutral stimulus, the teacher no longer had to give the verbal command and instead could flicker the lights. The children immediately walked to their seats and sat quietly. Although these classroom behaviors were initially classically conditioned, they may require operant conditioning to be maintained. Using consequences such as reinforcement or punishment would ensure that the children continued to follow the class -room rule. Following operant conditioning principles, the teacher could use a reward chart. After the lights are turned on and off, the children are required to get to their seats and sit quietly within 10 seconds. Children in their seat at the 10-second mark would receive a sticker or other reward. Those children compliant with the classroom rule are reinforced for their behavior and, therefore, this positive behavior will be expected to occur in the future.

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See Also

- [Behavior](#)
- [Behavior Intervention](#)
- [Learning](#)

References and Further Reading

Malott, R. W., & Trojan Suarez, E. A. (2004). Principles of behavior. Upper Saddle River, NJ: Pearson Education.

Martin, G., & Pear, J. (2003). Behavior modification: What it is and how to do it (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Miltenberger, R.G. (2001). Behavior modification: Principles and procedures (3rd ed.). Pacific Grove, CA: Wadsworth.