

Critical Thinking: Classical and Operant Conditioning

In most classical conditioning examples, we should be able to identify an *involuntary response* at the core of the learning process. In Pavlov’s original conditioning experiment, the dog’s salivary reflex was the involuntary response. When food is presented to a hungry dog, the dog will salivate. This connection is natural and unlearned, or unconditioned. It is the brain’s way of readying the digestive tract, and it assists in our survival. We might say that this is a “hard-wired” feature of dog design. Food is an *unconditioned stimulus* (UCS) and the salivation is an *unconditioned response* (UCR).

If you present a neutral stimulus (NS) – one that has no particular meaning such as a bell – to a dog just prior to the presentation of the food, and if you present this pair of stimuli often enough, you are likely to see a new learned connection develop. The bell will come to signify that food is on the way. Since the bell had no effect initially, the meaning of the bell has to be conditioned. Therefore, it is called the *conditioned stimulus* (CS). When the researcher has successfully conditioned the dog to respond to the bell, the dog will salivate in the absence of the food. This salivation is called the *conditioned response* (CR). Note that the unconditioned response and the conditioned response are virtually the same. They are likely to differ only in intensity. Even smart dogs know you shouldn’t eat a bell!

Four examples of classical conditioning are outlined in the following paragraphs below. Each describes a situation in which a unconditioned stimulus, an unconditioned response, a conditioned stimulus, and a conditioned response occur. Can you identify the components in each example?

The Troublesome Shower

Martin likes to shower in the men’s locker room after working out. During one such shower, he hears someone flushing a nearby toilet. Suddenly, boiling hot water rushed out of the shower-head, causing Martin serious discomfort. As he continued the shower, he hears another toilet flush and immediately jumped out from under the shower-head.

What is the unconditioned stimulus? (UCS)

What is the unconditioned response? (UCR)

What is the conditioned stimulus? (CS)

What is the conditioned response? (CR)

The Water Show

Jeanette was happy when she learned about her family’s plan to go to the water sports show. Then she heard the weather report which predicted temperatures exceeding 100 degrees. Jeanette suspected that the weather would be hard to bear, but she went to the show. As she watched the water skiers perform taxing routines to the blaring organ music, she got more and more sweaty and uncomfortable. Eventually, she fainted from the heat. After the family outing, Jeanette could never hear organ music without feeling dizzy.

What is the unconditioned stimulus? (UCS)

What is the unconditioned response? (UCR)

What is the conditioned stimulus? (CS)

What is the conditioned response? (CR)

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The Trouble with Tuna

Brain was looking forward to lunch. His mother had prepared a tuna sandwich. Unfortunately, the mayonnaise she used had been left out too long and was tainted. Not long after eating, Brian felt extremely nauseated and had to rush to the bathroom. Thereafter, the mere mention of a tuna sandwich would send Brain scurrying to the bathroom.

What is the unconditioned stimulus? (UCS)

What is the unconditioned response? (UCR)

What is the conditioned stimulus? (CS)

What is the conditioned response? (CR)

Captain Hook's Time Problem

Captain Hook had a nasty encounter with a crocodile in Never-Never Land. As a result of the battle, he lost his hand to the croc, which also swallowed an alarm clock. Fortunately for Hook, the loud ticking sound warned him of the hungry croc's approach. Unfortunately, for Hook, any clock's ticking now ushers in a full-blown anxiety attack.

What is the unconditioned stimulus? (UCS)

What is the unconditioned response? (UCR)

What is the conditioned stimulus? (CS)

What is the conditioned response? (CR)

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In classical conditioning, objects take on new meaning when they are closely associated with some type of involuntary behavior. In operant conditioning, consequences determine behavior. We will tend to repeat things that make us feel good (principles involving *reinforcement*), avoid things that make us feel bad (principle of *punishment*), and disengage from behaviors that have no impact (principle of *extinction*).

Any time consequences *reinforce* a behavior, it will be strengthened. For example, a builder who wanted to reinforce a wall to make it stronger may add another stud, and a tailor who needs to reinforce a seam will restitch. Similarly, reinforced behavior is more likely to occur in the future. When you see the term *reinforcement*, expect that the target behavior will get stronger or increase in intensity.

Positive reinforcement is relatively straightforward. When a good consequence follows some performance, you are more likely to repeat that performance in order to capture more of the good consequences that follow it. For instance, if you study hard for a test and received an A for your efforts, you will probably expend the same energies on your next test because you have received this positive reinforcement.

Negative reinforcement is a little trickier. Negative reinforcement is often confused with punishment, but they are not the same. In negative reinforcement situations, the target behavior is the one you can perform to help you escape some bad circumstance. When a behavior is negatively reinforced, the behavior has helped you escape some pain, some embarrassment, or some other negative situation. For example, if you live in a rainy climate, you may routinely carry an umbrella to prevent getting soaked by the rain. Your habit of carrying an umbrella would be negatively reinforced: you escape an unpleasant outcome by remembering to bring the tool that will keep you dry. When you see the term negative reinforcement, try to identify what is negative about the target situation. Will a specified behavior allow you to escape or avoid the unfavorable circumstance? If so, that escape behavior will be negatively reinforced. We rarely enjoy being in uncomfortable or painful situations. This explains why negative reinforcement situations are such powerful incentives to strengthen behaviors that will allow us to escape.

Punishment tends to reduce the frequency of the behavior it follows. However, almost any parent can tell you that the effects of punishment vary. To be effective in reducing undesirable behavior, punishment should be swift, consistent, and sufficiently strong. Coordinating punishment consequences to meet those criteria can be a challenge. Even when punishment works, punishing practices may have undesirable side effects. For example, children sometimes associate the punisher with pain and may dislike or avoid the punisher.

Extinction is also a process that reduces the occurrence to behavior. When a behavior meets with no consequence, there is no incentive to continue the behavior. Although extinction is effective in reducing behavior, the process may take a very long time.

Positive reinforcement: When a behavior is followed by a favorable outcome (+), the behavior is likely to be strengthened in the future (↑).

Negative reinforcement: When a person is trapped in a bad situation, he or she performs a behavior to escape the bad situation. The escape is a favorable outcome (+), the behavior is likely to be strengthened in the future (↑).

Punishment: When a behavior is followed by an unfavorable outcome (-), the behavior may decrease in the future (↓). *Note*: Punishment is risky business. To ensure effectiveness, it must be done quickly, consistently, and with proper intensity.

Extinction: When a behavior has no meaningful consequence (0), the behavior will decrease in the future (↓).

The following scenarios describe some behaviors and their consequences. Your task is to apply the principles of operant conditioning to predict whether the targeted behavior (the underlined one) will reoccur. Read the shot scenario, focusing on the underlined behavior, and identify whether the consequence for the person performing the behavior was good (+), bad (-), or none (0). Then specify whether the targeted behavior is likely to increase (↑) or decrease (↓) in the future. Finally, identify which principle of operant conditioning (use only the four above) the scenario describes.

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	<i>Scenario</i>	<i>Nature of Consequence</i>	<i>Likelihood of Reoccurrence</i>	<i>Principle</i>
1.	A student <u>volunteers</u> to answer a tough question in class, and the teacher comments favorably on the quality of the student’s contribution	_____	_____	_____
2.	A wife brings home flowers to her husband because of a special meal he had <u>cooked</u> to surprise her.	_____	_____	_____
3.	A child is sent to his room with no dinner after <u>presenting</u> a bad report card.	_____	_____	_____
4.	Dad and toddler enter a checkout lane of the supermarket. When the child <u>screams</u> for candy, dad pops a lollypop in her mouth to quiet her down.	_____	_____	_____
5.	A child <u>spills</u> milk all over the dinner table, and Mom (having had a very bad day) swoops the child up from the high chair and spanks him.	_____	_____	_____
6.	A student has a terrible headache after an intense test preparation period. He <u>takes two aspirin</u> to make it go away.	_____	_____	_____
7.	Two children, who usually spend most of their time fighting, finally <u>play peacefully</u> over a coloring book. Dad peeks in and sighs, “at last, they are getting along.” He returns to work without saying anything to them.	_____	_____	_____
8.	A spoiled child is being driven by a fast-food restaurant when she begins screaming that she must have french fries or she won’t survive. The parents <u>surrender</u> and drive in for a large supply.	_____	_____	_____
9.	A teenager <u>whines</u> about having nothing to do. Dad gives him a lecture about all the stuff in his room and the good old days when he didn’t have all that stuff but still managed to be happy.	_____	_____	_____
10.	A terrorist applies an electrical current to the feet of a spy so she will <u>confess</u> . She tells him everything she knows.	_____	_____	_____

Adapted from: Jane Halonen and Cythia Gray. *The Critical Thinking Companion for Introduction of Psychology*, second edition. 2001