

Classical conditioning

[Psychology](#), [Behaviorism](#)



Ivan Pavlov Classical Conditioning PY-100 April 2002 Jason Forsythe

#ABSTRACT 1904 Nobel Prize Winner, Ivan Pavlov was born in Ryazan, Russia on September 14, 1849. Pavlov is best known for his intricate workings with the drooling dog experiment that led to his further research in conditioning. This experiment, which began in 1889, had an influence on the development of physiologically oriented behaviorist theories of psychology in the early years of the nineteenth century. His work on the physiology of the digestive glands won him the 1904 Nobel Prize in physiology or medicine. CONTRIBUTIONS Pavlov's first independent work focused on the physiology of the circulation of the blood (Girogian, 1974). He studied the influence of variations in blood volume on blood pressure. He also investigated the nervous control of the heart, and argued that four types of nerves control rhythm and strength of cardiac contractions. It was during this first independent study that Pavlov used unanesthetized, neurologically intact dogs (Girogian, 1974). This method became the mainstay of Pavlov's methodology. Pavlov's second independent work centered primarily around digestion. He started studying digestion as early as 1879, and it was his major focus from 1890 to 1897 (Girogian, 1974). His work was an accumulation of observations on the nervous control of one organ system through the method of chronic experiment (Girogian, 1974). The study of digestion involved developing "fistulas" through which secretions from salivary glands, stomach, the pancreas, and small intestine could be collected (Girogian, 1974). His technique was truly unique in that he did not cut the nerve supply nor contaminate the secretions with food. The most famous and well-known experiment of Pavlov is that he 'conditioned'

dogs to start a salivary response to the sound of a bell. He began by measuring the amount of salivation in response to only food. As the experiments continued, he rang a bell as he presented the food (Girogian, 1974). Again, he noted a salivary response. Finally, by only ringing the bell, Pavlov observed the same response as having presented food to the dogs . . . salivation (Girogian, 1974). These experiments defined what has been a "conditioned response".

CLASSICAL CONDITIONING

Classical Conditioning is the type of learning made famous by Pavlov's experiments with dogs. In an article titled, *An Animal Owner's Guide to Operant and Classical Conditioning*, by Stacy Braslau explained the process of the experiment. Pavlov presented dogs with food, and measured their salivary response (how much they drooled). Then he began ringing a bell just before presenting the food. At first, the dogs did not begin salivating until the food was presented. After a while, however, the dogs began to salivate when the sound of the bell was presented. They learned to associate the sound of the bell with the presentation of the food. As far as their immediate physiological responses were concerned, the sound of the bell became equivalent to the presentation of the food. Through Ivan Pavlov's experiment with dogs and their reaction to stimulus, he set the basis for Classical conditioning. The methods of how classical conditioning works can be described in the following sequence (Mischel, 1993, p. 296):

1. There exists an unconditioned, natural response, like a reflex (called a UCR)
2. There exists a stimulus that triggers this response (called the UCS)
3. Eventually, the organism (man, dog, ect.) will begin to associate the UCR with the UCS
4. Once the behavior is learned, the UCR may take place even when the UCS is simulated
5. At

that point, the response it referred to as conditioned (or a CR) 6. The stimulus is then referred to as a conditioned, or learned as well (or CS) 7. Stimuli unrelated to the UCR may be imposed simultaneously to the UCS 8. Though unrelated, like the UCS, these stimuli will be associated to the UCR 9. Eventually, once learned, even these unrelated stimuli can trigger the CR

The theory of Classical conditioning can be used to describe many events in people's lives. For example, the amount a person likes another person may be associated with how much the other person has come to represent positive stimuli or gratification (Mischel, 1993, p. 297). People may develop certain fears due to negative stimuli that occurred at the same time as another event (Mischel, 1993, p. 297). Freud's interpretation of little Hans, who developed fear of horses after seeing one horse fall and bleed, is an example of phobia development by classical conditioning (Mischel, 1993, p. 299-300). Another example is in Watson's experiment where a boy was exposed simultaneously to rats and a loud noise. The boy subsequently developed a strong aversion to rats, and eventually, all fuzzy things (Mischel, 1993, p. 299). Many of the reasons people avoid certain situations may stem from classical conditioning (Mischel, 1993, p. 302). Classical conditioning extends to fairly deep levels in human nature. Peoples' connotations of certain words and symbols come from associations made with responses (ie. classical conditioning) (Mischel, 1993, p. 304). An example of this is " The Star Spangled Banner" evoking deep emotions in an American, while it would probably not elicit the same response in a Russian (Mischel, 1993, p. 304).

EXPERIMENT ACKNOWLEDGEMENT Pavlov's description on how animals (and humans) can be trained to respond in a certain way to a particular stimulus

drew tremendous interest from the time he first presented his results (Fredholm, 1999). His work paved the way for a new, more objective method of studying behavior. So-called Pavlovian training has been used in many fields, with anti-phobia treatment as but one example (Fredholm, 1999). An important principle in conditioned learning is that an established conditioned response (salivating in the case of the dogs) decreases in intensity if the conditioned stimulus (bell) is repeatedly presented without the unconditioned stimulus (food). This process is called extinction (Fredholm, 1999). In order to treat phobias evoked by certain environmental situations, such as heights or crowds, this phenomenon can be used (Fredholm, 1999). The patient is first taught a muscle relaxation technique. Then he or she is told, over a period of days, to imagine the fear-producing situation while trying to inhibit the anxiety by relaxation. At the end of the series, the strongest anxiety-provoking situation may be brought to mind without anxiety. This process is called systematic desensitization (Fredholm, 1999). Conditioning forms the basis of much of learned human behavior. Nowadays, this knowledge has also been exploited by commercial advertising (Fredholm, 1999). An effective commercial should be able to manipulate the response to a stimulus (like seeing a product's name), which initially does not provoke any feeling (Fredholm, 1999). The objective is to train people to make the "false" connection between positive emotions (e. g. happiness or feeling attractive) and the particular brand of consumer goods being advertised (Fredholm, 1999). NOBEL PRIZE Although the first image that comes to mind while mentioning Ivan Pavlov's name is his drooling dogs, he became a Nobel Laureate for his research in a different field (Fredholm,

1999). In 1904, he received the Nobel Prize in Physiology or Medicine for his pioneering studies of how the digestive system works. Until Pavlov started to scrutinize this field, our knowledge of how food was digested in the stomach, and what mechanisms were responsible for regulating this, were quite foggy. In order to understand the process, Pavlov developed a new way of monitoring what was happening. He surgically made fistulas in animals' stomachs, which enabled him to study the organs and take samples of body fluids from them while they continued to function normally (Fredholm, 1999).

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