

Classical conditioning research paper

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Classical Conditioning

The pioneering brain behind classical conditioning was a Russian physiologist, Ivan Pavlov (1849-1936), who identified this type of learning while working with dogs; a discovery that would later win him tremendous international accolades and knighthood. Pavlov's classical conditioning has since become monumental in learning with most scholars perceiving it as a fundamental form of learning. This type of learning is at times called Pavlovian learning or conditioning in honor to the exemplary work that Ivan Pavlov did.

Pavlov was researching on the digestive system in dogs where he developed a surgical procedure for implanting fistula tubes into living animals to enable him collect digestive secretions of dogs for measurement (Hamblin, 2005). The overarching concept aimed at instituting the mechanisms of reflexive secretions in dogs when the food was placed into their mouths also when the food was moving down the digestive tract. Pavlov by the aid of the fistula made a sensational discovery that the dogs would start salivating on a mere sight of empty bowls of food (Tracey and Morrow, 2006). The fact that the dogs salivated on just seeing the empty bowls was insightful enough to make Pavlov stop the digestion research and concentrate on this new, exclusive development (Tracey and Morrow, 2006). The all-encompassing purpose of Pavlov's new series of action was to empirically investigate and document this unprecedented exhibition by the dogs- a phenomenon that can be called psychic reflexes. To enunciate this phenomenon vividly, Pavlov manipulated the stimuli that he thought would trigger salivation.

There were a set of discrete stimuli that Pavlov used in his empirical research. One was the unconditioned stimulus- a stimulus that according to Pavlov would induce salivation without any prior learning (Kalat, 2010). In this case, the unconditioned stimulus was food which was evoking unconditioned response salivation. He then embarked on using specific and controllable stimuli- he decided to integrate a bell and then emerge with the food. He termed bell during this time as a neutral stimulus (Kalat, 2010; Domjan & Grau, 2010). After a repetitive period of pairing the bell and the food, Pavlov stopped bringing food but continued ringing the bell before appearing. He noticed that a mere sound of the bell would elicit salivation in the dogs. The bell had now become a conditioned stimulus while salivation on hearing the bell was now a conditioned response (Domjan & Grau, 2010). Little did he know that this would later become an avalanche of a plethora of learning ideas.

Pavlov's classical conditioning just like any other type of psychological technique is multifaceted into what Pavlov called principles of classical conditioning. Acquisition is the first principle in which behavior is learnt as a result of reinforcement (Coon & Mitterer, 2008). This is achieved when an initially neutral stimulus produces a conditioned response thereby becoming a conditioned stimulus. As Pavlov noted, after temporal repetition of ringing the bell without bringing food, the dogs stopped salivating even when the bell was rung. Pavlov termed this principle of extinction (Coon & Mitterer, 2008; Kalat, 2010). Because of the curious nature of this Russian physiologist, he continued ringing the bell even when the dogs were not salivating before he temporarily stopped. After some time, he began ringing the bell again

without bringing food and noticed that the dogs were again salivating. Pavlov named this principle of spontaneous recovery to imply the recurring of behavior that was earlier learnt and later unlearnt (Coon & Mitterer, 2008). However, there are times when the dog would salivate on hearing a sound that was closely related to the bell. This is according to Pavlov this principle of generalization (Coon & Mitterer, 2008; Kalat, 2010). Interestingly, on continual subjection the sounds that are close the sound of a ringing bell the dogs learnt to distinguish the sounds. Discrimination was the term that he came up with to describe the ability of the dogs to differentiate closely related sounds (Coon & Mitterer, 2008).

Worth noting is the fact that classical conditioning can be carried out as first order classical conditioning or a second order classical conditioning. First order classical conditioning involves the pairing of the unconditioned stimulus with the neutral stimulus until a stable conditioned response is recorded (Pearce, 1997). Conventionally, the stimulus that produces the conditioned stimulus can be called conditioned stimulus-1 (CS-1). Afterwards, another neutral stimulus can be introduced. This new neutral stimulus is then associated with CS-1 in what is known as second-order conditioning until another conditioned response is produced (Pearce, 1997). This response is produced as a result of the association of CS-1 and a new conditioned stimulus (CS-2) (Pearce, 1997).

Classical conditioning, though anecdotal as it may seem, is perhaps the most common type of learning. The reflexive responses produced by animals can be used as a milestone in training most domestic animals to produce desired

behavior as a result of the association between unconditioned stimulus and a neutral stimulus. For instance, a chicken can be trained to elicit a given behavior as a response to an impending peril imposed by a hawk. Normally a chicken produces a certain sound (an alarm) on sighting a hawk as a warning shot to other chickens before running for safety. A chicken owner can decide to make a certain sound for instance knocking a metal can whenever there is a hawk. Naturally, the chicken due to their diligence to evade attack by the hawk will produce the normal warning sound before running for safety. Temporal repetition of knocking the metal by the chicken owner continues until the chicken learns to associate the sound produced by the metal can and the presence of a hawk. In this view, the hawk is an unconditioned stimulus while the alarm and running for safety by the chicken on sighting a hawk is an unconditioned response. The sound produced by the metal can at first is a neutral stimulus which with time becomes a conditioned stimulus that produces a conditioned response. The entire conditioning process can be summarized in a chart as shown below

Figure 1: Chart of the Process of Conditioning a Chicken

In a nutshell, the association of different types of stimuli provides us with a pivotal avenue of manipulating learners to respond in ways that are desirable hence leading to meaningful learning. This mode of learning that was discovered by Ivan Pavlov while in a physiological round with dogs bases its idea on the fact that organisms, humans included, can learn to associate a set of stimuli in process of conditioning, ending up producing the same response for all the conditioned stimuli. The conditioning process is either

first-order or second-order depending on how the stimuli are present to the animal. The major transformation during the Pavlovian conditioning process is the changing of an initially neutral stimulus to a conditioned stimulus that produces a similar response like the one produced by the unconditioned stimulus after temporal pairing of the two. The response produced by the conditioned stimulus is called a conditioned response.

References

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