

Classical Conditioning

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by Saul McLeod, updated 2014

Classical conditioning theory involves learning a new behavior via the process of association. In simple terms two stimuli are linked together to produce a new learned response in a person or animal.

John Watson proposed that the process of classical conditioning (based on Pavlov's observations) was able to explain all aspects of human psychology.

Everything from speech to emotional responses was simply patterns of stimulus and response. Watson denied completely the existence of the mind or consciousness. Watson believed that all individual differences in behavior were due to different experiences of learning. He famously said:

"Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select - doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations and the race of his ancestors" (Watson, 1924, p. 104).

Classical Conditioning Examples

Classical conditioning theory involves learning a new behavior via the process of association. In simple terms, two stimuli are linked together to produce a newly learned response in a person or animal. There are three stages of classical conditioning. At each stage the stimuli and responses are given special scientific terms:

Stage 1: Before Conditioning:

In this stage, the **unconditioned stimulus (UCS)** produces an **unconditioned response (UCR)** in an organism. In basic terms, this means that a stimulus in the environment has produced a behavior / response which is unlearned (i.e., unconditioned) and therefore is a natural response which has not been taught. In this respect, no new behavior has been learned yet.

For example, a stomach virus (UCS) would produce a response of nausea (UCR). In another example, a perfume (UCS) could create a response of happiness or desire (UCR).

This stage also involves another stimulus which has no effect on a person and is called the **neutral stimulus (NS)**. The NS could be a person, object, place, etc. The neutral stimulus in classical conditioning does not produce a response until it is paired with the unconditioned stimulus.

Stage 2: During Conditioning:

During this stage a stimulus which produces no response (i.e., neutral) is associated with the unconditioned stimulus at which point it now becomes known as the **conditioned stimulus (CS)**.

For example, a stomach virus (UCS) might be **associated** with eating a certain food such as chocolate (CS). Also, perfume (UCS) might be **associated** with a specific person (CS). Often during this stage, the UCS must be associated with the CS on a number of occasions, or trials, for learning to take place. However, one trial learning can happen on certain occasions when it is not necessary for an association to be strengthened over time (such as being sick after food poisoning or drinking too much alcohol).

Stage 3: After Conditioning:

Now the conditioned stimulus (CS) has been associated with the unconditioned stimulus (UCS) to create a new conditioned response (CR).

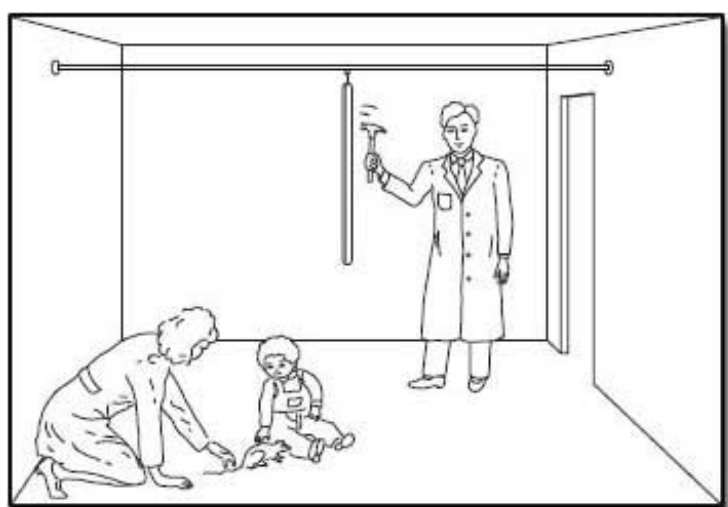
For example, a person (CS) who has been associated with nice perfume (UCS) is now found attractive (CR). Also, chocolate (CS) which was eaten before a person was sick with a virus (UCS) now produces a response of nausea (CR).

Little Albert Experiment (Phobias)

Ivan Pavlov showed that classical conditioning applied to animals. Did it also apply to humans? In a famous (though ethically dubious) experiment, Watson and Rayner (1920) showed that it did.

Little Albert was a 9-month-old infant who was tested on his reactions to various stimuli. He was shown a white rat, a rabbit, a monkey and various masks. Albert described as "on the whole stolid and unemotional"

showed no fear of any of these stimuli. However, what did startle him and cause him to be afraid was if a hammer was struck against a steel bar behind his head. The sudden loud noise would cause "little Albert to burst into tears.



When Little Albert was just over 11 months old, the white rat was presented, and seconds later the hammer was struck against the steel bar. This was done seven times over the next seven weeks, and each time Little Albert burst into tears. By now little Albert only had to see the rat and he immediately showed every sign of fear. He would cry (whether or not the hammer was hit against the steel bar) and he would attempt to crawl away.

In addition, the Watson and Rayner found that Albert developed phobias of objects which shared characteristics with the rat; including the family dog, a fur coat, some cotton wool and a Father Christmas mask! This process is known as generalization.

Watson and Rayner had shown that classical conditioning could be used to create a phobia. A phobia is an irrational fear, i.e., a fear that is out of proportion to the danger. Over the next few weeks and months, Little Albert was observed and ten days after conditioning his fear of the rat was much less marked. This dying out of a learned response is called extinction. However, even after a full month it was still evident, and the association could be renewed by repeating the original procedure a few times.

Classical Conditioning in the Classroom

The implications of classical conditioning in the classroom are less important than those of operant conditioning, but there is a still need for teachers to try to make sure that students associate positive emotional experiences with learning.

If a student associates negative emotional experiences with school, then this can obviously have bad results, such as creating a school phobia.

For example, if a student is bullied at school they may learn to associate the school with fear. It could also explain why some students show a particular dislike of certain subjects that continue throughout their academic career. This could happen if a student is humiliated or punished in class by a teacher.

Critical Evaluation

Classical conditioning emphasizes the importance of learning from the environment, and supports nurture over nature. However, it is limiting to describe behavior solely in terms of either nature or nurture, and attempts to do this underestimate the complexity of human behavior. It is more likely that behavior is due to an interaction between nature (biology) and nurture (environment).

A strength of classical conditioning theory is that it is scientific. This is because it's based on empirical evidence carried out by controlled experiments. For example, Pavlov (1902) showed how classical conditioning could be used to make a dog salivate to the sound of a bell.

Classical conditioning is also a reductionist explanation of behavior. This is because a complex behavior is broken down into smaller stimulus-response units of behavior.

Supporters of a reductionist approach say that it is scientific. Breaking complicated behaviors down to small parts means that they can be scientifically tested. However, some would argue that the reductionist view lacks validity. Thus, while reductionism is useful, it can lead to incomplete explanations.

A final criticism of classical conditioning theory is that it is deterministic. This means that it does not allow for any degree of free will in the individual. Accordingly, a person has no control over the reactions they have learned from classical conditioning, such as a phobia.

The deterministic approach also has important implications for psychology as a science. Scientists are interested in discovering laws which can then be used to predict events. However, by creating general laws of behavior, deterministic psychology underestimates the uniqueness of human beings and their freedom to choose their own destiny.

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Key Terms

Classical Conditioning

Classical conditioning refers to learning by association, and involves the conditioning of innate bodily reflexes with new stimuli.

Stimulus

Any feature of the environment that affects behavior. E.g., in Pavlov's experiments food was a stimulus.

Response

The behavior elicited by the stimulus. E.g., in Pavlov's experiments salivation was a response.

Unconditioned Stimulus

A feature of the environment that causes a natural reflex action. E.g., a puff of air blown into the eye causes an involuntary blink.

Conditioned Stimulus

A feature of the environment that has an effect through its association with a U.C.S. E.g., Pavlov's dog learned to salivate at the sound of a bell.

Conditioned Response

The behavior elicited by the C.S. E.g., Salivation when the bell rings.

Extinction

The dying out of a conditioned response by breaking the association between the C.S. and the U.C.S.

E.g., When the bell was repeatedly rang and no food presented Pavlov's dog gradually stopped salivating at the sound of the bell.

Spontaneous Recovery

The return of a conditioned response (in a weaker form) after a period of time.

E.g., When Pavlov waited for a few days and then rang the bell once more the dog salivated again.

Generalisation

When a stimulus similar to the C.S. also elicits a response. E.g., Initially Pavlov's dog salivated at the sound of any bell – not just the food bell.

Discrimination

The opposite of generalisation i.e. the ability of the subject to tell the difference between two similar stimuli.

E.g., Eventually Pavlov's dog learns the difference between the sound of the 2 bells and no longer salivates at the sound of the non-food bell.