

## CLASSICAL CONDITIONING

Another way we learn is through a method known as Classical Conditioning

*Terms to get familiar with*

"Unconditioned" - the stimulus and the response are naturally connected. They just came that way, hard wired together like a horse and carriage and love and marriage as the song goes.

- this connection was already present before we got there and started experimenting.

"Stimulus" simply means the thing that starts it while anything in the environment that causes an organism to respond

"Response" means the thing that ends it. An observable behaviour

A stimulus elicits and a response is elicited

If "unconditioned" means unlearned, untaught, preexisting, already-present-before-we-got-there.

"Conditioning" just means the opposite.

we are trying to associate, connect, bond, link something new with the old relationship. And we want this new thing to elicit (rather than be elicited) so it will be a stimulus and not a response

Let's review these concepts.

1. Unconditioned Stimulus: the thing (stimulus) that elicits a response without conditioning or learning having to take place.
2. Unconditioned Response: the automatic (reflexive) response to the Unconditioned Stimulus.
3. Conditioned Stimulus: a new stimulus we deliver the same time we give the old stimulus causing a Conditioned response similar to the Unconditioned Response.
4. Conditioned Response: the learned response elicited by the conditioned stimulus.

### *A LITTLE HISTORY AND A COMPARISON*

The example we used here is from the first studies on classical conditioning as described by Ivan Pavlov, the famous Russian physiologist. Pavlov discovered these important relationships around the turn of the century in his work with dogs.

Ivan Pavlov (1849-1936)

- ☆ A Russian physiologist (also referred to as a behavioural psychologist)
- ☆ Won a Nobel Prize in 1904 for his work on the physiology of dogs' digestive systems
- ☆ During his research, he noticed that his dogs sometimes salivated when no food was present (when the assistant who fed the dogs came into the room).
- ☆ He devised a simple experiment to determine how salivation could occur in the absence of an obvious physical cause (the actual food itself).
- ☆ First, he performed an operation to divert the dogs saliva into a container so that the amount secreted could be measured precisely. He then confined the dog to an apparatus.
- ☆ Pavlov held a dog secure in a harness and attached a tube to the dog's cheek to measure the saliva production.
- ☆ Then he put meat powder in the mouth of the hungry dog, causing it to salivate.
- ☆ Pavlov called this natural, or unlearned salivating the UNCONDITIONED RESPONSE = UCR while the meat was termed the UNCONDITIONED STIMULUS = UCS

UCS (food) → UCR (salivation)

- ☆ Keep in mind that Pavlov wanted to find out why the dogs salivated at the mere sight or sound of food being prepared.
- ☆ To do this, Pavlov sounded a bell just before giving meat powder to the dog. He repeated this process several times. He called the bell the **CONDITIONED STIMULUS = CS**

$$\begin{array}{ccc} \text{CS (bell)} & & \\ + & & \rightarrow \text{CR (salivation)} \\ \text{UCS (food)} & & \end{array}$$

- ☆ Then Pavlov sounded the bell without giving the dog any meat powder. What happened? The dog salivated at the sound of the bell alone.
- ☆ The bell was the **CONDITIONED STIMULUS = CS** and the dogs reaction to the bell was the **CONDITIONED RESPONSE = CR**
- ☆ Therefore, the dog in some way came to associate the two things (the bell and the meat powder). Our formula for this now becomes

$$\text{CS (bell)} \rightarrow \text{CR (salivation)}$$

## FORMULA

Before conditioning

Neutral stimulus  $\rightarrow$  No response or irrelevant response

UCS (food)  $\rightarrow$  UCR (salivation)  
 CS (bell)  $\rightarrow$  no relevant response

During conditioning

CS (bell) + the UCS (food)  $\rightarrow$  CR (salivation)

After conditioning

CS (bell)  $\rightarrow$  CR (salivation)

- ☆ Using the same procedure, Pavlov found that he could cause dogs to salivate in reaction to any number of bells, whistles, or flashing lights.
- ☆ He found that the stimuli similar to the one used in the test situation can bring about the same reaction. The more unlike the original stimulus, the less will be the response. We call this *generalization*. It is the process by which stimulus similar to the Conditioned Stimulus (bell) will also elicit the Conditioned Response (salivation), but the strength of the Conditioned Response will be diminished.
- ☆ Pavlov also found that if he kept ringing the bell without occasionally providing the meat powder the animal would eventually stop salivating at the sound. This is called *extinction*.
- ☆ This method of learning is called *Classical Conditioning*.
- ☆ Pavlov's work reduced the study of psychology away from the study of the mind and towards the study of observable behaviour. His experiments form the basis for much modern research into conditioning.



Record these examples in your notes. Identify the UCR, the UCS, the CS, and the CR (also possibly generalization and extinction).

1. The overhead in Tom's lab has a short circuit and gives him a shock everytime he touches it. After a while Tom hesitates everytime he is about to touch the overhead.

UCS  
UCR

CS  
CR

2. David gets hungry everytime he goes into the kitchen.
3. Janine hates the sight of cats, because she is allergic to them
4. You meet a new person who's cooking is very good. After a few meals you start to fall in love.
5. You always do your homework on your desk. After a very hard semester, you find that sitting at your desk depresses you.
6. When you are in gym class, you get hit in the head repeatedly with a basketball. Soon you develop an aversion to not only the basketball, but to volleyball and football as well.
7. Your cat gets attacked by a dog while walking in your front yard. Now your cat stays in the back yard or in the house.
8. You get an aquarium, which your cat discovers and regularly eats the fish. You give up and take the aquarium away, but your cat still likes to sit on the shelf where the aquarium was.
9. Your cat comes running everytime it hears the can opener.
10. Your dog gets sick and requires several painful trips to the ver. Now he hides everytime he hears you rattle your keys.



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## ANSWERS

1. UCS = shock      UCR = fear from shock    CS= overhead    CR= fear from overhead
2. UCS = food      UCR = salivation      CS= kitchen    CR= hunger in kitchen
3. UCS = allergens    UCR = allergic reaction & bad feelings    CS= cats    CR= bad feeling from cats
4. UCS = Food      UCR = happy satisfied feeling    CS= new person    CR= happy feelings
5. UCS = stress caused by studying    UCR = bad feelings    CS= desk    CR= bad feelings
6. UCS = pain from being hit    UCR = fear    CS= gym class    CR= fear (also generalization)
7. UCS = scary dog    UCR = fear      CS= front yard    CR= fear
8. UCS = food (fish)    UCR = approach (predation)    CS= shelf    CR= approach
9. UCS = food      UCR = approach      CS= can opener sound    CR= approach
10. UCS = painful procedure    UCR = fear    CS= rattle of keys    CR= fear