

# Classical Conditioning

The Principles of Learning



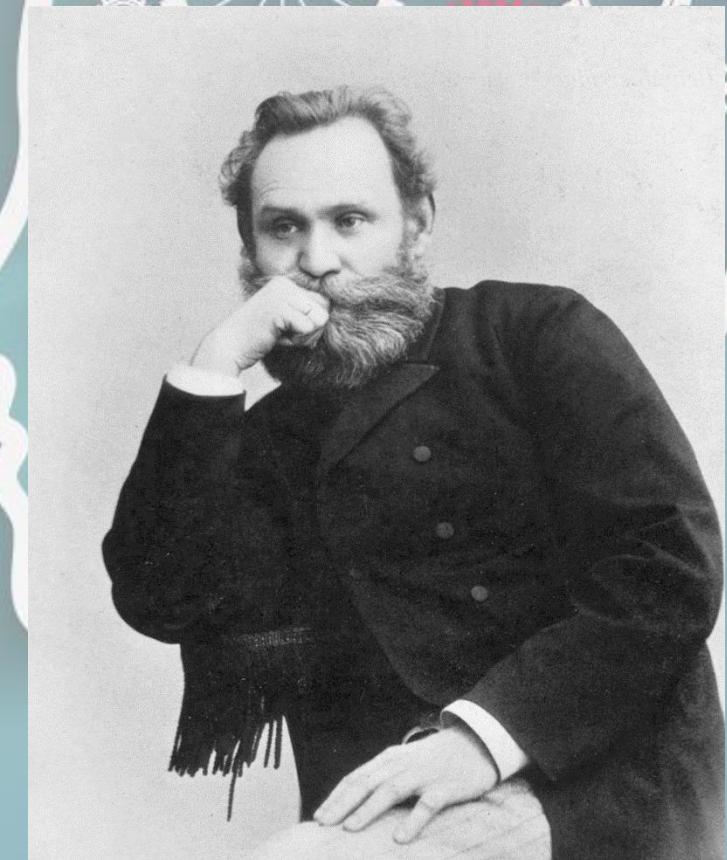
# A Psychological Understanding of Learning

- Learning is a relatively permanent change in behavior that results from experience
    - Learning is a form of adaptation
  - Three major types of learning:
    - Classical conditioning
    - Operant conditioning
    - Cognitive learning



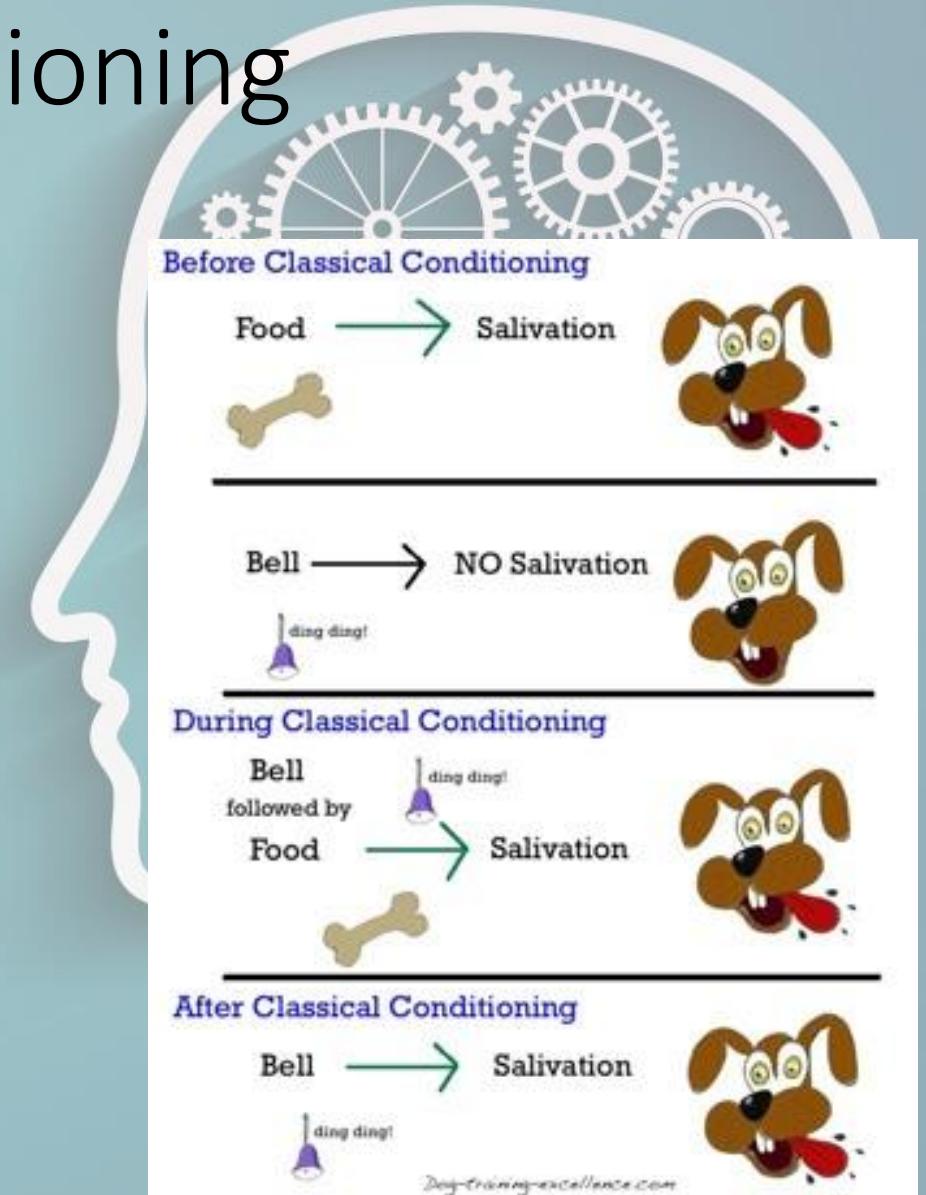
# Pavlov's Dogs

- Developed by Russian Physiologist Ivan Pavlov(1849–1936)
- Developed research into learning by association and experience in 1899
  - Won Nobel Prize for work in 1904
- Conditioned dogs to salivate at the sound of a bell
  - From the use of food as a stimulus



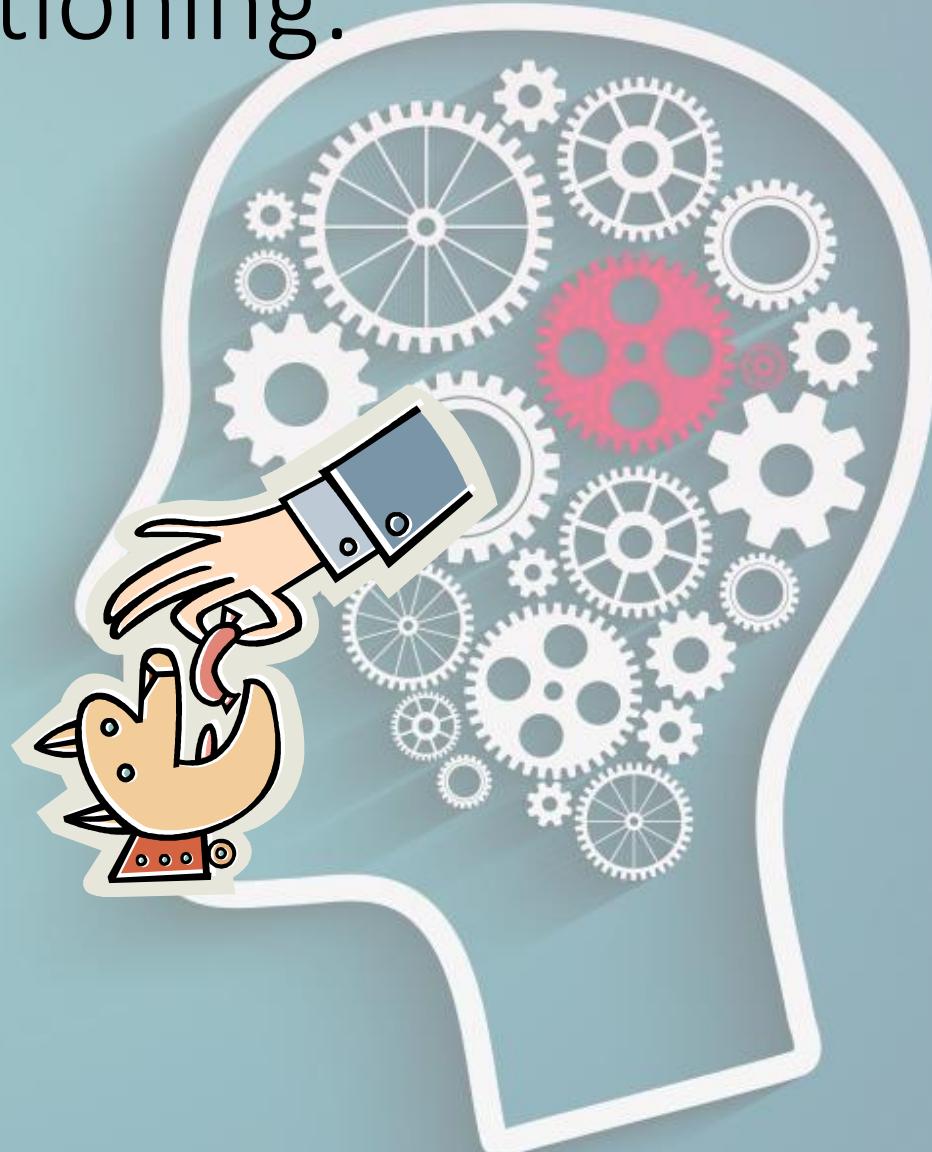
# Principles of Classical Conditioning

- Classical Conditioning is a form of behavioral learning in which a previously neutral stimulus acquires the power to elicit the same innate reflex produced by another stimulus
  - Essentially this means that a particular stimulus is able to consistently result in a response
    - Ex. Dogs learn to associate eating with the sound of a bell



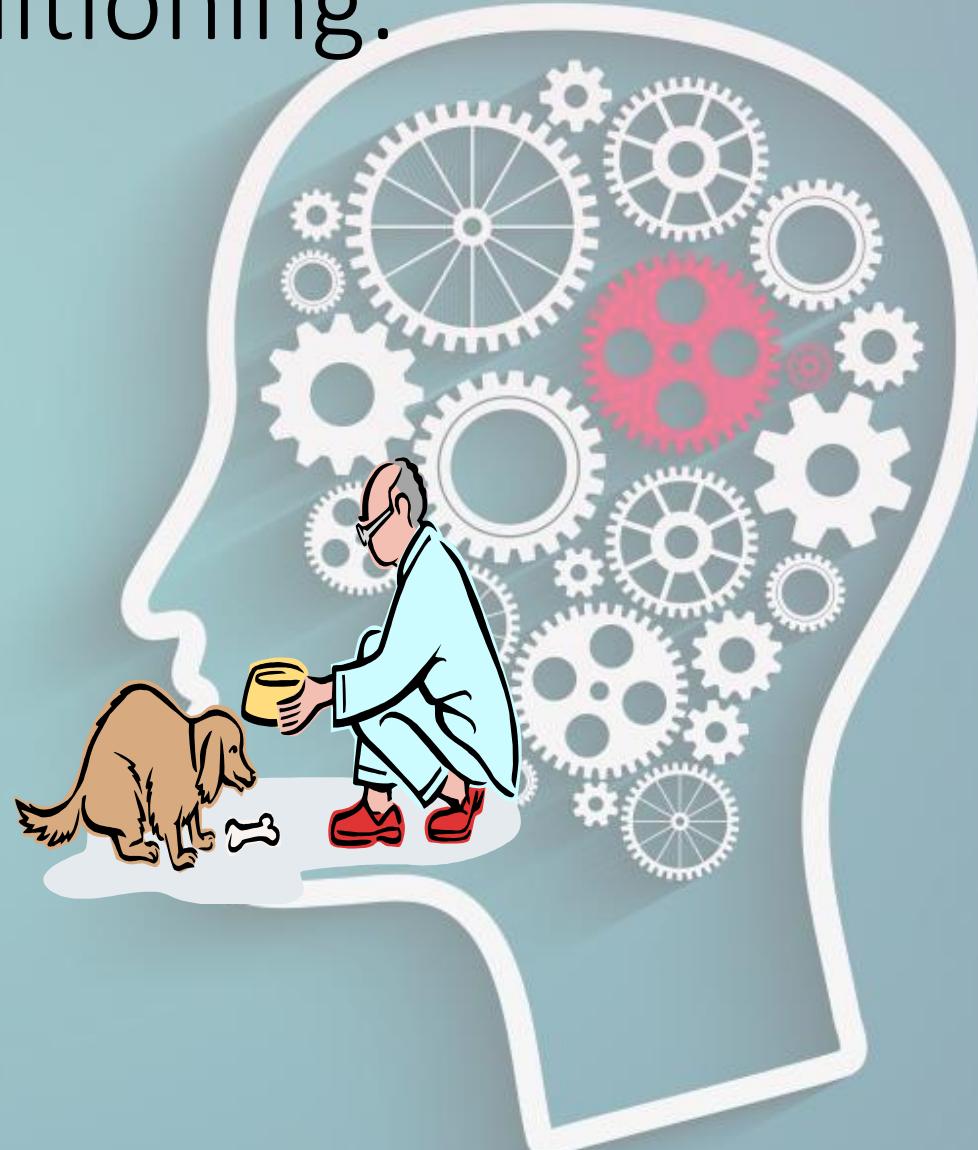
# Elements of Classical Conditioning: Unconditioned Stimulus

- The unconditioned stimulus (UCS) is any stimulus that consistently produces a particular, naturally occurring, automatic response.
- In Pavlov's experiment, the UCS was the food (meat powder).



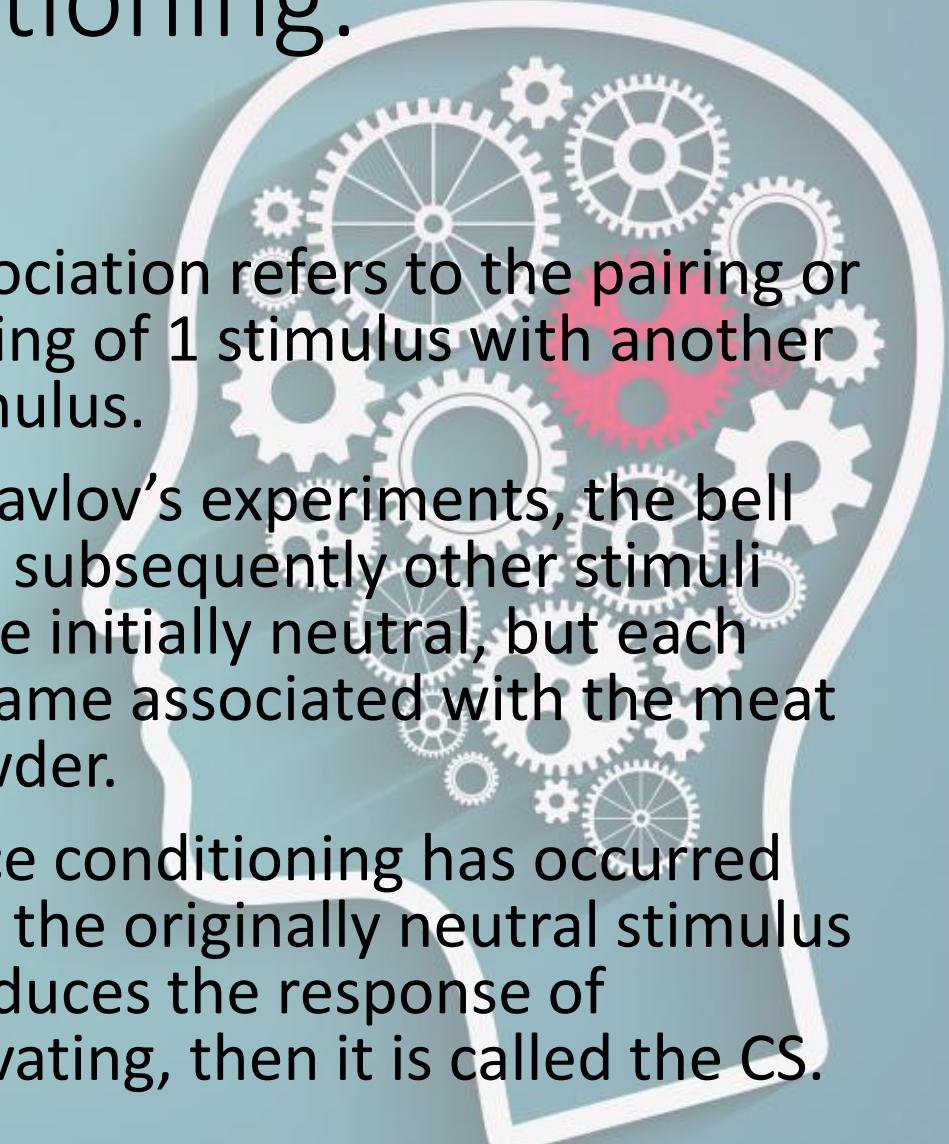
# Elements of Classical Conditioning: Unconditioned Response

- The unconditioned response (UCR) is the response that occurs automatically when the UCS is presented.
- A UCR is a reflexive, involuntary response that is predictably caused by a UCS.
- In Pavlov's experiments, the UCR was the salivation.



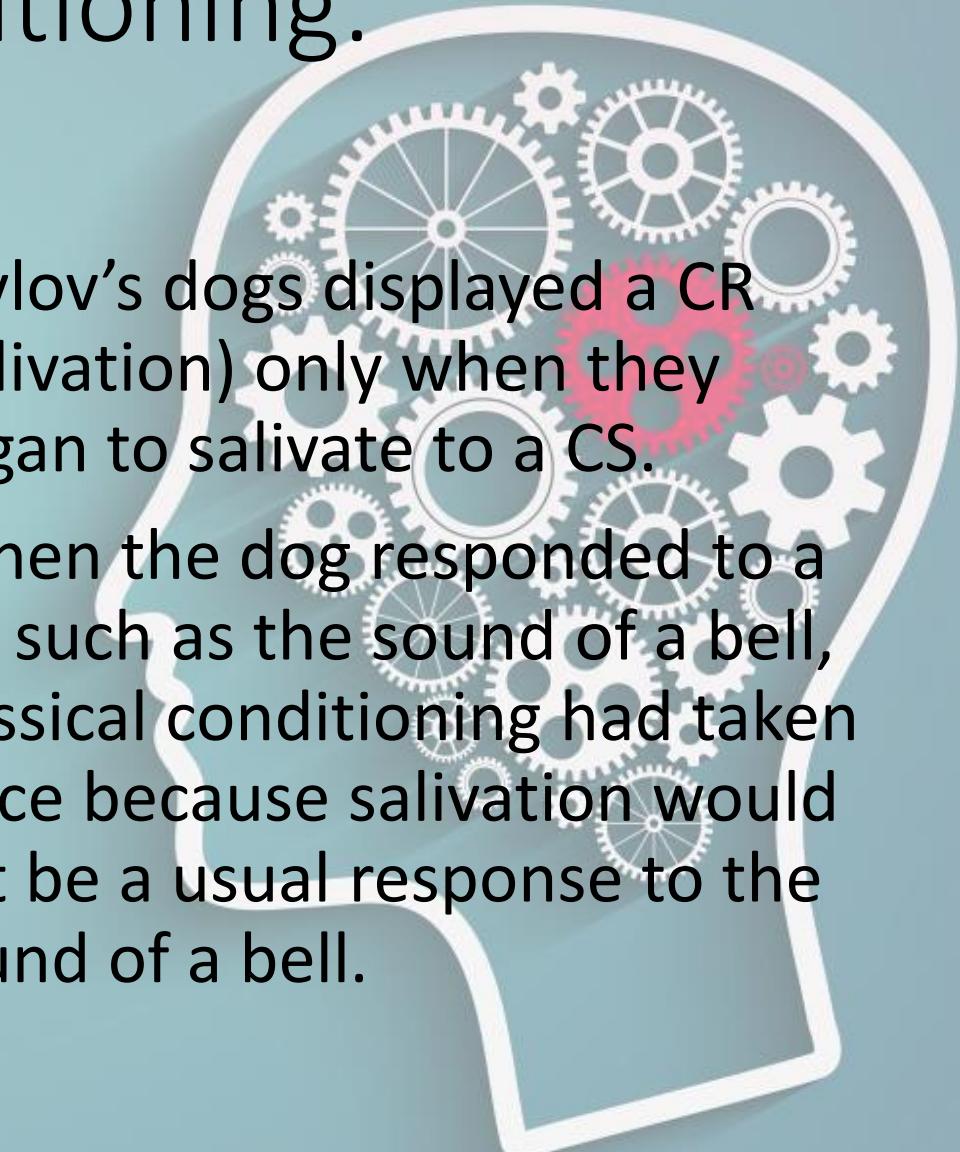
# Elements of Classical Conditioning: Conditioned Stimulus

- The conditioned stimulus (CS) is the stimulus that is neutral at the start of the conditioning process and does not normally produce the UCR.
- Yet, through repeated association with the UCS, the CS triggers a very similar response to that caused by the UCS.
- Association refers to the pairing or linking of 1 stimulus with another stimulus.
- In Pavlov's experiments, the bell and subsequently other stimuli were initially neutral, but each became associated with the meat powder.
- Once conditioning has occurred and the originally neutral stimulus produces the response of salivating, then it is called the CS.



# Elements of Classical Conditioning: Conditioned Response

- The conditioned response (CR) is the learned response that is produced by the CS.
- The CR occurs after the CS has been associated with the UCS.
- The behaviour involved in a CR is very similar to that of the UCR, but it is triggered by the CS alone.
- Pavlov's dogs displayed a CR (salivation) only when they began to salivate to a CS.
- When the dog responded to a CS, such as the sound of a bell, classical conditioning had taken place because salivation would not be a usual response to the sound of a bell.



# Key Processes in Classical Conditioning

- Acquisition - Acquisition is the overall process during which the organism learns to associate 2 events.
- Extinction - Extinction is the gradual decrease in the strength or rate of a CR that occurs when the UCS is no longer presented.
- Spontaneous Recovery - In CC, spontaneous recovery is the reappearance of a CR when the CS is presented, following a rest period after the CR appears to have been extinguished.
- Stimulus Generalization - The tendency for another stimulus to produce a response that is similar to the CR.
- Stimulus Discrimination - When a person/animal is able to learn to respond different stimuli in different ways

