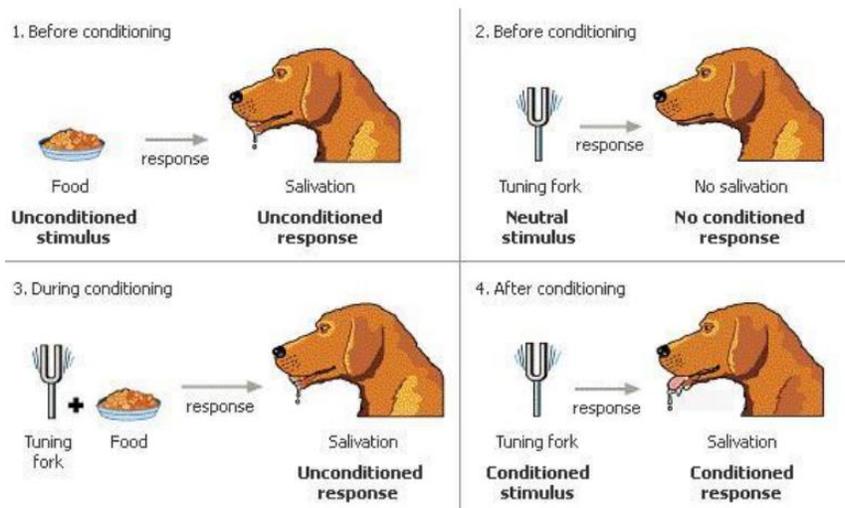


## Lecture 6- Learning

- Milestones to consider in historical context
  - 1920s Behaviourism, classic conditioning and operant conditioning
  - 1960s and 70s cognitive psychology and evolutionary psych
- Adapt to environment and stimuli
- Define learning
  - Central issue in behaviourist perspective
  - Learning is any enduring change in the way an organism responds, based on its experiences
    - Change or adaption in behaviour
    - Endures over time
    - Necessary for survival in a changing environment
  - Key issue: learning cannot be observed directly, it is inferred from behaviour that is observed
  - Modify behaviour for next times situation happens – context
  - Apply knowledge from one situation to another
- Classical conditioning- Ivan Pavlov (1849-1936)
  - Associating a neutral stimulus with a stimulus that leads to reflexive response
  - In classical conditioning, all responses are reflexes or autonomic responses- involuntary
    - Eg. Classical conditioned feelings are not altered by logical reasoning
  - Eg. With dogs: Salivating, breathing, blinking, stimuli naturally occurs
  - Neutral stimulus turned into condition stimulus
  - Pair stimuli which are associated- a behaviour follows

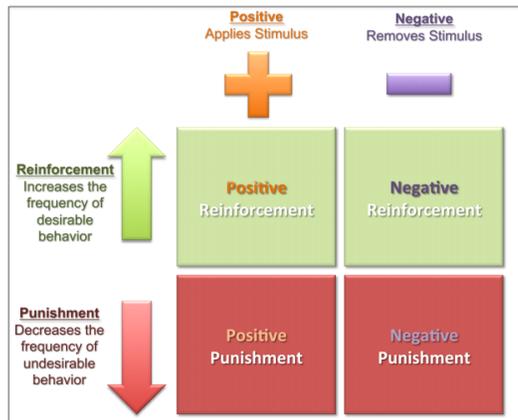
## Classical Conditioning Model



- Classic conditioning of emotional responses
  - Emotional responses can be learned eg. Little Albert experiment

- If a response is conditioned to one stimulus, the organism may also respond to a similar stimulus (generalisation) but not to a dissimilar stimulus (discrimination)
    - Generalisation- specific stimulus applying to another stimulus
  - Classic conditioning- advertisement
    - Product associated with situation, image that is attractive: intended emotional response
  - Principles of classical conditioning
    - Acquisition
    - Extinction- weakening of conditioned response when the conditioned stimulus is presented without the unconditioned stimulus
      - Not an 'unlearning', it is a learned inhibition of responding
      - Important implications for treatment of phobias
    - Spontaneous recovery
      - The re-emergence of a previously extinguished conditioned response
  - Biological constraints on classical conditioning
    - Biological preparedness- some stimuli and responses are more likely to be conditioned than others
- Operant conditioning
  - Learning of a new association between behaviour and its consequences
  - It is learning through reinforcement and punishment
  - Behaviour (response) is voluntary and emitted not elicited
  - Behaviour is modified according to its consequences
  - Behaviour more likely/less likely to occur due to positive/negative reinforcement
  - Thorndike law of effect
    - Behaviour is controlled by its consequences
    - Behaviours that result in pleasant consequences- reinforcement- will be more likely in the future
    - Behaviours that result in unpleasant consequences- will be less likely in the future
  - Skinner
    - Systematic investigation of Thorndike's ideas
    - All animal behaviour is learned
    - Design environments that shape the behaviour
- Operant vs classical conditioning
  - Classic: what happens before a behaviour is most important for learning
  - In operant: consequences or what happens after a behaviour is most important for learning
  - Behaviours are called operant
  - Operant conditioning = conditioning these operants to occur more or less frequently
- Punishment/reinforcement – positive/negative
  - Positive reinforcement- chocolate, good grades
  - Negative reinforcement- removing noise, removes unpleasant stimulus
  - Positive punishment- spraying a cat with water, shouting at a child
  - Negative punishment- losing licence

## Reinforcement & Punishment



- Limitations of punishment
  - Demonstrates what behaviour is wrong, but doesn't show what to do instead
  - Physical punishments are wrong
  - Can lead to imitation of punisher, aggression
  - Reduces self-esteem, damages interpersonal relations
  - Increases use of punishment in the future
- Alternatives to positive punishment
  - Extinction- planned ignoring
  - Response cost- quiet time, time out, withdrawal of privileges
- Principles/characteristics of operant conditioning
  - Immediacy
  - Extinction
  - Shaping and changing- reinforcing behaviours that are more similar to desired behaviour
  - Reinforcement schedules- intermittent reinforcement
  - Generalisation and discrimination
  - Escape learning and avoidance learning
  - Characteristics of the learner
    - Biological preparedness
    - Individual differences
- Cognitive-social theory
  - Cognitive revolution in psychology in 1960s
  - Behaviourism and cognitive and social learning
  - Edward Tolman
    - Cognitive maps- mental representations and images
    - Latent learning- learning that has occurred but is not manifest in behaviour
  - Albert Bandura
    - Observational learning- learning by observing the behaviour of others (models)
    - Imitation and modelling
    - Vicarious reinforcement
- Cognition and learning

- Cognitive-social theory argues that we form expectancies about the consequence of our behaviours
- Locus of control- the expectancy of whether or not fate determines outcomes
  - Internal: believing that their actions determine their fate (outcomes are determined by one's behaviour, hard work, attitudes and decisions)
  - External: believe their lives are governed by forces out of control (outcomes are independent of one's behaviour, determined by external events, forces)
- Learned helplessness
  - Expectancy that one cannot escape aversive events
  - Ethical issues of dog experiment
  - Learned helplessness is central to human depression

## Chapter 6- summary

- Learning
  - Any enduring change in the way an organism responds based on its experiences
  - Learning theories assume that experience shapes behaviour, that learning is adaptive and that uncovering laws of learning requires systematic experimentation
- Classical Conditioning
  - Refers to learning in which an environmental stimulus produces a response in an organism- an innate reflex is called an unconditioned reflex, the stimulus that produces the response in an unconditioned reflex is called an unconditioned stimulus or UCS
  - A conditioned response CR is a response that has been learned, a conditioned stimulus CS is a stimulus that through learning, has come to evoke a conditioned response
  - Once an organism has learned to produce a CR, it may respond to stimuli that resemble the CS with a similar response- stimulus generalisation
  - Stimulus discrimination is the learned tendency to respond to a very restricted range of stimuli or only the one used in training
  - Extinction in classical conditioning: CR is weakened by presence of CS without the USC, response is extinguished
  - Factors that influence Classical Conditioning include the inter-stimulus interval- time between presentation of CS and UDC, the individuals learning history and prepared learning
- Operant conditioning
  - Thorndike's law of effect states that an animal's tendency to produce a behaviour depends on that behaviour's effect on the environment
  - Operant conditioning- learning to operate on the environment to produce a consequence, operants are behaviours that are emitted rather than elicited by the environment
  - A consequence is said to lead to reinforcement if it increases the probability a response will recur
  - A reinforcer is an environmental consequence that occurs after an organism has produced a response, makes that response more likely to occur

- Positive reinforcement – process whereby presentation of a stimulus (reward) after a behaviour makes it more likely to occur again
  - Positive reinforcer- environmental consequence that strengthens the probability a response will occur
  - Negative reinforcement is the process whereby a termination of an aversive stimulus makes a behaviour more likely to occur
  - Negative reinforcers- are aversive or unpleasant stimuli that strengthen a behaviour by their removal
  - Presentation of a positive reinforcer rewards a response, the removal of a negative reinforcer rewards a response
  - Reinforcement increases the probability that a response will occur- punishment decreases the probability of a response
  - Exposure to an aversive event following a behaviour (positive punishment)
  - Losing or failing to obtain reinforcement previously associated with behaviour (negative punishment)
  - Punishment is commonplace in human affairs but is frequently applied in ways that render it ineffective
  - Extinction in operant conditioning- occurs if enough conditioning trials pass in which the operant is not followed by its previously learned environment consequence
  - Schedules of reinforcement
    - Continuous: the environmental response occurs the same time an animal emits a behaviour
    - Intermittent- does not occur every time the organism emits a response
    - Fixed-ratio schedule of reinforcement- organism receives reinforcement at a fixed rate according to the number of responses emitted, receives reinforcement after fixed amount of time
    - Variable-ratio- receives reward for some percentage of responses, number of responses required is unpredictable, amount of time before receiving reinforcement is unknown
    -
  - Discriminative stimuli- stimuli that signal to an organism that particular contingencies of reinforcement are in effect
  - Behavioural context - occurs in the context of the other environmental contingences (eg. Impact of obtaining one reinforcer on the probability of obtaining another) and broader social and cultural processes
  - Characteristics of learner also influence conditioning, such as prior behaviours in the animal's repertoire, enduring characteristics of learning and species-specific behaviour
  - Operant and classical conditioning share: extinction, prepared learning, discrimination, generalisation and the possibility of maladaptive associations
  - Operant conditioning usually applies to voluntary behaviour It can also be used in techniques such as biofeedback to alter autonomic responses which are usually the domain of classical conditioning
- Cognitive-social theory

## PYB100 SAMPLE Revision

- Incorporates concepts of conditioning from behaviourism but adds two additional features: a focus on conditioning and social learning
- Organisms form cognitive maps or mental images of their environment and these were responsible for latent learning- learning that has occurred but is not currently manifest in behaviour
- Proposes expectations or expectancies of the consequences of behaviour are what render behaviours more or less likely to occur
- Locus of control- generalised expectancies people hold about whether or not their behaviour will bring out the outcomes they prefer
- Learned helplessness- expectancy that one cannot escape aversive events
- Explanatory style- way people make sense of bad events, people with depressive or pessimistic explanatory style- see causes of bad events as internal, differ across cultures
- Social learning- learning that takes place as a result from direct social interactional
  - Observational learning- by observing others, reproducing behaviour is called modelling
    - Vicarious conditioning- consequences of action by observing others
  - Tutelage- direct instruction