

101 676: Human Learning

Week 2: What is learning?

- Change in behaviour due to experience.
 - Change: can be increase/decrease in frequency, intensity, speed, duration or form of behaviour
 - Behaviour: anything an organism does that can be measured
- Not possible to directly observe learning – changes in behaviour are a product of learning
- Change in behaviour measure of performance rather than learning. Can be effected by many thing including:
 - Motivational states
 - Pharmacological states
 - Maturation
 - Physical changes
- Latent learning: not revealed in behaviour
- Learning central to human existence

Habituation & Sensitization

1) Habituation

- Simplest form of learned behaviour
- Involves changes in responding to a stimulus: DECLINE in responding to repeated presentations of (unimportant) stimulus
- Reflexes can be modified to allow for flexible responding to environmental stimuli – simplest form of learning
- Habituation allows us to ignore unimportant stimuli which occur repeatedly
- DISHABITUATION: re-emergence of habituated response due to presentation of another stimulus
- Habituation is stimulus specific and sensitive to the passage of time/change in context

2) Sensitization

- INCREASE in responding following repeated presentation of (important) stimulus
- Reflexes/responses become faster with each new exposure to stimuli
- Groves & Thomson: dual process theory of H&S
 - H process: ea. time stimulus-response connection is activated it subsequently becomes more difficult to activate
 - S process: state system – determined by the organisms general level of arousal or readiness to respond
 - Behavioural response is an integration of these competing processes
- Solomon & Corbit: Opponent process theory of H
 - A-Process: primary emotional response
 - Fast acting
 - Decays very quickly
 - Remains constant whilst stimulus is present
 - B-Process: opponent emotional response
 - Longer to emerge and decay
 - Only activated in response to A process
 - Acts to return organism to neutral emotional state and maintain stability
 - Manifest emotional response is an integration of a and b processes

Week 3: Classical conditioning: The basics

- Pavlov's experiments
 - Unconditioned responding: innate; same across all species
 - Conditioned responding: learned response
 - Pavlovian conditioning: used wide variety of stimuli. Conditioned stimulus present prior to unconditioned stimuli
- Classical conditioning: process by which initially neutral stimuli (CONDITIONED STIMULUS), which doesn't elicit a reflexive response, *comes* to elicit a reflexive response (CONDITIONED RESPONSE) as a result of being paired with a reflexive stimulus (UNCONDITIONED STIMULUS which elicits UNCONDITIONED RESPONSE)
 - CS: neutral stimuli
 - US: biologically significant
 - CC very powerful influence on human behaviour
 - Important for survival → allows preparation for occurrence of biologically significant events
- Variables influencing CC:
 - Temporal relationships b/w CS & US
 - **Short-delay cond.:** CS starts just prior to presentation of US; CS & US usually somewhat overlap
 - **Long-delay cond.:** gap b/w onset of CS & US is longer and termination of CS is delayed until US presented
 - **Trace cond.:** CS presented prior US and there is gap b/w end of CS and onset of US. Animal needs to maintain memory trace of CS during presentation of US for cond. to occur
 - **Simultaneous cond.:** CS & US together
 - **Backwards cond.:** US presented prior CS
 - ** Generally, CS must PRECEDE US for cond. to occur. Can usually see evidence for short, long & trace cond. Temp relationship also determines strength of cond. and rate of learning
- **Inter-stimulus interval (ISI):** interval b/w onset of CS & US. Generally longer ISI = poorer cond.
- **SALIENCE:** rate at which CR is learnt dependent upon physical characteristics of CS and attention paid to it. Effected by intensity and motivation
- **Compound stimulus:** two neutral presented together
- **Overshadowing:** learning about one stimuli is much greater than the other
- **Extinction:** CR disappears with lack of US shown alongside CS. Often temporary and many ways to restore learning
- **Latent inhibition:** slower to learn about a previously experienced stimulus
- **Blocking:** failing to learn about cues into environment learning to an US – occurrence of US needs to be surprising
- **Higher-order cond.:** no CS actually present during conditioning; CS paired with an established CS

Week 4: Connectionism and learning

Classical cond. connectionism

During CC, there are always 3 different events in the environment:

- CS e.g. ticking metronome
- US e.g. piece of meat
- UR e.g. salivation response

Two of these events are the presentation of stimuli (CS & US) and one is the occurrence of a response (UR).

Stimulus-response V.S. Stimulus-stimulus learning

Stimulus response:

- Cond. results from the CS directly acquiring the ability to elicit the response → conditioning establishes a stimulus-response association b/w between the mental representation of the metronome and the salivation process = innate pathway
- Innate pathway necessary for UR (salivation response) to be associated with CS (metronome)
- Once CR is learned, innate reflex pathway is no-longer necessary for producing CR

Stimulus-stimulus:

- Association formed between CS and US
- CS activates mental association between CS and US i.e. metronome activates mental association b/w between ticking noise and picturing piece of meat. This mental image of US results in UR
- Occurrence of CR depends upon strength of:
 - Learned association b/w between mental representation of CS and US (metronome and food)
 - And innate association between US centre and response centre
 - ➔ Therefore, should be possible to affect strength of CR by manipulating strength of the food-salivation response connection