Psychology 020
Chapter 7: Learning
Tues. Nov. 6th, 2007

What is involved in learning?

●**Evolution**

-The changes in behaviour that accumulate across generations are stored in the genes
→Combined with natural selection

●**Learning**

-The changes in behaviour that accumulate over a lifetime, stored in the Central Nervous System (CNS)

●**Behaviourism**

- States that we must study observable behaviour
- Behaviourists argued that
  - ✓ unobservable phenomenon aren't necessary for an understanding of human nature
  - ✓ knowledge is learned
  - ✓ experience shapes growth

●**Classical Conditioning**

-Ivan Pavlov
-Learning by associating two stimuli together
-Learning occurs when you recognize that one event predicts another
can substitute conditioning for the word "learning"

Natural Response

Meat Powder----------→Salivation of dog
Unconditioned Stimulus (UCS) — *Unconditioned Response* (UCR)

Bell----------->No salivation
Neutral Stimulus

●During Learning

Food pairing with bell ----------→Salivation UCR

Repeatedly pairing…

●After Learning

Bell----------→Salivation
Conditioned Stimulus CS — *Conditioned Responses CR*

●**Terminology Game**

-Indicate the UCS, CS, and CR for the following examples:
-Examples:

→Sarah has had a lot of dental work done recently (fillings, root canals). Now, just walking into the reception room at the dentist makes her palms sweaty
→pain is UCS……CR is sweaty palms
→Rob's first girlfriend loved to eat onions. Whenever thy kissed, he could faintly taste onion on her breath. Now, the very scent of onions "turns him on"
→UCS is kissing……CS is onions……CR is arousal

●Other Important Terms
→**Acquisition:** acquiring a learned response to CS
→**Extinction:** learning not to respond to CS
→**Spontaneous Recovery:** The dog will quickly recover extinguished learning (pairing of food with bell). It takes a lot less time to relearn the response after many trials.
→**Generalization:** What other stimuli are going to elicit the same response in the dog (large bell and small bell)
→**Discrimination:** Can the dog discriminate between different stimuli (bell vs. chime)

●<u>Other Considerations</u>
●Taste Aversions
-strong CS-UCS association after only one trial
●Biological Preparedness
-More easily learn some associations (when stimuli more related to effect)
●Acquiring "unusual" behaviour…

●Explaining a Sexual Fetish…
-Paraphilia
-Recurring, unconventional sexual behaviour that is obsessive and compulsive, involving:
→Intense sexually arousing fantasies
→objects
→Suffering or humiliation of oneself or one's partner
→Children or other non-consenting adults.

●Application…
-Use the principles of Classical Conditioning to Explain the development of a Paraphilia or a Phobia
-Learning Theory (classical conditioning)
→1. Unconditioned Response: Sensory Stimulation → Arousal
→2. Learned Association Built through pairing: Sensory Stimulation + Fetish Object→ Arousal
→3. Conditioned Response: Fetish object → Arousal

●John B. Watson
-Applied classical conditioning principles to humans
→Acquisition of phobias
→Little Albert (exposed to white rat + noise, became afraid of white furry objects and animals)
→Development is simply learned responses from our environment
-Ethical concerns…

Applications
Learning of positive and negative reactions through pairings
Alcohol: nausea paired with taste/smell of specific alcohol (Ever had a bad night with a bottle of amaretto?)

●Operant Conditioning
-Edward Thorndike
-Learning by associating a behaviour with its consequences
-Again, learning occurs when you recognize that on event predicts another
- **"Law of effect"**→ a given behaviour is likely to occur when it is paired with a positive consequence
→if something has a negative consequence it is less likely to occur in the future.

●Thorndike's Experiment
→Puzzle Box (with cats)

-First Trial:
Tendency to perform:
→Exploring
→Sniffing
→Grooming
→Reaching with paw
→Lever-Pressing = Reward

-Later Trials:
Tendency to perform:
→Lever-Pressing
→Then typical cat behaviours

=Trial and error learning: the exploring and sniffing behaviours became less frequent and the reaching and lever pressing became more frequent, because of the reward

●Shaping Behaviour
-B.F. Skinner
→Skinner Box
-mice and bird were used with a bar to press (food was delivered) or a light to peck.

●Operant Conditioning Terms

●Reinforcement:
-Reward for desired behaviour
-Strengthens behavioural response
→positive or negative
→primary (sleep etc) vs. secondary (money)

●Punishment
-Penalty for undesired behaviour
-Weakens behavioural response
→positive or negative

●Reinforcement vs. Punishment

-Positive Reinforcement
-Positive stimulus is presented to increase behaviour
→Ex. Giving a child a candy after they have performed something that you wanted them to do.

-Negative Reinforcement
-Negative stimulus is removed to increase behaviour

-Punishment
-Aversive stimulus is presented to decrease behaviour
→Ex. Spanking

-Response Cost
-Positive stimulus is removed to decrease behaviour
→Ex. If a child stops acting up, they will no longer be grounded

●Things to consider
-Is the consequence increasing or decreasing the likelihood the behaviour will occur again in the future?
-Increasing → reinforcement
-Decreasing→ punishment

-Is something being presented or taken away?
-Given→ positive
-Taken away→ negative

****Negative punishment→called Response Cost****

●Practice
-A parent tells a child they can watch TV if they finish their homework
→positive reinforcement

-If you get out of bed, your roommate will stop yelling at you to get up
→negative reinforcement

-A parent smacks a child that for mouthing off
→positive punishment

-A dog gets a Milkbone if he rolls over and plays dead

→positive reinforcement

-If you take an aspirin, your headache pain will go away
→negative reinforcement

-If you get caught drunk driving, you will lose your licence
→negative punishment (**response cost)

●**Example: Bart at the Blackboard**
→ Reinforcement or Punishment?
=Punishment

●**Other Terms**
Chaining
-Reinforce behaviour after completing one component and then present an opportunity to perform the next in the sequence of behavior (used to acquire a sequence of responses)
Extinction
-Decline in behaviour due to lack of reinforcement
Partial Reinforcement
-Behavioural response is not rewarded every time

●**Partial Reinforcement**

Fixed Ratio
-reinforcement after a fixed number of responses
Variable Ratio
-reinforced after a variable number of responses

Fixed Interval
-reinforced after a given amount of time have elapsed
Variable Interval
-reinforced after a variable amount of time has elapsed

→*Figure 1: Partial Reinforcement*

-Learning occurs more quickly if the schedule is variable rather than fixed
→Extinction takes longer to occur

●**Name that schedule**
-You study for the tests that your professor gives you; the tests occur once per month
→fixed interval

●**Role of Cognition**
-Learned Helplessness (Seligman)
→Shock Box
-Beliefs about reinforcement

-Self-evaluations
→of our own behaviour and consequences

- **Person Variables**
  - Self-efficacy
  - Values
  - Expectations

●**Biological Constraints**
-Can't learn some behaviours
-Can't unlearn others

●**Classical vs. Operant Conditioning**
Classical
-Responses are involuntary
→Salivating
→Panic
→Nausea
→Sexual arousal
→→No cognitive component

Operant
-Responses are voluntary
→Pressing lever
→Cleaning room
→Homework
→→Can include a cognitive component

●**Observational Learning (Albert Bandura)**

-Learning by observing and imitating others
→Monkey see, monkey do…

-Cognitive processes
→attention
→retention
→reproduction
→motivation

●**Social Learning Theory**

-Children watched a film of an adult playing with a Bobo doll
→Adult was either aggressive (used a mallet) or not

-The kids were later brought into a room with toys
→Including a Bobo doll and mallet

-Kids who saw the aggressive adult modelled their aggressive behaviour

●<u>Observational Learning</u>

-Bandura created modelling theory with classic Bobo doll experiments
→Bobo: Inflatable clown

-If successful or behaviour is rewarded, behaviour more likely to recur

●Media Violence
→*Figure 2: Violence on Television*
→Children shows have almost double the amount of violence when comparing it to adult shows

●Experimental Evidence
→*Figure 3: Violent television and rate of aggression*
-Exposure to a violent TV show increased aggression – especially among boys. BUT, depends on gender of aggressor