Chapter 7: Learning

**Basic Learning Concepts + Behaviourism**

* **Learning**
  + Process of acquiring new + relatively enduring info. Or behaviours
    - Acquisition = result of experience
    - Can involve both beneficial + negative behaviours
    - Learn in order to adapt to environment
  + **Associative Learning**
    - Learning that certain events occur together
      * Associations between stimuli
        + Classical conditioning
      * Associations between actions + consequences
        + Operant conditioning
      * Associations between other’s actions + their consequences
        + Learning by observation + modeling
* **Behaviourism**
  + Rejection of introspection method
  + Psychology:
    - Should be objective science
    - Studies behaviour without reference to mental processes
  + “Theory that human and animal behaviour can be explained in terms of conditioning, without appeal to thoughts or feelings, and that psychological disorders are best treated by altering behaviour patterns.” <https://www.lexico.com/en/definition/behaviorism>

**Classical conditioning**

* Type of learning where we link 2 (or more) stimuli
* Ivan Pavlov
* Physical response can be produced solely by way of mental association
* **Unconditioned response**
  + Unlearned, naturally occurring response to unconditioned stimulus
* **Unconditioned stimulus**
  + Stimulus that unconditionally - naturally + automatically - triggers unconditioned response
* **Neutral stimulus**
  + Stimulus that elicits no response before conditioning
* **Conditioned response**
  + Learned response to previously neutral stimulus
* **Conditioned stimulus**
  + Originally neutral stimulus that, after association with an unconditioned stimulus, comes to trigger conditioned response
* **Watson, Rayner, + Little Albert**
  + Emotional responses can be acquired through classical conditioning
* **Behaviour therapies**
  + *Counterconditioning*
    - Uses classical conditioning to evoke new responses to stimuli that are triggering unwanted behaviours
      * ***Exposure Therapies***
        + Treats anxieties by exposing people (in imaginary or actual situations) to things they fear + avoid

**Systematic desensitization**

Treatment for phobias

Individual = trained to relax while exposed to progressively more anxiety-provoking stimuli

**Aversion therapy**

Encourages individuals to give up undesirable habits by causing them to associate habit with unpleasant effect

* **Biological limits + cognition’s influence**
  + Animal’s capacity for conditioning = limited by biological constraints
    - Species’ predisposition prepare to learn associations that enhance survival
  + **Preparedness**
    - Biological predisposition to learn associations that have survival value
    - Natural selection favours traits that aid survival
  + The more predictable the association, the stronger the conditioned response
    - Animals learn expectancy
    - Awareness of how likely it is that the US will occur
  + Awareness that reaction is caused by stimulus but not another weakens association between two stimuli
    - Conditioned likes + dislikes are even stronger when people notice + are aware of associations they have learned

* **Operant conditioning**
  + Behaviour becomes more likely to recur if followed by reinforcer or less likely to recur if followed by punisher
  + B.F Skinner
  + **Law of effect**
    - Thorndlike’s principle
    - Behaviours followed by favourable consequences become more likely
    - Behaviours followed by unfavourable consequences become less likely
    - Behaviour changes because of its consequences
  + **Reinforcement**
    - Increases behaviour
  + **Punishment**
    - Decreases behaviour
  + **Positive reinforcement**
    - Adds desirable stimulus
  + **Negative reinforcement**
    - Removes aversive stimulus
  + **Positive punishment**
    - Adds aversive stimulus
  + **Negative punishment**
    - Removes desirable stimulus
  + **Shaping**
    - Reinforcers guide behaviour toward closer and closer approximations of desired behaviour

1. Observe, + build on existing behaviour
2. Reward successive approximations

* Shaping = used to train animals
* Can help us understand what nonverbal organisms perceive
  + If we can snap organism to respond to one stimulus and not to another, they we know they can perceive the difference
* Discriminative stimuli signal that response will be reinforced
* We continually reinforce + shape others’ behaviour we don’t want to reinforce

* **Types of reinforcers**
  + Vary with circumstances
    - What is reinforcing to one animal may not be to another
  + ***Primary reinforcer***
    - Innately reinforcing stimulus
      * Eg. One that satisfies biological need
    - Unlearned
  + ***Conditioned reinforcer/ Secondary reinforcer***
    - Stimulus that gains its reinforcing power through its association with a primary reinforcer
      * Eg. Money, good grades, etc..
    - Learned associations with primary reinforcers
  + ***Delayed reinforcers***
    - Presented after delayed interval following desired behaviour
      * Humans respond to delayed reinforcers
        + Eg. Pay check at end of week
      * To function effectively, we must learn to delay gratification
        + Small but immediate pleasures are sometimes more alluring than big but delayed rewards
        + Leads to better outcomes
* **Reinforcement schedules**
  + Pattern that defines how often desired response will be reinforced
  + ***Continuous reinforcement schedule***
    - Reinforcing desired response every time it occurs
      * Learning occurs rapidly
        + Extinction occurs rapidly too
  + ***Partial (intermittent) reinforcement schedules***
    - Reinforcing response only part of time
      * Slower acquisition of response
        + Much greater resistance to extinction
    - ***Fixed ratio schedules***
      * Reinforce response only after specific number of responses
    - ***Variable ratio schedules***
      * Reinforce response after unpredictable number of responses
    - ***Fixed interval schedules***
      * Reinforce response only after specified time has elapsed
    - ***Variable interval schedule***
      * Reinforce response at unpredictable time intervals
* **Applications**
  + At school
    - Immediate, personalized feedback
  + In sports
    - Gradually increasing challenges
  + At work
    - Define and reward specific, achievable performances
  + In parenting
    - Do best not to cave to whims
    - Explain why bad behaviours have bad consequences
    - Target specific behaviour, reward it, watch increase
  + To change own behaviour
    - State realistic goal in measurable terms and announce it
    - Decide how,when, and where will you work towards goal
    - Monitor how often you engage in desired behaviour
    - Reinforce desired behaviour
    - Reduce rewards gradually
    - ***Learned associations feed or habitual behaviours***
      * Some behaviours become linked with context
      * Our next experience of contact will evoke habitual response
    - *Forming habitual habits take on average 66 days*
* **Critics**
  + Physical punishment
    - Behaviour = suppressed, not forgotten
      * Temporary state
    - Teaches discrimination among situations
    - Can teach fear
    - May increase aggression by modeling violence as way to cope with problems
    - Correlation does not equal causation
      * Does physical punishment cause more aggressive behaviour? Or is it aggressive behaviours that trigger physical punishment?
      * Bidirectionality of parent-child interactions
        + Parents and their children are mutually affected by one another’s characteristics and behaviours

Punishment is not just about parents’ behaviours

* + Rewards
    - If reinforced behaviour only depends on rewards
    - Might be temporary state if reward disappears
    - Can teach entitlement to privileges
    - Might get in way of building resilience and coping skills
    - Disproportionate punishment might teach fear and unfairness, but how about fair, explained punishment
* **Biological limits**
  + Most easily learn and retain behaviours that reflect our biological predispositions
    - Biological constraints predispose organisms to learn associations that are naturally adaptive
* **Cognition’s influence**
  + ***Cognitive map***
    - Mental representation of layout of one’s environment
  + ***Latent learning***
    - Learning that occurs but is not apparent until there is an incentive to demonstrate it
  + ***Limits of rewards***
    - *Intrinsic motivation*
      * Desire to perform behaviour effectively for its own sake
    - *Extrinsic motivation*
      * Desire to perform behaviour to receive promised rewards or avoid threatened punishment
    - Outside incentives can divide attention and reduce performances when it comes to complex tasks
    - Rewards may cancel out natural sense of play

* **Classical and operant conditioning**
  + 5 major conditioning processes in both classical and operant conditioning
    - Acquisition
      * In classical conditioning
        + Initial stage
        + When one links neutral stimulus and an unconditioned stimulus so that neutral stimulus begins triggering conditioned response

In most cases, half a second between NS and US is best for conditioning to happen

If US appears before NS, conditioning does not occur

* + - * In operant conditioning
        + Strengthening of response
    - Extinction
      * In classical conditioning
        + Diminishing of conditioned response
        + Occurs when unconditioned stimulus does not follow conditioned stimulus anymore
      * In operant conditioning
        + Extinction occurs when response is no longer reinforced
    - Spontaneous recovery
      * In classical conditioning + operant conditioning
        + Reappearance, after pause, of extinguished conditioned response
    - Generalization
      * In classical conditioning
        + tendency, once response has been conditioned, for stimuli similar to conditioned stimulus to elicit similar responses
      * In operant conditioning
        + Occurs when responses learned in one situation occur in other, similar situations
    - Discrimination
      * In classical conditioning
        + Learned ability to distinguish between conditioned stimulus and similar stimuli that do not signal an unconditioned stimulus
      * In operant conditioning
        + Ability to distinguish responses that are reinforced from similar responses that are not reinforced

* **Discipline + First Nations’ principles of learning**
  + ***Discipline***
    - Set of strategies and behaviours used to teach children how to behave appropriately
      * Effective when individual stops engaging in undesirable misbehaviour, + ideally engages in preferred behaviour
  + ***Internalization***
    - Process by which children learn and accept reasons for desired behaviour
      * Discipline techniques that apply too much psychological or even physical pressure on children are not effective at promoting internalization
  + ***Indigenous approaches***
    - Discipline = part of learning
    - *Ethics of non-interference*
      * **Storytelling**
        + Ethics of noninterference give individuals freedom to explore and learn through trial and error
        + Allows children to learn by experiencing natural consequences
        + Fosters independent thinking

Children become self-reliant by knowing how to survive and coexist with others in their environment

* + - * + Discipline teaches individual how their actions impact social and natural environment

As result of bad behaviour, child would endure discipline through teasing, laughter, or ignoring

Children = given moral values not to lie, cheat, or steal from their community

* + - * **Restorative justice**
        + Recognizes wrongdoing as impacting relationships
        + Seeks to restore balance in community after wrong has occurred
        + Forces offenders to be accountable to those they hurt
        + Offenders = expected to acknowledge actions

* **Learning by observation**
  + Learning by observing others
    - Without direct experience
  + ***Modeling***
    - Process of observing + imitating specific behaviour
  + Likely to learn from people we perceive as similar to ourselves, as successful, or as admirable
    - When we identify with someone, we experience their outcome vicariously
  + ***Mirror neurons***
    - Frontal lobe neurons that fire both when we perform certain actions + observe another doing so (Rizzolatti et al. 1996)
      * Brain’s mirroring of another’s action enable imitation + empathy
  + ***Prosocial effects***
    - Can be used to help new employees learn skills that will help them excel in their work
      * Gain skill faster when able to observe skills being modeled
    - People who show nonviolent, helpful behaviour can also make others have similar behaviours as them
  + ***Antisocial effects***
    - Abusive parents tend to have more aggressive children
    - Children who are lied to become more likely to cheat and lie