PSY1022 Notes

Topic List:

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Week 1 – Cognitive Psychology: Memory

Memory –

- Retention of info over time
- Processes to acquire, store and later retrieve info
- Allows learning about things in the environment that promote survival and avoid harm
- Memories define who we are
- Brains often go beyond available info to make sense of situation
- Three systems = Sensory memory -> Short term memory -> Long term memory
- Sensory memory:
    - High capacity sensory register that briefly holds perceptual info
    - Each sense has own form of memory
    - Iconic (visual) = 1 second
    - Echoic (auditory) = 5-10 seconds
- Short term memory:
    - Retains info for limited durations
    - Related to working memory
    - 5-20 seconds
    - Generally hold 7-9 stimuli
    - Can lose info due to:
        - Decay – naturally fades over time
        - Interference – loss of info due to new incoming info
            - Proactive vs retroactive
                - Proactive – old info moves forward to interfere with new info, eg. Old habits
                - Retroactive – new info interferes with retrieval of old info
    - Rehearsal – repeating info in STM extends the duration of it
        - Maintenance rehearsal – repeating stimuli in the same form
        - Elaborative rehearsal – links stimuli to each other in a meaningful way (eg. Acronyms)
            - Usually more effective
            - Consistent with levels-of-processing model
            - Three levels – visual, phonological (sound related) and semantic (meaning related)
            - Visual = most shallow, phonological = less shallow, semantic = deepest
- Long Term Memory:
    - Relatively enduring
    - Includes facts, experiences, skills developed
    - Decades to permastore (duration)
    - Capacity is unlimited
    - Implicit memory
        - Recalling info that we don't remember deliberately

        - Eg. Tying shoelaces
        - Includes procedural memory, habituation, classical conditioning
    - Types:
        - Explicit
            - Semantic
            - Episodic
        - Implicit
            - Procedural
            - Priming
            - Conditioninge
            - Habituation
- Three Processes:
    - Encoding
        - Getting info into memory
        - Must first attend to it
        - Next-in-line effect (remember first things better than later thing)
        - Mnemonics
            - Learning aids that enhance recall
            - Pegword method (rhyming)
            - Method of loci (place imagery)
            - Keyword method (language learning, reminder words)
        - More likely to recall something when conditions are similar to when we encoded
            - Context-dependent learning
                - Superior retrieval when external context of original memory matches retrieval context
            - State-dependent learning
                - Superior retrieval when organism is in same psychological or physiological state as in encoding
    - Storage
        - Keeping info in memory
    - Retrieval
        - Reactivation or reconstruction of info from memory
        - Cues help access to long term memory
            - Recall
                - Generating previously remembered info
            - Recognition
                - Selecting remembered info from array of options
            - Relearning
                - We recall things much more quickly when we've previously learn them

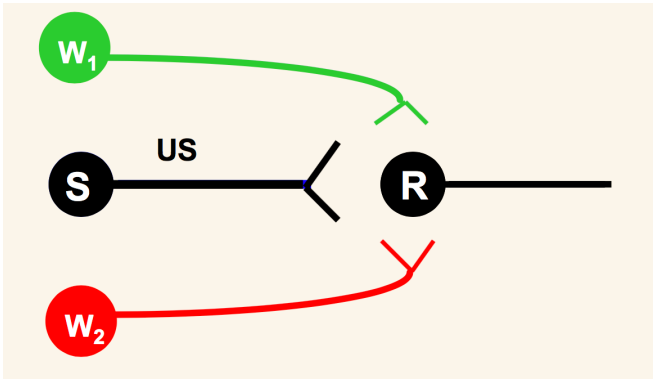
Week 2 – Memory 2

Biology of Memory:

- Memories are distributed around the brain
- Short term
    - Reverberating loops of neutral activity
    - Maintains neural activity for a period

Hebbian Synapse:

- Long term memory
    - Required structural change in brain
    - Relitively permanent
- Donald Hebb proposed that use strengthens synaptic efficiency and concurrent activity is required
- Different experiences memories are stored in different brain regions
- Long term potentiation
    - Gradual strengthening of connections among neurons from repetitive stimulation
    - Gultamate – excitatory neurotransmitter released
    - Binds to 2 postsynaptic receptor subtypes
        - AMPA
        - NMDA
    - Leads to presynaptic & postsynaptic changes
    - Associative Learning
        - Before Learning –
            - Stimulates S -> Action potential in response
            - W1 or W2 -> no action potential in response
        - Induction –
            - Paired: W1 + S -> AP
                - LTP in W1
            - Unpaired W2 -> no AP
        - After Learning
            - W1 alone -> AP in R
            - W2 alone -> no AP in R



- LTP plays a key role in learning
- Hippocampus plays a role in forming memories
    - There is not an engram
- Amnesia
    - Retrograde
        - Loss of past memories
    - Anterograde
        - Loss of ability to make new memories

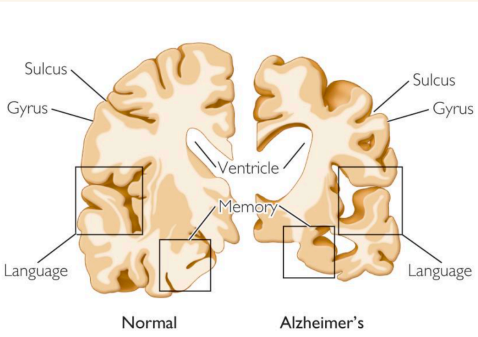
Emotional Memory

- Hippocampus is not entirely necessary for implicit memory, but is for explicit memory
- Amygdala and hippocampus interact to give emotional memories
- Amygdala helps recall emotions associated with fearful events

- Hippocampus helps recall events themselves

Memory Deterioration

- Begin to decline after approx. 65 years
- Alzheimer's most frequent cause of dementia
- Shows memory and language losses (cortical loss – outer layer of cerebrum)



Alzheimers Disease

- Activity lifestyle, greater education and intellectual activity are related to preventing or delaying AD

Memory over Time

- Changes as we age
- Memory span increases with age untuil 12
- Increase in conceptual understanding
- Develop meta-memory skills

Infantile Amnesia

- Inability of adults to retrieve accurate memories before 2-3 years old
- Hippocampus is only partially developed in infants

False Memories

- Flashbulb memories
  - Very vivid
  - Able to be recalled in detail much later
  - But often change over time and are innacurate
- Source monitoring confusion
  - Lack of clarity about origins of a memory
  - Can cause memory illusions (including cryptomnesia – remembering a forgotten memory and mistaking it for a new one)
- Suggestive memory techniques
  - Seed an idea which creates misinformation
  - Eg. Describing a car crash with more intense adjectives (smashed vs contacted) meant people were more likely to recall the speed as greater
- Implanting False Memories
  - Event plausibility and recency can impact their strength
  - It is possible to create memories that are flase
- Memory Distortions
  - Schema's
    - Memory distorted by what we believe we should recall
    - Can fill the gaps
- Less Accurate Memories When…
  - Observing others of different race
  - Witness talking to other witnesses
  - Observed event was stressful
- False Memory Controversy
  - Repressing then later recovering traumatic memories with recovery therapists
  - No evidence to support these claims that we can repress memories

Week 3 – Psychology and the Scientific Method (Psych Discovery)

- Psychological discovery – process where behavioural sciences gather and interpret info to provide an understanding of how and why people **think, feel** and **behave** the way they do.
- Ways of acquiring knowledge:
    - Superstition
    - Intuition
    - Authority
    - Tenacity (long accepted facts or traditions)
    - Rationalism
    - Empiricism (observations from the senses)
    - Science
        - Have pitfalls in
            - Erroneous beliefs
            - Inaccurate info
            - Flaws in logical reasoning
            - Perceptions biased by prior experiences
- The Scientific Method
    - Helps overcome problems associated with illogical reasoning, overgeneralisation and inaccurate observations.
    - 5 Steps:
        - Observe phenomena
        - Form a hypothesis
        - Use hypothesis to generate a testable prediction
        - Evaluate predication by making systematic observations
        - Use observations to present findings and how they relate to original hypothesis
- Goals of Science
    - Description: seek to define or classify events and their relationships
    - Predication: adds to our knowledge of a particular phenomenon and also helpful in the prevention and treatment of disorders
    - Explanation or Understanding: the casual factors involved in behaviour
        - Explanation Understanding can be sought by:
            - Examining covariations of events
            - Examining time-order relationships
            - Elimination of possible alternative causes
- Theory
    - Framework within which knowledge Is brought together in a logical way to provide explanation for something
    - Qualities of a Good Theory
        - Parsimony – contains the least assumptions. Simple explanations are preferred over complex.
        - Precision of predictions
        - Rigorous testing
- Hypotheses are
    - Brief statements about what researcher expects to find