Memory

Working memory: Rehearsal, auditory loop, visuo-spatial sketchpad

LoP (levels of processing) emphasises that stimuli can be processed in different layers, more or less superficially and thus be remembered differently

Forgetting

Accessibility vs availability - it might be there but not easy to access, low probability of finding it

Long-term memory forgetting: Early theories focused on *disuse,* many new theories focus on how learning new things may interfere with prior experiences, called *interference theory*. Little evidence outside lab settings. *Retrieval failure theory* - forgetting because we use the wrong *cue* by which we have stored the memory

Attention

Solo 1995 definition: “the concentration on a mental effort on sensory and mental events”
Split: selective attention (aware or not) vs divided attention (multi-tasking)
Cocktail party effect: Filter out other things
Selective attention studied by dichotic listening, have to filter one side/conversation out
Divided: mental resources, Kahneman
Stroop effect

Bottleneck/*single-channel* theories of attention:

Broadbent 1958: information coming to short-term memory, being filtered/selected as interesting, then these “channel” of incoming information is being processed by a limited-capacity processor. Information which is filtered out is still available but only in short-term memory.

Triesman 1960: Attenuation of unattended channel - turning down volume instead of binary on-off. Aspects of incoming information are analysed at level of physical properties, syllables, grammar and semantics before being filtered.
Deutsch-Norman: Full analysis before being filtered

Single-channel theories are inflexible compared to allocation model

Kahneman 1973 capacity allocation model:
We have finite amount of processing power available, completing task depends on whether we have allocated sufficient resources to the task. Affected by arousal, “enduring dispositions” (outside control, hearing your own name), “momentary intentions” (voluntary shifts in att.) and ”evaluation of attentional demands”
Model does not describe how resources are channeled or focused

Automatic vs. controlled processing, Schneider & Shiffrin

Capable of both, automatic for easy task, controlled for difficult and new tasks.
Controlled requires more attention, is also slow and limited in capacity

Automatic, little to no attention, fast, few limitations on capacity, unavoidable, difficult to modify

Factors affecting attention

Stress is most important factor: effect of stimuli both internal and external, affects arousal.
Arousal: motor and perceptual activity
Stressors: light, noise, vibration, anxiety, fatigue, anger, lack of sleep
Yerkes-Dodson law - relationship between arousal and performance - not too high, not too low. There is an optimal level of arousal. For simple tasks high arousal is not as bad

Vigilance

Maintain attention and quick reaction

Mental workload:

Mental demand, physical demand, temporal demand, performance, effort and frustration

Visual search

locate particular items on scene
no consistent search pattern from user which can be predicted
Attention to bright and changing elements, used to direct attention
Edge effect: routine scanning we ignore periphery

Signal detection theory

Based on a detected signal we must act
Respond in 4 ways to presence of signal: Detect correctly (hit), not detect (mis). Absence: Correctly reject, incorrectly reject (it was present)