PSYU2246: COGNITIVE PSYCHOLOGY I GLOSSARY OF TERMS, THEORIES, AND EXPERIMENTS	
The study of cognition	Understand human cognition by observing behaviour
Parallel processing	Able to do two things at once, takes less conscious effort
Cascaded serial processing	Processes overlap, serial, but don't have to be completed before the next process begins to occur.
Discrete serial processing	Processes completely separate, occur one at a time, next one doesn't start until the previous one has finished.
Bottom-up processing	Stimulus causes internal processes to occur
Top-down processing	Expectations/knowledge/experience influences response, goal driven. E.g. looking for keys on a crowded desk. Role of context is important.
Information processing approach	Major goal: specify the processes and structures involved in cognition. Stimulus -> attention -> perception -> though processes -> decision -> response/action. Bottom-up and serial processing. Treating the human mind as an information processor
Approaches to study of cognition	Cognitive psychology: studying observed behaviour to investigate human cognition Cognitive neuroscience: behaviour-brain link Cognitive neuropsychology: study of brain-damaged patients to understand cognition Computational cognitive science: use of computational models to develop understanding of human cognition.
Serial recall task	Recalling of items in the correct order
Temporal resolution	When a process occurs. The accuracy with which one can measure when an event occurs in the brain. How precise the time measurement is.
Spatial resolution	Where a process occurs. The accuracy with which one can measure where an event occurs in the brain
Event-related potential (ERPs)	EEG recorded in response to an event. High temporal, low/limited spatial due to skull and brain tissue distorting electrical fields. Non-invasive. Requires many trials
Functional magnetic resonance imaging (fMRI)	Shows blood oxygenation (haemodynamic activity) in the brain, high spatial, poor temporal resolution, non-invasive, indirect measure. Blue= decrease in blood flow, red= increase in blood flow
Magnetoencephalography (MEG)	Uses SQUID to measure magnetic fields produced by the brain's electrical activity, high temporal, moderate spatial. Expensive, requires potentially uncomfortable positions for participants for an extended period of time
Transcranial magnetic stimulation (TMS)	Produces a brief lesion in the brain by applying a magnetic pulse which disrupts brain functioning in a specific region.
Functional modularity	What the area of the brain does. Domain specificity (only respond to one class of stimuli)

Anatomical modularity	Where it is located in the brain
Focused attention	Selectivity to one stimulus and only attending to that individual stimulus alone.
Divided attention	Control and automaticity
Dichotic listening task	Different auditory message is presented to each ear. Shadowing -> attended message was repeated aloud as it was presented. Concluded that the unattended message received almost no processing.
Cherry's auditory selective finding (1953)	Subjects didn't process meaning (e.g. could be in a foreign language and they wouldn't notice or backwards speech), but only the perceptual features of the unattended message (e.g. pitch, male or female voice). Physical not meaning in unattended processed.
Moray's cocktail party phenomenon (1959)	How you can hear only the person you're talking to and mask out the background sound. Incompatible with Cherry's finding that only physical characteristics are processed in the unattended message. Participants wouldn't notice same word repeated 35 times but could notice own name in unattended message
Broadbent's filter model	Early bottleneck, only process attended, selection based on perceptual characteristics, not meaning. The other input remains briefly in the sensory buffer and is rejected unless attended to rapidly. Messages are streamlined when it reaches the selective filter that only allows certain input through to the STM. Selective filter prevents overloading of the STM limited capacity store. Only attended message is semantically processed. Consistent with Cherry's findings that the unattended info undergoes minimal semantic processing before being filtered <u>Limitations</u>: - Model is inconsistent with Moray's finding (own name detected)
Treismann's attenuation model	More flexible bottleneck. Predicted that words would be noticed in the shadowed ear better than in unattended, processing is reduced in unattended ear by an *attenuator*. "breakthroughs" explains why you can hear your own name in unattended message – context is important (top-down processes). Processing started based on physical cues, syllable pattern and specific words and then move on to process based on grammatical structure and meaning. Thresholds of context-appropriate stimuli are lower; some stimuli require less processing as they are contextually salient. Own name has a lower threshold due to its high salience. Selection occurs during perception.
Deutsch & Deutsch's late model	Argued that all stimuli are fully processed to the level of meaning. Attended and unattended messages processed all the way, processing should be the exact same. Bottleneck is late at selection for action (not perceptual processing). Found that there was reasonably thorough processing of the unattended message, but this was less than the attended message.
Triesmann & Riley's experiment (1969)	Compared Treismann's attenuation and D&D. Attenuation model predicted that the non-shadowed message would be attenuated, and that target detection should be worsened in the non-shadowed message. The late selection model predicted that there would be full processing of both messages, and that target detection should be equal in the two messages. Target detection was much worse in the non-shadowed message (8%) than the shadowed message (87%). Unattended message wasn't processed, didn't notice if in different language or backwards – supported Treismann's attenuation model
Johnston & Heinz's flexible bottleneck view	Proposed that bottleneck location is flexible and depends on the requirements of the task. The unattended message is not always processed fully to the level of meaning.

Johnston & Wilson's experiment (1980)	Dichotic listening task where target was from a semantic category, use of critical targets with ambiguous meaning (e.g. organ), making detection of target harder as it requires interpretation. Appropriate: church-organ Neutral: paper-organ Inappropriate: kidney-organ. If meaning is processed in the unattended message, meaning of the non-target word would influence detection of the ambiguous target word (appropriate > neutral > inappropriate). *Focused attention* condition found no effect of non-target on detection of targets, non-targets not semantically processed. Suggests early bottleneck as semantic processing doesn't occur in the unattended message. *Divided attention* condition found that target detection was best for appropriate then neutral and then inappropriate, non-targets processed semantically. Shows that the bottleneck can be late or early depending on the demands of the experiment.
Task switching	Individuals were identified as high vs low multitaskers. Presented with a digit or letter and had to classify whether it was odd or even, vowel or consonant. RT measured. Critical manipulation is the switch between tasks (repeat or switch condition). Alzahabi & Becker (2013) found that heavy multitaskers show smaller switch costs. Ophir et al. (2009) reports the opposite – why the inconsistency? Changes in the nature of media users over the 4 years, different combination of media use, correlation not causality. The participants were classified into high/low multitaskers – subject characteristic, wasn't manipulated – can't make a causal statement
Dual-task performance	What determines how well we can multitask? - Individual differences in media usage – a subject variable that can't be manipulated, can't tell you about the cause of how well you multitask. - Degree of similarity of the two tasks: similar tasks interference • Similar stimulus modality (input) e.g. read a test vs listen to a phone message while driving • Similar response modality (output) e.g. tap numbers vs say numbers while rubbing your head. - Practice and automaticity – with practice, the task becomes automatic (don't need to focus as much)
Characteristics of automaticity	Automatic processes are: - Fast - Require little attentional capacity - Unavailable to consciousness - Unavoidable - Inflexible (difficult to modify once learned)
Shiffrin & Schneider consistent and varied mapping	Demonstrated that automatic processes are unavoidable and inflexible. Participants had to decide whether an item was from the memory set or not. Consistent mapping sets were distinguished and did not overlap, varied mapping sets overlapped. CM resulted in automatic processing, *RT didn't increase as set size did*, parallel search, *does not consume attentional capacity*. VM resulted in controlled processing, RT increased as set size did – serial controlled processing. Participants were then asked to only search for the object in a particular region – they were unable to ignore it. This demonstrates the **unavoidable** nature of automatic tasks.