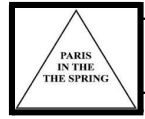


MODULE 1 - INTRODUCTION TO COGNITIVE PSYCH

Definition sub module 1

Cognitive psychology is the scientific study of the **mind** and its **processes**, including **memory, attention, language, problem-solving, and decision-making**. It deals with how knowledge is **acquired, remembered**, and used in various everyday and academic contexts. A fundamental aspect of cognitive psychology is that **we cannot directly observe the mind**, so we infer its workings through **behaviour**, which can be measured in **experiments**.



Top-down processing: influenced by prior knowledge and expectations rather than by new stimuli alone.

Key Figures and Historical Development sub module 2

Cognitive psychology developed in the late *19th century*, starting with **Wilhelm Wundt**, who established the first laboratory of scientific psychology. His reaction time experiments were among the first methods used to **measure cognitive processes**. His student, **Edward Titchener**, used introspection to explore subjective experiences, though this method was criticised for its **lack of objective measurement**. **William James** introduced functionalism, emphasising the adaptive significance of mental processes like **memory** and **attention**.

Wilhelm Wundt	Voluntarism	1832-1920	Established the first scientific psychology lab. His reaction-time experiments allowed cognitive processes to be inferred from behaviour.
Edward Titchener	Structuralism	1867-1927	Focused on the structure of the mind and used introspection to analyse conscious experiences, though introspection was criticised for being subjective.
William James	Functionalism	1842-1910	Studied how mental processes function in promoting survival. He developed theories about attention and memory, including the distinction between short-term (primary) and long-term (secondary) memory.
John Watson	Behaviourism	1878-1958	Rejected the focus on mental processes favouring observable behaviour, leading to behaviourism. Like the "Little Albert" experiment, his work demonstrated classical conditioning.
B.F. Skinner	Operant Condition	1904-1990	Expanded on behaviourism by studying reinforcement and punishment. His theory emphasised learning as a product of behaviour modification.

sub module 1 & sub module 2

John Watson founded behaviourism in the early 20th century, arguing that psychology should **only focus on observable behaviour**, excluding mental processes. **B.F. Skinner** later expanded on this by developing operant conditioning, which involves learning through **reinforcement**. The cognitive revolution in the *mid-20th century*, led by figures like **Noam Chomsky** and **George Miller**, shifted the focus back to **mental processes** and marked the decline of **behaviourism**.

Cognitive Revolution: Marked the decline of behaviourism and the rise of cognitive psychology, spurred by critiques from figures like **Noam Chomsky** and key research in **attention** (Broadbent), **memory** (George Miller), and **language**.

sub module 3

Scientific Method: Cognitive psychology relies on the **scientific method** to establish **cause-and-effect** relationships. It ensures that any results are due to **manipulated variables**, rather than **external ones**.

Ecological Validity: Refers to how well lab findings **apply** to the **real world**.

Key Research Methods:

1. **Experimental Cognitive Psychology:**

- Involves **lab-based research** focusing on **accuracy** or **reaction times** in tasks.
- Issues include **ecological validity**, task complexity, and the fact that cognitive processes are often inferred from **indirect measures** (e.g., reaction times).

2. **Cognitive Neuroscience:**

- Uses methods like **ERPs (event-related potentials)**, **TMS (transcranial magnetic stimulation)**, and **fMRI** (**often incorrectly assumed with Function specificity**) to determine where and when brain processes occur.
- These methods help **localize brain activity** but often rely on **associations** rather than direct evidence.

3. **Cognitive Neuropsychology:**

- Studies patients with brain damage to infer/deduce normal cognitive function.
- Challenges include **uniformity** (whether one patient's findings apply to others), **subtractivity** (whether patients compensate for damage with other brain areas), and individual differences.

4. **Computational Cognitive Neuroscience:**

- Models human cognition using computer programming. Issues include **Bonini's paradox (over-complex models are less useful)**, **overfitting** (models account for noise and real data), and difficulty in falsifying models.
- **Combining Methods:** Using multiple methods (e.g., lab research combined with neuroscience) provides more robust evidence if results converge.
- **Replication Crisis:** A significant issue in psychology that many studies fail to replicate. Solutions include promoting open science (sharing data and pre-registering studies) to reduce questionable research practices.

Example questions

1. The primary method of the study of cognitive processes: **Experimentation**
2. Behaviourism is a reaction to: **Voluntarism, structuralism, and functionalism**
3. Which of the following causes a belief brain lesion? **Transcranial Magnetic Stimulation (TMS)**

MODULE 2 - MEMORY 1

sub module a1

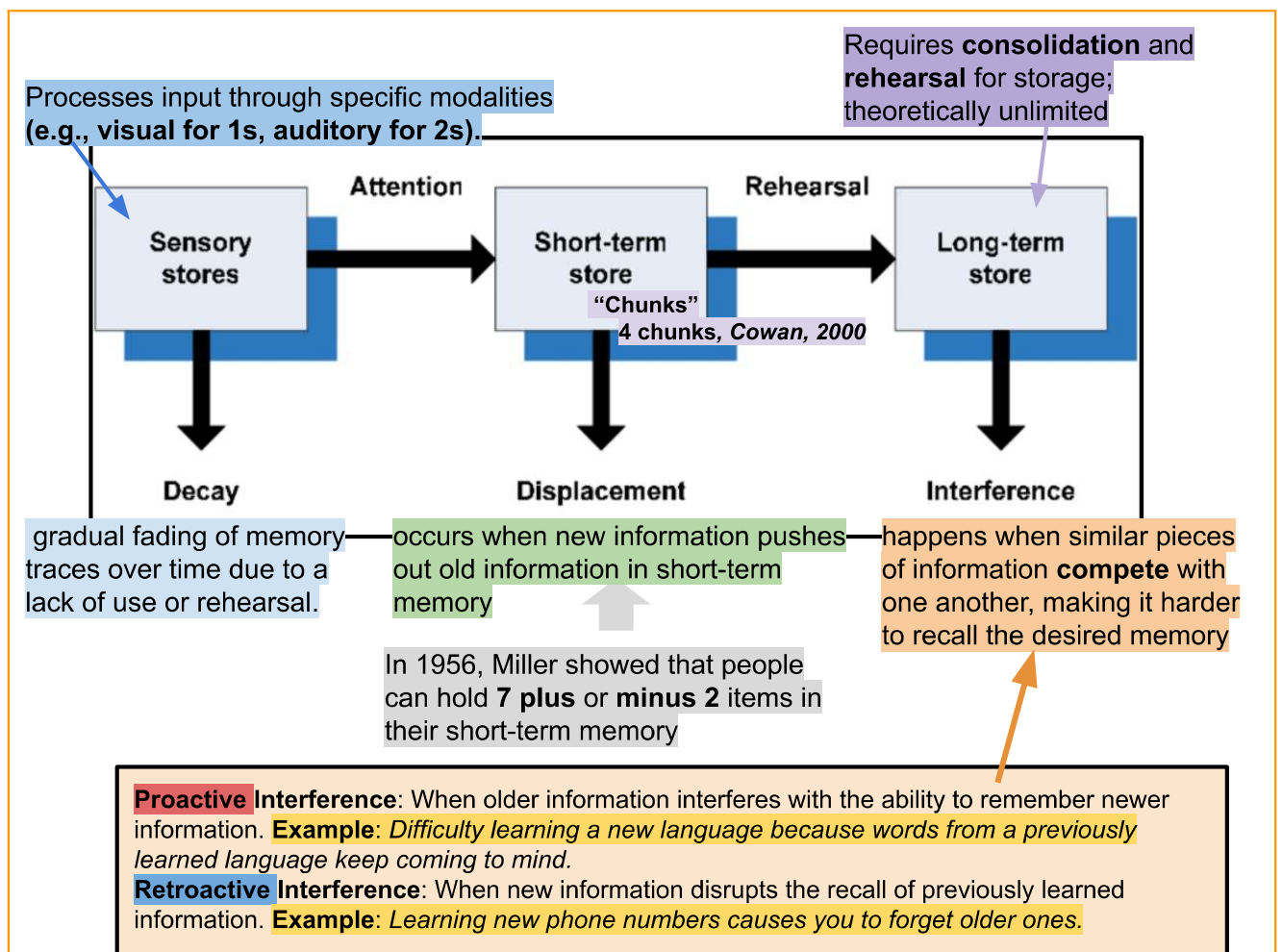
Definition

Memory involves **recalling** events and people, **enabling a sense of self**. It's a **reconstructive process** (Roediger, (2008). *Relativity of remembering*).

Four Stages of Memory:

- **Encoding**(initial learning):
 - Transforming information into a form for storage.
- **Consolidation**(brain that converts short-term memories into long-term ones):
 - Establishing biological connections with past knowledge.
- **Storage**(permanent record of info): Information is held over time.
- **Retrieval**(recovering stored information by accessing the memory trace through an effective retrieval cue):
Re-accessing stored information (**reactivation**) or facing failure in recall (**forgetting**).

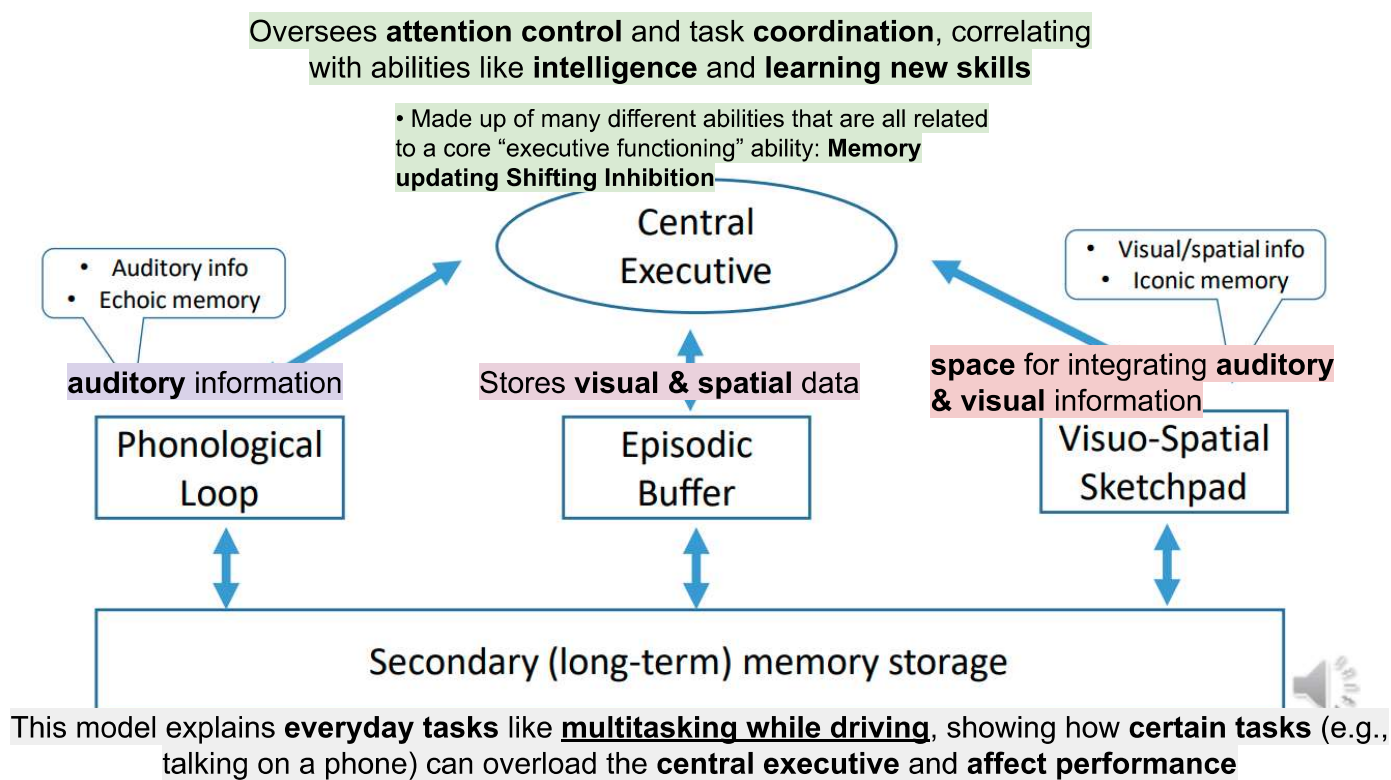
Multi-Store Model of Memory



These processes all contribute to **forgetting**, either by weakening **memory traces (decay)**, pushing out existing **memories (displacement)**, or by causing confusion between **competing memories (interference)**.

Baddeley and Hitch's Working Memory Model (1974)

sub module 1b



Levels of Processing Theory (Craik & Lockhart, 1972)

sub module 1c & sub module 1d

Core Assumptions:

1. Depth of processing of a stimulus (**extent to which meaning is extracted**) affects memorability
2. Deeper levels of analysis produce more **elaborate**, **longer-lasting** and **stronger** memory traces than **shallow analyses**.

Processing Levels

Shallow	(Graphemic)	Focuses on superficial features like uppercase vs. lowercase letters.
Intermediate	(Phonemic)	Involves sound features, like rhyming .
Deep	(Semantic)	Connects information to meaning , yielding the <u>best memory retention</u> .

Elaboration and Distinctiveness: More **elaborative** processing leads to better memory, while **distinctiveness** at the **encoding** or **retrieval** stages enhances long-term memory. *e.g. Reading a list of animals, recall the bird names.*