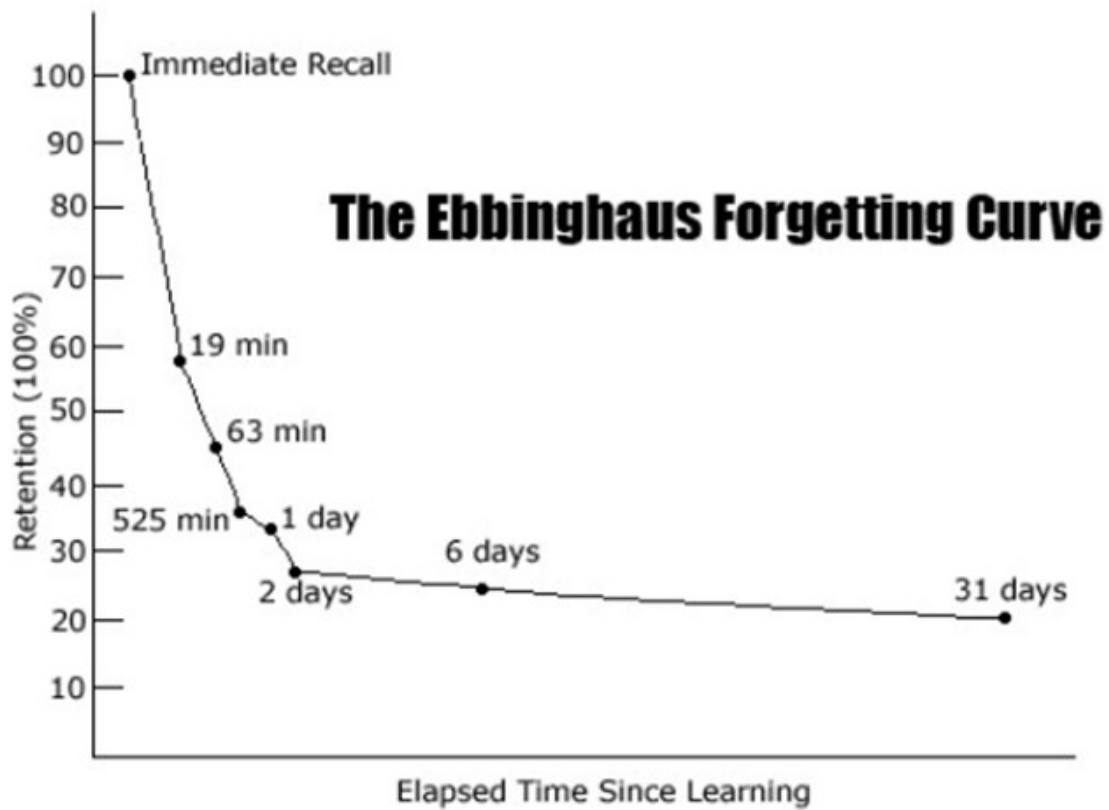


Memory



Hermann Ebbinghaus

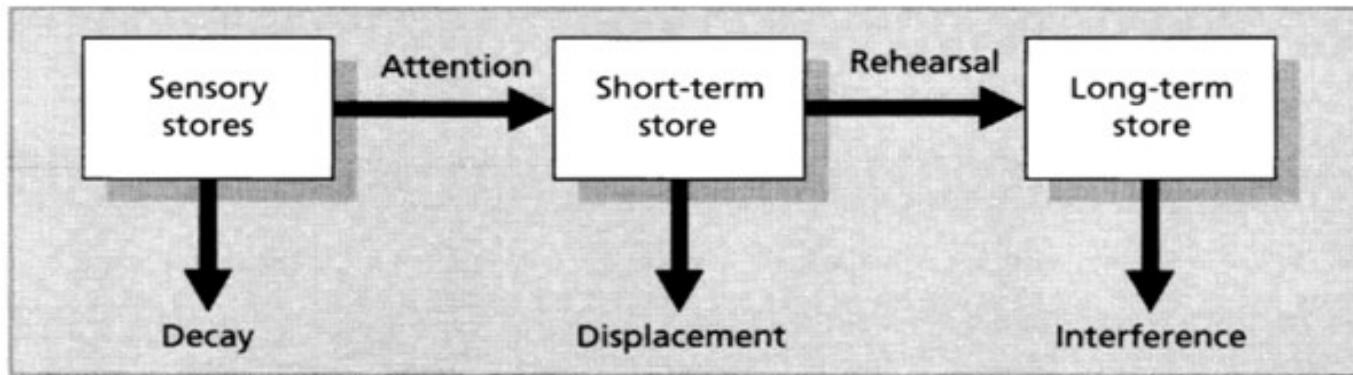


- Serial Position Effect - Primacy effect
Recency
effect
- Savings – learn something and then
never rehearse it until it is completely
forgotten
then learn it again and compare the
learning time

- Structuralist Perspective
- Proceduralist Perspective
- Dynamic Perspective

Structure of Memory

- **Stages in Information Processing:**
Encoding
Storage
Retrieval
- Memory Stores as explained using **Atkinson and Shiffrin's Modal Model of Memory (see below)**



[Source: Eysenck & Keane (2000); p. 169]

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Memory Stores

- Sensory Store:

Duration: 1-4 seconds; just enough to be perceived.

Iconic (visual) store

Echoic (auditory) store

Short-Term Store:

Duration: for about half a minute; information held longer in STM if rehearsed.

Storage Capacity: “Seven plus or minus two”; the role of chunking

Structuralist View

- Working Memory
- Semantic memory
- Episodic Memory
- Perceptual Representation
- Procedural memory

- Working memory – cognitive work is happening
 - temporary maintenance and storage
 - multiple subsystems – auditory and visuo-spatial
 - unlike STM, capacity is based on rehearsal & decay

- Semantic memory – knowledge of facts, vocabulary
- Episodic memory – memory of events

- Perceptual Representation - information about form and structure of objects and words
- Procedural memory – memory of how to do things – swim, ride a cycle, play badminton

Proceduralist Perspective

- Memory is viewed as a **process** rather than a store
- Craik & Lockhart – **Levels of Processing**

Encoding	Level	Example
Structural/Physical	Shallow	Is the word in caps
Phonemic with	Intermediate	Does it rhyme
Semantic fruit?	Deep	Is it an e.g of a

- The deeper the processing the better the retention

Rehearsal

- Maintenance rehearsal (mugging)
- Elaborative rehearsal (forming rich associations)

3 dimensions linked to levels/ depth of processing:

- Elaboration - rehearsal
- Distinctiveness - uniqueness
- Self-reference effect - the information is relevant to us.

The Dynamic Perspective

Memory is active and dynamic

- memory is constructed
- At every retrieval attempt memory is reconstructed based on the old memory and general knowledge

- Misinformation Effect

Loftus & Palmer - film of a traffic accident

“How fast were the cars going when they smashed into each other?”

“How fast were the cars going when they hit each other?”

A week later they were asked if they recalled seeing any broken glass at the scene of the accident.

- Visualizing something and actually perceiving something activate similar brain areas (Gonsalves et al., 2004).
- Eyewitness Testimony
- Source Amnesia
- False Memories

Factors that affect eyewitness testimony

Factor	Effect on accuracy of eyewitness
Post event information	Eyewitness testimony about an event often reflects not only what the witness actually saw, but information that was obtained later.
Witness intoxication	Alcohol impairs an eyewitness's later ability to recall persons and events.
Weapon focus	Presence of weapon impairs an eyewitness's ability to accurately identify the perpetrator's face.
Suggestibility	Young children and older adults are more prone than young adults to interviewer suggestion, peer pressure and other social influences.
Disguise	Hampers recognition of perpetrator at line up identification stage.

US Senator John McCain on the Iraq war:

2007(on MSNBC): “When I voted to support this war I knew it was probably going to be long and hard and tough.”

2002(on Larry King): “I believe that the operation will be relatively short (and) that success will be fairly easy.”

Retrieval

- Recall – recall information learnt earlier – as to a question on a exam
- Recognition – identify items previously learnt - MCQ.
- Retrieval cues come from the associations we form when we encode information

- Context Effects - place congruent memory
- Mood - mood congruent memory

Neurobiology of Memory

- Hippocampus - new memories are formed. Densely packed with neural layers. Connections to the cortex - may lead to memories getting transferred to LTM
- Cerebellum - Procedural Memory
 - Classical Conditioning
 - Implicit Memories

Forgetting

- Encoding Failure – Attention to detail
- Storage Decay – Fading
- Retrieval Failure – Tip of the tongue phenomenon
- Interference – Proactive - earlier information disrupts
Retroactive – later information
disrupts

- Aging - episodic memory is affected not semantic
hippocampus may shrink
- Stress - cortisol - hippocampus
- Alzheimer's Disease - beta-amyloid plaques spread over the cortex
- Dementia - vascular dementia

Amnesia

- Retrograde - events before the incident – brain injury/ stroke
- Anterograde – new memories
brain injury, sleeping pills, alcohol
- Psychogenic Amnesia – traumatic event (absence of brain injury)

Memory and Studying

- Spacing Effect (Cepeda et al. 2006)
- Testing Effect (Karpicke & Roediger, 2008)

- Encoding

Time Management & Planning

Minimize Distraction – Focused Attention

Taking Good Notes (Concept maps, outlining, summarizing)

- Storage

Organizing memory

Spreading out and Consolidated Learning

- Retrieval

Effective retrieval Cues

Preview, Question, Read, reflect, recite, review

- Sleep - memories are consolidated in sleep