


Cognition

Unit 7

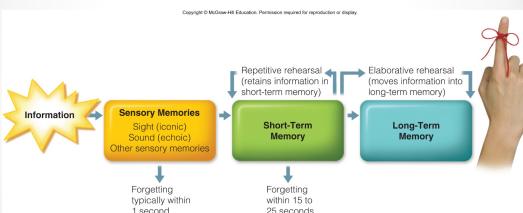
Foundations of Memory

- **Memory:** Process by which we encode, store and retrieve information
 - Stages of remembering:
 - Encoding
 - Storage
 - Retrieval



Three-Stage/Information-Processing Model of Memory

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Information → Sensory Memories (Sight (iconic), Sound (echoic), Other sensory memories) → Short-Term Memory → Long-Term Memory

Forgetting typically within 1 second (under Sensory Memories)

Forgetting within 15 to 25 seconds (under Short-Term Memory)

Repetitive rehearsal (retains information in short-term memory) (between Short-Term and Long-Term)

Elaborative rehearsal (moves information into long-term memory) (between Short-Term and Long-Term)

Source: Atkinson & Shiffrin, 1968

Types of Memory Stores

- **Sensory Memory:** Initial, momentary storage of information, lasting only an instant
- **Short Term Memory (STM):** Holds information for 15-25 seconds
- **Long Term Memory (LTM):** Stores information on a relatively permanent basis, although it may be difficult to retrieve.

Sensory Memory

- Snapshot that stores information for a brief moment in time.
 - **Iconic memory:** reflects information from the visual system (less than a second).
 - **Echoic memory:** stores auditory information coming from the ears (fades within 2 to 3 seconds).

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Questions

- What role does "attention" play in sensory memory?
- What does "automatic" processing mean?



Short-Term Memory

- Memory in which information first has meaning
 - **Chunking:** grouping of information that can be stored in STM
 - **Limited Capacity: Magic Number 7 +/- 2**
 - PBSFOXCNNABCCBSMTVNBC
 - PBS FOX CNN ABC CBS MTV NBC
- **Limited Duration:** information is lost after 15 to 25 seconds

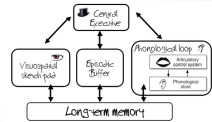
Short-Term Memory

- **Rehearsal:** repetition of information that has entered STM
 - **Elaborative rehearsal:** information is considered and organized in some fashion
 - **Mnemonics:** Organizing information in a way that makes it more likely to be remembered



Working Memory

- Set of temporary memory stores that actively manipulate and rehearse information (Baddeley)
 - Central executive processor – involved in reasoning and decision making
 - Visual store
 - Verbal store
 - Episodic buffer
 - Uses a significant amount of cognitive resources during its operation
 - Stress can reduce its effectiveness



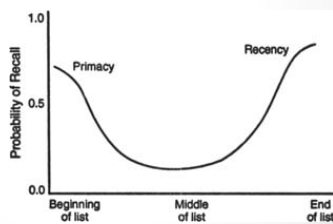
Cognitive Load

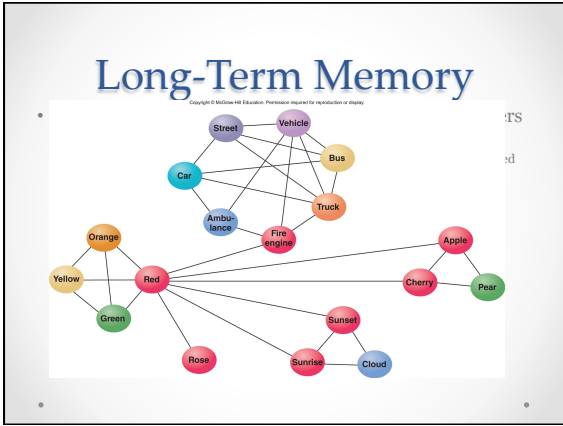
- Amount of stuff put into working memory
- How much are you asking people to do at one moment
- Complexity of information to be learned



Long-Term Memory

- **Serial positioning effect:** the ability to recall information in a list depends on where in the list the items appear
 - Primacy effect:
 - Recency effect:






Recalling: Long-Term Memory

- **Tip-of-the-tongue phenomenon:** Inability to recall information that one realizes one knows

Retrieval Cues

- Stimulus that allows us to recall more easily information that is in LTM
<https://www.youtube.com/watch?v=MdL5LszGTE>
- **Recall:** Specific piece of information must be retrieved
- **Recognition:** Occurs when one is presented with a stimulus and asked whether he/she has been:
 - Exposed to it previously, or is asked to identify it from a list of alternatives


Flashbulb Memories



- Memories related to a specific, important, or surprising event that are recalled easily and with vivid imagery
 - **Source amnesia**—occurs when an individual has a memory for some material but:
 - Cannot recall where he or she encountered it


Constructive Processes in Memory

- Memories are influenced by the meaning one gives to events
 - **Schemas**: Organized bodies of information stored in memory that bias the way new information is:
 - Interpreted
 - Stored
 - Recalled



Allport & Postman, 1958

Constructive Processes

<p>Eyewitness</p> <ul style="list-style-type: none">• Errors by eyewitnesses can result in mistaken identity• Prone to memory-related error due to:<ul style="list-style-type: none">◦ Impact of the weapons used in crimes◦ Specific wording of questions	<p>Children's Reliability</p> <ul style="list-style-type: none">• Memory reliability of children is more acute as their memories are highly vulnerable to the influence of others. 
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<https://www.youtube.com/watch?v=zMcWKG1wJG>

Constructive Processes

- **Autobiographical memory:** recollection of our own life experiences
 - One tends to forget information about one's past that is incompatible with the way in which one currently see's oneself.
- **Highly Superior Autobiographical Memory (HSAM):**
- Do psychological abilities impact learning? Nature vs. Nurture?

<https://www.youtube.com/watch?v=A0-mv26szBk>
