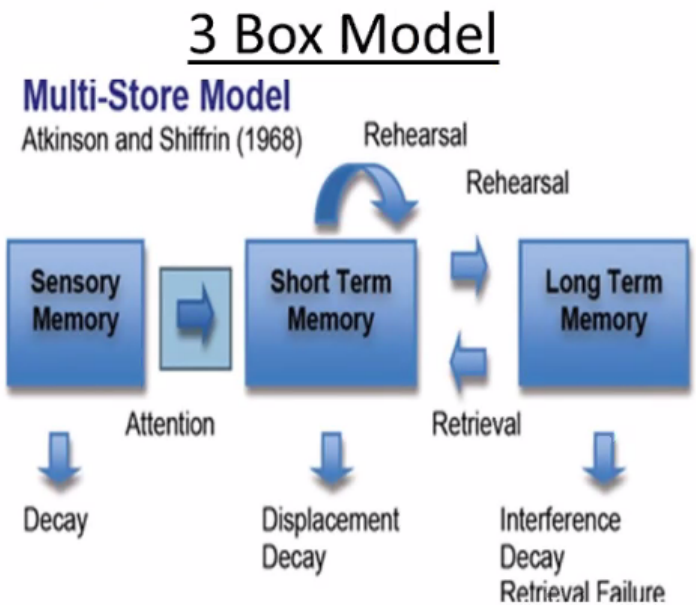
Application of Memory

- General Knowledge
- Personal Experience
- Skills
- Identity
- Conditioned Response

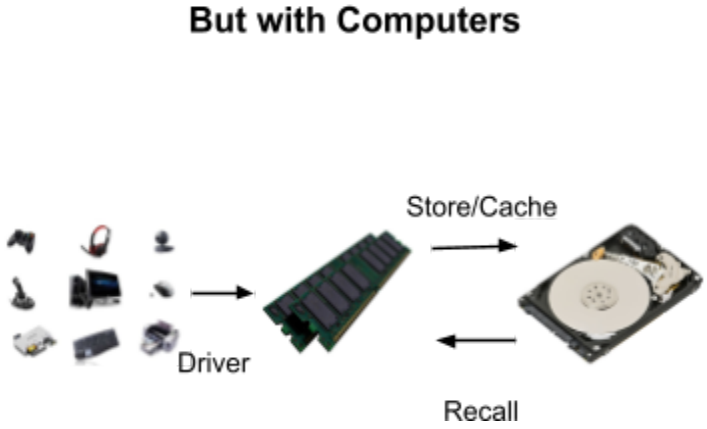
Memory Means

- Encoding
  - Gathering information into memory
- Storage
  - Maintaining information
- Retrieval
  - Getting information out of the system
- But what does “the memory system” mean?
- You can’t “remember” something if it didn’t make it into the system with your senses.



The 3 Box Model

- Also called the Information processing theory
- One theory of how memory works, but this is the most popular.



Sensory Memory

- Below the level of consciousness
- Stores information for just enough time to classify it.
- It only keeps it in sensory memory long enough to process *what* it is, not what it means.
- Once you are aware of it, it is out of sensory memory.
- Selection process for stimuli that should be passed on to consciousness.
- Iconic memory (visual sensory memory) is 0.3 seconds
- Echoic memory (auditory sensory memory) is 1-2 seconds.
- No distortion, this is raw input.
- Iconic memory can be tested by asking someone to recall something they saw only briefly.
- Echoic memory can be tested by asking someone to repeat what they hear
- Everything comes into sensory memory, then a selection process happens.
- The Cocktail Party Effect

Short Term Memory

- Conscious Awareness
- Stores what's happening from sensory memory
- What's happening now.
- Working memory
    - Recalls things from Long term memory to recall information or work with it, or "remember" it.
- Can only work with 5-9 units of information at a time
- Working time is ~20 seconds
- Long term memory is anything before the last 20 seconds
- "Chunking" is the mind dividing larger pieces of information into smaller chunks that are easier to retain
    - Extends the capacity of short term memory, because the chunks can be very complex.

Long-Term Memory

- Seemingly infinite capacity and duration
- Everything we can remember after 20 seconds
- But we do forget things, it's not necessarily permanent.
    - Some things that we remember for a long time and will never forget go into "permanent storage"
- 2 types of memories:
    - Explicit/Declarative Memory
        - Conscious recall
        - You are aware of when the memory is brought back. A classic "memory" that you see in your head.
        - Asking yourself a question and LTM returns an answer
        - 2 categories
            - Episodic memory
                - Personally experienced events; autobiographical, your POV
            - Semantic memory
                - Information and general knowledge; facts
                - universal
    - Implicit/Non-Declarative Memory
        - No conscious recall
        - Automatic
        - 2 categories
            - Procedural memory
                - Motor and cognitive skills.
                - As you develop skills, they become less declarative.
            - Conditioned Dispositions
                - Things you like / dislike
                - Learned by associations.
                - General attitude / personality

Eidetic Memory

- A photographic memory
- They remember things because their brain makes images and stores them every time.
- Commonly combined with synesthesia.
- Useful at times, but burdensome because it’s hard to remember abstract concepts.
- We can learn from them.

Memory Strategies

- Visualize
- Mnemonics
    - Interactive Imagery
        - Linking isolated pieces of information by creating a visual representation of them and their interactions.
    - Memory Palace
        - Take a place or a route that you’re familiar with and place pieces of information along it.
- Narrative Story/Song
- Chunking
    - Clustering
    - Acrostics
        - Sentences that start their words with the same letters as the information
    - Acronyms
        - EPCOT
        - יקנ"ה
- Rehearsal
    - Very effective for keeping information in short term memory
    - Good at moving information into long term memory.
    - Not as effective for very long term retrieval

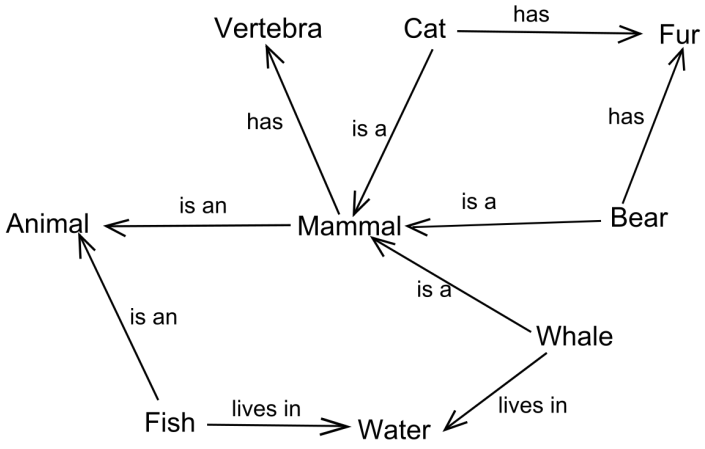
- Semantic Processing
    - Bringing the information back into working memory and doing mental operations with it.

Retrieval

- Getting information out of memory
- Memories are accessed by either
    - Recall
    - Recognition
- Recognition tends to be stronger than recall, because it is just a true or false “have you seen this before?”. Recall is asking to retrieve the information in full.
- Relearning Effect
    - It takes less time for people to master information a second time.

Factors that Influence Retrieval

- Priming
    - Using a stimulus to activate a memory
    - You can also use priming to influence perception or behavior
    - Mentalists use priming a lot
- Retrieval Cues
    - Stimuli that aid recall or recognition
    - Semantic Network Theory
        - Things are linked together in our minds
        - We store information based on relationships between it.
    - Encoding Specificity Principle



        - The more a cue can remind you of the “metadata” or context and setting around you when the information was *first* encoded, the better it will help retrieval.
        - Memory is linked to context
            - Physical location
            - Scents
            - Background music

Forgetting

- Why can’t we remember some things?
- Well, sometimes it was never encoded into STM or LTM if you weren’t paying attention or didn’t think it was important enough to encode into LTM.
- Or because of Decay.
    - Memories just decay over time if you don’t use it or think about it.
    - There are strong and weak memories
        - Strong memories:
            - Your Name
            - Your address
            - Your friends
            - A life changing event
        - Weak memories:
            - Information for a test
            - Random person you met once
            - What you ate for breakfast yesterday
- Or maybe you could have a retrieval failure.
    - This can happen for a lot of reasons:
        - Weak retrieval cues
        - Interference
            - Proactive interference
                - Old information interferes with recall of newer information.

- Retroactive interference
    - New information interferes with recall of older information.
    - Sleep can dampen the effects of retroactive interference because it stops new information coming in, preventing it entirely.

Amnesia

- Extreme loss of memory
- Retrograde
    - You forget things that happened before you got it
    - Complete retrograde amnesia is when you forget *everything*
        - Josuke 8
- Anterograde
    - You forget things that happen after you got it but your old memories are fine

The Memory Wars

- 1990s
- Some adults who suffered trauma in childhood just didn't remember them until later.
- These memories are often recovered through therapy (which they go to for *seemingly* unrelated symptoms), or through seeing something related that triggers it.
- It led to accusations of the abusers now that they remember them.
- The war was about whether suppressed memories like this can be trusted and about how they work.