Unit 1: Introduction To Memory

* Cognitive psychologists study how our mental processes make us sentient beings
* Memory: The fundamental cognitive mechanism that allows you to encode, store, and retrieve information
  + i.e. Like a camera, filing cabinet, and computer
* However, these examples are misleading and inaccurate
  + Stored memory includes personal details, and interpretations
  + Retrieved memory may be altered or lost
* Stored memories are frequently lost as time passes, a special phenomenon psychologists call “forgetting

Unit 2: The Basics Of Memory

* Psychologists study how memory is acquired, encoded, stored, and retrieved
* One memory can act as a cue to signal another memory into consciousness
  + i.e. Ben talking about his dog, triggers Bob’s memory of his dog
* Cues trigger memory; retrieval is linked through cues
  + i.e. Like the pearls linked in a necklace, each word connects to the word before and after it
* Memory models involve an encoding phase, followed by a retrieval phase
  + Encoding phase: Learning a list of items or words
  + Retrieval phase: Subjects are tested for their memory of items presented during the encoding phase
    - Can use either a recall or recognition test for memory
  + Recall test: Freely generate/recall as many items as you can remember
  + Recognition test: You are shown a list of items and must categorize them as “new” (the item was not in the initial list) or “old” (the item was in the initial list)
    - Both tests prove that subjects who were asked to learn the list, did better than those who were distracted.
* Our ability to recall recently encoded information decreases rapidly over time
  + Recall is highest immediately after learning and decreases over time
  + Relationship can be graphed with “Forgetting curve”

Unit 3: The Multi-Store Model

* Proposed by Atkinson and Shiffrin in 1968
* Assumes that memory is composed of both short and long-term storage systems
* Short term memory: Information is stored for online tasks, but not permanently
  + Operates similar to RAM on a PC
* However, important information stored in short term memory, can be transferred to the long-term memory system for permanent storage
  + Occurs when items in short term memory are often rehearsed
* Short-term memory has a storage capacity of 7 +/- 2 items
  + Organizing items into meaningful chunks expands the capacity of short-term memory. This is seen when items resemble familiar words/acronyms
    - i.e. Memorizing 7 animals holds more information than 7 letters

Unit 4: The Serial Position Curve

* Memory is strongest for items at the beginning and end of a list
  + Relationship can be graphed using the serial position curve
* Primacy effect: Items in the beginning of a list have more rehearsal time
  + More rehearsal time increases the chances of being transferred to long-term memory for permanent storage
* Items in the middle of a list have less opportunity for rehearsal than those at the start
* Recency effect: The more recent items replace the previous items to occupy short-term memory
  + Last few items are active in the short-term memory
    - Taking a break/interruptions decreases the recency affect
* Manipulating presentation time of the items affects the primacy effect
  + More rehearsal time 🡪 Increase in primacy effect (Remember more)
  + Less rehearsal time 🡪 Decrease in primacy effect (Remember less)
* Disrupting short-term memory buffer affects the recency effect
  + Performing a distracting task diminishes the recency effect
    - Because short-term memory is loaded with a heavy task
* Practical examples of the primacy and recency effect
  + Words in a list are read faster than normal 🡪 Decrease in primacy effect
  + Words in a list are read slower than normal 🡪 Increase in primacy effect
  + Complete a distracting task before recall 🡪 Decrease in recency effect
  + Sitting in a quiet room during and after encoding 🡪 Increase in recency effect

Unit 5: The Levels Of Processing Principle

* Information is encoded at different levels of processing
* Shallow level
  + Encode physical characteristics
    - i.e. What the words look like and how it sounds (phonemes)
  + Requires little effort
  + Poor memory performance
* Deeper level
  + Encode semantic characteristics
    - i.e. Meaning of the words
  + Requires significant effort
  + Better memory performance
* Examples of levels of processing manipulation during encoding for the word “dog”
  + Shallow/physical level: Is the word in capital letters?
  + Moderate/Acoustic level: Does the word rhyme with Fog?
  + Deep/semantic level: Does the word fit in this sentence: I walked my \_ \_ \_
* Memory performance is best for the deep level, and worst for shallow level
* Levels of processing principle states that the more we try to organize and understand the material, the better we remember it
  + Paying attention to only surface details leads to poor recall
    - i.e. Passively reading your notes is ineffective studying for tests

Unit 6: Encoding Specificity

* Environmental cues are encoded together with memories for items and events
  + Memories are rich and detailed in the context of the world around us
  + Cues in the environment are incorporated into your memory with learned items
* Encoding specificity: Memory encodes all aspects of an experience
  + Even when you encode a word in a memory experiment, you are encoding all aspects of the environment including the properties of the room, chair you are sitting on, the experimenter, the aroma, etc.
    - These properties can act as cues in the future
* Preserving encoding context improves subsequent recall of a memory
  + i.e. If encoding occurs underwater, recall performance will be better underwater, and worse on land
    - This was seen with SCUBA divers

Unit 7: Memory Illusions & Fluency

* Our memories are prone to error
  + Memories we recall may actually be different from our original experiences
  + We may even have vivid memories of events that did not occur
* Our susceptibility to false memories indicate that memory is a reconstructive process
* Repeated imagination of any event can lead to the event being falsely remembered
  + Our memory can confuse false, imagined events with actual, performed events
  + When subjects were asked to imagine completing an event, they later reported to have actually done the event
    - Memory is subject to alteration and manipulation
  + This is why leading questions are forbidden in courtrooms; memory implantation can occur for even unlikely events
* Memory is reconstructive and constantly open to re-interpretation
  + The stories you tell, year after year, change slightly, and from person to person
    - i.e. The giant fish you caught as a kid, keeps on getting bigger and bigger
* We experience familiarity on many occasions
  + i.e. You are sitting on a bus and notice someone familiar looking
* Fluency: The ease with which an experience is processed, some experiences are easier (more fluent) than others
  + Familiar experiences are generally processed more fluently than novel ones
* Attribution: Judgement tying together cause and effects
  + i.e. Attribute the feeling of fluency that we know someone from somewhere
    - i.e. Seeing someone familiar on a bus
  + We create stories to interpret the internal experience of fluency
    - i.e. Maybe you know this “stranger” from work?
    - i.e. Maybe you saw this “stranger” on TV?
* “Becoming Famous Overnight” experiment
  + During phase 1, subjects had to read a list of names aloud
  + During phase 2, subjects had to identify famous celebrity names
    - Group A, that was asked immediately, succeeded in this task
    - Group B, that was asked 24 hours later, falsely labelled generic names as famous because they appeared during phase 1
  + The time between exposure and recall affects our attributions to fluency

Unit 8: Conclusion

* Stored memory includes personal details and interpretations
  + Explains why several people witnessing the same event, remember it differently
    - Retrieved memory may be altered or lost
* Memories are reconstructed, not stored
  + Memories exist by reconstructing them, when we need to remember them
* Memory is a constantly reconstructed compilation of perceptions and experiences
  + i.e. Memories are building blocks, and when called upon, they reconstruct and build a structure that resembles the experience
  + These building blocks can also construct a false experience
* Memories can be easily lost within hours or days of learning it
  + In order to keep them forever, they must be actively revisited

Lecture Notes

* Attention is the gateway to memory
* Encoding interacts with attention to select items for memory
* False memories: Memories are fake
  + You perceive memories to be something, when they are not real
  + Memory can be easily manipulated and altered
* Storage of memories occurs through consolidation of neural changes
  + Encoding: Information is converted for storage
  + Storage: Information is retained in memory
  + Retrieval: Information is recovered from memory when needed
    - If any one of these processes fails, memory will fail
* Eyewitness Testimony
  + In a lineup, non-suspects
  + In a lineup
    - Everyone should look identical as possible
    - Know that the perpetrator might not be present
    - Suspects should be presented one at a time
    - Emotional state should be similar
    - People should not be familiar

Tutorial Notes

Memory has several components

Fluency: How easily something is encoded

Attribution: The tying together of causes with effects

“Fame over night”

* The group that was tested 24 hours after, associated the names they had previously seen with fame because of the fluency effect. The name was familiar; must be famous

Memory is highly reconstructive

* Memories can change

Encoding specificity

* When you are doing something, you encode the things in the environment as well
* Memory recall is better under similar conditions to encoding

Shallow level of processing: Passively skimming and reading

Deeper level

* Do practice tests
* Make notes of notes
  + Write things in your own words

Decrease in recency effect 🡪 Disruption in short term memory

Decrease in primacy effect 🡪 Less rehearsal time

Increase in recency effect 🡪 More practice time