Factors that influence Memory
Chapter 8
pp 257-270

Influencing factors on Memory

- Need to pay attention to remember

Influencing factors on Memory

Retrieval cues

- Retrieval cues
  - Free recall
  - Cued-recall
- Example: Memory for music lyrics
  - Rhyming technique
  - Organized/chunking

Encoding-retrieval match

- Encoding-retrieval match
  - Effective cue
  - Context dependent
  - Homophone study
- Transfer-appropriate processing
  - Study in same way you are tested!
  - Environment encoded with TBR info

Example: Memory for music lyrics

- Rhyming technique
- Organized/chunking
State dependent learning
(Encoding-retrieval match)


Influencing factors on Memory
Elaboration and Meaning

- Memory instructions for study conditions
  - Shallow: Count # of vowels in words (Physical)
  - Deep: Synonym for words (Meaning)
- Memory Test:
  - Performance is significantly better for “Deep” condition
- Effect of elaboration
  - Connection to existing knowledge
  - Notice similarities and differences
  - Provides cues
  - Provides distinct memory

Why do we forget?
Ebbinghaus (1850 – 1909)

- Memorized nonsense trigrams in serial order
- Tested at various intervals
- Forgetting curve
- Why?
  - Decay
  - Retroactive interference
  - Proactive Interference

Forgetting: Brown-Peterson task

- Examination of forgetting
- Method
  - 3-letter stimulus to remember
  - 3-digit number to count backwards (distractor)
- Results
  - Forgetting curve over delay
- Conclusion
  - Information DECAYs from memory
  - Due to passage of time
Why do we forget? 

**Proactive Interference**
(Old info interferes with new info)

- Peterson & Peterson (1959)

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**Retroactive interference**
(New info interferes with old info)

- List learning with 1, 2, 4, 8 hr delay
- If awake during delay new info occurs before test
- If asleep during delay no new info before test

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**Influencing factors on Memory**

- Free recall
  - % correct for each word
- Serial position curve
  - Primacy
  - Long-Term Memory
  - Recency
  - Short-Term Memory
- Two independent systems of memory

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**Primacy and Recency**

- Portion of Serial Position Curve

- Slow presentation = more rehearsal = better LTM
- 30s delay after list presentation = reduces STM
Why do we forget?  
*Proactive Interference*

- Trial 1-3: List of fruits
- Trial 4: same (fruit) or different list items
- Same: Old info learned is hurting new info
- Change to new information helps memory!

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**Begin to write only after I have given the signal, “Go”.”**

<table>
<thead>
<tr>
<th>Butter</th>
<th>Candy</th>
<th>Bed</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>Bake</td>
<td>Rest</td>
<td>Sit</td>
</tr>
<tr>
<td>Eat</td>
<td>Sugar</td>
<td>Tired</td>
<td>Legs</td>
</tr>
<tr>
<td>Sandwich</td>
<td>Taste</td>
<td>Dream</td>
<td>Seat</td>
</tr>
<tr>
<td>Lunch</td>
<td>Tooth</td>
<td>Night</td>
<td>Desk</td>
</tr>
<tr>
<td>Milk</td>
<td>Honey</td>
<td>Blanket</td>
<td>Wood</td>
</tr>
<tr>
<td>Jelly</td>
<td>Chocolate</td>
<td>Snore</td>
<td>Cushion</td>
</tr>
<tr>
<td>Crust</td>
<td>Good</td>
<td>Nap</td>
<td>Hard</td>
</tr>
<tr>
<td>Slice</td>
<td>Cake</td>
<td>Peace</td>
<td>Rocking</td>
</tr>
<tr>
<td>Toast</td>
<td>Pie</td>
<td>Yawn</td>
<td>Bench</td>
</tr>
</tbody>
</table>

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**RECALL**

- BREAD
- SWEET
- SLEEP
- CHAIR

<table>
<thead>
<tr>
<th>BREAD</th>
<th>SWEET</th>
<th>SLEEP</th>
<th>CHAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>55%</td>
<td>62%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Butter | Candy | Bed | Table |
- Food   | Bake  | Rest| Sit   |
- Eat    | Sugar | Tired| Legs |
- Sandwich | Taste | Dream| Seat |
- Lunch  | Tooth | Night| Desk |
- Milk   | Honey | Blanket| Wood |
- Jelly  | Chocolate | Snore| Cushion |
- Crust  | Good | Nap | Hard |
- Slice  | Cake | Peace| Rocking |
- Toast  | Pie | Yawn| Bench |

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Reconstructive memory

- Roediger & McDermott (1995)
  - Semantically similar lists
  - On 50% of lists have FALSE memory (e.g. “sleep”)
- WHY?
  - Gist memory
  - Schema
  - Familiarity
- Memory reconstruction
  - Bartlett’s (1932) “The War of the Ghosts”

Reconstructive memory: Schemas

- You drive near the golden arches and park near the door to go eat. You pull open the door and notice the familiar smells and sounds. You know what to do to get your food, and you know what to expect when it is ready. After eating, you returned to your car. What did you eat?
- You drive near the golden arches and park near the door to go eat. You pull open the door and notice the familiar smells and sounds. You know what to do to get your food, so you sit at the table with white tablecloth and candle to wait for the waiter. After eating, you returned to your car. What did you eat?

Memory Reconstruction

Loftus & Palmer (1974)

- Film of actual accident
- Lead question:
  - “About how fast were the cars going when they smashed into each other?”
  - “Did you see broken glass?”

Semantic Maps:
Flashbulb (FB) memory
Brown & Kulick (1977)
- Memory of emotional and surprising events
- Examples
  - JFK assassination
  - Space shuttle Challenger
  - September 11th
- Are flashbulb memories (more/less) accurate?
  - Where were you?
  - What were you doing?
  - How did you find out?
  - How did you feel?

Memory and Emotion
- Enhancement effect possibly due to:
  - Rehearsal
  - Distinctiveness
  - Elaboration
  - Attention
  - Emotion/Adrenaline
  - FB and normal memories: have equal forgetting rate
  - FB retain emotion and vividness

Autobiographical memory
- Autobiographical memory
- Personal life events
- First memory
  - Average 3-5 years old
  - Inverse relationship: Age 1st memory and intelligence
- Infantile amnesia: Why?
  - Brain development
  - Difference in how infants view the world
  - Language

Autobiographical memory over Lifespan
Rybash (1999)
- Recency effect: remember events just happened
- Reminiscence bump: remember events from 11 – 24 yrs old
**Motivated Forgetting**
- Memories of Abuse: Repressed memory?
  - Freud: defense mechanism
  - Adaptive to push negative memory into unconscious
  - Validity?
    - Williams (1992): 38% memory of abuse forgotten
- False Memory Syndrome
  - A false but believed memory of traumatic experience
  - Hypnosis therapy for retrieving “repressed” memories?
  - Validity?

**Review: Chapter 8 Memory**
- Mnemonic devices
- Why mnemonics work and their limitations
- Types of memory: stm/ltm; explicit/implicit; episodic/semantic
- What we’ve learned about memory from amnesia case studies
- Factors that influence memory
- Why we forget
- Reconstructive memory and schemas
- Autobiographical memory; Flashbulb memory

**Common Memory Questions**
- Why do some people remember better than others?
- Why are there differences in the things you remember well vs. forget?
- Does memory always decline with age?
- How can I improve my memory?
- Does sleep improve memory?

**Memory**
- Repetition
- Retrieval cues
- Dual-coding cues
  - Verbal and visual representations
- Organization
  - “Chunks”
- Notice relationships and differences
  - Use existing knowledge
- Generation
  - Your ideas makes it personal
- Attention
  - Ensure encoding
- Elaboration
  - Think about meaning
  - Deep vs shallow processing
- Encoding-retrieval match
  - Transfer appropriate processing
- Serial position curve
  - Primacy vs recency
- Decay vs interference
  - Proactive vs retroactive
Why mnemonic devices work

- Organization
  - Groups information into smaller “chunks”
- Retrieval cues
- Provide several memory codes
  - Verbal and visual representations
  - *Visual imagery*: picture superiority effect
- Elaboration
  - Think about *meaning*
  - Notice relationships and differences
- Generation
  - Your ideas makes it personal

Limitations of Mnemonics

- Time
- How to deal with abstract material?
- Learning vs. retention
- Creative ability
- Interference – more material
- Doesn’t help memory in general
  - No help if fail to use technique
- Does not help understanding of material
- Need to practice mnemonics!

From the last class…

- Episodic vs semantic
- Implicit vs explicit

- To complete a free recall test you need to use your __________ memory.
- To complete a fragment completion test you need to use your __________ memory.
- To complete a vocabulary test you need to use your __________ memory.
- To complete a questionnaire about your memory for your own life events you need to use your __________ memory.

Begin to write only after I have given the signal, “Go”.

- Cup
- Table
- History
- Truck
- Book
- Keyboard
- Calendar
- Couch
- Tiger
- Knife
- Picture
- Computer
Think

- How accurate is your memory?
- What are your memories of hurricane Katrina OR 9/11? Are they accurate?
- What is your very first memory? How old were you? Is it accurate?