Human Memory
Chapter 7

The Seven Dwarfs?

<table>
<thead>
<tr>
<th>Grouchy</th>
<th>Shy</th>
<th>Sneezy</th>
<th>Shy</th>
<th>Grouchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabby</td>
<td>Droopy</td>
<td>Lazy</td>
<td>Lazy</td>
<td>Gabby</td>
</tr>
<tr>
<td>Fearful</td>
<td>Dopey</td>
<td>Pop</td>
<td>Pop</td>
<td>Fearful</td>
</tr>
<tr>
<td>Sleepy</td>
<td>Sniffy</td>
<td>Grumpy</td>
<td>Grumpy</td>
<td>Sleepy</td>
</tr>
<tr>
<td>Smiley</td>
<td>Wishful</td>
<td>Bashful</td>
<td>Bashful</td>
<td>Smiley</td>
</tr>
<tr>
<td>Jumpy</td>
<td>Puffy</td>
<td>Cheerful</td>
<td>Cheerful</td>
<td>Jumpy</td>
</tr>
<tr>
<td>Hopeful</td>
<td>Dumpy</td>
<td>Teach</td>
<td>Teach</td>
<td>Hopeful</td>
</tr>
</tbody>
</table>

Santa’s Reindeer?

<table>
<thead>
<tr>
<th>Trouncer</th>
<th>Jogger</th>
<th>Hermes</th>
<th>Donder</th>
<th>Trouncer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nova</td>
<td>Blitzen</td>
<td>Strutter</td>
<td>Schweitzer</td>
<td>Nova</td>
</tr>
<tr>
<td>Thor</td>
<td>Panter</td>
<td>Pixie</td>
<td>Catcher</td>
<td>Thor</td>
</tr>
<tr>
<td>Apollo</td>
<td>Cupid</td>
<td>Dasher</td>
<td>Gunnar</td>
<td>Apollo</td>
</tr>
<tr>
<td>Nixon</td>
<td>Starlight</td>
<td>Bounder</td>
<td>Vixen</td>
<td>Nixon</td>
</tr>
<tr>
<td>Dancer</td>
<td>Fancy</td>
<td>Flasher</td>
<td>Comet</td>
<td>Dancer</td>
</tr>
<tr>
<td>Striker</td>
<td>Prancer</td>
<td>Howitzer</td>
<td>Leaper</td>
<td>Striker</td>
</tr>
</tbody>
</table>

Memory measures

- Recall
- Recognition
- Relearning
1. DUCK  
2. TREE  
3. party  
4. fox  
5. COLOR  
6. penny  
7. look  
8. flower  
9. ROBIN  
10. SNOW  
11. MARKET  
12. HOUSE  
13. HALL  
14. gate  
15. window  
16. book  
17. SAFE  
18. pupil

**A Pop Quiz!**

<table>
<thead>
<tr>
<th>Case</th>
<th>Yes Answers</th>
<th>No Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNOW, fox, book</td>
<td>MARKET, flower, TREE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rhyme</th>
<th>Yes Answers</th>
<th>No Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>GATE, HALL, look</td>
<td>COLOR, party, safe</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Yes Answers</th>
<th>No Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>pupil, ROBIN, DUCK</td>
<td>window, penny, HOUSE</td>
<td></td>
</tr>
</tbody>
</table>

**Levels of Processing**

- Shallow processing
- Capital letters?
- Intermediate processing
- Rhyme?
- Deep processing
- Fit in the sentence?

**Basic Memory Processes**

- Encoding
- Storage
- Retrieval
Change Blindness

Visual Imagery
- Dual-coding theory
- semantic and visual

Memorize these word pairs

<table>
<thead>
<tr>
<th>DRESS</th>
<th>APPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRASS</td>
<td>MEAT</td>
</tr>
<tr>
<td>FLAG</td>
<td>COAST</td>
</tr>
<tr>
<td>FUR</td>
<td>MOUNTAIN</td>
</tr>
<tr>
<td>HOUSE</td>
<td>LIP</td>
</tr>
<tr>
<td>BUILDING</td>
<td>LETTER</td>
</tr>
<tr>
<td>MOTHER</td>
<td>CITY</td>
</tr>
<tr>
<td>ANIMAL</td>
<td>VILLAGE</td>
</tr>
<tr>
<td>SKY</td>
<td>SEAT</td>
</tr>
<tr>
<td>SUGAR</td>
<td>SHIP</td>
</tr>
</tbody>
</table>
Lesson

• Ineffective encoding = “forgetting”
• pseudoforgetting
• Enriched encoding = remembering
  • elaboration

Other memory aids

• Mnemonic devices
• Acronyms and acrostics
• Overlearning
• Distributed Practice, not Massed Practice

Forgetting

• Pseudoforgetting
• Decay
• Interference
• Retroactive
• Proactive
• Retrieval failure
• Repression

Forgetting

![Retention graph](image)
List I
- TEACHER
- LAWYER
- GARDNER
- DOCTOR
- MECHANIC
- ROOFER
- ELECTRICIAN
- PAINTER
- CARPENTER
- PROGRAMMER

List II
- JUDGE
- ARTIST
- BUILDER
- PROFESSOR
- NURSE
- ARCHITECT
- SECRETARY
- FIREFIGHTER
- BANKER
- PLUMBER
Set I

- Words on list
  - wake, peace, drowsy, nap, yawn, bed, snore
- Unrelated words not on list
  - seat, road, sitting, rocking, chocolate, sand, candy, table
- Related word not on list
  - sleep

Set II

- Words on list
  - injection, thimble, point, hurt, eye, haystack
- Unrelated words not on list
  - wake, candy, tough, smooth, cloth, drowsy, couch, tooth, legs
- Related word not on list
  - needle

False Memories

- Roediger & McDermott (1995)
- The misinformation effect
- Repressed & recovered memories

Loftus & Palmer (1974)

How fast were the cars going when they _____ each other?

<table>
<thead>
<tr>
<th>Word used</th>
<th>Speed estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>contacted</td>
<td>32 mph</td>
</tr>
<tr>
<td>bumped into</td>
<td>34</td>
</tr>
<tr>
<td>hit</td>
<td>38</td>
</tr>
<tr>
<td>collided with</td>
<td>39</td>
</tr>
<tr>
<td>smashed into</td>
<td>41</td>
</tr>
</tbody>
</table>
Percent remembering (non-existent) glass

<table>
<thead>
<tr>
<th>No question</th>
<th>“Hit”</th>
<th>“Smashed”</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>30</td>
</tr>
</tbody>
</table>

Atkinson-Shiffrin Memory Model

Sensory Memory
- 1/4 second
- afterimage

Digit-span task
George Miller (1956)
Short-term memory

- Duration: About 20 seconds
- Extend with rehearsal
- Capacity: “Magical number 7 ± 2”
- Extend with chunking