Visual imagery

Ch 10

pp 270-279
Imagery

- **Bower & Winzenz (1970)**
  - Can imagery enhance memory?
- **Method**
  - Paired-associate learning
    - 15 pairs of nouns
  - Conditions: Silent repeat or mental picture
- **Results/Conclusions**
  - **YES!**
  - **WHY?**
Mnemonics: Dual-coding technique

- Dual-coding hypothesis
  - Verbal representation
  - Visuospatial rep.
- Example acronym:
  - The Great Lakes: HOMES
- Effective visualization
  - Interactive
  - Vivid
  - Bizarre
Image–name mnemonic

• Use mnemonic to remember name with face
  – Think of vivid word that sounds like name
  – Link word with person’s appearance

• Example
  – Rodney Flanery
  – Image: Football player with rod in his knee, so benched and wearing flannel to stay warm

• Create one for your own name!
Keyword mnemonic

• Use to learn new or foreign language words
  – Think of vivid word that sounds like to-be-remembered word
  – Link vivid word with meaning
• Example
  – “Pato” – spanish for duck
  – Image: Pot on top of Donald duck’s head
• Example
  – Skulk – to hide in a sneaky manner
  – Image: Skull tip-toeing and hiding behind a couch
Method of Loci

• Used by Greek orators
  – Combines imagery and organization

• 1: Memorize familiar locations in natural order
• 2: Create visual image of word with each location
• Recall: take a “mental walk”

• “In the first place…”
First, memorize the locations in order…

Olin
DuPre
Main
Snyder
Library
Carlisle
Daniel
Milliken
Burwell
Shipp
Then link each TBR item with location…

<table>
<thead>
<tr>
<th>Olin</th>
<th>Apple</th>
</tr>
</thead>
<tbody>
<tr>
<td>DuPre</td>
<td>Piano</td>
</tr>
<tr>
<td>Main</td>
<td>Hammer</td>
</tr>
<tr>
<td>Snyder</td>
<td>Cake</td>
</tr>
<tr>
<td>Library</td>
<td>Planet</td>
</tr>
<tr>
<td>Carlisle</td>
<td>Pizza</td>
</tr>
<tr>
<td>Daniel</td>
<td>Kite</td>
</tr>
<tr>
<td>Milliken</td>
<td>Bus</td>
</tr>
<tr>
<td>Burwell</td>
<td>Butterfly</td>
</tr>
<tr>
<td>Shipp</td>
<td>Scissors</td>
</tr>
</tbody>
</table>
Then take mental walk through locations to remember each item...

- Apple
- Piano
- Hammer
- Cake
- Planet
- Pizza
- Kite
- Bus
- Butterfly
- Scissors

- Why helps?
  - Organized
  - Visualization
  - Locations are retrieval cue
  - Associations
  - Deep processing (meaning)

- Helpful for serial learning
  - But can also remember out of order

- Need distinct locations
- Need strong association
Peg-word technique

• 1: Use memorized concrete nouns
  – Rhyming helps to remember words and order
• 2: Create visual image of target word with peg-word
Why mnemonics work

• Attention
  • Ensure encoding
• Rehearsal
  • Spaced repetition
• Depth of processing
  • Make info meaningful
  • Notice similarities and differences
  • Use existing knowledge – top-down effects
• Elaboration
  • Think about *meaning* and make info distinctive
• Generation
  • Make it personal
• Dual-coding cues
  • Verbal and visual representations
• Organization
  • “chunks”
• Retrieval cues
Visual imagery

- Historical question: Imageless-thought debate
- Is imagery different from perception?
  - Do they share the same mechanisms?
- Is imagery spatial or propositional (based on language)?
- What are the obstacles to study imagery?
- How are mental images stored in memory?
- What tasks are used to study imagery?
Mental rotation

• Does imagery take time to do?
• Mental rotation task

• Conclusions and questions
  – Decision time longer for more rotation
  – Use of a visual code – storage of mental image
  – Or other type of representation?
  – Do imagery and perception share same mechanism?
Kosslyn’s Expmts

- Mental scanning
  - Mentally search for another part of boat
  - How long to mentally travel between 2 pts on a map
- Size in visual field
  - Can you see detail on animal depending on small/large image
- Mental-walk task
  - Move to object; when does image overflow?

Conclusion: Spatial correspondence between perception and imagery
Imagery debate

• Mental representation
  – Spatial representation (Kosslyn)
  – Propositional representation (Pylyshyn)

• Tacit-knowledge explanation
  – Unconsciously use knowledge to make judgment

• Finke & Pinker (1982): Does arrow pt to a dot?
  – Took longer for dots farther away (support for imagery)
Imagery and perception

• Perky (1910)
• Farah (1985)
Cognitive maps

- How far is it to the library from here?
- How many miles is it to your home “as the crow flies”?
- Cognitive map:
  - Mental representation of the environment
- Research questions
  - How do we create mental maps from verbal descriptions?
  - How do we represent visuo-spatial information?
  - Are the cognitive maps accurate, and if not what typical errors do we make?
Cognitive map studies

• Methodologies to study mental maps

• Directions
  – Describe how to get to a location

• Map creation
  – Rate map accuracy

• Learn hypothetical map
  – Estimate distance between locations
  – Describe setting given place on map