

Improving Memory: Memory Strategies and Metacognition

- ❖ Memory Strategies
 - Previous Chapters
 - Practice
 - Imagery Mnemonics
 - Organizational Mnemonics
 - Multimodal Approach
 - Prospective Memory
- ❖ Metacognition
 - Metamemory
 - TOT
 - Metacomprehension

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Apply What We've Learned So far...

- ❖ Divided Attention
- ❖ Working Memory (Limited Capacity)
- ❖ Levels of Processing
- ❖ Elaboration
- ❖ Self-Reference
- ❖ Encoding Specificity Principle
- ❖ Expertise and the Skilled Memory Effect

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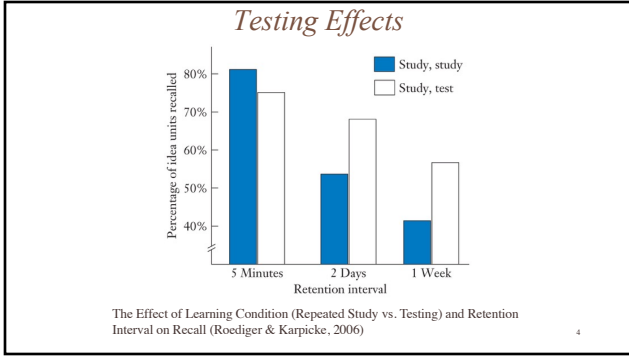
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Practice

- ❖ Total Time Hypothesis
- ❖ Distributed vs. Massed Practice
- ❖ Desirable Difficulty
- ❖ Expanded Retrieval Practice
- ❖ Testing Effects (eg. Roediger et al. 2010; Roediger & Karpicke, 2006b)

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Practice

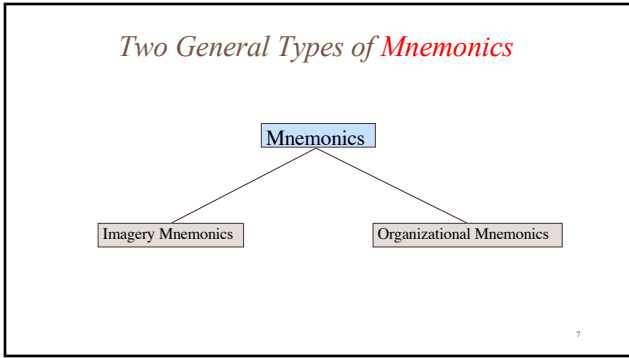
- ❖ Deliberate Practice
- ❖ Domain-Specific vs. General

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Mnemonics

Mnemonics are techniques for learning & remembering arbitrary or difficult to learn information or material.

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- Visual Imagery Mnemonics*
- ❖ What is Imagery?
 - ❖ Types of Imagery – Visual, Auditory, Gustatory
 - ❖ Visual Imagery – Effective
 - ❖ Bizarre Imagery Effectiveness – Potential Confounds
 - ❖ *Interactive* Visual Imagery – extremely effective
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*Interactive Visual Imagery
Demonstration*

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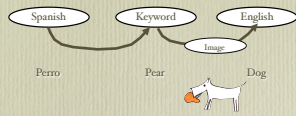
Interactive Visual Imagery Mnemonics

- ❖ The **Keyword Method**
- ❖ The **Method of Loci**
- ❖ The **Pegword Method**

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Keyword Method



The keyword method is a mediational technique that involves first relating a Spanish word (perro) to a similar-sounding English word called the keyword (pear) and then relating the keyword to the English definition (dog) by generating an interactive visual image involving the two referents.

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How to Use the Method of Loci to Remember a List of Items

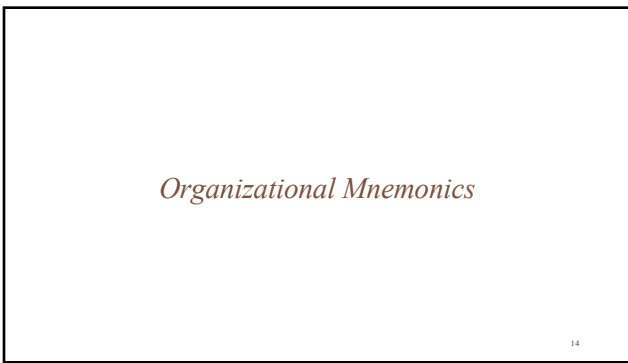
- ❖ Select a route that consists of a series of **locations** – these are your **"loci."**
- ❖ Associate the word for each item with one of the locations as you mentally 'walk' your path.
- ❖ Try to form an **interactive** visual image involving the item and the location.
- ❖ To remember your list of items, retrace your path or route and simply retrieve your item by looking at each location as you retrace your path.

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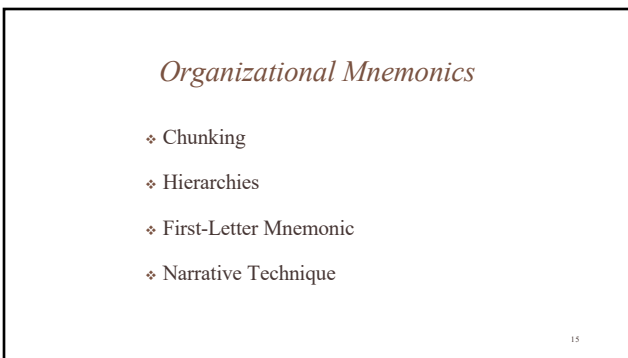
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CHUNKING

Read this list of letters and then cover them up. Try to recall them as accurately as possible.

YMC AJF KFB INB CLS DTV

Now read this list of letters and then cover them up. Try to recall them as accurately as possible.

AMA PHD TWA VCR XKE SDI

Finally, read this list of letters and then cover them up. Try to recall them as accurately as possible.

N Z K L E Q B N P I J W U Y H R T M

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Hierarchical Technique

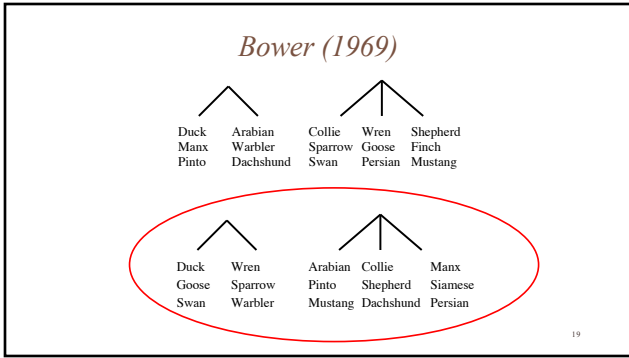
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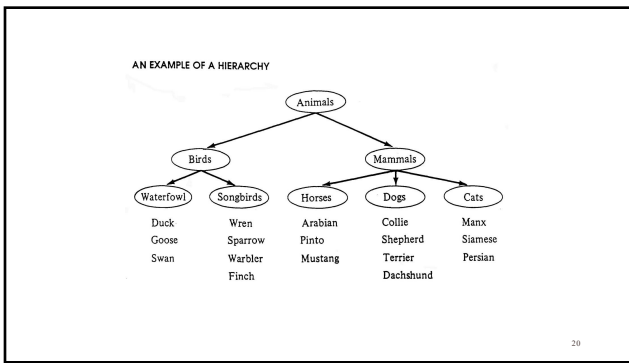
Duck
Manx
Pinto
Arabian
Warbler
Dachshund
Collie
Sparrow
Swan
Wren
Goose
Persian
Shepherd
Finch
Mustang

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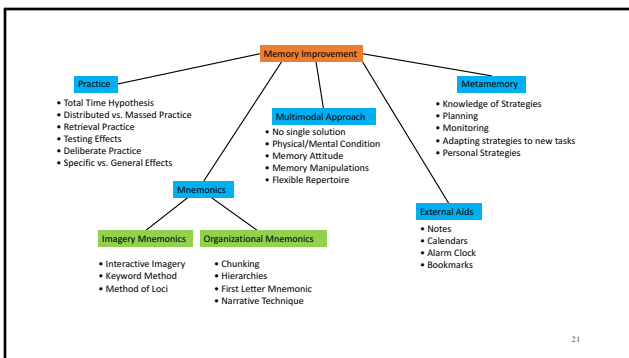
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First-Letter Mnemonic

- ❖ Examples:
- ❖ ROY G BIV
 - Red, Orange, Yellow, Green, Blue, Indigo, Violet
- ❖ HOMES
 - Huron, Ontario, Michigan, Erie, Superior

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Narrative Technique

- ❖ Make up a story that links a series of words together
- ❖ Bower & Clark (1969)
 - Six times as many words recalled by narrative group
- ❖ Narrative must be sensible and hang together as a story

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Multimodal Approach

- ❖ Mnemonics Alone – Limited Application
- ❖ Comprehensive approach needed
- ❖ Physical and Mental Factors
- ❖ Memory Attitude
- ❖ No one device or technique

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Improving Prospective Memory

- ❖ Definition
- ❖ Retrospective vs. Prospective
 - Differences
 - Similarities
- ❖ Prospective Memory Research
 - Ecological validity
 - Currency
- ❖ Absentmindedness
 - Schemas and routines
 - Time pressures
- ❖ Improving Prospective Memory

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External Memory Aids

- ❖ Any device, external to the person, that facilitates memory in some way
- ❖ Examples
- ❖ Retrieval cues always present

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Metacognition

- ❖ My knowledge, awareness, and control of my cognitive processes
- ❖ **Knowledge** of the *factors* that influence my cognitive process
- ❖ **Awareness** of my preparation and level of understanding
- ❖ **Control** over my cognitive activities
- ❖ Strategy *selection, monitoring*, etc.

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Metacognition Topics

- ❖ Metamemory
- ❖ Tip of the Tongue
- ❖ Metacomprehension

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Metamemory

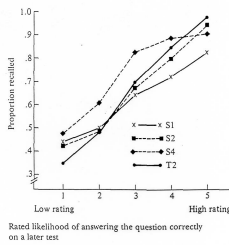
- ❖ Definition
- ❖ Accuracy
- ❖ Lovelace (1984)
 - Paired associates (ex: disease - railroad)
 - 4 conditions
 1. Each pair 8 seconds single trial
 2. Each pair 4 seconds 2 successive trials
 3. Each pair 2 seconds 4 successive trials
 4. Each pair 4 seconds 2 successive trials with a test trial in between

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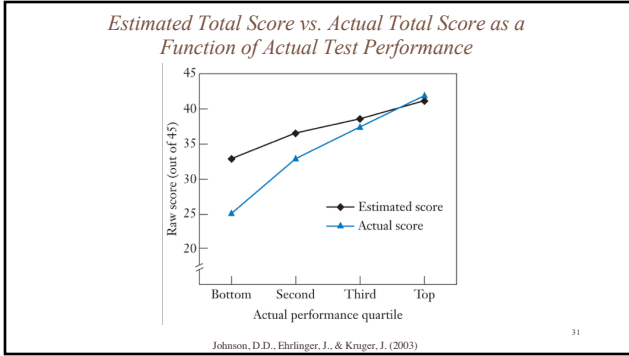
Lovelace (1994) Results

PROBABILITY OF RECALLING AN ITEM, AS A FUNCTION OF EXPERIMENTAL CONDITION AND RATED LIKELIHOOD OF ANSWERING THE QUESTION. LOVELACE (1984).



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- When Metamemory Accuracy Is Likely To Be High:*
1. *Easy vs. Difficult material*
 2. *Individual Items vs. Overall Score*
 3. *Delayed vs. Immediate judgments*
 4. *Intentional vs. Incidental learning*
 5. *Overlearned Material*

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- ❖ Relationship Between Metamemory and Memory Performance
 - Leal (1987) : questionnaire study
 - Methodological and measurement issues
- ❖ Awareness of factors affecting memory
 - Suzuki & Slater (1988)
- ❖ Regulating study strategies
 - Allotment of time
 - Immediate vs. Delayed assessment
 - Cull & Zechmeister (1994)

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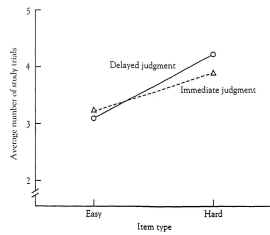
Cull & Zechmeister (1994)

- ❖ unusual word - easy word
– e.g. fugue - chair
- ❖ unusual word - hard word
– e.g. rheum - siege

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NUMBER OF STUDY TRIALS FOR EASY AND HARD PAIRS OF WORDS, AS A FUNCTION OF IMMEDIATE AND DELAYED JUDGMENT. CULL & ZECHMEISTER (1994).



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Tip-of-the-Tongue Phenomenon

- ❖ A sensation we have when we're confident that we know the word we're searching for but we can't recall it
- ❖ Brown & McNeill (1966)
- ❖ *Sampan* - Saipan, Siam, Cheyenne, Sarong, sanching, and symphoon
- ❖ Why is this metacognition?

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THE TIP-OF-THE-TONGUE PHENOMENON

Look at each of the definitions below. For each definition, supply the appropriate word if you know it. Indicate "Don't know" for those that you are certain you don't know. Mark TOT next to those for which you are reasonably certain you know the word, though you can't recall it now. For these words, supply at least one word that sounds similar to the target word. The answers appear at the end of the chapter. Check to see whether your similar-sounding words actually do resemble the target words.

1. An absolute ruler, a tyrant.
2. A stone having a cavity lined with crystals.
3. A great circle of the earth passing through the geographic poles and any given point on the earth's surface.
4. Worthy of respect or reverence by reason of age and dignity.
5. Shedding leaves each year, as opposed to evergreen.
6. A person appointed to act as a substitute for another.
7. Five offspring born at a single birth.
8. A special quality of leadership that captures the popular imagination and inspires unswerving allegiance.
9. The red coloring matter of the red blood corpuscles.
10. Flying reptiles that were extinct at the end of the Mesozoic Era.
11. A spring from which hot water, steam, or mud gushes out at intervals, found in Yellowstone National Park.
12. The second stomach of a bird, which has thick, muscular walls.

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T.O.T. - More Recent Research

- ❖ Brown (1991) - 25 years of research
- ❖ 1 experience / week
- ❖ 1st letter 50% - 70 %
- ❖ # of syllables 47% - 83%
- ❖ Feeling of knowing

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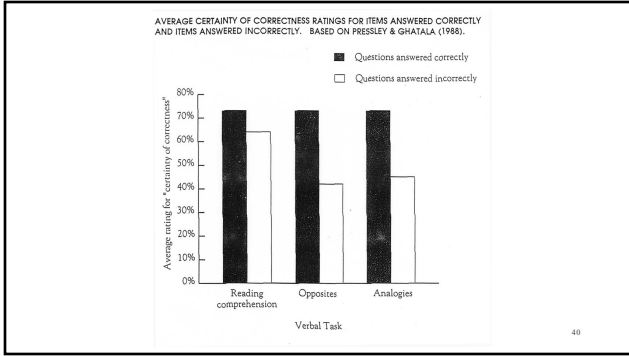
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Metacomprehension

- Our knowledge/awareness of our reading comprehension
- Metacomprehension Accuracy
 - College students
 - Pressley & Ghatala (1988)
 - Higher metacomprehension ----> higher reading comprehension
- Improving Metacognition
 - Pretests
 - Accurately assessing understanding
 - Regulating your reading

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ASSESSING YOUR METACOMPREHENSION SKILLS

Answer each of the following questions about your own metacomprehension. If you answer "no" to any question, devise a plan for improving metacomprehension that you can apply as you read the next assigned chapter in this textbook.

1. Before beginning to read an assignment, do you try to assess how carefully you should read the material?
2. In general, are you accurate in predicting your performance on exam questions related to reading?
3. After reading a chapter in this textbook, do you test yourself on the list of new terms and on the review questions?
4. After you read a short section (roughly a page in length), do you make yourself summarize what you have just read—using your own words?
5. Do you reread a portion when it doesn't make sense or when you realize that you haven't been paying attention?
6. Do you try to draw connections between the ideas in the textbook?
7. When you read a term you do not know, do you try to determine its meaning by looking it up in a dictionary or in the index of this textbook?
8. When you review material prior to a test, do you spend more time reviewing the reading that you consider difficult than the reading you consider easy?
9. When reading through a variety of resources to see whether they might be relevant for a paper, do you try to assess—without reading every word—the general scope or findings of the article?

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Improving Metacomprehension

- ❖ Subjective Assessment vs. Objective Test
- ❖ Pretest
- ❖ Elaborative Processing
- ❖ Regulation
 - Connections
 - Visual images
 - Summarizing / outlining
 - Questions

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Answers to the TOT Definitions:

- 1. Despot
- 2. Geode
- 3. Meridian
- 4. Venerable
- 5. Deciduous
- 6. Surrogate
- 7. Quintuplets
- 8. Charisma
- 9. Hemoglobin
- 10. Pterodactyl
- 11. Geyser
- 12. gizzard

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