Long Term Memory: Encoding

- Levels of Processing
- Other factors that affect memorability
  - Organization
  - Elaboration
  - Memory for Personally Relevant Info
  - Self-Generation Effects

Levels of Processing

- Craik & Lockhart
  - Continuum of Processing
    - Shallow: surface, perceptual features
    - Deep: processed, meaningful interpretation
  - Level or "depth" of processing affects its memorability
  - Deeper encoding produces more elaborate, longer-lasting memory traces
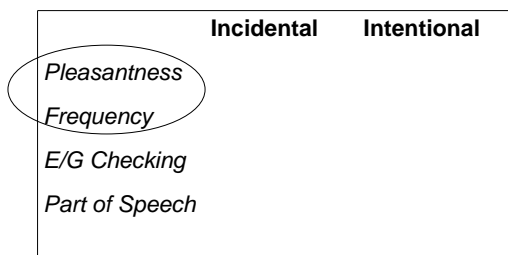
Testing Levels of Processing

- Orienting Tasks
  - Objective: induce subjects to focus on different perceptual and conceptual info associated w/stimuli
- Unexpected Recall Task
  - Objective: exercise more control over subject during encoding phase
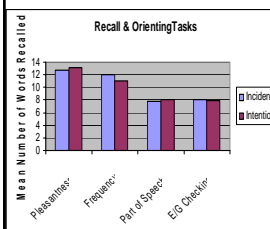
Orienting Tasks

CANOE

- Does the word have an 'e'?
  - Orthographic orienting task (shallow)
- Does the word rhyme with taboo?
  - Phonological orienting task (shallow)
- Is it a vehicle?
  - Semantic orienting task (deep)

Hyde & Jenkins

	Incidental	Intentional
Pleasantness		
Frequency		
E/G Checking		
Part of Speech		

Hyde & Jenkins

Recall & Orienting Tasks

Mean Number of Words Recalled

14 12 10 8 6 4 2 0

Pleasantness, Frequency, Part of Speech, E/G Checking

Incidental / Intentional

- Better Recall for Semantic Encoding Tasks
  - Pleasantness, Frequency > PoS, E/G checking
- Performance Equivalent on Intentional and Incidental Learning Tasks
  - The mere intention to remember does not affect memorability unless it changes encoding strategies

Craik & Tulving

- Ostensive task: How long to answer various questions
- Physical Aspects
  - Is the word in upper-case letters?
- Sound
  - Does the word rhyme with "log"?
- Meaning
  - Would the word fit the sentence, "The boy had a pet _____"?
- Unexpected Recognition Test

Craik & Tulving Data
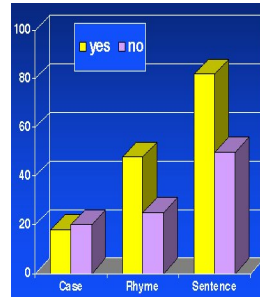
- Sentence Task Best!
- Congruency Effect
  - Finding that people do better on "yes" items than "no"
  - Due to differences in retrieval cues
  - Is a yacht a ship?
  - Is a robin a ship?

Is it just processing time?

- Craik & Tulving
- Semantic Task
  - The man threw the ball to the *child*
- Structural Task
  - Child: CCVCC

Task	Time	Recognition (% correct)
Structural	1.7 sec	57
Semantic	.83 sec	82

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Doubts about Depth

- Levels of Processing doesn't account for all factors that affect memorability
  - Importance of Organization
  - Memory for Personally Relevant Information
  - Self-Generation Effect
  - Elaboration
  - Distinctiveness

Organization

- People naturally organize info
  - magazine, clock, executive, airplane
- Tulving
  - Give people the same words in different random orders (multiple times)
  - Free recall
- Subjective Organization
  - Each subject has their own strategy
  - People who organized the most remembered the best
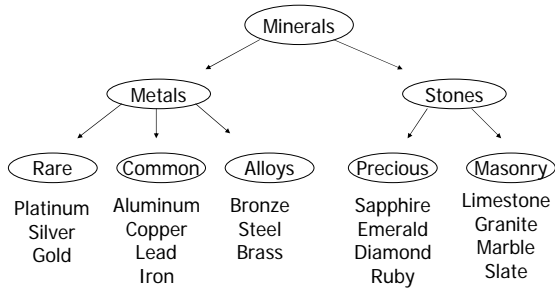
Types of Organization

- Taxonomic
- Hierarchical
- Thematic
  - Frames, Schemas
    - Librarian
    - Minneapolis
    - Jet
    - Island
    - Tan

Hierarchical Structure

- Memory improves whenever knowledge is available to organize it

| CAT1 CAT2 CAT3 CAT4 CAT5 CAT6 |
| 10egs 10egs 10egs 10egs 10egs 10egs |

CAT1	CAT2	CAT3	CAT4	CAT5	CAT6
s1a s1b	s2a s2b	s3a s3b	s4a s4b	s5a s5b	s6a s6b
5 5	5 5	5 5	5 5	5 5	5 5

Bower & Colleagues

```
              Minerals
             /         \
         Metals         Stones
        /  |  \         /    \
     Rare Common Alloys  Precious Masonry
```

Rare	Common	Alloys	Precious	Masonry
Platinum Silver Gold	Aluminum Copper Lead Iron	Bronze Steel Brass	Sapphire Emerald Diamond Ruby	Limestone Granite Marble Slate

Data

	[1]	[2]	[3]	[4]
Organized	73	106	112	112
Random	21	39	53	70

Memory for Personally Relevant Information

- Rogers, Kuiper, & Kirker
  - Structural appearance
    - Are there any capital letters in it?
  - Phonemic Properties
    - Rhymes with X?
  - Semantic
    - Means the same as X?
  - Self-Relevance
    - Does this adjective describe you?

Memory for Personally Relevant Info

Self-Relevance Effect
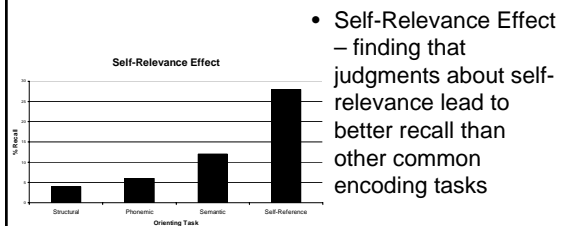
- Self-Relevance Effect – finding that judgments about self-relevance lead to better recall than other common encoding tasks