Human Memory Outline 8: Semantic Long-Term Memory

I. Overview of Semantic Memory

A. Definitions

1. Generic (as opposed to personal) memory
2. Knowledge; Memory for meaning
3. Permanent store-general-world knowledge
4. A dictionary, thesaurus, and encyclopedia

B. Basic issues related to semantic memory

1. Representation
2. Tacit knowledge
3. Automatic processes
4. Parallel processing

C. Theoretical Approaches to Representation of Knowledge

1. Associationist Approach
2. Cognitive Approaches

Network Models

Hierarchical model - Collins & Quillian

Spreading activation model - Collins & Loftus

Other computer models

Human associative memory (HAM)

ACT* (Adaptive Control of Thought) - Anderson

3. Set/List models

Set-Theoretical Model

Categories & attributes - Meyer

Semantic-feature comparison model

Lists of features - Smith and Rosch

4. Neurocognitive models

Neuronetworks

II. Collins & Quillian Hierarchical Model of Semantic Memory

A. The STRUCTURE of semantic memory

1. Concepts are nodes in a network

Network=

Node=

Pathways=

ISA =

P =

Assumption of cognitive economy -

B. The PROCESS of retrieval

1.

2. Search time depends on

III. Evaluations of Collins & Quillian Hierarchical Model

A. Empirical Test - Collins & Quillian (1969) Sentence Verification Task

1. Hypothesis:
2. Procedure

Simple sentences are presented

A robin is a bird.

A canary is green.

A canary is yellow.

A canary has wings.

A canary has skin.

Subjects make 'YES'/'NO' decisions

Reaction times measured.

3. Results consistent with the model

B. PROBLEMS with Collins & Quillian Hierarchical Model

1. Familiarity/Relatedness Effects
2. Typicality Effects
3. Associative frequency effects

Conrad (1972)

4. Acquisition of General Properties
5. Responses to False Sentences

IV. Collins & Loftus (1975) REVISED Spreading Activation Model

A. Retained associated network but REJECTED strict HIERARCHICAL structure

1.

2.

3.

B. Retrieval processes
1. Spreading activation
2. Spread of Activation depends on
3. Priming
Related concepts are activated during a search
Activated concepts temporarily more accessible

V. Feature Overlap Model, Smith (1974-)

A. Semantic memory as a COLLECTION OF LISTS
Compared to Collins & Quillian model, Smith's model:
is NOT hierarchical
is NOT a network
has simpler structure, but more complicated retrieval

B. Each concept = list of semantic features
Feature lists are ordered in terms of 'definingness' priorities
Defining features - essential
Characteristic features - common, frequent

C. Information retrieval = feature comparison process
Sentence verification - "A canary is a bird"
Check feature overlap for 'canary' and 'bird'
1. Stage I search
Very high overlap - fast 'yes' response
Very low overlap - fast 'no' response
2. Stage II search
When Stage I yields only moderate overlap
Slow, deliberate comparison
Uses only DEFINING features

VI. Evaluation of Feature Overlap Model

A. Strengths
1. Simple account of 'typicality' effects
2. Explains familiarity/relatedness effects in terms of feature overlap
3. Explains some results with false statements

B. Weaknesses
1. Distinction between defining and characteristic features
2. Does not predict or explain PRIMING

VII. Priming

A. Processes & Terms
1. Semantic Priming - What is it?
2. Priming tasks - important terms
Prime:
Target:
Facilitation:
Inhibition:
SOA (stimulus onset asynchrony):

B. Priming Lexical Decisions - Meyer & Schvaneveldt (1971)
(For a demonstration, see the Purdue Lexical Decision Online Laboratory)
'Lexical decision'-subject decides if letters form a real word
1. Procedure
DV
IVs
2. Results

C. Neeley (1977) automatic activation processes versus conscious expectations
1. Procedure
DV: RT - in a 'lexical decision' task
IVs: Semantic relatedness, expectations, and SOA
Subjects told to expect specific category shift sometimes,
other times expect no category shift. Examples:
"If you see BIRD expect target to be a kind of bird"
"if you see BODY expect target to be part of a building"
2. Results
Related & expected PRIME-TARGET =
Unrelated but expected PRIME-TARGET =
Related & unexpected PRIME-TARGET =
Unrelated & unexpected PRIME-TARGET =
3. Conclusions: Effects of semantic priming are DIFFERENT
than effects of conscious expectations

Return to home of Psychology 279 Human Memory

Send questions & suggestions to saultsj@missouri.edu

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