

Memory Encoding and Storage

Theoretical Explanations

Practical Implications

Short Term Memory

William James 1890 primary/secondary
Hebb 1940's circuit activation
Miller 1956 memory span, limited capacity
Peterson & Peterson, 1959
eliminate rehearsal w distractor
=> very fast forgetting

Atkinson & Shiffrin 1968 elaborate model

sensory stores
attention

STM

rehearsal

LTM

limited capacity - memory span?
rehearsal -> storage

Rehearsal

Rundus 1961
rehearsal of list items correlates with recall

Craik & Loackhart 1972
depth of processing

Baddeley 1986 articulatory loop
word length effect
visiospatial sketchpad

Long Term Memory

Bible, animals, flood

nodes and connections
schemas / objects

a similar example / demo

Anderson Model

basic model- propositional network + activation

1. network propositional model

dynamics at single node

2. activation -> availability
3. strength -> availability

dynamics of network

4. spreading activation

explanations provided by model

5. elaboration -> more network structure
-> more spreading activation

6. interference -> competing pathways
-> diffused activation -> difficulty with retrieval

7. inference -> elaboration &
help with (plausible) retrieval

8. inference and retrieval use schemas &
default expectations

Activation and LTM

level of activation

1. recency of use:

Loftus 1974

instances of category beginning w letter

1.53sec first time

0,	1,	2	intervening items
1.21,	1.28,	1.33	secs

.32 sec estimate of activation time

2. how much practice/use/learning

Anderson 1976 (recency+practice)

1. learn: sentences like:

The sailor is in the park

The lawyer is in the church

(varied study time)

2. recognition test

negatives were recombinations

repeated recognition tests at different

intervals

degree of study time	intervening items		LTM activation
	0-2	3+	
less	1.11	1.53	.42
more	1.10	1.38	.28

Spreading Activation

Meyer & Schvaneveldt 1971

Associative Priming
word recognition task
2 words at a time
related words 85ms faster

Ratcliff & McKoon 1981

Experimentally learned associates
1. learn sentences like
 The doctor hated the book
2. recognition of presented words

average of 43ms faster if primed with
another word in sentence

priming effect grows over 50-300ms
interval (growth in activation)

Kaplan 1989

environmental cues to problem solving

Factors Influencing Memory

meaningfulness of materials

depth of processing

elaborative processing

Stein & Bransford 1979

self generated?

"precise" / relevant

study techniques for textual material

Frase 1975

advanced organizers (questions)

relevant questions

asking & answering

Thomas & Robinson 1972 PQ4R method

Preview- identify sections, for each:

Questions

Read- try to answer questions

Reflect- think of examples,

relate to prior knowledge

Recite- recall, answer questions,

reread if problems

Review- recall main points

meaningful vs. nonmeaningful elaborations

method of loci

organization

using well learned organizational structure

meaningful processing of items

meaningful processing of connections

between items and framework

incidental vs. intentional learning

Hyde & Jenkins 1973

depth of processing

(pleasantness vs. letters)

novel vs textbook

flashbulb memories and self-reference effect

Brown & Kulik 1977

Kennedy assassination unverifiable

McCloskey, et al. 1988

Challenger explosion inaccurate

Palmer et al. 1991

SF earthquake 1989

in person - better memory

Garcia effect