

Sensory memory

Information from the different sensory modalities is stored in separate sensory memories.

- *Iconic memory* is a visual sensory store with a short duration of less than one second.
- *Echoic memory* is an auditory sensory store with a duration several seconds long.

Sensory memory

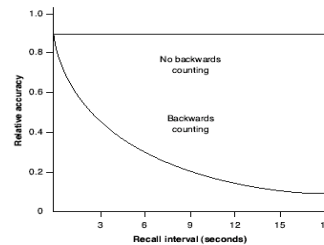
- Sperling (1960) presented letter arrays
 - *whole report condition*
 - *partial-report condition*
- Iconic memory has a high capacity

G	Y	K
T	V	P
C	B	S

Working memory

- limited capacity
 - Capacity can be increased by grouping items into meaningful wholes called *chunks*. Limit is about 7 ± 2 chunks.
- limited duration
 - Duration can be increased by repeating items, a process called *rehearsal*.

Working memory duration



Peterson and Peterson (1959).

Memory skill training

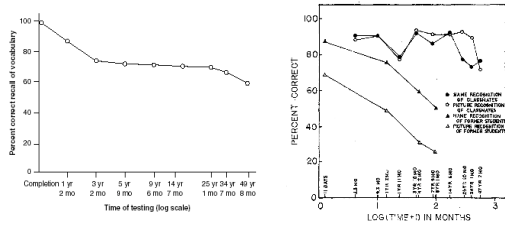
Ericsson, Chase, Faloon (1980)

- SF: 1 hour of practice, 3-5 times a week, for 1.5 years
- Memory span for random digits increased from 7 to 79
- But: trick

Long-term memory

- Implicit or *procedural memory* (riding a bicycle).
- Explicit or *declarative memory* (facts and events).
 - *Semantic memory* (factual knowledge)
 - *Episodic memory* (life events)

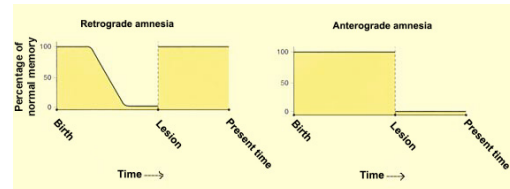
Semantic memory duration



Bahrick (1984)

HM

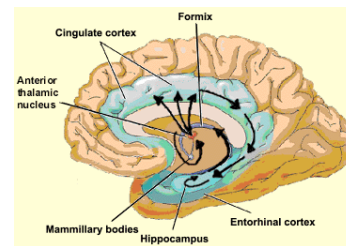
- Bilateral medial temporal lesions: anterograde amnesia



HM

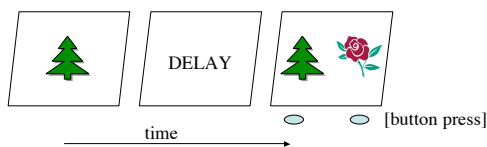
- Severe anterograde amnesia, no learning of new episodic information (info on actual extent of lesion has been revised)
- BUT: procedural memory was intact (e.g. gradual improvement in playing tennis)
- Procedural memory: basal ganglia
- Parkinson's Disease, Huntington's Disease: no motor learning

Main memory network



Visual working memory

- Typically measured by the Delayed Matching to Sample (DMS) method in monkeys
A.....B.....C.....D.....A
- In the form of a forced-choice task:



Memory-related neural activity in the frontal and temporal cortex

- Stimulus-selective sustained activity during delay
 - Exists even with multiple intervening stimuli

“Flashbulb” memories

- Brown & Kulik, 1977
- Unusually high confidence
- But they are no more accurate than everyday memories