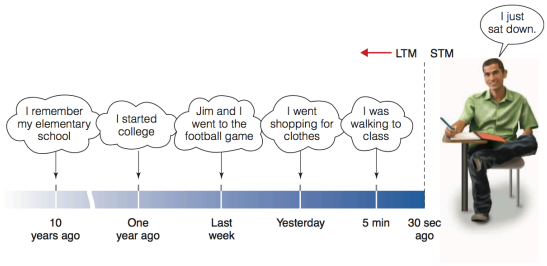
Memory II

PSYC 313 - Lecture 11
Dr. J. Nicol

Long-term memory (LTM) is the system that is responsible for storing information for long periods of time—it is an archive of information about past events in our lives and knowledge we have learned



LTM covers a span that stretches from about 20–30 seconds ago to your earliest memories

The double dissociation between STM and LTM shows that they operate independently and are served by different mechanisms

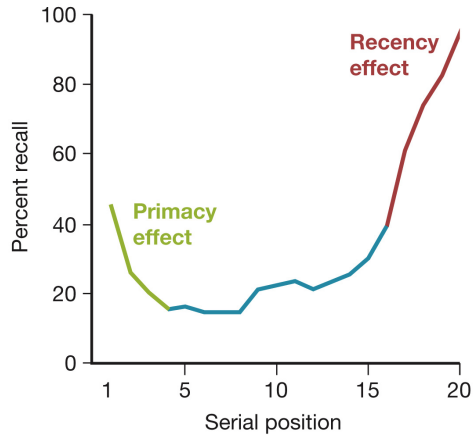
A Double Dissociation for Short-Term and Long-Term Memory

Patient	Short-Term Memory	Long-Term Memory
HM	OK	Impaired
KF	Impaired	OK

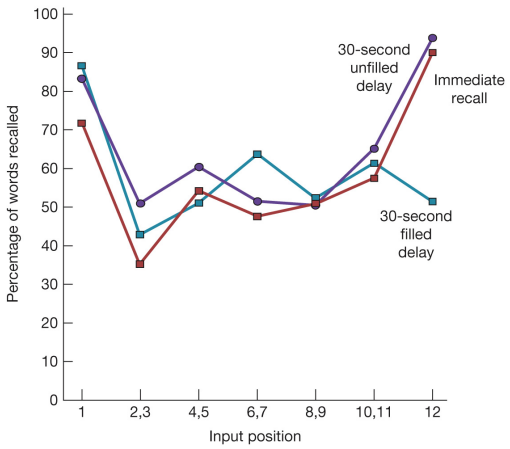
There are some patients with functioning STM who can't form new LTMs and other patients who have poor STM but functioning LTM

Distinguishing STM and LTM

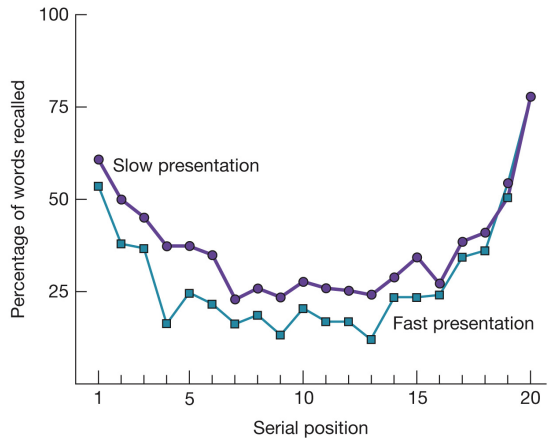
- STM is limited in size, whereas LTM is not
- Getting information into STM is easy, whereas getting information into LTM usually involves effort
- Accessing information that is in STM is easy, whereas accessing information stored in LTM can be difficult, slow, or unsuccessful
- The contents of STM are quite fragile and can easily be pushed out by thinking about something else, whereas information remains in LTM whether or not you are thinking it about at the moment



Murdoch (1962)

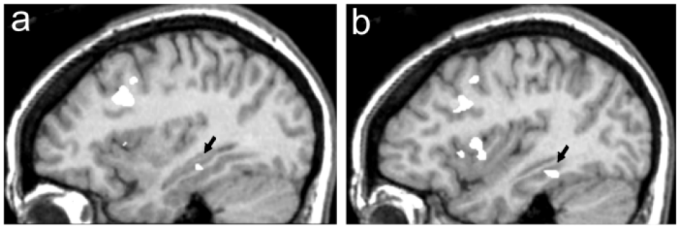


Glanzer & Cunitz (1966)



Glanzer & Cunitz (1966)

Memory for early list items depends on brain areas associated with long-term memory, whereas memory for later items later on the list show a different pattern of activation

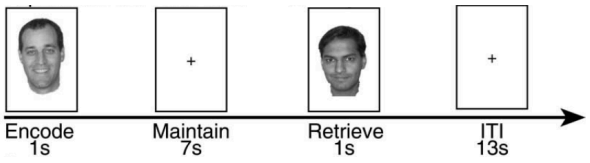


Retrieval from long-term memory activates the hippocampus

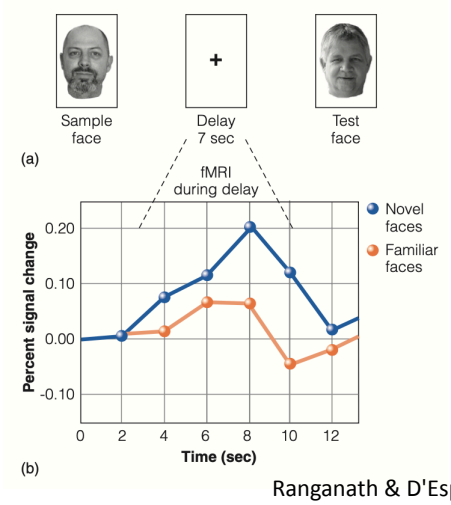
Retrieval from short-term memory activates the perirhinal cortex

Talmi et al. (2005)

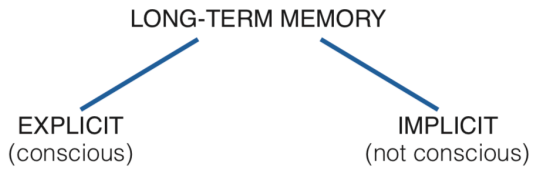
While in an fMRI scanner, the participants task was to decide whether the two faces were the same or different



In the novel face condition participants had not seen the faces before and in the familiar face condition they had seen the faces before

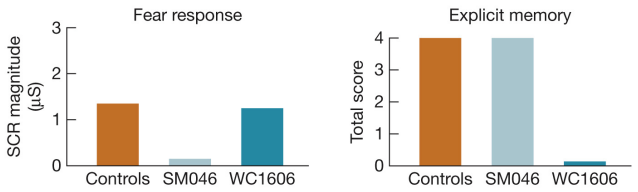


Ranganath & D'Esposito (2001)

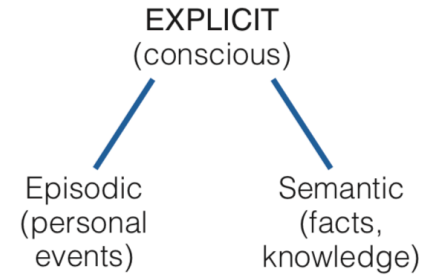


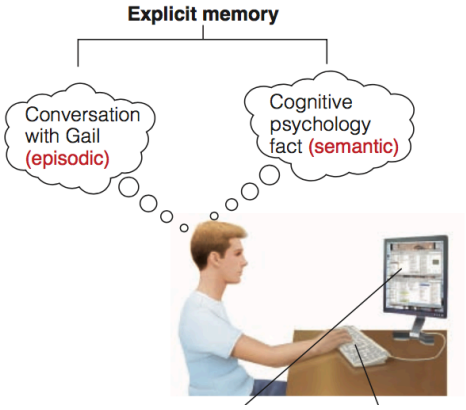
Types of Long-Term Memory

- ***Explicit memory:*** conscious or declarative memory
  - Contents can be described or reported
  - Revealed by direct memory testing
- ***Implicit memory:*** unconscious or non-declarative memory
  - Used without awareness, so the contents cannot be reported Memory without episodic awareness
  - Occurs when some previous experience influences our performance on a task, even though we do not consciously remember the previous experience



Bechara et al. (1995)





Neuropsychological research shows a double dissociation between semantic and episodic memory, indicating these two types of explicit memory are served by different mechanisms

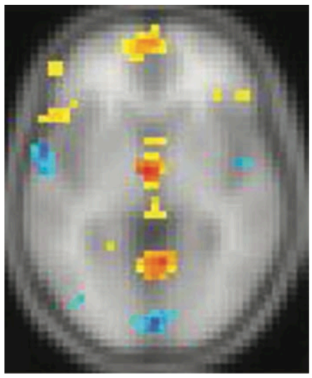
A Double Dissociation for Semantic and Episodic Memory

Patient	Semantic Memory	Episodic Memory
KC	OK	Poor
LP	Poor	OK

Episodic vs. Semantic Memory

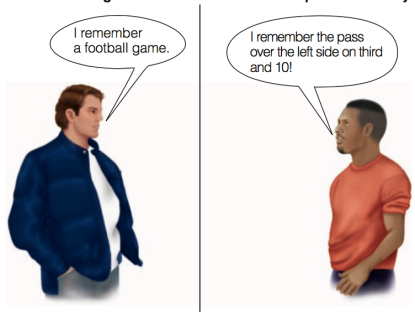
- ***Episodic memory***: the memory system concerned with personally experienced events or episodes
  - Storage and retrieval of dates, spatially locations, and personally experienced events or episodes
- ***Semantic memory:*** the memory system concerned with storage and utilization of knowledge about words and concepts their properties and relationships
  - Memory for facts that are not unique to us and that are not recalled in any particular temporal context

There are differences in neural activation associated with episodic and semantic memories



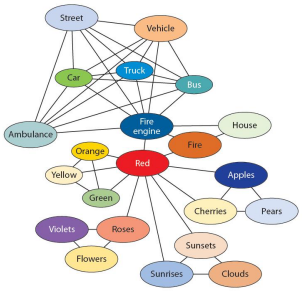
Levine et al. (2004)

Semantic knowledge can influence formation of episodic memory



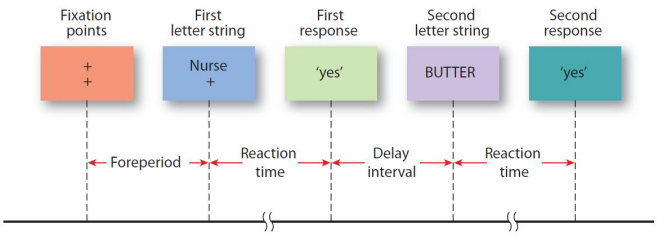
Episodic and semantic memories are distinct, but also interact with each other

An important notion to emerge from the study of semantic memory is the concept of spreading activation



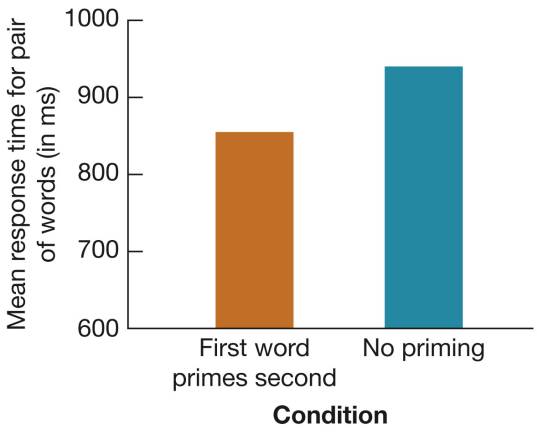
When you search a semantic network in the brain you activate the connections where the search takes place

***Priming** occurs when the presentation of one stimulus (i.e., the prime) changes the response to a subsequent stimulus (i.e., the test stimulus)*



Semantic priming in a lexical-decision task shows evidence of spreading activation and implicit memory

Meyer & Schvaneveldt (1971)



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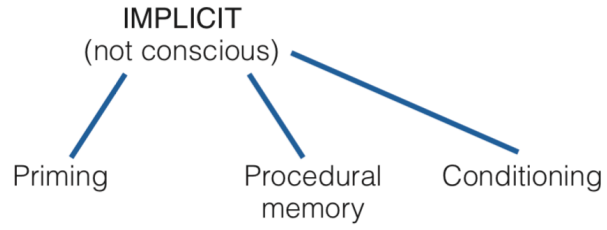
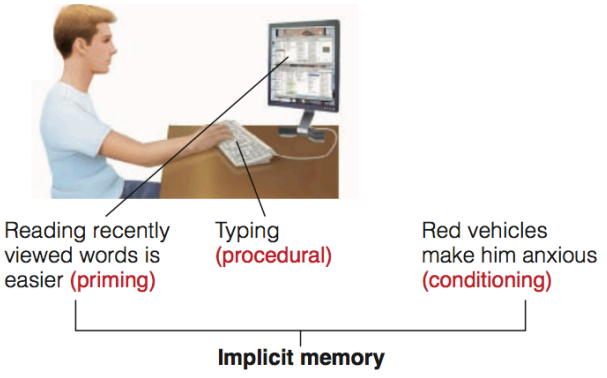
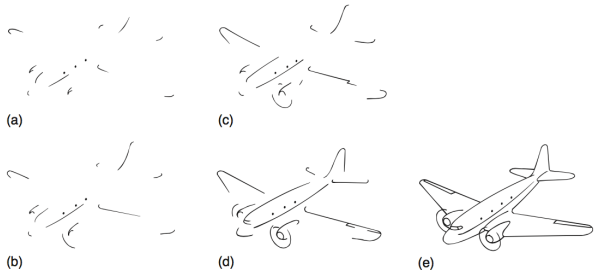


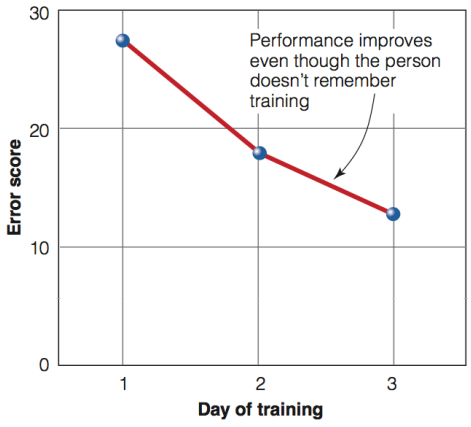


Priming *occurs when the presentation of one stimulus (i.e., the prime) changes the response to a subsequent stimulus*

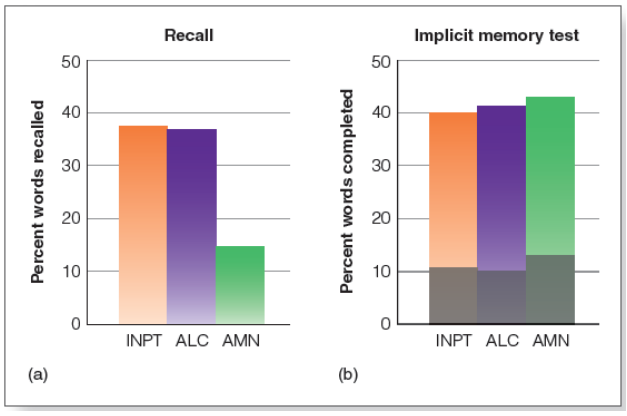


Amnesia patients were shown increasingly complete pictures of objects until they were able to recognize them

Gollin (1960)



Gollin (1960)

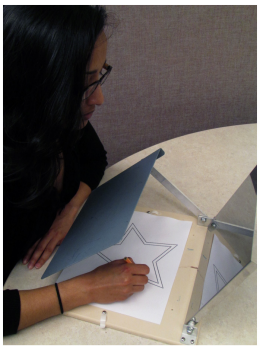


Graf et al. (1985)

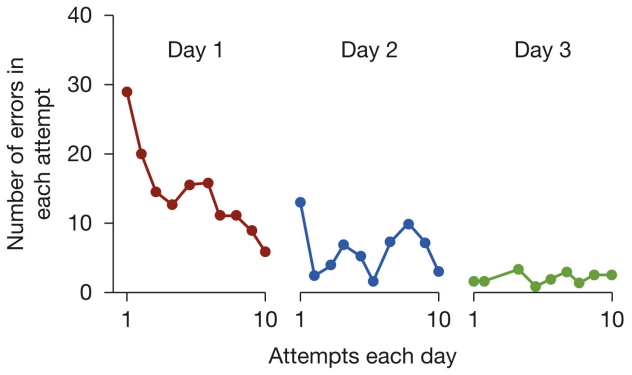
The Propaganda Effect

- We are more likely to rate statements that we have read or heard before as being true—apparently simply because we have been previously exposed to them
- This effect involves implicit memory because it can operate even we are not aware that we have heard or seen a statement before, and even when we may have thought it was false when we first heard it
- Occurs even when participants were told the statements were false when they first read or heard them (Begg et al., 1992)

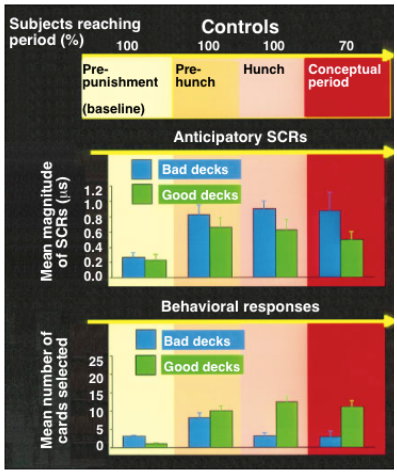
Procedural memory *(or skill memory) is concerned with knowing how to do things*



The mirror tracing task



Gabrieli et al. (1993)



Bechara et al. (1997)