

# Long-Term Memory

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Long-term memory (LTM) the final stage of the multi-store memory model proposed by the Atkinson-Shiffrin, providing the lasting retention of information and skills.

Theoretically, the capacity of long-term memory could be unlimited, the main constraint on recall being accessibility rather than availability.

Duration might be a few minutes or a lifetime. Suggested encoding modes are semantic (meaning) and visual (pictorial) in the main but can be acoustic also.

Bahrick et al. (1975) investigated what they called very long term memory (VLTM). Nearly 400 participants aged 17 – 74 were tested. There were various tests including: A free recall test, where participants tried to remember names of people in a graduate class. A photo recognition test, consisting of 50 pictures. A name recognition test for ex-school friends.

Results of the study showed that participants who were tested within 15 years of graduation were about 90% accurate in identifying names and faces. After 48 years they were accurate 80% for verbal and 70% visual. Free recall was worse. After 15 years it was 60% and after 48 years it was 30% accurate.

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## Types of Long Term Memory

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One of the earliest and most influential distinctions of long-term memory was proposed by Tulving (1972). He proposed a distinction between episodic, semantic and procedural memory.

### Procedural Memory

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Procedural memory is a part of the long-term memory is responsible for knowing how to do things, i.e. memory of motor skills. It does not involve conscious (i.e. it's unconscious - automatic) thought and is not declarative. For example, procedural memory would involve knowledge of how to ride a bicycle.

### Semantic Memory

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Semantic memory is a part of the long-term memory responsible for storing information about the world. This includes knowledge about the meaning of words, as well as general knowledge. For example, London is the capital of England. It involves conscious thought and is declarative.

### Episodic Memory

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Episodic memory is a part of the long-term memory responsible for storing information about events (i.e. episodes) that we have experienced in our lives. It involves conscious thought and is declarative. An example would be a memory of our 1st day at school.

Cohen and Squire (1980) drew a distinction between **declarative knowledge and procedural knowledge**. Procedural knowledge involves “knowing how” to do things. It included skills, such as “knowing how” to playing the piano, ride a bike; tie your shoes and other motor skills. It does not involve conscious thought (i.e. it’s unconscious - automatic). For example, we brush our teeth with little or no awareness of the skills involved.

Whereas, declarative knowledge involves “knowing that”, for example London is the capital of England, zebras are animals, your mums birthday etc. Recalling information from declarative memory involves some degree of conscious effort – information is consciously brought to mind and “declared”.

The knowledge that we hold in **semantic and episodic memories focuses** on “knowing that” something is the case (i.e. declarative). For example, we might have a semantic memory for knowing that Paris is the capital of France, and we might have an episodic memory for knowing that we caught the bus to college today.

Evidence for the distinction between declarative and procedural memory has come from research on patients with amnesia. Typically, amnesic patients have great difficulty in retaining episodic and semantic information following the onset of amnesia. Their memory for events and knowledge acquired before the onset of the condition tends to remain intact, but they can’t store new episodic or semantic memories. In other words, it appears that their ability to retain declarative information is impaired.

However, their procedural memory appears to be largely unaffected. They can recall skills they have already learned (e.g. riding a bike) and acquire new skills (e.g. learning to drive).

## References

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