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## Memory Storage

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Memory storage is another way to explain the process of keeping information in our brain. Numerous theories (began in earnest by Atkinson & Shiffrin in 1968) seem to suggest that our memories can be divided into three stores.

The three stores are:

- Sensory memory
- Short-term memory (STM)
- Long-term memory (LTM)

The function of these memory stores is to filter the incredible amount of information we encounter everyday. Without such a filter, our minds would quickly be overwhelmed by an unimaginable array of facts, figures, events and experiences. It appears that the more often information is encountered and repeated, the more likely it is to be stored in the Long-Term Memory.

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## Duplicate Memories

Karl Lashley and Wilder Penfield carried out neurological research in the 50s and 60s which showed that LTM was distributed in various parts of the cortex rather than in one part of the

brain as was previously thought. Research has also shown that LTM's are encoded (the process of placing information in a store) in different parts of the cortex. This means that if one memory trace is lost, there are duplicate memories stored elsewhere ensuring they are not lost forever.

This means that human memory storage [1] is nothing like the storage of information in a library as has been commonly espoused. Memories must be reconstructed through encoding as there are different elements scattered all over the brain. Our memory is not sequenced, it is more like a jumbled up jigsaw puzzle. Evidence seems to suggest that our LTM can store unlimited amounts of information for as long as the brain functions. Neurological diseases like Alzheimer's can adversely affect our LTM however.

## Sensory Memories

Our sensory memory [2] briefly stores information from our senses (eyes and ears for example) and this enters the Sensory Information Store (SIS). Yet little attention is paid to this new information which quickly decays. More information (also known as interference) writes over the ignored information. Our sensory memory is stored for between a quarter of a second and three or four seconds.

## Short-Term Memory

Short-term memory [3] (STM) storage is estimated to last anywhere between 20 and 30 seconds if the new information is not rehearsed. If the information is rehearsed, the information will last as long as the rehearsal process continues. A 1956 study by George Miller suggested that STM could hold seven (plus or minus) two items as its maximum capacity. This theory was widely accepted until more recent studies indicated that STM storage depended on numerous factors including the type and length of each item. For example, a sports fan with no interest in fashion will be able to store more sports related items in his/her STM than items about jewelry.

## The Shiffrin Theory

Richard Shiffrin of Atkinson-Shiffrin model [4] fame suggested that the human brain stores all memories and it is the process of retrieval which eradicates unimportant memories. This has been refuted by several psychologists in various studies which suggest that memories are edited and sorted. This process ensures that certain memories are never stored in the first place.

## Forgetting

The process of forgetting [5] in memory storage refers to our inability to retrieve a piece of information that has previously been stored. Forgetting is different to amnesia because it only relates to missing pieces of memory rather than the entire episode. It seems impossible to deliberately erase memories at will though beta blockers appear to water down emotional aspects of traumatic memories without actually erasing them.

## Links

[1] [http://www.web-us.com/memory/human\\_memory.htm](http://www.web-us.com/memory/human_memory.htm) [2] <https://explorable.com/sensory-memory> [3] <https://explorable.com/short-term-memory> [4] <https://explorable.com/atkinson-shiffrin-model> [5] <https://explorable.com/forgetting>