

STM & LTM

Capacity

LTM has been considered by many scientists to have an unlimited capacity. It is possible to lose information from LTM by decay or interference, but this is not due to its capacity.

STM has a very limited capacity (storage space). An example of this short capacity is if you are told a phone number, you can just about write it down with no delay. If there were some sort of distraction task or delay, the last figure in the number will be displaced. If the phone number is repeated, this acts as a rehearsal. However when new information is trying to get in (the distracter task) some of the numbers will be displaced from your STM. Another example of your STM's capacity is arithmetic. When faced with simple addition or subtraction, we normally have no problems working something out, however when faced with more complex formulas we start to struggle. This shows that our STM can only perform a small number of processes at one time. Many psychologists have performed experiments to try and obtain a better understanding on the capacity of our STM. One of those is George Miller. He conducted a test he called 'The magical number 7, plus or minus 2.' In which he discovered that it is more manageable to remember a series of letters if they are broken down into 'chunks' of 3 each. The reason is that instead of learning different letters, you are now remembering the different blocks of letters. He found that if the chunks are broken up to make short words, we can remember them with ease. This is because LTM comes into action, which is mainly semantic, pairing the words up to their specific meaning; therefore we are able to remember them easier. Miller's experiment was a variation of Jacob's Digit span technique. This is when participants are asked to recall a series of words from a list. The list gets longer until the participant can no longer recall the list correctly. This was used to measure the capacity of STM. There are a number of factors that can affect the capacity of your STM. These include influence of long-term memory – when things are temporarily stored in the LTM, which increases the STM for a short period of time. Reading aloud helps people remember more digits because some letters are temporarily in the echoic memory and can be recalled easier. Pronunciation time affects STM, this is the time it takes to articulate words which can vary in language or age of participants, for example a test in Arabic, where

words take longer to articulate, will result in less words recalled, or young children, who take longer to build words up in their mind, will not be able to recall as many. Also individual differences affect STM. Some may suffer from anxiety when in a laboratory environment, and so will have a shorter span in their STM.

Duration

It is generally accepted that STM doesn't have a very high duration and can only hold few items at one time. Information that we need to retain over a longer period of time will be transferred from STM to LTM by rehearsing this information to ourselves. A rehearsal loop is done by repeating the information in STM. This will strengthen the memory trace so it will potentially stay in our LTM until we die. The factors that affect duration in STM are repetition, for example when we need to remember a series of numbers, we repeat them in our mind so increase the duration. The intention to recall, where it is questionable whether participants make a real effort to recall, or whether they are expecting to be asked to recall. Also, the amount of information being asked to recall may affect the duration of STM.

LTM can hold an unlimited amount of information from anything from minutes, to a lifetime. It is difficult to perform tests to find an understanding of the duration of LTM, but one particular study by Bahrick (1975) stands out. He tested 392 graduates from a high school, on their former class mates. Various memory tests were performed on the graduates including pictures of their old classmates, matching names to pictures, and recalling names without pictures. The results came out well up to 34 years. However the recognition tasks were performed better than recall tasks, because although the LTM cannot recall names of people, it is capable of storing images (recognition). After 47 years there was a dip in the results, possibly due to passage of time or effects on the brain as the participants grew older.

Peterson and Peterson

Aim – To distinguish the effect of a timed delay, when recalling from STM. (IV – time delay, DV – quality of recall)

Procedures – Participants were asked to look at a trigram (3 consonants not making up a specific word or sound) and asked to

count backwards, in threes for varied amounts of time. They used 3, 6, 9, 12, 15 and 18 second intervals. They then had to repeat the trigram.

Findings – They found that they could recall the letters after the 3 - second interval 80% of the time. The recall, however became progressively worse as the time delay got longer and after an 18 second interval, less than 10% was recalled correctly.

Conclusions – Peterson and Peterson showed from this experiment that when rehearsal is prevented (distracter task), decay of the STM occurs more rapidly

Criticisms – This study lacks in ecological validity, because remembering these trigrams is unlikely to occur in someone's real life situations, because they were not words and had no meaning, other studies and research shows that more meaningful information is more likely to be stored in the STM for longer. (mundane realism)