

Evaluate a model or a
theory of one
cognitive process



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Evaluate a model or a theory of one cognitive process (e. g. memory, perception, language), with reference to research studies (22)* The Multi Store Model of Memory (also known as the Atkinson and Shiffrin Model of Memory) is a simplified cognitive model of the memorial structure of the human mind. It was first proposed by Richards Atkinson and Shiffrin, in 1968. It was one of the first models of memory to show a clear and systematic approach to the store and retrieval of memory, and although now considered by many to be an oversimplification of the mind, it paved the way for more sophisticated models (e. . the working memory model).

At it's core, it has the three memory stores [1]: Sensory Memory (SM), Short Term Memory (STM), and Long Term Memory (LTM). The SM only holds information for under a second, and records all sensory information received by the mind. The STM holds up to 7, ± 2 items of information at a time (for instance, a telephone number) and can hold it for up to approximately 18 seconds. The LTM can hold near unlimited amounts of information, for a near unlimited duration. Information enters the STM initially from the SM, as a result of any attention being paid to it.

The information resides in the STM for up to approximately 18 seconds, until it is either forgotten or (through rehearsal of the memory) it is transferred to the LTM. All recall occurs from the STM, and therefore any memories recalled from the LTM must first 'pass through' the STM. The model has it's strengths: it can account for the Serial Position Effect (Murdock, 1962) - participants were asked to remember a series of words, from 10 - 30 in length. They were flashed up on a screen for 1-2 seconds each, while the participants were asked to try and remember as many as they could.

After all the words were shown, the participants were asked which words they could remember: the trend was towards them remembering the first few words (the Primacy Effect), and the last few (the Regency Effect) [2]. Although this study took place before the Multi Store Model was proposed, it supports the transmission of information between the different stores: the first few words are subject to greater repetition than the others, moving them from the STM to the LTM. The last few words are still in the STM when the participants are asked to recall them, and so can be recalled with ease.

It is the middle section of the words that are forgotten, because they are not subject to enough repetition to be transferred to the LTM, and are too far from recall to still be in the STM; consequently, they are forgotten. However any interfering activities can cancel out the Regency Effect: for example, being asked to perform arithmetic problems while simultaneously attempting to remember the words, causes the arithmetic problems to displace the memorial task in the STM, and so limit the ability to recall information to only the LTM (the Primacy Effect).

This displacement can support the Multi Store Model (7 ± 2 items of information can be stored in the STM) but it can also support the Working Memory Model (Baddeley and Hitch, 1974). The HM case study also supports the Multi Store Model: HM was a patient who suffered from severe epilepsy, and so had his Hippocampus resected as treatment. This resulted in him being unable to transfer information from the STM to the LTM, and so form new memories.

This not only demonstrates the localisation of memorial functions in the brain, it shows the limited storage capacity of the STM and how crucial the <https://assignbuster.com/evaluate-a-model-or-a-theory-of-one-cognitive-process/>

transferral of the information to the LTM is in the permanent storage of information. He was still able to access his LTM stores (that is to recall old memories), however the closer the memories are to the surgery, the fainter they become (temporally graded retrograde amnesia).

Despite the massive damage to the ability to commit new memories to LTM, the STM appears entirely unaffected: the test scores for short term retrieval were no different to that of control subjects (Smith & Kosslyn, 2007; Corkin, 2002). Despite his inability to commit specific events to LTM, he still possessed the ability to learn new procedures (now known as procedural memory): he was able to learn the new skill of drawing a picture of a figure in a mirror, and repeat it long after he had forgotten learning the act itself (Milner, 1960).

He could also draw a map of his house (which he moved out of years after his surgery) from memory, suggesting that he formed topographical memories of his surroundings while moving from room to room in day to day circumstances (Corkin, 2002). Nor did his surgery render him entirely incapable of learning new facts (e. g. celebrities' names), even long after his surgery (Corkin, 2002). These findings suggest that the basic Multi Store Model is grossly oversimplified, with numerous memory stores for more specialised tasks (e. g. auditory memory, visuospatial memory etc. seeming more likely).

The Multi Store Model defines all memories lasting longer than 18 seconds as long term, however it would appear from this study that the LTM has multiple components which make it up as a whole, and can be disrupted independently of one another. These findings are allowed for in the <https://assignbuster.com/evaluate-a-model-or-a-theory-of-one-cognitive-process/>

subsequent Working Memory Model (Baddeley and Hitch, 1974), itself based upon the Multi Store Model. Also presenting evidence to the contrary of the Multi Store Model is the case study of Clive Wearing, a former musicologist, conductor, tenor and pianist from London.

He contracted a virus, Herpesviral encephalitis, leading him to subsequently suffer from anterograde and retrograde amnesia, rendering him unable to form new memories and remember only a limited amount of what happened before the infection. Consequently, he repeatedly (every 7-30 seconds) experiences a 'sudden awakening' of consciousness, believing himself to be conscious for the very first time. His memories get weaker the further back from his illness he gets: for instance he recalls he has children from a previous marriage, but cannot remember their names.

Conversely, he still remembers and is greatly in love with his second wife, whom he married the year before his amnesia. Despite his lack of experiential memory, his procedural memory is intact: he can still play the piano and conduct a choir, and if presented with a repeated video clip, he cannot remember watching it but can anticipate certain parts of it without knowing how. This again demonstrates the limitations of the Multi Store Model: it's oversimplification of the LTM in particular prove it inaccurate in complex, real world cases.

In conclusion, the Multi Store Model proves advantageous when considering a simple, theoretical model of the mind; and paved the way for more accurate, detailed and useful models of memorial constructs (e. g. the Working Memory Model). However it's gross simplification of the mind leads it to be inaccurate in predicting and explaining real-world psychological

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phenomena, and ignoring the clear presence of distinct areas of memory (although such evidence may not have been available at the time). It is flawed, but the psychology of memory would not be the same today without it.