

Explain multi store model of memory



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Many theorists suggest that the memory system is divided into three stores. A significant theory of this type was proposed by Atkinson and Shiffrin (1968) and this essay is going to explain and evaluate the multi-store model of memory. Apart from becoming the standard description of the memory system; it is also believed that, their model was raised from the information processing approach, which in turn is obtained from communication and computer science. The main focus in this model is the distinction between short and long term memory.

According to this approach, memory is characterised as a flow of information through a system, which is divided into a set of stages and information passes through each stage in a set sequence. Atkinson and Shiffrin proposed that external stimuli from the environment first enter sensory motor, where they can be registered for very brief periods of time, before being passed to S. T. M. Short-term memory contains only the small amount of information that is actually in active use at any one time. Information at this stage can be encoded iconically (through the eye) or echoically (through the ear). They believed that memory traces in STM are fragile and can be lost within thirty seconds unless if they are rehearsed. Information that is rehearsed is then passed on to the long-term memory store, where it can remain for a life time unless it gets lost through decay or interference. They explained that coding in LTM is assumed to be in terms of meaning also known as semantic.

A crucial aspect of the multi-store model is that there is experimental evidence which suggest that STM and LTM operates differently in terms of capacity and duration. People with brain damage have also contributed to

the study and use of this model which gives rise to memory impairment. On the other hand we can look at some weaknesses of the MSM. Although Atkinson and Shiffrin thought that information is transferred into LTM by rehearsing, other psychologists argued that deep processing was necessary to transfer information. Others have criticised it to be simple and inflexible and that it fails to take into account of factors such as the strategies people employ to remember things. Emphasis is put on the amount of information that can be processed rather than its nature. The MSM is also criticised for not putting into account, that some things are easier to remember than others because of the distinctive meaning and that the flow of information through the system is interactive rather than sequential as suggested by Atkinson and Shiffrin.

Further in this essay, a discussion in the case study of Clive Wearing, is going to explain how it supports the multi-store model of memory. Baddeley (1997) explains that Clive Wearing was not only highly educated but also a broadcaster who had great talent as a musician. In 1985, he contracted a viral infection (encephalitis) that left him with extensive brain damage that caused him to have major memory disorder. Although he retained his musical skills in addition of being able to talk, read and write, his memory remained seriously impaired. He had an obsessive thought that convinced him that he had just woken up and kept a diary for this thought. This was evident through his wife whom he could greet as if he had not seen her in a long time, though sometimes she would just have left a the room for a few minutes. Clive could not use the past to anticipate the future. He described

his situation as “ hell on earth, it’s like being dead.” {Page 2, Cardwell M, Clark L and Meldrum C (2000) Psychology for AS level}.

The above case supports Atkinson and Shiffrin’s model, due to the fact that they point to a clear distinction between STM and LTM, especially in terms of duration, capacity and effects of brain damage and forgetting mechanisms.

Murdock (1962) also carried out an experiment by asking participants to learn a list of words and recall them. He found out that words that were presented earlier on in the list or at the end were the ones that often recalled than the words in the middle, so in support of the MSM, he suggested that the words put into LTM were those that came earlier in the list and the ones at the end went into STM. However, he said words that were in the middle of the list had been there too long to be held in the STM, but not long enough to be put into LTM.

Though the model suggests that information that is rehearsed is transferred into LTM, some studies have shown that it is not essential. According to Eysenck and Keane (1990), they gave an example that we may remember certain things because they have relevant meaning and this could range from being funny or relevant in some way (semantic). Paivio (1971) also argued against the model because some of our LTM consists of mental images from all our senses.

Warrington & Shallice studied and carried out extensive research on KF who was involved in a motorcycle accident which caused him serious brain damage (left inferior parietal lobe damage). This case study is going to be used to critically evaluate the multi-store memory model. As a result of the

accident KF developed anterograde amnesia, which means that his memory of events before the accident was not damaged, but after the accident his memory was severely ruined. Tests that were carried out on him showed that his STM was damaged. Although, he had no major problems with his visual perception, he did have serious problems with his auditory information.

The above results opposed the MSM, and it was criticised, because KF could recall past events despite damage to his STM, whereas Atkinson and Shiffrin had claimed that it was possible to recall information from LTM to STM, which couldn't have been possible in the case of KF. Conclusions on the above case, was drawn to show that there is more than one type of STM, which brought further criticism on the MSM

EXPLAIN THE RECONSTRUCTIVE MEMORY MODEL (BARTLETT 1932)

The concept of reconstructive memory is related to schema theory. In the late 1930's, it was assumed that memory involved remembering the information presented to us, but Bartlett argued that memory was often more complicated than that because knowledge in the form of schemas has an impact on our memory. According to Bartlett, we organise our memories in a way that fits in with our previous experience, or schemata. When we remember events, gaps in our memory are reconstructed based on our schema. Bartlett aimed to investigate the effects of schemas on participants' recall. Schemas include prior expectations, attitudes, prejudices and stereotypes. The study was based on Bartlett's schema theory, which states that memory involves an active reconstruction. According to this theory,

what people remember depends on two factors of information presented to us and misrepresentation created by our belief on schemas. These distortions would be most likely to occur when the participants, schemas were of little importance to the facts being learned.

In one of his studies, Bartlett carried out a natural experiment by examining twenty English speaking participants, who had to read a North American Indian folk tale called "The war of the Ghosts", and had to recall the story afterwards. The story being from a different culture, he believed that it would conflict with the participants' prior knowledge contained in their schemas.

Bartlett found considerable distortions in the participants' recollections. The distortions increased over successive recalls and most of these reflected the participants' attempts to make the story more like a story from their own culture.

Bartlett concluded that the accuracy of memory is low. The changes to the story on recall showed that the participants were actively reconstructing the story to fit to fit their existing schemas, so his schema theory was supported. He believed that schemas affect retrieval rather than encoding or storage. He also concluded that, memory was forever being reconstructed because each successive reproduction showed more changes, which contradicted Bartlett's original expectation that the reproductions would eventually become fixed.

Bartlett's research provided some of the first evidence, that what we remember depends in an important way on our past knowledge in the form of schemas. His research possessed more ecological validity than most

memory research, because schemas play a major role in everyday memory. Though he assumed that the distortions in recall produced by his participants were due to genuine problems with memory, the instructions he used were vague. It is believed that many of the distortions might have been guessed by the participants in order to make their recall seem logical and complete.

Some psychologists argued that Bartlett's research lacked objectivity. They believed that well controlled experiments are the only way to produce objective data and referred to his research as casual. However, it is known that well- controlled experiments that have been carried out in recent years, have effectively shown the reconstructive Schemas on memory. In general Bartlett and other reconstructive memory researchers have been accused of over- emphasizing the factual error of memory and using unusual material to support the reconstructive effect of schemas on memory.

EXPLAIN AND EVALUATE HOW THE APPLICATION OF RECONSTRUCTIVE MEMORY RELATES TO EYE WITNESS TESTIMONY

Eyewitness memory researchers are interested in the process of encoding, storing and retrieving memories of real life events and how accurate these may be. For example in courts of law, eyewitness testimony is widely used as evidence. Bartlett's research on reconstructive memory has had important implications for the reporting of events requiring great accuracy such as in eyewitness testimony. The reconstructive approach is known to have particular relevance for memory of real-life events.

Bartlett explained that as humans, we do not just store a copy of what we want to remember but we construct memories by combining existing

knowledge with new material. In other words he suggested that memory is seen as an active process. He also suggested that retrieval involves reconstructing the resulting memories for example 2 people can see the same event, but may remember quite different things about the same event due to constructing their memories in their own ways.

Loftus considered Bartlett's view of memory as reconstructive, so he used it in his investigations of eyewitness testimony. His argument was about the evidence given by witnesses in court cases as having a high percentage of unreliability.

Loftus and Palmer (1974) carried out an experiment where they showed a 30 - second video tape of two cars being involved in an accident. They later asked their participants several questions about the collision, but the questions were in the context of how the participant's judged the speed. One group in particular was asked about the speed both cars were travelling when they ' hit', whereas in other groups the word hit was replaced by ' smashed', ' collided', ' bumped' or ' contacted'. The words that were used in the above study had different implication in regards of the judgment that was made about the speed and force of impact.

Page 2, Cardwell M, Clark L and Meldrum C (2000) Psychology for AS level

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