Comparison of two selected memory models

This essay will look at the study of memory. It will compare two selected memory models those being Atkinson and Shiffrin's multi store model (1968) and Craik and Lockhart's Levels of processing model (1972). It will explain the theory behind each model and compare and evaluate the strengths and weaknesses of both. The essay will also include case studies and experiments carried out in conjunction with the theories. It will look at how the models apply to different peoples abilities of processing the information in a way that fits the theories. The essay will also highlight the anomalies that are not addressed by these models. It will conclude by evaluating the validity of the models to every day memory recall and rehearsal and show why the Levels of Processing model is a more applicable and realistic application of memory.

Atkinson and Shiffrin's Multi-Store model (1968) tries to illustrate how the memory system works. The model identifies how the memory system is made up.

The model suggests that the memory is made up of several different stores, the three main stores are; the sensory memory store, the short term memory store and the long term memory store. It is suggested that the sensory store is made up of five separate stores one for each of the senses. All senses are capable of and will take in information. If the information that is taken in is paid attention to, then it can be moved on directly to the short term memory store. If the information is rehearsed in the early stages it will move on to the long term memory store where it would remain indefinitely. However if the information is not rehearsed it will decay and quickly become lost. (Haralambos et al 2002).

Atkinson and Shiffrin believe the short term memory does not have the capacity to hold lots of information for long periods of time. This therefore means recall from short term memory is time limited. Recall from long term memory on the other hand can be recalled indefinitely unless the brain receives any damage or trauma.

A case study was carried out of a man (K. F) brain damaged as a result of a motorbike accident. The subject's short term memory was severely impaired and he could not recall all recent memories. However the study showed that his long term memory, in connection with events occurring after his accident, was completely normal. (Shallice and Warrington 1970).

This shows that the theory of short and long term memory stores being separate is more likely. However it also indicates that information can be taken directly to the long term memory without going through the other memory stores first.

The multi store model was very influential and became the grounding for further studies of research and resulted in more models being developed.

It provides evidence to distinguish between the short term memory and long term memory.

However the model works only one way which is structurally and there is no in between. If there is nothing in-between each store how are lost memories accounted for when they have been rehearsed and should stay in the long term memory indefinitely? This question remains unanswered by Atkinson and Shiffrin. On the other hand how can people recall unrehearsed

information and often after long time periods? By the multi store model theory these memories should have decayed and therefore are no longer stored yet people are often able to recount these memories.

The model is not in depth and does not look at all possibilities. The model does not explain why brain damage or trauma would affect the memory. It also does not elaborate on the affect for example whether it would just affect the storage of memories or the transfer between stores and whether it would continue to affect them over time.

The model was criticised by Craik and Lockhart in 1972 which led to the development of a new model of memory called the Levels of Processing model. They did not completely reject the idea of the separate memory stores and accepted the existence of short term and long term memory. Their model however focuses more on encoding and the importance of the process of information. (Haralambos et al, 2002)

This model suggests that information can be encoded and processed at different levels. The levels at which the information is processed directly accounts to how it will be remembered and stored.

It is suggested that there are various levels of processing from shallow to deep. The shallow levels are information that is processed through visual stimuli and the deep levels are things that are processed acoustically. The model indicates that the memories will last longer when gained through deeper processing.

Craik and Lockhart carried out an experiment to confirm their theory; the experiment used three separate groups of subjects who each were given words in different forms. One set of subjects were asked to process the words superficially, for instance what the word looked like. The second group were asked to process the words acoustically for example what each word rhymed with. Finally the third group was made to think about the words by putting them in to sentences. The study found on recall the superficial process only recalled fifteen percent whereas the third group could recall seventy percent of the words. (Hayes 1984)

The strength of this model lies in the fact that before 1972 it was thought that the same stimulus would be processed in the same way by all people on all occasions. The Levels of processing model introduced that memory is influenced by a person’s attention and perception of a stimulus. (Gross et al 2000)

The model “ changed the direction of memory research” and “ led to hundreds of experiments most of which confirmed the superiority of deep semantic processing”. (Haralambos et al 2002 pg 15)

Just as the multi store model was grounding for further research this model changed the way in which memory research was done.

The model was criticised by Eysenck and Keane in 1995 because it fails to explain why deeper processing leads to better recall and it is difficult to define or measure what ‘ depth’ actually is. (Eysenck M. W and Keane M. J 1995)

The experiment itself can be criticised as it only shows that information, deep or shallow, would be remembered in the context of the test used. For example it does not take in to account that if the subjects were given similar information in a different situation (without the knowledge they were being tested) the recall rate would possibly be different.

The model relies on the importance of senses and indicates clear strengths of certain senses over another such as acoustic over visual. How then would a blind person's memory differ from a person with perfect vision? The model would indicate their memory would be worse. This would also apply to someone who is hearing impaired. However there is no evidence to suggest that a loss of sense can have a direct connection to memory function or recall.

It is recognised that different people have different learning styles and process information differently. For example some people find it easier to retain information when they have visually recognised it and others when they have received it acoustically. (Cottrell 2008)

This would contradict that one sense has a deeper processing capability than another and that encoding and process would be wholly down to the individual's ability to process certain information. Although it does take in to account perception and attention this is not linked to which sense is stronger.

The two models although having some similarities differ quiet substantially. The multi store model is based mainly on the memory having separate stores and information being transferred between them. The level of

processing model, although suggesting that memory is encoded and processed, does not completely dismiss the idea of memory stores such as a long term memory and short term memory. The Levels of Processing model has a deeper explanation of the memory process whereas the multi store model is too uniform and restrictive to account for any other situations. The Levels of Processing model allows for individual differences when memory is processed and does not limit recall or rehearsal from the short term memory. The levels of processing model accounts for human differences too, it takes in to account that people have different perceptions and attention to things. The model recognises the importance of this and acknowledges the direct correlation between this and processing and storage of memory.

Therefore in summary the Levels of Processing model is a much stronger more applicable model to real life case studies. The model looks a lot deeper in to the process and encoding of memory than the multi store model. In general it recognises individual perception of information from different people and allows for unrehearsed information to be recalled after long periods of time. It also explains why people remember some information over other information with or without rehearsal, by focusing on how it is taken in as opposed to how it is stored. (1515 words)