Rebecca Johnson

Memory

Q1. Describe two differences between Short term memory (STM) and Long term memory (LTM) in term of duration and capacity (3 marks)

STM has duration of 3-18 seconds whereas the duration of LTM memory can last anything from a few minutes to a lifetime. The STM theory was supported by Peterson and Petersons Study (1959), which was their Trigram experiment. They attained this evidence by asking the participants to remember a single nonsense syllable of three consonants i.e. KPD. They were then given another task to do to stop them rehearsing the trigram. Their recollect was tested after 3,6,9,12,15,18 seconds and the recall had to be in correct order to count. They discovered that 80% of participants recalled the trigrams very well after 3 seconds, but this dropped dramatically to 10 % after 18 seconds. The supporting evidence for the duration of LTM was brought about by Ebbinghaus who tested his memory using nonsense syllables after delays ranging from 20 minutes to 31 days later and found that a large proportion of the information in LTM was lost comparatively quickly, i.e. in the first hour and thereafter stabilised to a much slower rate of loss. Linton used a diary to record at least 2 everyday events from her life each day for 6 years and then she had to aimlessly test her later recall of them. The results were that there was a much more even and gradual loss of data over time.

STM has a limited storage capacity; whereas the capacity of LTM is impossible to measure therefore it is enormous. Many early researchers such as Ebbinghaus proposed the capacity of STM and Miller (1956) investigated this limited capacity experimentally. The experiment was known as 'the magical number seven, plus or minus two' and he found out that the amount of information that could be reserved could be increased by the process of chunking (packaging the information into larger units). However the STM can only retain 7+ or –2 of the chunks. Also chunking can be improved if the information already has meaning from LTM.

Q2. Describe one study that provides support for STM and LTM between stores (6 marks)

The study that provides support for STM and LTM between stores is Atkinson and Shiffrin's Multi-Store Model of memory (1968). This is a two-process model of memory that shows how information flows through the two stores of memory so STM and LTM. Like many of the models they assume that a sensory memory exists and that this comes before the STM. Atkinson and Shiffrin described the stores as the structural components of the model and also proposed a number of control processes, such as attention, coding and rehearsal, which operate in conjunction with the stores. Additional research shows that there are two main lines of evidence that support the models assumptions about the way information flows through the system and the existence of the STM and LTM. These are the free recall experiments and the studies of brain damaged patients.

In the Free Recall experiments, participants are given a number of words to remember to test whether they can recall them accurately. The results usually fall into a pattern known as the serial position curve. This curve consists of a primary effect- which means that the participants tend to recall the words of the list well, which indicates that this involved recall from long term memory, An Asymptote which indicates that middle portion items of the list are remembered far less well than those at the

beginning and at the end, and a regency effect which means that participants recall items from the end of the list and are more likely to get these right that all the earlier items. Further evidence for the primary and regency effect comes from the findings that slower rates of representation can improve the primacy effect possibly due to the increase in rehearsal time, but this has little or no effect on the regency effect. The regency effect disappears if the last words are not recalled straight away and this is supported Glanzer and Cunitz (1966) research, which involved giving subjects an interference task immediately after the last word of the list and found a primary but no regency effect.

The studies of brain damaged patients included cases of anterograde amnesia such as H.M (Milner et al, 1978) or Clive Wearing provide strong evidence for the distinction between STM and LTM. Anterograde amnesia is often caused by brain damage to the hippocampus and those suffering from it are incapable of transferring new information between STM and LTM. They attract in a world of experience that only lasts as long as their STM does. They often retain a large amount of LTM for events up until the point of brain damage and maintain their procedural memories. Despite the fact that they are incapable of gaining new long-term declarative memory for semantic or episodic information, most are able to learn new procedural skills. Research by Baddely and Warrington (1970) shows that if these people are given free recall experiments they show good recency effects, but poor primacy effects.

Q3. Give two critisms of the study described

The criticisms of the multi-store model are that it is too simplistic, this is because it underemphasizes the interaction between stores i.e. the way information from LTM influences what is regarded as important and relevant to show attention to in sensory memory and helps chunking of information in STM.

Another criticism of the Multi-store model is that the STM and LTM are more complex than the model proposes. The Working memory model of STM by Baddely and Hitch (1974) and the research into semantic, episodic, imagery and procedural encoding of LTM deals with this particular criticism. Mere rehearsal is too simple a process to account for the transfer of information from STM and LTM. The model does not include factors such as the effort and strategies subjects may use when learning and the model does not account for the type of information taken into memory, as some items seem to flow into LTM easier than others. The criticisms outlined above are highlighted and dealt with by the approach of Craik and Lockhart (1972) Level of Processing model.