THE MULTI STORE MODEL OF MEMORY
ATKINSON AND SHIFFRIN – <u>1968</u>

Atkinson and Shiffrin proposed this theory to explain the memory processes. They began by distinguishing three separate unitary stores:

- STM –
- LTM –
- SENSORY STORE – this is information collected by our senses (ears, eyes, nose, mouth etc). The information remains only for a brief period by the sensory registers. Nonetheless, the capacity of the sensory store is very large and the method of encoding depends on the sensory store used, for example is it was the eyes, it would be visual codes.

The SS is constantly receiving information but the majority is not paid attention to so stays only for a brief period. Info that is paid attention to then enters the STM. Information in the STM is in a fragile state – it decays quickly if not rehearsed or is displaced by incoming information (which is due to the fact STM has a limited capacity, 4 chunks). So, it has to be rehearsed

In order to be transferred into the LTM, the individual has to undergo maintenance rehearsal. Initial rehearsal, maintains the information into the STM but if it is done enough, it enters the LTM.

A & S proposed a direct relationship between the amount of rehearsal in the STM and the strength of the LTM – the more something is rehearsed, the better it will be remembered.

EVIDENCE

1. Sperling - research has been undertaken to prove the duration of the sensory store. Participants were shown a grid of 12 digits and then either asked to recall all of them or they heard a tone and asked to recall one row. P's asked to recall the whole grid, showed poorer recall (42%) whereas those asked to recall a row showed better recall (75%). This suggests how rapid decay happens in SS.

2. Glanzer & Cuntiz proved the existences of STM and LTM via the serial position effect. They gave participants a word list containing 20 words. They found that participants were better recalling words from the beginning (primary effect) and words from the end (regency effect) but had trouble recalling words from the middle. They said the primary effect occurred because those words were better rehearsed and enter the LTM and the regency effect due to the words still being in the STM when asked to recall.

3. Modern technology, such as PET scans, have also show brain areas associated with memory. The prefrontal cortex seems to be active when participants were given a task involving their STM and their hippocampus seemed to be involved when the LTM was being engaged via a task.

4. Case studies have also been used to support the MSM. A case study, involving a man referred to as HR, suffered brain damage caused by the removal of his hippocampus. He couldn't form new long term memories but still remembered things from before

surgery. This suggested the hippocampus acted as gateway through which new memories pass before entering the LTM

VALIDITY

The MSM has said to be lacking in validity, in some areas. For example, mainly college students were used between the ages of 18 and 21 for the experiments– it could be that there memories are different from older/younger individuals. Also, it is fair to say they would be above the average intelligence, and could have guessed the aim of the experiment. This might cause a change in their behaviour, known as participant reactivity/demand characteristics, thus the results.

Secondly, most of the experiments were laboratory experiments, which although adds control, also introduces another load of threats to validity, including experimenter bias and demand characteristics.

Nonetheless, laboratory experiment does have some positives. The experimenter can control extraneous variables, leading them to safely conclude that it was the independent variable that caused the change in the dependant variable, leading to state a cause and effect. So, in this sense, the experiments could be said to be valid.

STRENGTHS
- There is strong evidence to support the three stores involved in the MSM, which indicates the foundation of the MSM is correct.
- The MSM provides clear predictions, giving psychologists a way to conduct a study and test it. This leads to research, which is of paramount importance, in terms of looking at human behaviour.

WEAKNESSES
- The MSM states that the STM and LTM are unitary units and operate in a single uniform fashion. However, research has been conducted that contradicts this. A case study, concerning KF, who suffered brain damage, found, in terms of STM, he had trouble with verbal processing but was okay with visual codes. This suggests that the STM is not one single store. The same goes for the LTM – research conducted on amnesia patients (Schachter) found that there are actually 4 long term memory stores:
  * Semantic Memory – memory about the world
  * Episodic Memory – memory concerning what you did yesterday, film you saw etc.
  * Procedural Memory – memory on how to ride a bike, read a book, swim etc
  * Perceptual Representation System

- The MSM claims that the STM and LTM are completely separate stores, but research has shown STM relies on LTM, for example to be able to chuck successfully, you have to understand the meanings of the items to out that in memorable chunks, which involves the LTM. Ruchkin conducted a study where participants were given a word list containing real words and pseudo words. Their brain activity was monitored and if the STM was separate it should be said that the brain activity was equal when recalling the fake words and real words. However, it was found that brain activity increased when handling the real words, suggesting that more areas of the brain were involved. Ruchkin concluded that STM is part of LTM, where LTM is mainly used.