Contribution of the Psychologists

Richard Atkinson and Richard Shiffrin

Richard Chatham Atkinson is the President Emeritus of the University of California System, an American professor of Psychology and Cognitive Science, and an academic administrator. Richard Shiffrin is a professor of Cognitive Science in the Department of Psychological and Brain Sciences at Indiana University, Bloomington. They are best known for their contributions to the "modal model of memory" which is also known as the "Atkinson-Shiffrin Theory".

The "Atkinson-Shiffrin Theory" is a memory model of which foundation was formed from the general theory of human memory in the mid-1960s when Atkinson began publishing a series of papers with his graduate students and post-doctoral fellows. Of that group of papers, the most influential is a 1968 article titled "Human Memory: A Proposed System and its Control Processes". Atkinson's co-author, Richard Shiffrin, was a young Stanford graduate student. In 2019, the journal 'Memory and Cognition' devoted a special issue in recognition of five decades of research inspired by the theory. This article is one of the most highly cited in the behavioral and cognitive sciences, and the theory continues to shape research today.

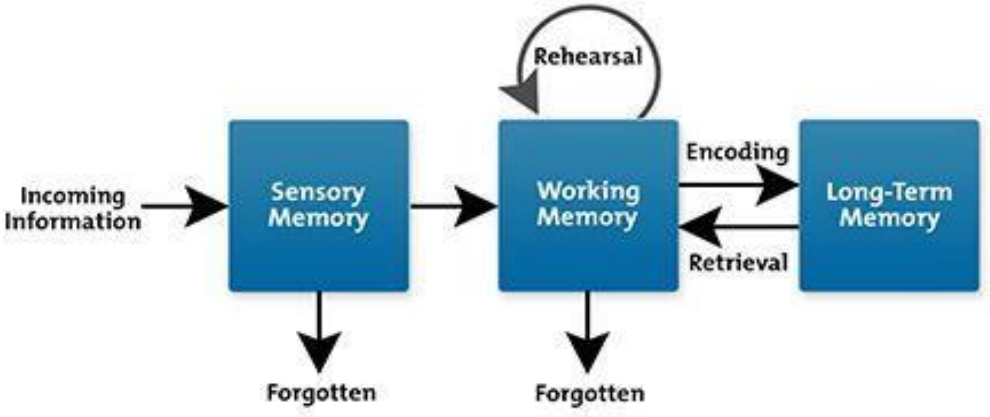

Figure: Memory Model

This model proposes that human memory has three individual parts, those are:

1. A sensory register, where sensitive information enters memory
2. A short-term store, also called 'working memory', which receives and holds input from both the sensory register and the long-term store
3. A long-term store, where information which has been rehearsed in the short-term store is held indefinitely.

Sensory Memory

When an environmental cause is detected by the senses, it is shortly available in the sensory registers. Though this store generally refers to the 'sensory register', it is actually composed of multiple registers, one for each sense. The sensory registers do not process the information carried by the cause, but rather detect and hold that information for use in short-term memory. Hence, the registers are also called 'buffers', as they avoid immense amounts of information from overwhelming higher-level cognitive processes. Information is only conveyed to the short-term memory when attention is given to it, otherwise, it declines rapidly and is forgotten.

Short-term store

While much of the information in sensory memory declines and is forgotten, some remains unforgotten. The information that remains is transferred to the short-term store.

Duration

As with sensory memory, the information that enters short-term memory declines and is lost, but the information in the short-term store has a longer duration, approximately 18–20 seconds when the information isn't being actively practiced though it's possible that this relies on modality and will be as long as 30 seconds. Fortunately, the knowledge is often held within the short-term store for much longer through 'rehearsal'.

Long-term store

The long-term store is a more or less permanent store. Information that is stored here can be 'copied' and transferred to the short-term store where it can be attended to and shaped.

Transfer from STS

Information is proposed to enter the long-term store from the short-term store automatically. As Atkinson and Shiffrin model it, transfer from the short-term store to the long-term store is occurring for as long as the information remains in the short-term store. In this way, diverse amounts of attention result in differing amounts of time in short-term memory. Apparently, the longer an item is held in short-term memory, the stronger its memory trace will be in long-term memory.

Capacity and Duration

In this model, as with most models of memory, long-term memory is presumed to be nearly unlimited in its duration and capacity. It is most often the case that brain structures begin to decline and fail before any limit of learning is reached. This is not to assume that any item which is stored in long-term memory is available at any point in the lifetime. Rather, it is noted that the connections, cues, or associations to the memory decline; the memory remains intact but unreachable.

Conclusion

We see that the human memory model has a method of processing memories. Its formation has sparked the history of Psychology. Although it has been scrutinized and criticized for various reasons since its beginning, it had impacted greatly in the field of Psychology. Thus, Atkinson and Shiffrin made a remarkable contribution in the field of cognitive science. In conclusion, we can say that the "Atkinson-Shiffrin theory" of Psychologists Atkinson and Shiffrin was a revolutionary contribution in the cognitive science that is still shaping researches today.

References:

1. http://rca.ucsd.edu/biography.asp

2. Figure – https://www.mindtools.com/pages/article/cognitive-load-theory.htm