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Cloud concept of Memory in Humans-

Extension of Psychological Memory Model of Humans to include

Concept of Chidakasha

By Gaurav Mathur

The human mind is a complex part of the body that scientists and psychologists are still trying to understand. The Atkinson-Shiffrin model of human memory is a well-known approach to decoding memory, but it has been refined over time. However, when we consider the concept of chidakasha and the karma theory in Sant Mat and Hinduism, we see that scientists tend to focus only on the physical body and neglect the subtle and causal bodies, which continue to exist even after death and may explain the persistence of memory from past lives. This study aims to expand the Atkinson-Shiffrin model to include the effects stored in the chidakasha, which guide our actions in our present lives.

First, we will discuss the Atkinson-Shiffrin model, then the concept of karma as "Naksha" on the chidakasha, the retrieval of these memories when attention is focused, and finally, we will combine the two to present a complete model of human memory.

The Atkinson-Shiffrin model, which was first introduced by Richard Atkinson and Richard Shiffrin in 1968, posits that human memory can be broken down into three fundamental components: a sensory register, a short-term store, and a long-term store. The sensory register is responsible for receiving and briefly retaining sensory information, while the short-term store serves as a temporary holding space for information. In contrast, the long-term store is responsible for storing information that has undergone rehearsal in the short-term store, preserving it indefinitely.

Although the Atkinson-Shiffrin model has faced its fair share of critique, it has undeniably left a substantial impact on the field of memory research. The multi-store model of memory, as articulated by Atkinson and Shiffrin, provides valuable insights into the workings of memory processes. It delineates the presence of the sensory register, short-term store, and long-term store as integral components of the memory system. It's worth noting that the concept of distinct memory stores was not entirely novel, as William James had already outlined a similar distinction back in 1890. However, the separation of memory stores was a topic of considerable debate during that period. Below, we summarize the evidence that supports the differentiation between long-term and short-term memory stores. This notion is central to the Multi-Store Model.

attention

transfer

retrieval

long-term

memory

Prt

R

U

F

G

H

H

K

VR

N

?

sensory memory

short-term memory

rehearsal

Multi-store model: Atkinson and Shiffrin's (1968) original model of memory, consisting of the sensory register, short-term store, and long-term store. Atkinson and Shiffrin also introduced a sensory register and control processes to regulate memory transfer. Since its initial publication, various extensions and alternative frameworks have been proposed to enhance the model. These include the precategorical acoustic store, the search of associative memory, model, the perturbation model, and permastore. Additionally, alternative models like procedural reinstatement, the distinctiveness model, and Baddeley and Hitch's model of working memory have been suggested.

Sensory Memory: The sensory register, also known as sensory memory, briefly holds environmental stimuli detected by the senses. It consists of multiple registers for each sense. The sensory registers do not process the information but detect and hold it for use in short- term memory. Information is transferred to short-term memory only when attention is given to it; otherwise, it decays rapidly. While there is a sensory register for each sense, most research has focused on the visual and auditory systems.

Iconic memory, associated with the visual system, is the most studied sensory register. It was experimentally demonstrated using a tachistoscope. Iconic memory can hold an unlimited amount of visual information within the field of vision. However, it only holds information about visual stimuli such as shape, size, color, and location, not semantic meaning. Iconic memory has a limited capacity for further processing, and the stored information decays rapidly after 05-10 seconds.

Echoic memory, which was named by Ulric Neisser, refers to the information that is processed by the auditory system. Similar to iconic memory, echoic memory only retains superficial aspects of sound such as pitch, tempo, or rhythm, and it has a nearly unlimited capacity. The duration of echoic memory is generally believed to be between 15 and 5 seconds depending on the context, but it has been shown to last up to 20 seconds when there is no competing information. Short-term memory, on the other hand, is the information that is attended to and transferred

from sensory memory.

Duration: Information that enters short-term memory experiences a gradual decay and is eventually lost over time. However, its duration exceeds that of sensory memory. It can persist for approximately 18-20 seconds when not actively rehearsed, and under certain conditions, it may extend up to around 30 seconds, depending on the sensory modality. The process of rehearsal, involving the repetition of items, enables this information to be retained within the short-term store for an extended duration. Rehearsal can be applied to any information that is attended to, including mental imagery and visual content. Furthermore, it's important to note that the modality of information in the short-term store doesn't necessarily have to match the sensory input. For example, written text can be held as auditory information, and auditory input can be mentally visualized. The act of rehearsing significantly contributes to the transfer of information into long-term memory. However, Atkinson and Shiffrin's research did not extensively delve into the rehearsal and storage of other sensory modalities due to experimental challenges.

Capacity: The short-term memory store has a limited capacity, typically estimated to hold around 7 ± 2 chunks of information. These chunks, as famously described by Miller, represent independent units of information. It's worth noting that some chunks may appear as a single unit even though they can be broken down into multiple individual items. The process of chunking, where information is organized into meaningful groups, allows for a more significant amount of information to be retained in memory. For instance, a sequence of digits like 149283141066 can be chunked into meaningful units such as "Columbus [1492] ate [8] pic [314-3.14-x) at the Battle of Hastings [1066]." The restricted capacity of short-term memory places limitations on the quantity of information that can be effectively processed simultaneously.

Long-term memory is a more permanent store where information can be copied and transferred to the short-term store for manipulation.

14 Transfer from STS: Information is believed to automatically transfer from the short-term ore to the long-term store. According to Atkinson and Shiffrin's model, this transfer occurs as long as the information is being attended to in the short-term store. The amount of attention given to the information determines how long it stays in short-term memory. The longer an item is held in short-term memory, the stronger its memory trace will be in long- term memory. There are certain extraneous variables that can affect the results in an unwanted way. These variables include participant differences (such as personal ability and capacity levels), demand characteristics (participants' knowledge about the experiment and what they bring to it), experimenter effect (the researchers' expectations and potential bias behaviour), and non-standardized instructions and procedures (different instructions and lack of consistency in procedure). Atkinson and Shiffrin provide evidence for this transfer mechanism through studies by Hebb (1961) and Melton (1963), which show that repeated rote repetition enhances long-term memory. The original Ebbinghaus memory experiments also support this idea, as they demonstrate that forgetting increases for items that are studied fewer times. Additionally, there are encoding processes that are more effective than simple rote rehearsal, such as relating new information to existing information in the long-term store. 0 Capacity and Duration: In terms of capacity and duration, long-term memory is assumed to have nearly limitless capacity and duration in this model. Brain structures may deteriorate before any limit of learning is reached. However, it is important to note that not all items stored in long-term memory are accessible at any given point in a person's lifetime. The connections, cues, or associations to the memory may deteriorate, making the memory temporarily unreachable.

Theory of Karmas and impressions on Chidakasha

The surroundings of an entity as also his subjective actions produce impressions on him, which are preserved in Chidakasha( also known as Manakasa), which is as elastic as ether in creation. Mind with its four functions becomes cognizant at the time of recording of the impressions. But when its attention is diverted the previous impressions fade away and pass into the stage of memory. They are never completely eliminated but scrupulously preserved in the old records of Chidakasha. When we focus our attention on them voluntarily or involuntarily, they are immediately recollected.

On close observation of these occurrences of reproduction of these impressions, it can be understood that when attention is focused on these impressions one acts entirely in accordance with the nature of those impressions, however feeble and unintelligible they are. Secondly, these acts react on Chidakasha and reinforce the impressions and constitute centers of future action, whenever an attention gets focused on them. These impressions as well as the actions done are called Karmas. Sukshma Sharira

The Sukshma Sharira, that is, the Subtle Body comprises of the three Koshas of Pranamaya Kosha, Manomaya Kasha and Vijnanamaya Kosha. In this body the Vijnanamaya Kosha, that is, intelligent sheath endowed with consciousness is the agent. The mental sheath or Manomaya Kosha having will power is the instrument. The vital sheath or Pranamaya Kosha is endowed with activity. It is this Sukshma Sharira that moves from one body to the other incourse of the transmigration of soul. It is also the body with which one enjoys the dream

state.

Karana Sharira

The Anandmaya Kosha constitutes the causal body or Karana Sharira and corresponds to the state of deep sleep. While the Gross Body perishes with death, the Subtle Body remains as long as the Spirit is revolving in transmigration. It gets dissolved at the end of the Kalpa when Pralaya takes place. The causal body gets dissolved when the Spirit merges in the Universal Spirit upon salvation.

The Extended memory model with Concept of Chidakasha Thus understanding the above concept of karmas as per Sant Mat, we find a striking parallel

between the existing psychological model/ theory of Human Memory and the concept of Chidakasha.

We can therefore think that if we consider Chidakasha accessible to Sukshma and Karana Sharira, then our long term memory can be further extended into Chidakasha, where the imprints are carried on and on for various lives and only upon focusing of attention current on them they become live again. So our diagram of Atkinson-Shiffrin model of human memory can now be extended as follows

MULTI-STORE MODEL

sensory memory

Faculty of mind

attention short-term

memory

rehearsal

transfer

retrieval

long-term

memory

Attention

Accessible

Chidakasha

Accessible to Sukshma and Karana Sharira

to Sthula Sharira

Thus we find a holistic approach of approaching human memory, which is an amalgamation

of the pure scientific and psychological approach with that of the spiritual approach.

Thus we see that our Mind with its four functions becomes cognizant at the time of recording of the impressions But when its attention is diverted the previous impressions fade away and pass into the stages of memory. They are never completely eliminated and are finally engraved on the Chidakasha which are never washed away on their own but become anarchive of old records and become the reason of our actions and the reason of rebirths. This is very akin to the modem concept of Cloud storage, where a central server stores all the distributed client data, accessible at the time of need. When we focus our attention on them voluntarily or involuntarily, they are immediately recollected. On close observation of these occurrences of reproduction of these impressions, it can be understood that when attention is focused on these impressions one acts entirely in accordance with the nature of those impressions, however feeble and unintelligible they are. Secondly, these acts react on Manakasa and reinforce the impressions and constitute centers of future action, whenever an attention gets focused on them. These pleasurable or unpleasant experiences produce a stronger desire to repeat those experiences and make them get entangled in the association of mind and matter. As the bodies assumed in those regions are impermanent and changeable and also infirm, subject to influences of the regions they experience, so the spirit entities thus pay dearly for associating with the mind and matter.

If the seeker, who takes refuge in the feet of the Satguru, gets initiated and starts performing spiritual practices, all these imprints will slowly get cleansed. Firstly if the devotee resigns himself to the will of the Lord and conducts himself accordingly, the effects of the actions done by him in the present life do not accrue to him. No new impressions are formed by the Kriyaman Karmas. Even thought the effects of the Prarabdha Karmas have got to be experienced by him in the present life there would be a vast difference in the result, i.c. in the amount of pain and pleasure experienced by the devotee. On account of his engaging in spiritual practices he becomes capable of withdrawing his spirit current inwards and upwards to a certain extent and thus the intensity of his pain and pleasure gets reduced to the extent of his active involvement in spiritual practices. The devotee easily disposes of the Sanchit Karmas during his practices. When a devotee traverses the mental sphere in course of his internal journey towards spiritual regions these impressions are manifested by the power of spirit and appear to him as real objects. They detain him for sometime but then he proceeds forward with the help of his Satguru. Thus the effect of Sanchit Karmas is also nearly obliterated.

The devotee thus attains his goal in this life itself eradicating all types of Karma s by the Grace of the Supreme Being and Sant Satguru.

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