CHAPTER FOUR

MEMORY AND FORGETTING

5.1 Memory

Memory is the retention of information/what is learned earlier over time

i.e Memory is the ability to take in information, encode it, store it, and retrieve it at a later time

Processes of Memory

The Memory processes involve three basic steps: that are

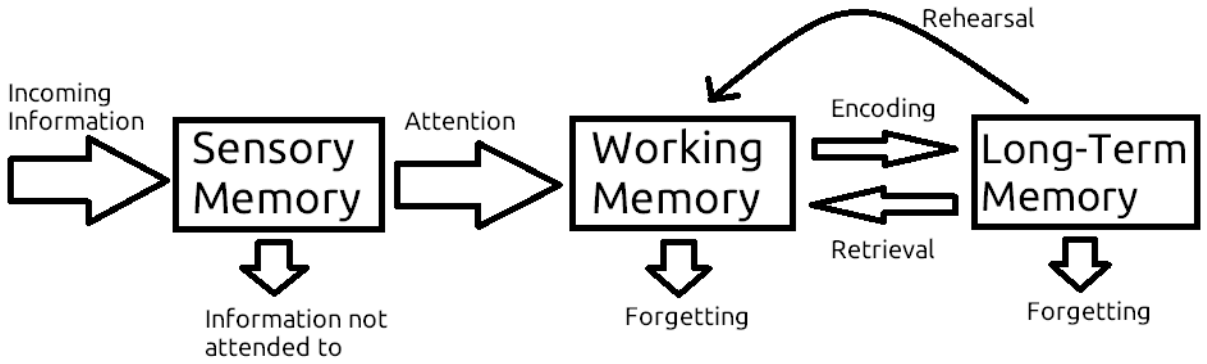
Encoding: Taken from computer science, the term encoding refers to the form (i.e. the code) in which an item of information is to be placed in memory. It is the process by which information is initially recorded in a form usable to memory. In encoding we transform a sensory input into a form or a memory code that can be further processed.

b) **Storage:** To be remembered the encoded experience must leave some record in the

nervous system (the memory trace); it must be squirreled away and held in some more or less enduring form for later use. This is what memory specialists mean when they speak of placing information in storage. It is the location in memory system in which material is saved. Storage is the persistence of information in memory.

Retrieval: is the point at which one tries to remember to dredge up a particular memory trace from among all the others we have stored. In retrieval, material in memory storage is located, brought into awareness and used.

Failure to remember can result from problems during any of the three phases of the memory process



Memory is the process by which information is encoded (phase1), stored (phase 2) and later retrieved (phase 3).

5.1.2 Stages/Structure of Memory

There are three structures

1) **Sensory Memory**

   Sensory memories are stored for a few seconds at most. They come from the five senses: **hearing, vision, touch, smell, and taste**. They are stored only for as long as the sense is being stimulated. They are then reprocessed and associated with a memory that may store in your short-term memory.

2. **Short-term Memory**

It is part of our memory that holds the contents of our attention. Unlike sensory memories, short-term memories are not brief replicas of the environmental message. Instead, they consist of the by-products or end results of perceptual

analysis. STM is important in a variety of tasks such as thinking, reading, speaking, and problem solving. There are various terms used to refer to this stage of memory, including working memory, immediate memory, active memory, and primary memory.

Short term memory is distinguished by four characteristics

It is active- information remains in STM only so long as the person is consciously processing, examining, or manipulating it. People use STM as a —workspace‖ to process new information and to call up relevant information from LTM.

Rapid accessibility - Information in STM is readily available for use. In this respect, the difference between STM and LTM is the difference between pulling a file from the top of a desk versus searching for it in a file drawer, or between searching for information in an open computer file versus file stored on the hard drive.

Preserves the temporal sequence of information- STM usually helps us to maintain the information in sequential manner for a temporary period of time. It keeps the information fresh until it goes to further analysis and stored in LTM in meaningful way.

Limited capacity- Years ago, George Miller (1956) estimated the capacity of STM to be ―the magic number seven plus or minus 2‖. That is, on the average, people can hold about seven pieces of information in STM at a time;

3. Long Term Memory

It is a memory system used for the relatively permanent storage of meaningful information. The capacity of LTM seems to have no practical limits. The vast amount of information stored in LTM . **LTM** stores information for indefinite periods. It may last for days, months, years, or even a lifetime

The LTM is assumed to be composed of different sub systems:

Declarative/ explicit memory- the conscious recollection of information such as specific facts or events that can be verbally communicated.

Episodic memory- memories for events and situations from personal experience. They are internal representations of personally experienced events

Non-declarative/ implicit memory- refers to a variety of phenomena of memory in which behavior is affected by prior experience without that experience being consciously recollected.

Serial Position Effect

The three-box model of memory is often invoked to explain interesting phenomenon called the **serial position effect**

5.1.3 Factors Affecting Memory

Eleven Factors that Influence Memory Process in Humans are as follows:

a. Ability to retain: This depends upon good memory traces left in the brain by past experiences.

b. Good health: A person with good health can retain the learnt material better than a person with poor health.

c. Age of the learner: Youngsters can remember better than the aged.

d. Maturity: Very young children cannot retain and remember complex material.

e. Will to remember: Willingness to remember helps for better retention.

f. Intelligence: More intelligent person will have better memory than a dull person,

g. Interest: If a person has more interest, he will learn and retain better.

h. Over learning: Experiments have proved that over learning will lead to better memory.

i. Speed of learning: Quicker learning leads to better retention,

j. Meaningfulness of the material: Meaningful materials remain in our memory for longer period than for nonsense material,

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5.2 Forgetting

5.2.1 Meaning and Concepts of Forgetting

Forgetting is **the loss or change in information that was stored in short-term or long-term memory**. It can occur suddenly or it can occur gradually as old memories are lost

5.2.2. Theories of Forgetting

Psychologists have proposed five mechanisms to account for forgetting: decay, replacement of old memories by new ones, interference,

motivated forgetting, and cue dependent forgetting.

5.2.2.1. The Decay Theory

The decay theory holds that memory traces or engram fade with time if they are not accessed‖ now and then.

5.2.2.2. Interference

Interference theory holds that forgetting occurs because similar items of information interfere with one another in either storage or retrieval

5.2.2.3. New Memory for Old/ Displacement Theory

This theory holds that new information entering memory can remove old information from long term memory. **5.2.2.4. Motivated Forgetting**

Sigmund Freud maintained that people forget because they block from consciousness those memories

5.2.2.5. Cue Dependent Forgetting

Cue-dependent forgetting, or retrieval failure, is **the failure to recall information without memory cues.**

5.3. Improving Memory

Pay Attention: It seems obvious, but often we fail to remember because we never encoded the information in the first place. When you do have something to remember, you will do better if you encode it.

Encode information in more than one way: The more elaborate the encoding of information, the more memorable it will be

Add meaning: The more meaningful the material, the more likely it is to link up with information already in long-term memory.

Take your time: If possible, minimize interference by using study breaks for rest or

recreation. Sleep is the ultimate way to reduce interference.

Over learn: Studying information even after you think you already know it- is one of the best ways to ensure that you‘ll remember it.

Monitor your learning: By testing yourself frequently, rehearsing thoroughly, and reviewing periodically, you will have a better idea of how you are doing