"A STUDY ABOUT THE MEMORY AND THEIR BEST UTILIZATION IN THE SYSTEM"

Shubham Kumar Srivastva[1]

Dr. Praveen Kumar[2]
(Head, Research & Development Cell)

Md.Mojammil husen[3]

Ananya Dubey[4]

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING,
DELHI INSTITUTE OF ENGINEERING & TECHNOLOGY, MEERUT, UTTAR PRADESH, INDIA**

ABSTRACT

Memory function involves both the ability to remember details of individual experiences and the ability to link information across events to create new knowledge. Prior research has identified the venture medial prefrontal cortex (VMPFC) and the hippocampus as important for integrating across events in the service of generalization in episodic memory. The degree to which these memory integration mechanisms contribute to other forms of generalization, such as concept learning, is unclear.

1. INTRODUCTION

Memory is the ability to take in information, store it, and recall it at a later time. In psychology, memory is broken into three stages: encoding, storage, and retrieval. Encoding (or registration): the process of receiving, processing, and combining information. Encoding allows information from the outside world to reach our senses in the forms of chemical and physical stimuli. In this first stage we must change the information so that we may put the memory into the encoding. Process . Storage: the creation of a permanent record of the encoded information. Storage is the second memory stage or process in which we maintain information over periods of time. Retrieval (or recall, or recognition): the calling back of stored information in response to some cue for use in a process or activity. The third process is the retrieval of information that we have stored. We must locate it and return it to our consciousness. Some retrieval attempts may be effortless due to the type of information. Problems can occur at any stage of the process, leading to anything from forgetfulness to amnesia. Distraction can prevent us from encoding information

initially; information might not be stored properly, or might not move from short-term to long-term storage; and/or we might not be able to retrieve the information once it's stored.

2. TYPES OF MEMORY

2.1 SENSOR MEMORY

Sensory memory allows individuals to retain impressions of sensory information after the original stimulus has ceased. One of the most common examples of sensory memory is fast-moving lights in darkness: if you've ever lit a sparkler on the Fourth of July or watched traffic rush by at night, the light appears to leave a trail. This is because of "iconic memory," the visual sensory store. Two other types of sensory memory have been extensively studied: echoic memory (the auditory sensory store) and hepatic memory (the tactile sensory store). Sensory memory is not involved in higher cognitive functions like short- and long-term memory; it is not consciously controlled. The role of sensory memory is to provide a detailed representation of our entire sensory experience for which relevant pieces of information are extracted by short-term memory and processed by working memory.

2.2 SHORT TERM MEMORY

Short-term memory is also known as *working memory*. It holds only a few items (research shows a range of 7 +/- 2 items) and only lasts for about 20 seconds. However, items can be moved from short-term memory to long-term memory via processes like *rehearsal*. An example of rehearsal is when someone gives you a phone number verbally and you say it to yourself repeatedly until you can write it down. If someone interrupts your rehearsal by asking a question, you can easily forget the number, since it is only being held in your short-term memory.

2.3 LONG TERM MEMORY

Long-term memories are all the memories we hold for periods of time longer than a few seconds; long-term memory encompasses everything from what we learned in first grade to our old addresses to what we wore to work yesterday. Long-term memory has an incredibly vast storage capacity, and some memories can last from the time they are created until we die.

There is long-term memory. *Explicit* or *declarative* memory requires conscious recall; it consists of information that is consciously stored or retrieved. Explicit memory can be further subdivided into *semantic* memory (facts taken out of context, such as "Paris is the capital of France") and *episodic* memory (personal experiences, such as "When I was in Paris, I saw the *Mona Lisa*").

In contrast to explicit/declarative memory, there is also a system for procedural/implicit memory. These memories are not based on consciously storing and retrieving information, but on implicit learning. Often this type of memory is employed in learning new motor skills. An example of implicit learning is learning to ride a bike: you do not need to consciously remember how to ride a bike, you simply do. This is because of implicit memory.

3. OPERATION AND FUNCTION:

3.1 THE ROLE OF MEMORY IN THE COMPUTER

People in the computer industry commonly use the term “memory” to refer to RAM (Random Access Memory). A computer uses RAM to hold temporary instructions and data needed to complete tasks. This enables the computer’s CPU (Central Processing Unit), to access instructions and data stored in memory.

A good example of this is when the CPU loads an application program – such as a word processing or page layout program – into memory, thereby allowing the application program to work as quickly and efficiently as possible. In practical terms, having the program loaded into memory means you can get work done more quickly with less time spent waiting for the computer to perform tasks. The process begins when you enter a command from your keyboard. The CPU interprets the command and instructs the hard drive to load the command or program into memory. Once the data is loaded into memory, the CPU is able to access it much more quickly than if it had to retrieve it from the hard drive.

This process of putting things the CPU needs in a place where it can get at them more quickly is similar to placing various electronic files and documents you’re using on the computer into a single file folder or directory. By doing so, you keep all the files you need handy and avoid searching in several places every time you need them.

4. STAGES OF MEMORY:

4.1 MEMORY ENCODING

When information comes into our memory system (from sensory input), it needs to be changed into a form that the system can cope with so that it can be stored.

Think of this as similar to changing your money into a different currency when you travel from one country to another. For example, a word which is seen (in a book) may be stored if it is changed (encoded) into a sound or a meaning (i.e. semantic processing).

There are three main ways in which information can be encoded (changed):

(i) Visual (picture)

(ii) Acoustic (sound)

(iii) Semantic (meaning
For example, how do you remember a telephone number you have looked up in the phone book? If you can see it then you presented with a list of numbers and letters, they will try to hold them in STM by rehearsing them (verbally).

Rehearsal is a verbal process regardless of whether the list of items is presented acoustically (someone reads them out), or visually (on a sheet of paper).

The principle encoding system in long-term memory (LTM) appears to be semantic coding (by meaning). However, information in LTM can also be coded both visually and acoustically.

4.2 MEMORY STORAGE:

This concerns the nature of memory stores, i.e., where the information is stored, how long the memory lasts for (duration), how much can be stored at any time (capacity) and what kind of information is held.

The way we store information affects the way we retrieve it. There has been a significant amount of research regarding the differences between (STM) and (LTM).

Most adults can store between 5 and 9 items in their short-term memory. Miller (1956) put this idea forward and he called it the magic number 7. He though that short-term memory capacity was 7 (plus or minus 2) items because it only had a certain number of "slots" in which items could be stored.

However, Miller didn't specify the amount of information that can be held in each slot. Indeed, if we can "chunk" information together we can store a lot more information in our short-term memory. In contrast, the capacity of LTM is thought to be unlimited.

Information can only be stored for a brief duration in STM (0-30 seconds), but LTM can last a lifetime.

4.3 MEMORY RETRIEVEL:

This refers to getting information out storage. If we can't remember something, it may be because we are unable to retrieve it. When we are asked to retrieve something from memory, the differences between STM and LTM become very clear.

STM is stored and retrieved sequentially. For example, if a group of participants are given a list of words to remember, and then asked to recall the fourth word on the list, participants go through the list in the order they heard it in order to retrieve the information.

LTM is stored and retrieved by association. This is why you can remember what you went upstairs for if you go back to the room where you first thought about it.

Organizing information can help aid retrieval. You can organize information in sequences (such as alphabetically, by size or by time). Imagine a patient being discharged from hospital whose treatment involved taking various pills at various times, changing their dressing and doing exercises.

If the doctor gives these instructions in the order which they must be carried out throughout the day (i.e., in the sequence of time), this will help the patient remember them.

5. CRITICISMS OF MEMORY EXPERIMENTS

A large part of the research on memory on conducted in laboratories. Those who take part in the experiments - the participants - are asked to perform tasks such as recalling lists of words and numbers.

Both the setting - the laboratory - and the tasks are a long way from everyday life. In many cases, the setting is artificial and the tasks fairly meaningless. Does this matter?

Psychologists use the term ecological validity to refer to the extent to which the findings of research studies can be generalized to other settings. An experiment has high ecological validity if its findings can be generalized, that is applied or extended, to settings outside the laboratory.

It is often assumed that if an experiment is realistic or true-to-life, then there is a greater likelihood that its findings can be generalized. If it is not realistic (if the laboratory setting and the tasks are artificial) then there is less likelihood that the findings can be generalized. In this case, the experiment will have low ecological validity.

Many experiments designed to investigate memory have been criticized for having low ecological validity. First, the laboratory is an artificial situation. People are removed from their normal social settings and asked to take part in a psychological experiment.

They are directed by an 'experimenter' and may be placed in the company of complete strangers. For many people, this is a brand new experience, far removed from their everyday lives. Will this setting affect their actions, will they behave normally?

He was especially interested in the characteristics of people whom he considered to have achieved their potential as individuals

Are using visual coding, but if you are repeating it to yourself you are using acoustic coding (by sound).

Evidence suggests that this is the principle coding system in short-term memory (STM) is acoustic coding.

6. DIFFERENT CHARACTERISTICS OF MEMORY SYSTEM

The different characteristics of memory system include:

1. Location
2. Capacity
3. Access method
4. unit of transfer
5. Performance
6. Physical types
7. Organization
8. Physical characteristics

6.1LOCATION:
This characteristic represents whether the location is external or internal to the computer. External memory is the separate storage device such as disk and tape. It is accessed by the processor through I/O controllers. Internal memory is mostly embedded within the computer. It is in various forms such as registers, cache and main memory.

6.2CAPACITY
it is the most important characteristic of the memory system. It is different for external and internal memory. Capacity of the external memory is measured in terms of bytes. Where the capacity of internal memory is measured in terms of bytes or words where in word length may be 8, 16 or 32 bits.

This characteristic has four types of method.

(I) DIRECT
(II) ACCESS
(III) RANDOM

7. CONCLUSION AND FUTURE SCOPE

Learning and memory can be studied from a variety of vantage points. First, memory is a critical psychological function. You can have a behaving organism which doesn't have a memory -- which operates purely on reflex, taxis, and instinct to respond to physical stimuli that are present in the current environment. But such an organism is severely limited.

- It can't respond to situations that are not physically present, because it has no way of representing them mentally.
- It can't respond to a rapidly changing environment, because course of evolutionary time.
- It can't analyze current stimuli for meaning, because it lacks the cognitive capacity to analyze anything beyond the physical stimulus.

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