MEMORY

THEORIES ABOUT MEMORY

THEORY OF GENERAL MEMORY FUNCTIONS

According to this theory there are three different processes of memory
1) Encoding process.
2) Storage process.
3) Retrieval process.

1) Encoding process

It is the process of receiving sensory input and transforming it into aform or a code, which can be stored.

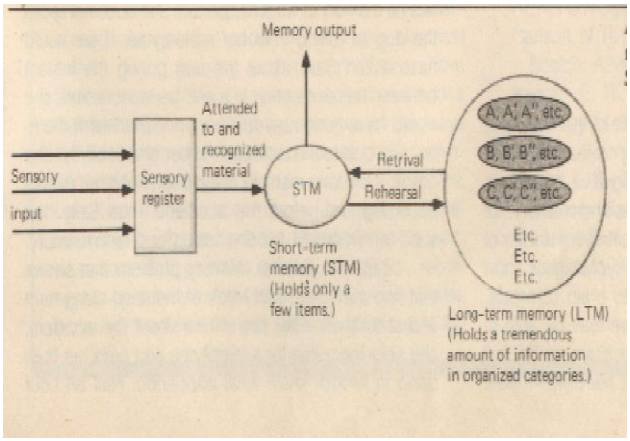
2) Storage process

Storage is the process of actually putting coded information into memory.

3) Retrieval process

It is the process of gaining access to stored, coded information when it is needed.

INFORMATION- PROCESSING THEORY



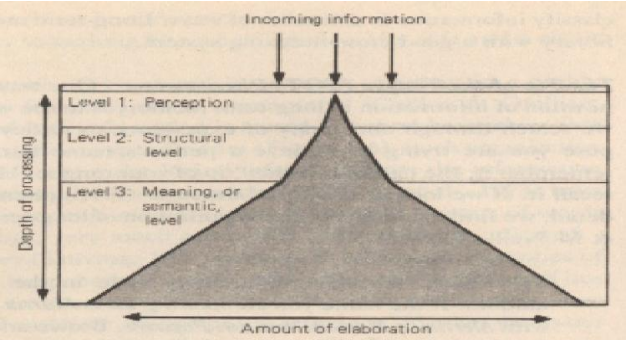
According to this theory, memory starts with a sensory input from the environment. This input is held for a very brief time in a sensory register associated with sensory channels.
Information that is attended to and recognized in the sensory register may be passed on to SHORT-TERM MEMORY (STM). It is held there for perhaps 20 to 30 seconds. Some of the information reaching STM is being rehearsed.

Information being rehersed and coded, may then be passed on to LONG-TERM MEMORY (LTM). They are organized into categories. Information stored in long-term memory is retrieved when it is needed our ability to retrieve the information depend upon having the appropriate cues. When the information is not coded and rehearsed while in STM, it is forgotten.

LEVELS OF- PROCESSING THEORY

According to levels – of - processing idea, incoming information can be worked on at different levels of analysis. The deeper the analysis goes to the better memory.

There are three levels of analysis



LEVEL 1 Perception

The first level is simply perception. Which gives us our immediate awareness of the environment.

LEVEL 2 Structural level

This is somewhat deeper level. At this level the structural features of the input (what it sounds like or looks like) are analysis.

LEVEL 3. Semantic level

At this deeper level of analysis the meaning of the input is analyzed. Analysis to the deep level of meaning gives to the best memory.

THE ROLE OF REHEARSAL IN PROCESSING OF INFORMATION

Rehearsal plays a role in the deeper processing of information. Rehearsal refers to keeping of information at the center of attention by repeating it over and over to oneself.

There are two types of Rehearsal.

1)Maintenance rehearsal

It means simply repeating the information it is not enough for good memory.

2)Elaborative Rehearsal

Rehearsing the information to the meaning level. The degree to which incoming information is processed so that it cam be tied to or integrated with existing memories. Elaborative rehearsal helps good memory.

LONG - TERM MEMORY ITS ORGANISATION AND PROCESSES

When we think about memory it is usually LTM that we have in mind. Our reminiscences of past events in our lives are drawn from LTM. Our sense memory, especially LTM, is essential for behaviour and mental life as we know it. It is one of the basic cognitive processes.

THE ORGANISATION OF LING- TERM MEMORY

We keep our long-term memory store in order. We organize, categorize and classify information in a number of ways. Long-term memory is a bit like a library with a good cross-indexing system.

THE TIP-OF-THE-TONGUE (TOT) PHENOMENON

The situation of felling certain we know a specific name or word, yet being unable to recall it immediately, has been called the tip-of-the-tongue (TOT) state.
Suppose you are trying to retrieve a person's name is on the "tip of your tongue" but you just cannot recall it. A subject in TOT state has information about a number of characteristics of the target word. The subject tends to retrieve words from LTM memories that,

1)Sounds like the target word.
2)Starts with the same letter as the target word
3)Contains the same number of syllables as the target word.
4)A meaning similar to that of target word.

SEMANTIC MEMORY

Much of what is in our LTM consists of knowledge about what words mean, about the ways they are related to one another, and about the rules for using than in communication and thinking. It is called semantic memory.

Semantic memory is considered to be very stable and there is little forgetting of the meanings of the words of our language and the rules for their use. Information seems to be stored in semantic memory in a highly organized way. Information is stored in logical hierarchies that

go from general categories to specific ones. Such organization makes it possible for us to make logical inferences from the information stored in semantic memory. Also semantic memory is organized into clusters of words with related meanings.

EPISODIC MEMORY

It consists of long-term memories of specific things that happened to us at particular times and places. Thus episodic memories are memories of episodes in our own lives, they are dated and have a biographical reference. In other words our "remembrances of things past" make up our episodic memory.

Episodic memory seems to be organized with respect to when certain events happened in our lives. The episodes do not have to have a logical organization. Thus episodic memory is a record of what has happened to us. Because it is less highly organized episodic memory seems more susceptible to being forgotten than does semantic memory.

ENCODING AND STORING LONG-TERM MEMORIES

Encoding for long-term storage requires special attention or strategies.

1)The role of organization

One strategy in remembering things well is to organize, or arrange the input so that it fits onto existing long-term memory categories. The organizational encoding may be inherent in the input itself or it may be supplied by the individuals as they learn and remember new things. This, individuals' own organizational encoding of incoming information is called subjective organization.

2)The role of imagery

Images are partial and altered representations of what is in the world around us. Imagery is aroused by words and incoming information as encoding by imagery. The words called concrete, while those that evoked very little visual imagery were termed abstract.

PAIRED-ASSOCIATE TECHNIQUE - Is a learning technique which involves imagery and memory. In this technique lists are made up of pairs of words, and members or nonsense syllables.
For example squirrel- calendar
Ice box - 561
Tee -you

The first element of the pair is called the stimulus, and the second element is called response. Given the stimulus the subject learns to make the response that has been paired with it.

3)The role of constructive processes During encoding, the to-be-remembered information is modified. Certain details are accentuated in many other ways so that what is encoded and stored is for from a literal copy of the input. These modifications are called constructive processes.
4) One important constructive process is encoding only the meaning of complex information.

5) Constructive processes includes shortening and simplifying making the general outline and using inferences in encoding.
6) Inferences are made on the basis of the memory organization or schematic (plural of schema) that we have in semantic memory.

FORGETTING

FORGETTING- DEFINED

Forgetting refers to the apparent loss of information already encoded and stored in long-term memory.

THEORIES OF FORGETTING

There are three explanations to understand the nature of what we remember and why we forget. The three explanations for forgetting are
1. Decay through disuse
2. Interference effects
3. Motivated forgetting.

1. DECAY THROUGH DISUSE

Forgetting takes place simply through the passage of time. Learning leaves a trace in the brain. The memory trace involves some sort of physical change that was not present prior to learning. With the passage of time the normal metabolic processes of the brain causes a fading of decay at the memory. So that traces of material once learned gradual disintegrate and eventually disappear altogether.

Some forgetting may occur through the organic changes taking place in the nervous system with the passage of time.

2. INTERFERENCE EFFECTS

What we do in the interval between learning and recall determines the course of forgetting.

There are two types of interference effects. 1) Retroactive inhibition and
2)Proactive inhibition.
Retroactive inhibition

The theory that new learning memory interfere with the old is known as Retroactive inhibition. It is called retroactive because the interference is with the memory of events that came before the interfering activity.

Retroactive inhibition can cagily be demonstrated by experiment.

The subject in the experimental group learns a list of items (list A) and then learns a second list (list B). After an interval an attempt is made to recall list A.

The subjects in the control group learns list A and in phase II rest is given instead learning the list B. After an interval an attempt is memory to recall list A.

If the control group recalls list A significantly better than the experimental group we attribute the difference to retroactive inhibition. The latent learning of B has interfered with the recall of the earlier learning of list A.

Proactive inhibition

A theory that prior learning may interfere with learning and recall of new material is called proactive inhibition. Proactive inhibition is due to events that come before the to-be-remembered information.

As shown in the above arrangement the subjects in the experimental group learn a list A then learn list B. After a period of rest the subject are to recall the list B.

The control group subjects have rest period in phase I and do not learn anything . In phase II they learn list B and then recall list B. If the control group, it can be concluded that the experimental group subjects are influenced by proactive inhibition.

3) MOTIVATED FORGETTING

There are some motives of the individuals which play a vital role in remembering and forgetting.

Repression One aspect of motivated forgetting is the prince of repression. Repression refers to the tendency of people to have difficulty retrieving anxiety-provoking or threatening information and what is associated with that information, from long-term memory. People generally remember pleasant events more often then they do unpleasant ones. The unpleasant memories have been repressed.

RETRIEVAL FROM LONG-TERM MEMORY

Information is encoded and stored in long-term memory, but it must be retrieved, if it is to be used.

Retrieval cues and reconstructive processes are important factors in the “read out” from memory.

I. RETRIEVAL CUES

Finding information in the organized long-term memory store is aided by retrieval cues or remainders, which direct the memory search to the appropriate part of the long-term memory store.

It is important to have the retrieval cues, or "tags" encoded along with the information as it is put into long-term memory storage. Recall is quite good when conditions favour rich and elaborate encoding. Perhaps the rich context into which an item of information is embedded provides a number of readily available retrieval cues.

When people learn things they provide their own organization of what they are learning. This is called subjective organization.

When retrieval cues are not explicitly present in learning, we may provide our own retrieval cues at the time we encode information for storage in LTM. This is one of the tricks in having a good memory.

There are structural influences that affect retrieval from long-term memory state-dependent memory is one such factor.

If people or animals encode and store information when they are in a particular emotional or drugged state, they may not be able to retrieve the information when they are in another emotional state or no longer under the influence of drug. But when put back into the original emotional or drugged state the memory can be retrieved. This is state-dependent memory. The emotional or drugged state is part of the context within which a memory is encoded and stored. Without this context retrieval is poor, with it, retrieval is good.

II. RECONSTRUCTIVE PROCESSES IN RETRIEVAL

Reconstructive processes are modifications of already stored input.

Reconstruction is sometimes called confabulation in the case of people with memory disorders who have stored very little and who then try to fill in the memory gaps during retrieval.

Reconstructive processes are often seen in the answers to leading questions that bias the retrieval of what was stored.

AMNESIA

DEFINITION

Amnesia is a profound memory deficit due either to the loss of what has been stored or to the inability to form new memories.

Amnesia have been classified into

1. Psychological Amnesia and
2. Biological Amnesia.

PSYCHOLOGICAL AMNESIA

Psychological amnesia occurs without any brain malfunction. This amnesia results from major disturbances in the processes of information encoding, storage and retrieval.

TYPES OF PSYCHOLOGICAL AMNESIA

CHILDHOOD AMNESIA

There is considerable evidence that our early childhood memory is poor.

1. Freud used repression concept to account for childhood amnesia. He said that we are unable to retrieve childhood memories because they are associated with the forbidden, guilt arousing sexual and aggressive urges. Being aware of them would result in strong feeling of guilt or anxiety.

2. Another explanation of childhood amnesia stresses the differences in the ways young children and other people exude and store information. As adult much of our memory is exuded verbally. Childhood memories are exuded in a non verbal form. Hence retrieval is difficult.

3. A third interpretation is the memory machine in the childhood period is not able to store long-term memories until its motivation is finished.

DREAM AMNESIA

We are several times each right but we remember few of these experience.

1. According to fraud dreams are expressions of forbidden sexual and aggressive urges. These urges can produce strong guilt or anxiety if we aware of them in ourselves. Hence they are forgotten.

2. If the memory – symbol networks of waking life are different from those of dreaming, we may have difficulty retrieving dreams in the walking state.

3. Dream amnesia may actually have a biological basis. The dreaming brain seems to be in a special state different from that of walking brain. Information stored in one state is difficult to retrieve in another state.

DEFENSIVE AMNESIA

People with this form of amnesia may forgot their names, where they have come from, who their spouses are, and many other important details of their past lives.

If is called defensive because this type amnesia is usually considered to be a way of protecting oneself from the guilt or anxiety that can result from intense , intolerable situation and conflict. Thus defensive amnesia is an extreme form of repression.

Amnesia episodes can last for weeks, months, or years. When they are over, the amnesia regains, often suddenly, memories of his or her earlier life. But information stored during the

episode itself is usually not retrievable. There is a memory gap. The gap occur because memories formed during the episode are themselves repressed.

Alternatively, after the stream of memory has returned to normal, perhaps retrieval cues are lacking for the information stored during the episode.

BIOLOGICAL AMNESIA

Some amnesias have a biological basis and the memory machine – the brain – is disturbed in some way. These may be called biological amnesias.

CAUSES OF BIOLOGICAL AMNISIAS

Concussions (brain bruises) from blows on the head, other damage to the brain, temporary disturbances in the brain's blood supply, certain drugs and brain diseases are some of the major causes of biological amnesias.

TYPES OF BIOLOGICAL AMNESIA

TRANSIENT GLOBAL AMNESIA

This is a profound memory with no loss of consciousness. If comes suddenly without any obvious causes and it last for only a few hours or days. Most people who experience such have it only once.
This amnesia is called global because so much of what has already been stored in memory is forgotten and because no new memories are formed while the attack is in progress. However the rectum is conscious and can go about the routine business of daily life.
Both retrograde amnesia and integrated amnesia characterize transient global amnesia.
The cause of transient global amnesia is not known. However it is assumed that it is due to temporary alterations in the normal pattern of blood flow to the brain.

MARIJUANA, ALCOHOL AND AMNESIA

Marijuana appears to have a limited short – lived effect on the encoding, storage and retrieval of information.

A person may have amnesia for the events occurring while under the influence of alcohol because encoding and storage processes have been disturbed by the effects of alcohol on the brain.

Another idea is that information may have been stored while in the drunken stage in a form not available for retrieval in the sober state.

Heavy drinking over a period of years can result, through vitamin- B deficit and other chemical imbalances, in irreversible brain damage and a pattern of symptoms known as the KORSAKOFF SYNDROME. Integrate amnesia is one of the chief symptom of this syndrome. Korsakoff patients also have some loss of remote memories that is remembrance

of events that occurred early in their lives. Korsakoff patients also have difficulties with attention and perception.

DISEASES OF THE BRAIN

Among the diseases that can result in amnesia are
1. Syphilis of the brain and other brain infections.
2. Stroke and other disorders of brain blood flow.
3. Brain tumors
4. Disorders of the brain metabolism
5. Multiple sclerosis
6. various conditions caused by toxic chemicals
7. senile dementia and
8. primary degenerative dementias.

Senile dementia and primary degenerative dementia are described blow

SENILE DEMENTIA(senile refers to old age)

If is characterized by deficit in many intellectual abilities – memory, attention, judgment and abstract thought – that can occur in aged people. Personality changes are common. Delusions and general disorientation can also occur.

The amnesia in senile dementia is at first largely intergraded. Thus the person cannot recall well what happened last month, yesterday or even a few hours ago. Memories of the years before the disease are largely intact until the brain damage becomes severe and widespread.

Senile dementia is usually the result of a reduction in blood flow to the brain.

Most of the patients with this disorder have been arteriosclerosis – that is narrowing of the small arteries of the brain due to fatty accumulations in them. Arteriosclerosis deprives brain cells of adequate supplies of oxygen and nutrients. So that some cells die and others malfunction. The brain is said to be atrophy.

PRIMARY DEGENERATIVE DEMENTIA

If has many of the same characteristics as senile dementia. A major difference is that the symptoms often begin in middle age.

ALZHEIMER'S DISEASE is a form of primary degenerative dementia. in this three is a cluster of specific degenerative brain changes of unknown origin. Amnesia in Alzheimer's disease is related to deficiencies in the brain neurotransmitter chemical acetylcholine.

Alzheimer's disease begins early in life and life continues with progressive mental deterioration. The amnesia goes from a relatively mild intergraded memory problem to a profound intergraded and retrograde deficit.

IMPROVING MEMORY

If one wants to remember what he or she learned here are some hints on how to remember what one wants to remember.

1. Planning a study schedule

Study is work and it takes time. Hence the study schedule should be planned and stacked on to. During the time set aside for study other works should not be done.

2. Rehearsal

Rehearsal is very important for the deeper and richer processing of information that is necessary for good memory. Elaborate rehearsal is the kind of use in studying. One should spend great deal of study time in elaborate rehearsal.

3. Organisation

Organization takes many forms. If can be organized by heading to provide a kind of outline. As the elaborate rehearsal goes on, a subjective organization to the material develop. Besides the subject may give retrieval cues, or reminders that will be important to recall what is learned. Visual images of abstract ideas can also be formed.

4. Feed back

It is better to get some idea of how well the material is remembered. In other words it is good to get some feedback. Feedback will tell what is mastered and where one is weak. It is also a practice of retrieval skills.

5. Review

Before the examination, the learned material can be reviewed. Organization of the material can be used during review. The forgotten material can be relearned in the way it is learned in the first place. A great deal of time should be spent on rehearsing major ideas and concepts.

6. overlearning

Once the material has been learned, relearning it after a few days helps improving memory. Psychologist use the word "over learning" for this. Over learning works to reduce the amount forgotten.

Hence studying to remember involves planning, rehearsal, organization, feedback, review and over learning.

AIDS TO MEMORY

The following are some of the specific aids available to memory

1. MINEMONICS (Pronounced "NIMONICKS")

Mnemonic techniques rely on the linkage or association, of to –be-remembered material with a systematic and organized set of images or works that are already established in LTM and therefore serve as a remainder cues.

For example The colors in the spectrum can be remembered by associating each colour with the word VIBGYOR.

2. THE METHOD OF LOCI

The word loci mean "places". The technique is to translate the verbal material into imaged objects and maintain their order by locating them against a background of a well – known route.

The method of loci requires very little practice. Try to visualize a walk through the house or apartment in which you live. You enter the front hall. Move next to the living room, then to the dining room, to the kitchen, to the bedroom, and so forth. If you were to use these loci to memorize a shopping list – e. g. Bread, eggs, bear, milk etc. then you would try to form a serious of mental images.

A loaf of bread hanging from the hall way light fixture, an egg sitting as "humpty dumpy" on the living room fire place, a spilled can of beer on the dining room table, a cow in the center of kitchen, a pig sleeping in a bed, and so forth. When ready to recall the shopping list, you would take an imaging walk trying to retrieve the image associated with each room.

3. NUMBER AND LETTER PEG SYSTEM

The main idea of these systems is to establish a well organized set of images to which the to – be –remembered items can be linked.

In number systems, you form an image with each number, for instance, a rhyming system can be used for the numbers 1 to 10. Think of words that rhyme with the numbers.
1. is a bun
2. is a shoe
3. is a tree
4. is a door, and so on.

Now when you have a list to remember, you can associate the items on the list with your images of the numbers. If the first item on a grocery list is coffee, imagine a streaming cup of coffee next to a plate of buns. Thus associating the number images with what is to be remembered.

Letter systems are similar. You can establish numeric pegs by forming strong, distinctive images of words that starts with the sounds of the letters of the alphabet. This will give you 26 pegs for association with you want to remember.

4. STROIES YOU TELL YOURSELF

If you have a list of unrelated items to remember, a useful numeric device is to relate the items in a made – up strong. The story starts with the first item on the list and, in order, each succession item is worded in doing this gives coherence and meaning to otherwise unrelated items. It is a form of elaborative encoding.

5. CHUNKING

This is a systematic way of coding information by breaking the information into parts.

Suppose you want to remember your credit card number 19141609001. it will help you if you break the number into chunks. If can be broken into several parks. There are number of ways to chunk the information that will work better.

6. REMEMBERING NAMES AND FACES

As first steps in establishing a good memory for faces and names. We should

1. be sure we hear the names, clearly when introduced
2. repeat the name when acknowledging the introduction
3. If the name's is unusual we should politely ask our acquaintance to spell it.

While we are sure we have hearted and rehearsed the name, we should be paying close attention to the individual's face. The shape and size of the head and individual characteristics of the hair, the forehead, eyebrows, eyelashes, eyes, cheek, bones, nose ears lips, chin, and skin should all be focal points of attention. Voice quality may also be important.

7. SQ3R

Another way to study effectively and remember thing is SQ3R method. In this method

S=stands for=search
Q =stands for=question
R =stands for=Read
R =stands for=Recite and
R =stands for=Review

Searching the appropriate material is the first step. Questioning of what should be learned is the second step. Reading is the third step. Self – recitation forms the fourth step. Finally reviewing the learned material is the fifth step.