

CHAPTER II

LITERATURE REVIEW

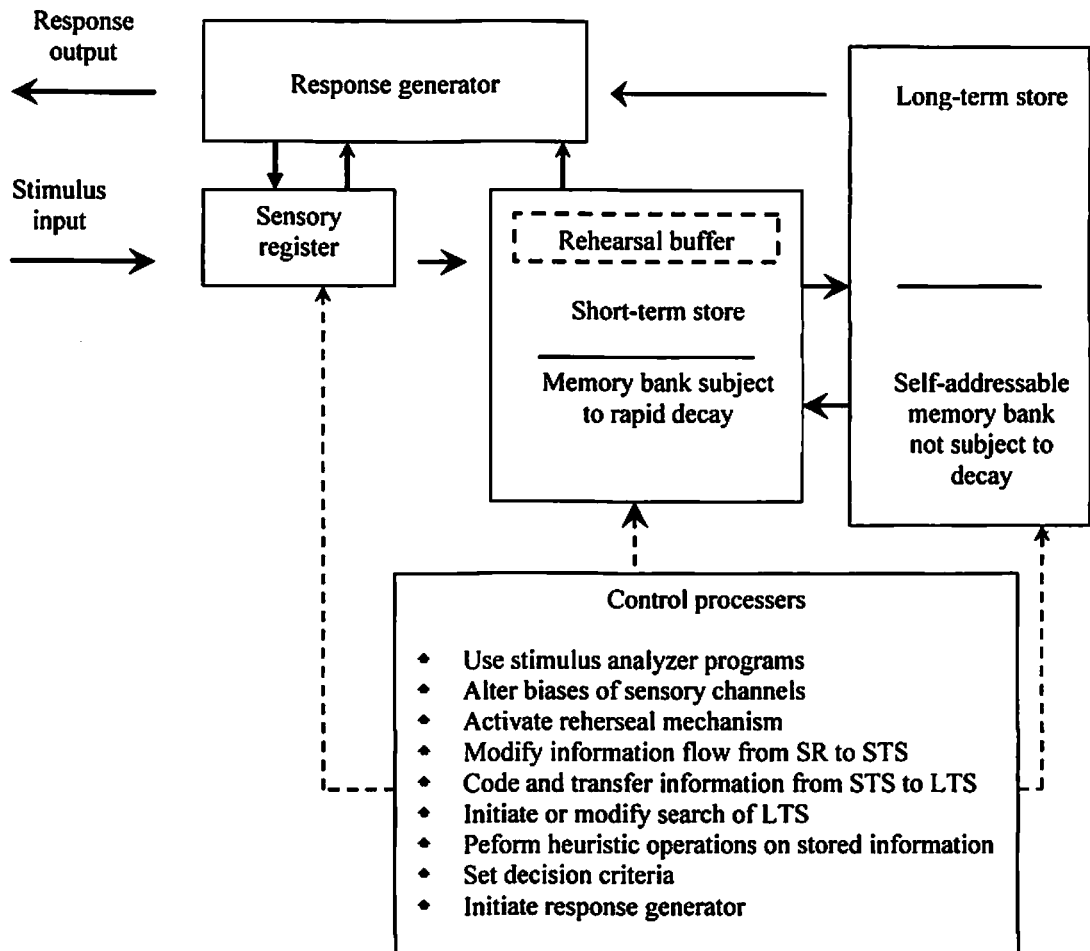
II.1. Information Processing

Information-processing theory emphasizes on how information flows through a series of separate memory stores. The most prominent information-processing model of memory states that there are three memory stores: a sensory store, a short-term store, and a long-term store. According to Atkinson and Shiffrin (Weiten, 1996), incoming information must pass through two temporary storage buffers (the sensory and short-term stores) before it can be transferred into the long-term storage.

Sensory store preserves information in its original sensory form for a brief time, usually only a fraction of a second. It can hold a large amount of information, just long enough for a small portion of it to be selected for longer storage. **Short-term store (STS)** is a limited capacity store that can maintain unrehearsed information for about 20 to 30 seconds. Moreover, by engaging in rehearsal – the process of repetitively verbalizing or thinking about information, our short-term store can maintain information longer than 30 seconds. And without rehearsal, information in STS quickly decays with the passage of time. STS is also limited in the number of items that can be held. In addition, when STS is filled to capacity, the insertion of new information often displaces some of the information currently in STS.

Long-term store (LTS) is an unlimited capacity store that can hold information over lengthy periods of time. All information stored in LTS is stored there permanently. And forgetting occurs only because people sometimes cannot retrieve needed information from LTS. But like other memories, LTS can be less detailed and complete with time. An alternative point of view assumes that memories stored in LTS do vanish forever. In addition, how is information transferred from STS into LTS? According to Atkinson and Shiffrin (Weiten, 1996), information that is being maintained in STM through rehearsal is gradually absorbed into LTM. Rundus (Weiten, 1996) investigated this hypothesis by asking undergraduates to recall a list of 20 words immediately after they had rehearsed the words aloud. The words were presented slowly, one at a time, so subjects had time to rehearse some of the words before hearing a new word. Rundus kept track of how often each word was rehearsed. Although LTS storage does not appear to be permanent, LTS undeniably houses a vast amount of information.

A Model of Memory System with Control Process Expanded.



Adapted from Solso (2001:243)

Information processing views cognition as a template-matching process where the input (image, sound) is matched against the most similar template stored away in long-term memory. This may be true for certain kinds of learning and recall, but there may be different kinds of processing. Although humans may use linear processes in some kinds of thinking, there is no equivalent of "crashing" in human thought. The brain does not simply stop but attempts to find

what goes wrong by starting over and taking a different approach. The brain also leaps to conclusions, with incomplete information or no information at all (www.healthnet.org.np/training/software/ww194.htm).

Some students known to fail in the information processing may have a lot to do with the learning style. A number of classroom strategies have been used to match learning style with instructional style, including small-group activities, cooperative learning, mastery learning, performance-based assessment, and computers. Curtis Carver and Richard Howard summarize the various approaches succinctly (www.healthnet.org.np/training/software/ww194.htm):

Students have different learning styles--characteristic strengths and preferences in the ways they take in and process information. Some students tend to focus on facts, data, and algorithms; others are more comfortable with theories and mathematical models. Some respond strongly to visual forms of information, like pictures, diagrams, and schematics; others get more from verbal forms--written and spoken explanations. Some prefer to learn actively and interactively; others function more introspectively and individually.

II.2. The Possible Causes of Forgetting

So far we have known how forgetting exists. And there are possible causes that can be used to explain forgetting (Weiten, 1996).

Ineffective encoding happens to learners when they get problem to remember the information that they have read. For example, if they are distracted

while reading the textbooks, they may be doing little more than saying the words to themselves (For information, what they do is called phonemic encoding, which is inferior to semantic encoding for retention of verbal material). About this forgetting case, we also need to know a phenomenon that is sometimes called as pseudoforgetting. In this case, the information in question may never have been inserted into memory in the first place since people cannot really forget things they never learned. For example, people usually assume that they know what a penny looks like, but most have failed to encode this information. Pseudo forgetting is usually due to lack of attention.

Instead of focusing on encoding, **decay theory** attributes forgetting to the impermanence of memory storage. It proposes that forgetting occurs because memory traces fade with time. The implicit assumption is that decay occurs in physiological mechanisms responsible for memories. According to decay theory, the mere passage of time produces forgetting. Decay does contribute to the loss of information from the sensory and STM stores.

Interference theory proposes that people forget information because of competition from other material. Interference is assumed to be the greatest when intervening material is most similar to the test material. Decreasing the similarity should reduce interference and cause less forgetting. In an influential study conducted by McGeoch and McDonald (Weiten, 1996) they had subjects memorize test material that consisted of a list of two-syllable adjectives. They varied the similarity of intervening learning by having subjects then memorize one of five lists. In order to decrease similarity test material, they were synonyms of

the test words, antonyms of the test words, unrelated adjectives, nonsense syllables, and numbers. Later, subjects' recall was measured. As the similarity of the intervening material decreased, the amount of forgetting also decreased – because of reduced interference.

People often remember things that they were unable to recall at an earlier time. This maybe obvious during struggles with the tip-of-the-tongue phenomenon, but it happens frequently. In fact, a great deal of forgetting may be due to breakdowns in the process of retrieval. **Retrieval failure** may be more likely when there is a mismatch between retrieval cues and the encoding of the information people are searching for. According to Tulving and Thomson (Weiten, 1996), a good retrieval cue is consistent with the original encoding of the information to be recalled. If the sound – its phonemic quality – was emphasized during encoding, an effective retrieval cue should emphasize the sound of the word. Moreover, if the meaning of the word was emphasized during encoding, semantic cues should be best.

The tendency to forget things one does not want to think about is called **motivated forgetting**. This idea is brought by Sigmund Freud (Weiten, 1996) that came up with an entirely different explanation for retrieval failures. He theorized that the memories were there all along, but the retrieval was blocked by unconscious avoidance tendencies. In Freudian theory, repression refers to keeping distressing thoughts and feelings buried in the unconscious. For example, a person who was deeply wounded by perceived slights at a childhood birthday party might suppress all recollection of that party.

II.3. Schema Theory

Sir Frederic Bartlett (Solso, 2001) who studied language processing and memory in a natural context described several experiments in which brief stories, prose passages, pictures, and Native American picture writings were used to study the remembering and forgetting of meaningful material. The procedures were simple. They read a story that would be told to a person, who then retold it to another, who then retold it to other person, and so on. Then Bartlett examined the contents of the reproduced version of the stories, and analyzed both the nature of the material coded and the nature of the material forgotten.

He conducted another experiment to subjects with about four time reproductions of retelling. To illustrate the precise nature of these elements, here is the original story:

The War of the Ghosts

One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: "Maybe this is a war-party." They escaped to the shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles, and saw one canoe coming up to them. There were five men in the canoe, and they said:

"What do you think? We wish to take you along. We are going up the river to make war on the people."

One of the young men said: "I have no arrows."

"Arrows are in the canoe," they said.

"I will not go along. I might be killed. My relatives do not know where I have gone. But you," he said, turning to the other, "may go with them."

So one of the young men went, but the other returned home. And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water, and they began to fight, and many were killed. But presently the young man heard one of the warriors say: Quick, let us go home: that Indian has been hit," Now he thought: "Oh they are ghosts." He did not feel sick, but they said he had been shot.

So the canoes went back to Egulac, and the young man went ashore to his house, and made a fire. And he told everybody and said: "Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick."

He told it all, and then he became quiet. When the sun rose he fell down. Something black came out of his mouth, his face became contorted. The people jumped up and cried.

He was dead.

After about 20 hours, the subject produced a reproduction that in general was shorter, and the style was more informal. There were numerous omissions and some transformations. Familiar words replaced less familiar words – for example, boat for canoe, and fishing for hunting seals.

Eight days later, the same subject recalled the following:

The War of the Ghost

Two young men from Edulac went fishing. While thus engaged they heard a noise in the distance. "That sounds like a war-cry," said one, "There is going to be some fighting," Presently there appeared some warriors who invited them to join an expedition up the river.

One of the young men excused himself on the ground of family ties. "I cannot come," he said, "as I might get killed." So he returned home. The other man, however, joined the party. And they proceeded on canoes up the river. While landing on the banks the enemy appeared and were running down to meet them. Soon someone was sounded, and the party discovered that they were fighting against ghosts. The young man and his companion returned to the boats, and went back to their homes. The next morning at dawn he was describing his adventures to his friends, who had

gathered round him. Suddenly something black issued from his mouth, and he fell down uttering a cry. His friends closed around, but found that he was dead.

The second reproduction was abbreviated. The proper name (Kalama in the original) was missing an excuse "I might get killed" reappeared after missing from the first retelling.

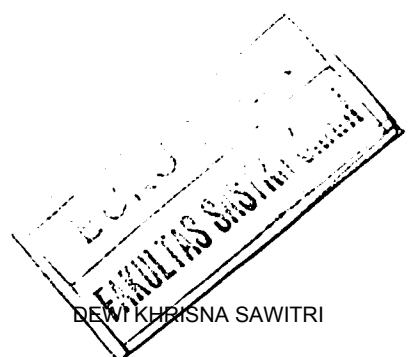
Six months later another subject recalled the following:

(No title was given). Four men came down to water. They were told to get into a boat and to take arms with them. They inquired "What arms?" and were answered "Arms for battle." When they came back to the battle field they heard a great noise and shouting, and a voice said: "The black man is dead." And he was brought to the place where they were and laid on ground. And he foamed at the mouth.

In this version, all unusual terms, all proper names, and references to supernatural powers were dropped.

Finally, one subject was asked to recall the story **after 2 years and 6 months**. He had not seen the original version for a long time and according to his own statements, had not thought of the story. His account follows:

Some warriors went to wage war against the ghosts. They fought all day and one of their number was wounded.



They returned home in the evening, bearing their sick comrade. As the day drew to a close, he became rapidly worse and the villagers came round him. At sunset he sighed: something black came out of his mouth. He was dead.

In making analysis, Bartlett used the concept of schema to account for his results. Schema in his view refers to an active organization of past reactions or past experiences. Incoming stimuli contribute to the building up of an organized schema. In Bartlett's words (Solso, 2001: p.335)

There is not the slightest reason, however, to suppose that each set of incoming impulses, each new group of experiences persists as an isolated member of some passive patchwork. They have to be regarded as constituents of living, momentary settings belonging to the organism, or to whatever parts of the organism are concerned in making a response of a given kind, and not as a number of individual events somehow strung together and stored within the organism.

Bartlett analyzed this type of information in terms of several categories. These include:

♦ **Omissions**

Specific information seems to be dropped out. Also, information that is illogical or does not fit into the subject's expectation is not readily recalled.

There was much simplification due to the omission of material that appears

irrelevant (Brewer). For example, in the “War of the Ghosts” the main character comes home after being wounded in battle and the text states that he “made a fire.” This event was not crucial to the overall plot or structure of the story and was frequently forgotten in the sample recalls presented by Bartlett.

◆ **Rationalization**

Occasionally some information is added that would help explain certain incongruous passages. Another class of changes that occurs in the recalls consists of the addition of information that goes beyond what is explicitly given in the text. For example, in the “War of the Ghosts” one man declines to go off to battle by stating “I will not go along. I might be killed. My relatives do not know where I have gone. But you”, he said, turning to the other, “may go with them”. One participant recalled the last section of this text as “But you have no one to expect you”. Another participant recalled it as “You have no parents”.

◆ **Dominant theme**

Some themes seem to be prominent, and other features are then related to the dominant theme. Little elaboration of details can be found, and several themes appear to be related to what the subject thought should happen, rather than what actually did happen in the story. For example from the last recalling, the wounded man finally dies. When? At sunset...naturally! It would appear that this theme is part of the popular folk history of the subject; it certainly is not in the original version.

- ♦ **Transformation of information**

Unfamiliar words are transformed to more familiar ones. When one of the designs was visually similar to some common object, but contains certain features which are unfamiliar to the community to which the material is introduced, these features invariably suffer transformation in the direction of the familiar (Brewer). For example, in the “War of the Ghosts” right before the main character dies the text includes the puzzling statement that “something black came out of his mouth.” Bartlett noted that one participant recalled that phrase as he “foamed at the mouth”; another participant recalled it as “his soul passed out from his mouth”

- **Transformation of sequence**

Some events are characterized as appearing earlier in the story, others later.

- **Subject attitude**

The attitude of a subject toward the material determines the degree of recollection.

The result showed that the story was modified in the retelling so that unfamiliar elements were replaced by culturally more familiar ones. Bartlett thought that people had reinterpreted the story in terms of existing structures as they tried to remember it. He saw ‘schemas’ as existing structures that encapsulated our knowledge and expectations about the same aspect of the world. He saw learning and memory as ‘a search after meaning’ (www.lgu.ac.uk/psychology/staff/elander/general.html).

The contribution of Bartlett is important for three reasons (Solso, 2001). First, the notion of abstract memory forms part of the basis for new learning and later for transformation of new information. Second, Bartlett demonstrated that research with real-life stories was possible and led to useful conclusions

Bartlett's famous studies of the "War of the Ghosts" story showed that people can be very poor at accurately remembering a story. With repeated tests, memory includes more and more schema-consistent elements that were not part of the original story, and fewer and fewer true elements. Remembering appears to be a highly reconstructive process. However, a contrasting piece of evidence seems to support the idea that long-term memory does maintain an accurate record of events. This is the finding that repeated testing may lead to substantial *increases* in the amount of information correctly recalled. These repeated tests are very beneficial for memory accuracy ([www.psychol.ucl.ac.uk/davidshanks /c530.html](http://www.psychol.ucl.ac.uk/davidshanks/c530.html)).

CHAPTER III

DATA PRESENTATION AND ANALYSIS

While conducting the course for three months, the writer used the same story. It was difficult to teach using the same story during the course. And the writer found that it was also difficult to conduct the same test both orally and in written form for three months. The respondents were bored and these were showed in the last two reproductions. After doing the research, the writer categorized the data of each respondent based on each reproduction of retelling that consists of written and oral data. The following is the presentation and analysis of the data.

III.1. The 1st Respondent's Reproductions

1st REPRODUCTION

Written Data

(No title was given). "In the night, two man going to the river. They are listening somebody come to the river take cannoes to passenger five man. They are coming by two man first going to the river and say," are you join with us to the war?" One man not interesting because he is not tell the family. But he said," My friend is oke join to you."

YS made a short paragraph using mostly the present tense. Some errors existed; for example, he made errors in using in appropriate preposition "coming by" for the correct "coming to". He wrote a to be "are" in the his sentence "are

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