CHAPTER - I

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1.1 GENERAL

Man is bestowed with the highest gift of sense of reasoning and language is the crowning glory of human race, because it is the expression of the enigma of man's being and his relation to the Universe. Language is the important tool of communication to express one's own ideas, views and feelings. Communication takes place in order to convey some message by the encoder and the message has to be understood by the decoder. Any language study will be definitely incomplete if proper importance is not given to what message is encoded and how the message is decoded.

1.1.1 Neurobiological and Psychological Views

The encoding and decoding of messages are the outcome of the functions of the Brain at the neurobiological level and the functions of mind at the psychological level. The brain-mind theories try to postulate the co-existence of the effects of both because the subject's conscious experience and the mental forces are integrated with the brain process. The brain process includes the communications to and from the brain and within the brain at the two hemispheres namely right hemisphere and the left hemisphere and the linguistic activities are also represented by the interconnections between the two hemispheres as in figure 1.1. On the psychological level the encoding and decoding of
linguistic elements can be represented by the memory system in the brain and the interactions between them Figure 1.2. A structural view of memory provides a comprehensive model which segregates the memory system as data based and as expectancy based. Data based memory system deals with the coding system of incoming data, events and personal experience emphasizing on "bottom-up" processing. Expectancy based memory system deals with information already stored which forms the basis of one's knowledge of the world emphasizing on "Top-down processing. At both the neurobiological and psychological level the incoming messages are coded, stored and organized for retrieval purpose.

1.1.2 Behaviorists and Cognitivists Views

The neurobiological and psychological views have its repercussions on the views of cognitivists like Chomsky, who believe that some biological representation of the abstract structure of language is built into the human nervous system and the innate capacity makes the learning and acquisition of language possible. Their views go against the views of the behaviorists who believe in the concept of stimulus, response and reinforcement and consider that the linguistic activity is determined by the characteristics of the environment.

Behaviorists like Skinner and Bloomfield consider that linguistic activity can never be interrelated with and explained through psychology. Their views are strongly criticized by the Cognitivists because according to them linguistic activity is a mental activity, it reflects the human mind in general, how it is
Figure 1.1 The working of the right and left Hemisphere of the Brain [From Eccles, 1980: 8]
organized and how it works. This lead to the coinage of the term Universal grammar by Chomsky, which states that each child is born with an innate capacity of knowledge of universal grammar, which enables the quick learning of a language possible despite the complexities inherent in it.

1.1.3 Cognitive Psychology and psycholinguistics

Any language study should be validated and clubbed with either the influences of the external forces imparted by the society or the internal forces of the working of the Cognitive system. Since language is an integral part of the thinking process, due importance is given to the internalization and externalization of this thinking process and the internal forces of the cognitive system. Cognitive psychology is the branch of psychology dealing with the cognitive system, which constitutes the mental process that are involved in knowing about the external world and their impact on our perceptions, attention, thinking and memory.

"The transformation of thinking that takes place during linguistics activities can be explained only by showing how the subject matter of the approaches can be synthesized into a single process. Considering only one approach or the other Linguistics or psychology will never reveal these transformations". (McNeil, 1987:1)

The culmination of the branch of cognitive psychology
Figure 1.2 The Language switch board [From Garman, 1990 : 5]
and linguistics led to the formation of psycholinguistics which deals with the mental processes, its underlying relation with language comprehension, production and acquisition.

"Psycholinguistics is the study of the mental mechanism that make it possible for people to use language. It is a scientific discipline whose goal is a coherent theory of the way in which language is produced and understood."

(Garnham, 1985:1)

Since the primary purpose of language in communication, psycholinguistics clearly states what information language conveys and how it is conveyed. The crux of psycholinguistic theories can be defined in a systematic way by the following questions:

1. How does one organize the linguistic elements which are to be decoded?
2. What does one know when the linguistic elements are decoded?
3. How does one put to use the already acquired knowledge when the linguistic elements are decoded?
4. How the linguistic elements are mentally organized?
5. How the mentally organized linguistic elements are used for language production?

Psycholinguistic theories try to answer these questions because

"Psycholinguistics is the study of language as a
human activity. It is the study of what people acquire when they acquire a language of how they acquire it and of how they use it when producing and understanding messages" (Foss and Hakes, 1978:4)

1.1.4 Understanding and Recall

This study focuses its attention on the two mental process that are involved at the cognitive level namely: understanding and recall.

Comprehension of language requires the use of many kinds of linguistic knowledge namely, syntactic and semantic.

The Syntactic knowledge depicts the knowledge of the words and the structure of sentences in short aspect of structure. Semantic knowledge depicts the knowledge of the meaning of words and the relationship between them, in short the aspect meaning.

The study of comprehension has gained a good deal of attention recently and it is always interrelated with production and the Cognitive skills involved in the process. Comprehension is an internal process and it can be studied only through the external process of production in the form of recall.

"The term Comprehension normally has been defined: That is information is comprehended by the reader to the extent to which it can be used, recalled or recognized."

So for any kind of study conducted to clarify the understanding system, tests should be conducted to see whether the given
message is stored in the memory, and if so, in what way it is stored. Studies on memory focuses it with attention on the recall of learned material, but the study of nature of the stored material and its structure has gained less prominence. Importance is given in this study to the nature of the stored materials.

In the process of testing, the understanding and recalling ability two kinds of processes are involved at the procedural level. They are: (i) Construction process and (ii) utilization process. The underlying representation from a given message has to be constructed and it should be utilized to express how far the given message is understood and recalled. Taking into consideration these two processes, the present study deals with whether and how the given message is understood and recalled.

1.2 The Main Factors Governing this Research Work

1.2.1 Language

While testing the understanding and recalling ability, the proficiency and fluency of the language in which they are tested gains paramount importance. While testing the language processing system of the bilingual two questions are often asked leading to various hypothesis:

(1) Does the fluent bilingual possess one unified language processing system, which is used for processing both the languages?

(2) Does the fluent bilingual possess two processing systems

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for different languages?

The above questions lead to the formulation of interactive hypothesis which states that both the language processing systems are activated during processing of language and an independence hypothesis, which shows evidence of deactivation of one language in which communication takes place. The view of independence hypothesis is taken into consideration and the subjects were tested only on the understanding and recalling capacity in one language and the influence or the processing system of the other language was not considered. In brief, the message that was given to test the understanding and recall is in English, the language which has the status of the second language, medium of instruction in education and lingua-franca in India. The subjects were fluent bilinguals, in both the mother tongue and English, the independence hypothesis is tested and the influence of mother tongue or the first language is not given importance, since it will create deviations from the main view of the study. The testing elements were mostly based on the test of English as Foreign Language (TOEFL) pattern.

1.2.2 Linguistic Components

The message is conveyed through the words and the combination of words forming sentences. The individual word should be recognized, identified and understood for the furtherance of macro-level operation of understanding of the sentences and paragraphs. The reader when confronted with the words and sentences meaning of the message is enfolded. So the
linguistic components in the test consists of the two levels viz., word level and sentence level.

**1.2.3 Linguistic Activity**

Research in the field of psycholinguistics should be based on the underlying mental operations involved while indulging in any kind of linguistic activity namely reading, writing, speaking or listening. Two kinds of linguistic activities are linked with mental process that are involved in the cognitive level Viz., understanding and recall. The reading activity involves the process of processing information from the linguistic elements and the writing activity comes as a performance task to convey the levels of understanding and recall.

**1.2.4 Input**

When the linguistic activity of the reading takes place, a transformation occurs in the cognitive process thereby making the different systems work accordingly. Triggering of the cognitive system is the outcome of the input which is in the form of message that had to be read by the informants. The message was given and subsequently questions were asked to test whether the information is fully understood or not and how the different cognitive processes enable the understanding of the message.
1.2.5. Working Memory

The memory system which works for processing information from the input is termed as working memory and it denotes the mental workspace which is being utilised for the processing of the data and the information processing operations themselves.

1.2.6. Information Processing

When the input triggers the working of the cognitive system, various cognitive process are involved and ultimately the information from the input is processed. Two factors affect the information processing process. They are: the linguistic properties of the text and the difference of cognitive demands. Figure 1.3 gives a detailed picture of the components of language processing.

1.2.7 Storage

The storage of information is influenced by the workings of the short-term and long-term memory system. The information processed from the input are stored in the memory system and thereby enables the usage of the message for further retrieval purposes.

1.2.8 Retention interval

The retention interval denotes the time gap that is involved between the input and the output. The messages are given and recall is made immediately and after half an-hour either a recall or recognition task was involved.
Figure 1.3 The components of language processing [From Garman, 1990: 182]
1.2.9 Output

The output sheds light on the process of reading, information processing, storage and the retention interval, because the output measured by the performance of the recall and recognition task reveal the facts regarding how the information is processed and stored and how the retrieval interval affects the process of recall and recognition.

1.3 The fundamental principles dominating this research work

Principle 1: Characteristic features of the item: The differences in the items involved in the same table are studied to view the differences in understanding level of recall and recognition.

Principle 2: Characteristic features of the task: Each and every task in the same linguistic unit differ because they involve different Cognitive process and the different process are explained.

Principle 3: Characteristic features of the Cognitive process depending on the variations in the understanding level and recall level, variables and usage of different strategies are studied.

Principle 4: Characteristic features of the informant The attitude of the informants during
the process of solving the tasks are measured to correlate with, and to find out the repercussions on the levels of understanding and recall.

1.4 Aims and objectives of the present study

The present study is undertaken in order to find out the following in the process of understanding and recall.

(i) How far the second language ie., English is understood.
(ii) How the words and sentences are comprehended and stored.
(iii) The easy and difficult linguistic elements in understanding.
(iv) The easy and difficult elements in recalling.
(v) What elements are stored?
(vi) How the elements are stored?
(vii) The relationship between the input and output.
(viii) The hierarchies and strategies.
(ix) Individual levels of understanding and recall.
(x) Individual views of understanding and recall.

1.5 The main components of the Research Frame

The proceedings and the results of the present research are reported under the following nine chapters:

1.5.1 Chapter 1: Introduction

This chapter is introductory in nature. It presents a brief overview of Neurobiological and psychological views, behaviorists and cognitivists views and their impact on psycholin-
guistics and narrows down to the cognitive process of mental operations at two levels namely understanding and recall, which had been tested based on the procedural level of two processes namely Construction process and utilization process. It exposes the reason for conducting a psycholinguistics study like the present one, the factors governing this dissertation, the principles dominating this research work, the aims of the study and also the details of the compartmentalization of the chapters.

1.5.2 Chapter II: Theories and Models

Any empirical work has to be based on some theories and models, which can be either accepted or rejected based on the results collected from the data. Various theories which are considered to be the contributing factors to explain what happens during the process of language comprehension and recall are taken into consideration. Theories like the multi-store model of memory, models of semantic memory, models of word recognition, Models of structural semantics, models on the process of language understanding, propositional model, Minsky's concept, Kintsh's theory are explained. This Chapter also includes the survey of literature, significance and scope of the present study.

1.5.3 Chapter III: Research methodology

This chapter expounds briefly, the Research problem, the formation of data, the structure of the data, the different variables, the nature of the Universe, experimental design, the method of data collection, the scoring pattern, the methods of analysis, the Statistical method used for analyzing the data and
other related methodological informations.

1.5.4 Chapter IV Word level understanding and recall

This chapter is concerned with the exposition of the problems of understanding and recall at the word level. The understanding and recall of the words, the variation in the understanding level and recall level, the different problems involved during the process of understanding and recall, the nature of the stored material are analyzed. The analysis is based on the three units of word level.

Word in isolation, word in a system and word in context.

1.5.5 Chapter V: Sentence level understanding and recall

This chapter is intended to provide some evidences for various theories and models which explain the process of understanding and recall of sentences. It deals with information like the levels of understanding and recall, how the sentences are understood and recalled, various processes that are involved during the process of understanding and recall. This sentence level study concentrates on three units:

Part of Sentences, Sentences and Paragraph.

1.5.6 Chapter VI: Hierarchical levels of understanding and Recall

All the linguistic components and messages conveyed by the components cannot be understood and recalled equitably. So in this chapter the hierarchical levels of understanding and recall of the linguistic components are probed into based on the statistical analysis of the data.

1.5.7. Chapter VII: Understanding and recalling Strategies
While understanding and recalling number of strategies would be used by the informants to solve various problems depend­ing upon the ability to use various strategies and the demands of the tasks. This chapter aims to analyze the usage of various strategies during different process of understanding and recall.

1.5.8. Chapter VIII: Individual Variations

Eventhough the same type of test was administered to all the informants, individuals are found to differ from each other greatly in the way in which they understand and recall the messages. Moreover the attitude of the informants towards the tests were not the same. Due generalization are made based on the correlation of various parameters defining attitudes and the understanding and recall or the utilization or the construction processes.

1.5.9. Chapter IX: Conclusion

In the concluding chapter the crux of the findings of this research is brought out and inferences are drawn based on the results of the data collected. It also presents some theoretical conceptions which will provide some guidelines for future research in the field of artificial intelligence, in the field of education technology in English language teaching for developing teaching methods to enhance various language skills including comprehension in industrial psychology to assess the understanding and recalling ability in English language needed among the workers at various levels.

A select bibliography is given at the end.