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THEME FIVE: Introduction to Psycholinguistics

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1. Definitions

Psycholinguistics is a branch of study which combines the disciplines of psychology and linguistics. Basically, it is concerned with the relationship between the human mind and the language as it examines the processes that occur in the brain while producing and perceiving both written and spoken discourse.

In the literature, a great deal of definitions provided by many scholars is available. Below, some of these definitions are presented:

- “Psycholinguistics is an interdisciplinary field of study in which the goals are to understand how people acquire language, how people use language and understand one another, and how language is processed in the brain” (Fernández & Cairns, 2011, p.1).
- “Psycholinguistics explores the relationship between the human mind and language. It treats the language user as an individual rather than a representative of a society - but an individual whose linguistic performance is determined by the strengths and limitations of the mental apparatus” (Field, 2003, p.2).
- “Psycholinguistics study how word meaning, sentence meaning, and discourse meaning are computed and represented in the mind. They study how complex words and sentences are composed in speech and how they are broken down into their constituents in the acts of listening and reading. Psycholinguistics seeks to understand how language is done” (O’Grady, 2001, n.a.).
- “Psycholinguistics can be defined as the mental processes involves in language use, including the production, comprehension, and storage of spoken and written language (Warren, 2013, p.4).

Based on these definitions, fundamental assumptions on psycholinguistics could be summarised in the following sentences:

- Psycholinguistics is an interdisciplinary discipline. It is interdisciplinary because, firstly, it combines two major branches, psychology, and linguistics. Secondly, psycholinguistics is also related to other fields, such as developmental psychology, cognitive psychology, neurolinguistics, and speech science.
- Psycholinguistics deals with language and mind.
- Psycholinguistics is directly linked with the processes of encoding and decoding the code (language).
- Psycholinguistics studies how word meaning, sentence meaning, and discourse meaning are computed and represented in the mind.
- Psycholinguistics discusses the processes which are going in the speaker and hearer's minds.
- Psycholinguistics explains how words and sentences are stored in the mind and also it describes how humans retrieve these words and sentences.
- Psycholinguistics explores language acquisition, processing, and production.

Warren (2013) reports a number of issues that arise from these definitions of psycholinguistics. Some are to do with representations, such as:

- How are words stored in the mental lexicon, i.e., the dictionary that is in our heads?
- Do we have phoneme-sized chunks of language in our heads?
- Do literate people have letter-sized chunks filling equivalent roles for the processing of written language?
- How is the meaning of a sentence represented in our memory?

Other questions concern the processes that might operate based on these representations:

- How do we memorise words so effortlessly?
- When we speak, how do we convert an idea into an utterance?

- As listeners, how do we get from hearing an utterance to developing our representations of the idea(s) being expressed by that utterance?
- What stages do we have to go through during the construction of language?
- Do the processes involved in language production and comprehension influence one another, and if so, in what ways? (Warren, 2013, p.4).

2. The Emergence of Psycholinguistics

As a term, the word “psycholinguistics” was introduced by the American psychologist Jacob Robert Kantor in his book, “An Objective Psychology of Grammar” in 1936. However, it has been recognised that the term was rarely used until 1946, when Kantor’s student, Nicholas Promko, popularised the term by using it in his article entitled “Language and Psycholinguistics: A Review”, which was published in 1946. In this article, Promko used the term “Psycholinguistics” to denote an interdisciplinary field of study that could be theoretically coherent. The term since then gained significant interest and opened the door to a new, unified approach to human linguistic approach (Nordquist, 2017; Levelt, 2013).

As an academic discipline, in the literature, there exist two main phases that account for the evolution of this discipline. The two phrases are marked as the period that came before the Chomskyan revolution. It usually starts with the works in ancient civilisations, and covers the earliest empirical studies until the nineteenth-century emergence of the cognitive neuropsychology of language. This phase ends with the early twentieth century of behaviourism. On the other side, the second significant period, referred to as the post-Chomskyan era, concerns Chomsky’s influence on psycholinguistics as this discipline is defined and shaped today. It starts during the second half of the twentieth century in the 1950s and continues to the early 21st century.

In what follows, a brief description of these two phases over history is going to be displayed.

2.1 The Pre-Chomskyan Era

In this sub-section, the historical review's purpose is to shed light on how the present-day state of the art evolved. In doing so, it will briefly touch on Ancient Greek philosophy, 19th-century neuroscience, 20th-century psycholinguistics, and beyond. It is necessary to note that this brief account is going to be selective to make sense of the historical developments that contributed to psycholinguistic science. To do so, major information on this period is based on Altmann's (2006) article that is entitled "History of Psycholinguistics".

From the Ancient Egyptians to the Greek Philosophers. It is claimed that the earliest to write about language and the brain were the Ancient Egyptians. A catalogue of the effects of head injury exists in what is now referred to as the Edwin Smith Surgical Papyrus, written in about 1700 B.C. The writer referred there to what is presumed to be the first recorded case of aphasia. However, the Egyptians did not accord much significance to the brain, which unlike the other organs of the body, was discarded during mummification. They believed that the heart was the seat of the soul and the repository for the memory, a view largely shared by the Greek Philosophers, such as Aristotle (384-322 B.C.).

The Earliest Empirical Studies. It is commonly recognised that the pre-history of psycholinguistics (up until the 19th century) was dominated by philosophical conjecture. The term dominated is used loosely here, as there was no systematic and ongoing questioning of the relationship between mind and language, or indeed, brain and language. By modern-day, psycholinguistics is dominated not by philosophy, but by experimental investigations that measure reaction times, monitor eye movements, record babies' babbles, and so on. Indeed, one of the most widely replicated studies is a study that was carried out on at least three and possibly four independent occasions between the 7th B.C. and the 16th century A.D.

The 19th Century emergence of the cognitive Neuropsychology of Language. The first systematic studies of the relationship between language and the brain were conducted in the 19th century. This is probably the earliest point in the history of psycholinguistics from when a progression of studies can be traced, with one author building a case on the basis of earlier studies coupled with newer data.

The protagonists at this time were Gall, Boulliard, Aubertin, Broca, Wernicke, and Lichtheim, to name a few. None of them would be described as “a psycholinguist”, but to the extent their work informed accounts of the relationship between brain and language. They are no less a part of the history of psycholinguistics than are the other linguists, philosophers, psychologists, and cognitive scientists who have influenced the field through their own, sometimes radically different, perspectives.

The Early 20th Century Influence of Behaviourism. By the end of the 19th century, the study of language began to change, as did the study of psychology more generally. Interest in the psychology of language shifted from being primarily concerned with its breakdown to being concerned also with its normal use. Wilhelm Wundt stressed the importance of mental states. William James similarly saw the advantages of introducing mental states into theories of language use.

However, the early 20th century was a turbulent time for psycholinguistics; J. B. Watson argued that psychology should be concerned with behaviour and behavioural observation, rather than with consciousness and introspection. Meanwhile, Wundt had argued that a psychology of language was more about the mind than it was about language. Behaviourists such as J. R. Kantor argued against the idea that language use implicated distinct mental states. For Kantor, the mentalist tradition started by Wundt was simply wrong.

In the twentieth century, more precisely in the 1930s, the linguistic school of Bloomfield was born, with the publication in 1933 of Bloomfield’s “Language”. Bloomfield

reduced the study of language structures to a laborious set of taxonomic procedures, starting with the smallest elements of language. In doing so, Bloomfield firmly aligned the linguistics of the day with behaviourism. It is important to highlight that behaviourism eschewed mental states in its study of psychology.

The behaviourist tradition culminated with B. F. Skinner's publication in 1957 of "Verbal Behaviour". Here, Skinner sought to apply behaviourist principles to verbal acquisition and verbal behaviour, attempting to explain them in terms of conditioning theory. Verbal behaviour proved to be the background on which the classical behaviourists and mentalists would clash.

2.2 The Post-Chomskyan Era.

Psycholinguistics, as a discipline, came into vogue during the second half of the twentieth century, starting from the year 1951. This period denotes the beginning of what is always referred to as the "Post-Chomskyan Era". Initially, the inspiring works of a linguistic milestone, Zellig Harris, and his student, Noam Chomsky, contributed to a major paradigm shift in understanding psycholinguistics. Harris through his book, "Methods in Structural Linguistics", rejected the statement of distributional analysis, a mechanical, corpus-based discovery procedure for the units of language, phonemes, morphemes, and syntactic components. In doing so, he claimed that these procedures would allow for a generative grammar. This fundamental idea was later on developed by Noam Chomsky who proclaimed that a generative grammar is "psycholinguistically real". By this, he referred to the mental capacity that allows any human being to produce language. This fundamental idea permitted psycholinguistics to turn back to its roots (Levelt, 2013).

The Mid-20th Century and Chomskyan Influence. In 1959, Chomsky published a review of Skinner's "Verbal Behaviour". He argued that no amount of conditioned stimulus-response associations could explain the infinite productivity of language. Chomsky

reintroduced the mind, and specifically mental representations, into theories of language. Whereas, Skinner eschewed mental representations. Chomsky proved that language was founded on precisely such mental representations. Chomsky's view opened the door for psycholinguistics. According to historians and scholars, with Chomsky's influence, psycholinguistics, as it is defined today, took its form and shape.

On the Influence of the Digital Computer. The 1970s saw enormous growth in psycholinguistics. Advances were made across a wide range of phenomena, including the identification of both printed and spoken words, the reading process, sentence comprehension, and the mental representations of texts. The influences of the digital computing revolution were felt in different ways. Some were direct, and others were indirect influences. These advances contributed to the development of psycholinguistics.

The Early 21st Century and the Grounding of Language in Action and the Brain. In the period of the early 21st century, increased attention was focusing on neuroimaging. This mainly concerned new techniques to study language and its effects on action. In its essence, the neuroimaging of language studies treated aspects of language that are represented in the same representational substrates that control our sensory-motoric interactions with the external world. It is worth noting that these techniques are considered as new advancements that widened the scope of studies involved in the field of psycholinguistics. They promise a greater understanding of the connection between language and the brain.

3. The goals and Scope of Psycholinguistics

As has been mentioned earlier, psycholinguistics explores the relationship between the human mind and language. It treats the language user as an individual rather than as a representative of a society. For Field (2003), psycholinguistics seeks to establish an understanding of the processes which underlie the system that is called language. Additionally, it aims to examine language as a product of the human mind and thus evidence of the way in

which human beings organise their thoughts and impose patterns upon their experiences.

Regarding these major goals of psycholinguistics, it is argued that the overall scopes of psycholinguistics concern answering questions such as:

- What knowledge of language is needed for individuals to use language? In precise terms, this knowledge could be tacit or explicit? Tacit knowledge answers the question “How to perform?” while explicit knowledge is about the process or mechanism that comes to interplay in the processes of language acquisition and production.
- What cognitive processes are involved in the ordinary stage of language processing?

In more elucidation of the scope of psycholinguistics, Field (2003) claims that psycholinguistics falls into three major areas: These are as follows:

3.1 Language Processing

It is precisely about what goes on when we are listening, speaking, reading, and writing. It also concerns what stages we go through when engaging in these skills and how we manage to turn a grammatical structure into a piece of information.

3.2 Language Storage and Access

These aspects concern how vocabulary is stored in our minds. It is also about how we manage to find vocabulary when we need it and forms of grammar rules to take.

3.3 Comprehension

This process looks for the ways we use to bring world knowledge to bear upon new information that is presented to us. It also attempts to comprehend how we come to construct a global meaning representation from words that we hear or read.