

Language Proses in the brain of Language Acquisition

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Abstrak

Because of a process in the brain, every individual can understand the language. that it is simple for language users to believe that language comprehension and production are two separate things. Both Processes are one of the three main areas of study for language and cognition in psycholinguistics. The goal of psycholinguistics is to develop theories that can explain how our brains process language. If you follow a set of written instructions or speak to yourself internally through your inner voice, you are almost unable to act or think without utilizing language. Like no other talent, language permeates our minds and our daily lives. Before, linguists' theorized rules served as a way for psycholinguistics to explain how we comprehend and use language (Fodor, Bever, & Garrett, 1974).

KEYWORDS :

Psycholinguistics, Production, understanding, language and the brain.

Abstrak

Karena sebuah proses di otak, setiap individu dapat memahami bahasa. bahwa mudah bagi pengguna bahasa untuk percaya bahwa pemahaman dan produksi bahasa adalah dua hal yang terpisah. Kedua Proses adalah salah satu dari tiga bidang studi utama untuk bahasa dan kognisi dalam psikolinguistik. Tujuan dari psikolinguistik adalah untuk mengembangkan teori yang dapat menjelaskan bagaimana otak kita memproses bahasa. Jika Anda mengikuti serangkaian instruksi tertulis atau berbicara kepada diri sendiri secara internal melalui suara hati Anda, Anda hampir tidak dapat bertindak atau berpikir tanpa menggunakan bahasa. Tidak seperti bakat lainnya, bahasa meresapi pikiran dan kehidupan kita sehari-hari. Sebelumnya, aturan teori linguistik berfungsi sebagai cara bagi psikolinguistik untuk menjelaskan bagaimana kita memahami dan menggunakan bahasa (Fodor, Bever, & Garrett, 1974).

KATA KUNCI :

Psikolinguistik, Produksi, pemahaman, bahasa dan otak.

INTRODUCTION

Language can be characterized as a set of symbols with widely accepted meanings that facilitates communication and helps us think more clearly. Due to the recent increase in interest in the study of communication, more psychologists are now focusing on the study of language. The ability to produce and understand language is one of our most automatic functions. The creation of single, isolated utterances is the primary goal of language production, yet they are also the most complex. An utterance is usually made up of one or more words, spoken together under a single intonational contour or personifying a single idea (e.g., Boomer, 1978; Ferreira, 1993), while comprehension requires the simultaneous integration of many different types of information, such as knowledge about alphabets or letters and their sounds, spelling, grammar, word meanings, and general world knowledge. To add, general cognitive abilities such as attention monitoring, inferencing, and memory retrieval are used in order to organize this information into a single meaningful representation.

Psycholinguistics as an interdisciplinary field has become the focus of researchers who study the interrelation between the mind and language. Psycholinguistics means the psychology of language,

which is studying the psychological and neurological factors that enable humans to acquire, use, comprehend, and produce language (“Altman”, 2001, p.1). It embodies how language and speech are acquired, produced, comprehended and lost.

Early psycholinguists described language comprehension and production in terms of the rules hypothesized by linguists (Fodor, Bever, & Garrett, 1974). The rules postulated by linguists were used by early psycholinguists to describe language production and comprehension (Fodor, Bever, & Garrett, 1974). In the area of syntax, where psycholinguists tested the psychological plausibility of various suggested language principles, there were some linkages between linguistics and psychology. Researchers realized that theories of sentence comprehension and production cannot be based solely on linguistic theories as the area of psycholinguistics grew. It was important that psycholinguistic theories take both the structure of language and the characteristics of the human mind into account. Since then, though, psycholinguistics has emerged as a field of study entirely on its own, while still partially informed by linguistics. Thus, the branch of linguistics that focuses on the psychological mechanisms at play is called psycholinguistics.

Understanding and speaking a language appear to be surprisingly simple to someone who is skilled in it. For a psycholinguist, language comprehension and production are the result of a complex interaction of different processing elements. These components include accessing the lexicon, creating a syntactic structure, encoding and decoding a language's sound patterns, and interpreting and expressing pragmatic messages that are intended. Psycholinguists try to understand what processes, methods, or procedures underlie language use and learning by examining these various components.

According to Levelt, language production is logically divided into three major steps, including deciding what to express (conceptualization), determining how to express it (formulation), and expressing it (articulation; Levelt, 1989). Comprehension can be said to be the sense that a listener feels from the speaker, takes the speaker's interpretation, puts it away in mind, cultivates it, and concludes with the suspense, whether good or bad.

For a greater knowledge of psycholinguistics, we must look at the complex interrelationships between language and the brain. There are a variety of sub-disciplines that use non-invasive approaches to examine the neurological processes of the brain in order to understand how the brain processes language. For instance, neurolinguistics has developed into a distinct science. Psycholinguistics takes into account the cognitive processes that make it possible to generate grammatical and meaningful sentences out of vocabulary and grammatical structure, as well as the processes that make it possible to understand utterances, words, texts, etc. (Miller & Emes, 1983).

The goal of this study is to provide a detailed description of the many brain structures and areas, linguistic functions, and the complex relationships between them. As the central component of the connection between language and the brain, the brain will be studied. Understanding how psycholinguists perceive the brain and how it connects to language processes is essential to comprehending the nature and dynamics of language.

In this study, a selected overview of some recent illustrative psycholinguistic studies on language generation and comprehension has also been made.

From the viewpoint of the language producer (speaker, writer), the creation of a message progresses from an underlying intention through steps of designing sentence structures and choosing words to the articulation of that intention as a sequence of sounds or characters. From the standpoint of the comprehender (listener or reader), the objective is to notice or recognize input elements like letters and sounds and figure out the relationships between these words in sentence structures to arrive at a message-level interpretation.

2. Literature Review

The extant research on psycholinguistics, language creation, and language comprehension is discussed in this section. It also examines the interpretation of the relationship between language and the psyche by psycholinguists.

2.1 Psycholinguistics

Chaer (2003: 6) argues that psycholinguistics explains the nature of the structure of language, and how that structure is obtained, used when speaking, and when understanding sentences in the speech. The core focus of psycholinguistics is the investigation of language production, processing, and acquisition through the application of psychological, scientific, and experimental methodologies. A scientific study of the materials and mental processes used in language use is known as psycholinguistics.

Psycholinguistics can alternatively be defined as the theoretical and empirical study of the mind. The area of psycholinguistics has grown to include a diverse variety of themes and disciplines ever since the linguistic revolution of the mid-1960s. Beginning in the early to mid 1960s, psycholinguistics developed along with the rest of psychology. The movement known as the Chomskian revolution (e.g., Chomsky, 1957, 1965, and 1968) emphasized language's structure and how it adheres to rules and regulations much like, for example, chemical structures.

The response to Chomsky has helped to define and advance the field. In 1959, Chomsky was very critical of Skinner's book and argued that language arises because people have an inbuilt ability to create syntactic sentences.

This review began what has been dubbed 'the cognitive revolution in psychology. According to Anderson, the review of Chomsky still holds that the human ability to use syntax is qualitatively different from any sort of animal communication; this ability may have resulted from an adaptation of skills evolved for other purposes (Anderson, 1998). Language users frequently assume that language understanding and production are two uncomplicated phenomena. These two processes constitute one of the three basic areas of inquiry in the study of language and the mind according to psycholinguistics.

It is customary for them to examine language generation and understanding as two distinct sets of operations. Through the processes of word choice, syntactic planning, and phonological planning, the language production system is entrusted with converting thoughts and wishes into a motor plan for action.

Different duties are placed on the comprehension system. It must accept an aural or visual signal as input, recognize the words in that signal, and then give the input a structure and meaning.

The concept that production and understanding are components of the same language system is supported by research, nonetheless. The fact that language users face different difficulties in both understanding and production is one explanation for this. Take language comprehension as an example, which entails deciphering a spoken or printed message to determine its meaning.

2.2 Language production

According to Levelt (1989), language production is logically divided into three major steps:

- 1) deciding what to express (conceptualization),
- 2) determining how to express it (formulation), and
- 3) expressing it (articulation).

Albeit; achieving conversational goals, structuring of narratives, and modulating the ebb and flow of dialogue are inherently important to understanding how people speak (Clark, 1996), psycholinguistics study of language production has primarily focused on the formulation of single, isolated utterances. An utterance consists of one or more words, spoken together under a single intonational contour or expressing a single idea (e.g., Boomer, 1978; Ferreira, 1993).

According to Griffin and Ferreira (2006), there are three sorts of mental processes;

Conceptualizing Starting with some notion or abstract idea of what we want to say (about the world, the current situation)

Formulating Putting together the elements of language to express the idea, drawing on knowledge of our language, including grammar and the lexicon.

Articulating; speaking this utterance, involving our speech material. The conceptualization stage might pompously perceive itself as the primary and ultimate composer of communication. The formulation stage might take pride in it being a conductor and orchestrator of speech sounds. The articulation stage might regard itself as the instruments of the music of our voices.

Language production

While Ferreira and Englehart's view on syntax describes processes that allow speakers to produce their words in grammatical utterances, this paper focuses instead on processing the words themselves. Unarguably, theories of multi-word utterance or sentence production fundamentally sum up to an account of how sentences obtain their word orders and structures, how the dependencies between words are accommodated (e.g., subject–verb agreement), and a functionally independent account of how individual content words are generated (e.g., Chang, Dell, Bock, & Griffin, 2000; Ferreira, 2000; Kempen & Hoenkamp, 1987).

The study of language production has primarily focused on the formulation of single, isolated utterances. An utterance consists of one or more words, spoken together under a single intonational contour or expressing a single idea (e.g., Boomer, 1978; Ferreira, 1993).

The first topic is how to generate words. The simplest meaningful utterance consists of a single word. Generating a word begins with specifying its semantic and pragmatic properties. That is, a speaker decides upon an intention or some content to express (e.g., the desired outcome or an observation) and encodes the situational constraints on how the content may be expressed (e.g.,

polite or informal speech, monolingual or mixing languages; see Levelt, 1989). This process, termed conceptualization or message planning, is traditionally considered prelinguistic and language-neutral (Garrett, 1975; Levelt, 1989). However, speakers may include different information in their messages when preparing to speak different languages (see Slobin, 1996, on thinking for speaking).

The formulation comes after generating words. It is divided into word selection and sound processing stages (Fromkin, 1971; Garrett, 1975). Deciding which word to use mostly include selecting a word in one's vocabulary based on it corresponding to semantic and pragmatic specifications. The significant word representation has often termed a lemma (Kempen & Huijbers, 1983), lexical entry, lexical representation, or clearly a word, and it targets the presence of a word in a speaker's vocabulary that is capable of expressing particular semantic and pragmatic content within a particular syntactic context. In contradiction, sound processing involves constructing the phonological form of a selected word by retrieving its individual sounds and organizing them into stressed and unstressed syllables (phonological encoding) and then specifying the motor programs to realize those syllables (phonetic encoding). The last process is articulation, which is the discharge of motor programs to pronounce the sounds of a word.

As a matter of interest, recent models of word production agree on the basic facts about how the system works to a great extent, with very least minor variations in explanatory mechanisms. When models differ, the tendency is concerned with the different stages of production, such as word selection or phonological encoding, and different aspects of these stages, such as speed of processing or how processing may go awry to yield speech errors. This means that of the properties of production described below, most are accounted for (at least to some level of detail) by most models of production.

2.3 Language comprehension

During the last half of the 20th century, psycholinguists focused on speech perception stood fairly distinct from the research on audition and other modalities of high-level perception such as vision. Current research, however, is beginning to bridge this traditional divide. Fundamental principles that govern all perception, some known for more than a century, are most likely shaping our comprehension of perception of speech in addition to other familiar sounds.

Researchers of speech perception traditionally attempted to investigate how listeners perceive the spoken acoustic signal as a sequence of consonants and vowels, collectively referred to as phonetic segments or units. When speech sounds are described in this way, brackets are used to surround phonetic symbols such as [j] (the 'y' sound in 'yes') and [o] (as in 'oh'). Contrary to this, phonemes are more abstract linguistic units that roughly correspond to letters in written language and are transcribed surrounded by slashes (/j/ and /o/.) Morphemes are the smallest meaningful units of language, roughly corresponding to words (e.g., 'cat', 'taste', as well as 'dis'- and - 'ful') with phonemes being the smallest units that can change the meaning of a morpheme (e.g., 'yo' versus 'go') (Trubetskoy, 1969). Within this design, the experimental study of speech perception classically has corresponded more or less to the lowest division of labor generally agreed upon by linguists and psycholinguists.

To the extent that speech perception researchers' task is to deliver minimal units to those who study language, an important caveat must be applied to this inherited division of labour. Their experimental evidence demonstrating that either phonetic segments or phonemes are real outside of linguistic theory is unclear (e.g., Lotto, 2000), and the appeal of phonetic segments and phonemes may arise principally from experience with alphabetic writing systems (e.g., Morais, Bertelson, Cary, & Alegria, 1986; Morais, Cary, Alegria, & Bertelson, 1979; Port, in press). A person should not be sanguine about whether speech perception is about recognizing consonants and vowels per se. Listeners presumably do not extract phonemes preliminary to recognizing words. There is no evidence of an area in the brain where phonemes reside independently of the words they are made up of.

Nonetheless, conceptualizing speech perception as a process by which phonemes are retrieved from acoustic signals is tradition. Here, research in speech perception often focuses on segmentation problems and lack of invariance. The segmentation problem refers to the fact that, if phonetic units exist, they are not like typed letters on a page. Rather, they overlap broadly in time, much like cursive handwriting. The problem of lack of invariance (or variability) is related to the segmentation problem. Since speech sounds are produced such that its neighbors dramatically colour articulations for one consonant or vowel overlaps with the production of preceding ones, and contrariwise, every consonant and vowel produced in fluent connected speech. Some of the most obstreperous problems in the study of speech perception are as a result of adopting discrete phonetic units as a level of analysis, a level that is not discrete and may not be real. In connected speech, the acoustic realization of the beginning and end

of one word also overlaps with sounds of preceding and following words, so the problems of invariance and segmentation are not restricted to phonetic units.

2.4 Comprehension of sounds

Phoneme restoration effect refers to a device by psycholinguist to investigate comprehension; e.g. subjects hear 'ail' in a paragraph describing how water is gathered and believe that they heard the word 'pail'. People seek contextual consistency and plausibility, even if it comes to adding a sound or inventing a word that was not actually spoken.

Firstly, people do not necessarily hear each of the words spoken to them. Comprehension is not the passive recording of whatever is heard or seen.

Secondly, comprehension is strongly influenced by even the slightest changes in discourse that the listener is attending to.

Finally, comprehension is not a simple item-by-item analysis of words in a linear sequence.

Voice Onset Timing (VOT) refers to the brief burst of air that precedes all stop consonants' articulation, which provides phonetic information listeners use to distinguish between sounds like /k/ and /g/. The acquisition of this phonetic ability cannot be completely explained only by exposure to or instruction in the language up to now. The ability to focus on VOT differences is innate. We categorize these minute phonetic differences in a non-continual binary fashion.

Categorical perception refers to listening to a stream of speech and automatically dividing this continuous flow of sound into the phonemes of the listener's native language, which is seemingly unique to human beings and appears to qualify as one aspect of UG, the genetic propensity for comprehending and producing language.

Categorical perception is the most well-known pattern of perceptual performance with speech sounds. Three common features define categorical perception: sharp labeling (identification) function, discontinuous discrimination performance (near-perfect across identification boundary and near-chance to either side), and the ability to predict discrimination performance purely based on labelling data (Wood, 1976). All of these three defining markers or features of categorical perception arise naturally from the principle of discovering (and continuously absorbing) predictability in the interest of maximizing sensitivity to change.

2.5 Language and the human brain

Psycholinguistics is an interdisciplinary field and recently, researchers who study the interrelation between the mind and language are interested. It studies how language and speech are acquired, produced, comprehended and lost. Whereas language acquisition and language dissolution happen diachronically or overtime, language production and language comprehension happen at a certain point in time or simultaneously. In other words, psycholinguistics means the psychology of language studies and the psychological and neurological factors that enable humans to acquire, use, comprehend and produce language ("Altman", 2001, p.1). This is mainly due to a lack of cohesive data on how the human brain functions. Modern research makes use of natural science concerned with the study of life and living organism (biology), the scientific study of how information concerning faculties such as perception (neuroscience), language, reasoning, and emotion is represented and transformed in a human or another animal nervous system or machinery, linguistics and a branch of applied mathematics and electrical engineering involving the quantification of information (information theory).

Language processing is an inherent characteristic of humans. The knowledge about its neurobiological basis has been improved considerably over the past decades. The study of brains has led researchers to identify and understand that different regions in the brain's left and right hemisphere support particular language functions. Networks and connections involving the temporal cortex and the inferior frontal cortex with clear left lateralization were shown to support syntactic processes, whereas lesslateralized temporo-frontal networks sub-serve semantic processes. These networks have been verified both by functional as well as by structural connectivity data. Electrophysiological measures show that within these networks, the syntactic processes of local structure building precede grammatical and semantic relations in a sentence. Suprasegmental prosodic information obviously available in the acoustic language input is processed predominantly in a temporo-frontal network in the right hemisphere associated with a clear electrophysiological marker. Language as a system is controlled by the brain that is different from but closely linked to general cognition. There are two hemispheres in the human brain. The left hemisphere is the "logical brain" and is involved in language and analysis and the right hemisphere is said to be the "creative brain," involved in daydreaming and imagination. The left hemisphere controls the right side of the body, whereas the right hemisphere controls the left side. The earliest research on speech and language centers of the brain dates back to the early nineteenth century. Doctors asserted that

patients who had brain-injuries with damages to the left hemisphere tend to lose power of speech and language abilities, while those with injuries to the right hemisphere did not lose this ability.

Language and the brain are complexly related and in order to gain a deeper understanding of Psycholinguistics, we must examine this relationship. To study how the brain processes language, there are a number of sub-disciplines with non-invasive techniques for studying the neurological workings of the brain. For instance, neurolinguistics has become a field in its own right. Psycholinguistics focus on the cognitive processes that help generate grammatical and meaningful sentences out of vocabulary and grammatical structure and the processes that make it possible to understand utterances, words, texts, etc. (Miller & Emas, 1983).

This is vital to modern linguistics; human language is a natural object (our species)-specific ability to acquire a language, our implicit knowledge of the immense complexity of language, and our competence to use language in open, fitting, and inexhaustible ways are attributed to a property of the natural world, our brain. The brain is composed of neurons, nerve cells that are the basic information processing units of the nervous system.

Language is a function of the human brain structure, and several brain regions have been identified with linguistic capabilities. Due mainly to a lack of cohesive data on how the human brain functions, modern research uses biology, neuroscience, language, reasoning, and emotion to be represented and transformed in a human or another animal nervous system or machinery, linguistics, and information theory. Psycholinguists particularly is concerned with the theories behind language acquisition and how the mind aids in a person's ability to gain language. During the 1950's, a famous linguist, Noam Chomsky developed a theory known as Nativism. This theory substantiates the fact that children will never gain the resources needed for processing language just by the things they heard, but more by how the language acquisition device works (Ambridge & Lieven, 2011). This theory advocated that all people are born with a universal grammar that grants them the ability to acquire language. Psycholinguistics attempts to carve out a model that represents how language is processed in the brain. It is nearly hopeless to do or think about anything without using language. Whether this subsumes an internal talk-through by a voice inside one's head or following a set of written instructions, language permeates our brains and lives like non-other skills. For what looks like more than a century, it's been accepted that our capacity to use language is usually located in the left hemisphere of the brain, specifically in two areas: Broca's area (associated with speech production and articulation) and Wernicke's area (associated with comprehension). Hence any harm to either of these, caused by a person stroking out or blunt force trauma or another injury, can lead to language and speech problems or aphasia; a language deficit caused by damage to the brain, often be a stroke or an accident.

METHODS

This chapter is concerned with the research design, materials and concludes with descriptive analyses of the major finding from the secondary data reviewed in the paper. It is worth noting that the linguistic approaches adopted for this study do not involve any sort of calculation or enumeration. It takes the form of a descriptive qualitative approach or a desktop study where research work mainly capitalizes on preexisting literature in the research domain.

FINDINGS AND DISCUSSION

Psycholinguistics is the discipline that studies the linguistic performance of speech production and comprehension. Early psycholinguists described our comprehension and production of language in terms of

the rules that were postulated by linguists (Fodor, Bever, & Garrett, 1974). The relationship between psychology and linguistics was particularly strong in syntax, where psycholinguists investigated the psychological validity of various hypothesized linguistic rules. Psycholinguistic theories should take into account both the structure of language and the characteristics of the human brain as psycholinguistics evolved into a comprehensive research field. It became clear that theories of sentence comprehension and production cannot be solely based on linguistic theories. Psycholinguistics has subsequently developed into a separate field of study, informed by but not entirely dependent on linguistics, as was previously stated in this essay.

Language and the human brain have a symmetrical relationship. The shape of the human brain affects language, and several parts of the brain have been linked to linguistic ability. Modern study employs biology, neurology, language, logic, and emotion to be represented and altered in a human or other animal nervous system or machinery, linguistics, and information theory due to the absence of comprehensive data on how the human brain functions. The theories underlying language learning and how the mind supports language acquisition are of particular interest to psycholinguists.

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In premodern perspectives, language production and understanding are thought to be processed in independent "streams." They adopt a competing viewpoint known as the "cognitive sandwich," despite the communication requirements and a wealth of evidence showing the close connection between production and comprehension.

Production processes must, of course, be used when individuals produce language, and comprehension processes must be used when they comprehend language. However, production processes must also be used during, for example, silent naming, when no utterance is produced. Silent naming, therefore, involves some production processes (e.g., those associated with aspects of formulation such as name retrieval) but not others (e.g., those associated with articulation; see Levelt 1989). Similar to this, comprehension processes must take place when a participant recalls the phonology of a prime word that has been hidden but not its meanings (e.g., Van den Bussche et al. 2009). This means that it is also conceivable for production processes to be employed during comprehension and comprehension processes to be used during production.

A combined or distinct view of language use and comprehension

Production and understanding are currently treated as being very different from one another in descriptions of language processing. The structure of current handbooks and textbooks that deal with the psychology of language is clearly reflected by the division (e.g., Gaskell 2007; Harley 2008). Instead of simply reflecting organizational convenience, this framework approaches understanding and production as two distinct research concerns. For instance, researchers believe that the mechanisms involved in developing a scene description may be significantly different from the ones involved in comprehending a spoken or written sentence, such as resolving ambiguity. The "traditional" Lichtheim-Broca-Wernicke paradigm in neurolinguistics implies separate anatomical routes for production and understanding, primarily based on correlations between deficits and lesions.

CONCLUSION AND SUGGESTION

Language users frequently assume that language creation and language comprehension are two discrete entities. These two procedures constitute one of the three main areas of study of language and the mind in psycholinguistics. Early explanations of language assume several "streams" of processing in the brain for producing and understanding language. They promote the "cognitive sandwich," a theory that conflicts with communication requirements and a body of evidence that shows how closely related production and comprehension are.

The ability to process language is unique to humans, and current theories of language processing approach production and comprehension as two quite different processes. The division is evident in the organization of the contemporary handbooks and textbooks in question.

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