

## CHAPTER II

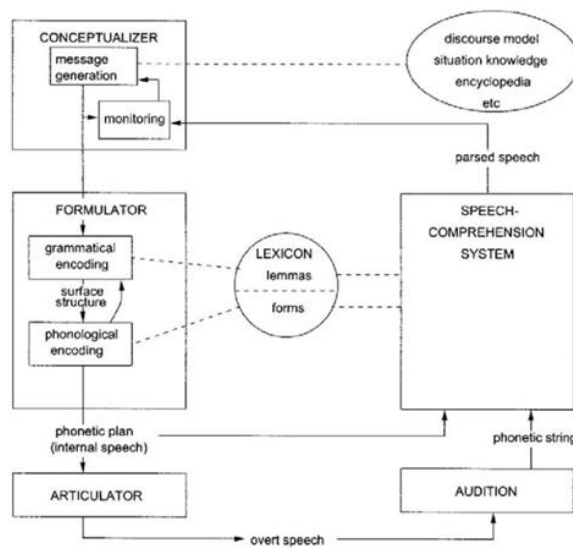
### REVIEW OF RELATED LITERATURE

#### B.1 Theoretical Framework

In this study, the researcher needs a micro-linguistic approach namely syntax and semantic to analyze the structure and meaning of the speech of people with Broca Aphasia in English and Javanese. In this research, the researcher also applies the Argument Structure Complexity Hypothesis (ASCH) to explain how the complexity of argument structure in language can affect an individual's ability to convey information effectively. This research also relates to grammatical encoding which is a mental process that occurs in language production where semantic information that has been encoded is converted into the appropriate linguistic form (Nakagawa et al., 2022). Furthermore, (Nakagawa et al., 2022) states that grammatical encoding serves to organize the elements of sentence elements according to the grammatical rules in a particular language.

##### B.1.1 Grammatical Encoding

There are five key elements that make up the language process: the sound comprehension system, the articulator, the formulator, the auditory system, and the conceptualizer (Levelt, 1989). In (Anjarningsih, 2023) (Levelt, 1989) presents a diagram depicting the language production process:



**Figure 1.** Levelt's (1989) model of language processing

The figure above illustrates how language generation begins as soon as a conceptual message enters the system. This means that messages entering the manufacturing system are translated before the formulator uses them as raw materials. Furthermore, two subcomponents known as phonological and grammatical encoding were included by (Levelt, 1989). Grammatical encoding involves the encoder using lexical units, such as syntactic and semantic units, while phonological information is accessed separately.

From these two subcomponents, phonological encoding produces a phonological design, which includes stress and intonation patterns, while grammatical encoding enables a series of lemmas. The process is then carried out by the formulator. The part that monitors speech production and errors is the speech understanding system. When a speaker modifies their speech process, they need to attempt to adjust the desired mode of production and related

mechanisms. Previous research conducted by (Rossi Eleonora, 2008) showed that impairments in grammatical encoding processes hinder verb production by Italian speakers diagnosed with Broca's Aphasia (AB). Thus, this claim validates previous research findings by (Bastiaanse & Van Zonneveld, 2004). The grammatical encoder also carries out the grammatical processes needed to create derived sentences, according to (Bastiaanse & Van Zonneveld, 2004). The application of grammatical rules and processes (in terms of morphology and syntax) will be affected if there is interference with the grammatical encoder. Generating verbs may be more challenging because it requires more sophisticated processing of information about subcategories, argument structure, and thematic roles. Grammatical encoders basically build sentence structures depending on the speaker's intentions and the lexical information of the words, as further discussed by (Rossi Eleonora, 2008). Because of their ability to convey information about argument structure, subcategorization framework, and thematic role, verbs are considered more sophisticated lexical items than nouns. These three elements are then used by the grammatical encoder to create sentence structure.

### **B.1.2 Argument Structure Complexity Hypothesis**

Argument Structure Complexity Hypothesis (ASCH) is a theory that addresses the relationship between the complexity of a verb argument structure and the difficulty in processing language. The theory focuses on how verbs with more complex argument structure tend to be more difficult to understand and produce than verbs with simpler argument structures. According to this theory, the

number and type of arguments produced by a verb determine the cognitive load required to process it. For example “give” is transitive verbs that have three arguments (subject, direct object, and indirect object) are more complex than intransitive verbs like “run” that have only one argument (subject) (Van Valin, 2001).

In the context of language production, the Argument Structure Complexity Hypothesis also shows that speakers tend to be slower or make more frequent errors when using verbs with complex argument structures. This is due to a greater working memory load in integrating syntactic and semantic information. For example, causative verbs such as caused that require the representation of causal relationships between multiple arguments are more likely to result in production errors than verbs that require only one argument (Thompson 2003, as cited in Tomasello 2014). Thus, ASCH suggests that the more complex the argument structure of a verb, the greater the challenge for language users to process, understand, and produce it.

Verb production is directly related to the Argument Structure Complexity Hypothesis (ASCH) theory because this theory explains that the complexity of a verb argument structure affects speaker’s ability to produce verbs appropriately and efficiently. In language production, speakers must integrate semantic and syntactic information to select appropriate verbs and structure relevant arguments based on grammatical rules. The more complex the argument structure of a verb,

the greater the cognitive load that speakers have to handle. ASCH highlights that verbs that have multiple arguments (such as transitive or ditransitive) require more cognitive processing than verbs with simple argument structures (such as intransitive).

The Argument Structure Complexity Hypothesis (ASCH) theory can be used to explain the difficulties experienced by people with Broca Aphasia in producing speech, especially in sentence construction with verbs that have complex argument structures. ASCH states that the more complex argument structure of a verb (for example, the number and type of arguments associated with the verb), the greater the cognitive and linguistic load required to process and produce the verb (Van Valin, 2001). In people with Broca Aphasia, who often have impaired syntax (agrammatism), difficulties in producing speech can be exacerbated by the need to integrate complex syntactic and semantic information when using verbs with multiple arguments.

ASCH based research can provide new insight into verb processing in people with Broca Aphasia. For example, researchers can compare their ability to produce sentences with intransitive, transitive and ditransitive verbs to see how argument structure complexity affects their linguistic performance. In addition, ASCH theory can also be used to develop more effective language therapy methods such as starting exercises with simple (intransitive) verbs before gradually increasing the complexity to transitive and ditransitive verbs. This approach can

help sufferers overcome speech production difficulties gradually, by reducing the cognitive load associated with complex argument structures (Van Valin, 2001).

### **B.1.3 Syntax**

The syntax is a branch of linguistics that investigates word units and other units above words, relationships with one and another, and arrangement so that they become speech units. It emphasizes the importance of the relationship between elements in the sentence (Chaer, 2015). Furthermore, syntax is a part of linguistics that discusses the in and out of discourse, sentence, clauses and phrase. This shows that syntax is not only limited to sentences but also includes broader structure in language.

Alwi (2003) encourages the use of syntactic analysis to understand how words in sentences function and interact with each other. This includes looking at the relationship between elements in a sentence and how sentence structure can affect meaning. This syntax codification provides a systematic framework for understanding and analyzing sentence structure, as well as contributing to the broader development of linguistics. Codification of six basic sentence patterns based on (Hasan Alwi, 2003) taxonomy to effectively describe basic phrase patterns in speakers' speech. Patterns 1 (Subject-Predicate), 2 (Subject-Predicate-Object), 3 (Subject-Predicate-Complement), 4 (Subject-Predicate-Adverb), 5 (Predicate-Complementary Object), and 6 (Subject-Predicate-Object-Adverb) is a category. Pattern codes 7, 8, and so on are used to identify patterns in the data that do not fit into any category. In terms of basic Indonesian sentence patterns,

Sneddon et al. (2010) explains that the elements removed from these sentences include subjects, nouns referring to non-human entities, words other than the subject, doubles, possessive pronouns, and words that answer questions from the interlocutor.

#### **B.1.4 Semantics**

According to (W.W.R., 2018) in his book entitled *Kamus Linguistic* fourth edition, the way sentence components interact also has an impact on semantic function. Predicates in Indonesian can be inhabited by a variety of word categories, the verb category being the most common category. Because it needs an explanation of how verbs operate as predicates and how arguments including verbs contribute to the formation of speech, semantic function is another crucial component that has to be explored. Depending on their individual semantic responsibilities, one or more arguments may actually come after the verb predicate in a preposition. (W.W.R., 2018) semantic theory emphasizes the importance of understanding the meaning of an utterance through the analysis of language structure and the relationship between linguistic elements. Here are some of the main points of this theory that are relevant to uncovering the meaning of utterances:

1. Language structure and meaning

Widya (2018) explains that the meaning of an utterance is not only determine by lexical meaning but also by structural meaning.

## 2. Meaning components

The meaning of utterances can be divided into several components, namely:

- a) Denotative meaning: meaning that is based on a straightforward reference to something outside the language or that is based on certain conventions.
- b) Extensional meaning: meaning that includes all the characteristic of an object or concept.
- c) Grammatical meaning: the relationship between language elements in larger units such as the relationship between words and other words in phrase or clause.

## 3. Contextual interpretation

Widya (2018) also emphasizes the importance of context in interpreting the meaning of utterances. This context includes the situation, nonverbal cues, and socio-cultural context that influence the interpretation of meaning.

## 4. Relation of symbol and referent

Widya (2018) also underlines the relationship between language symbols (words/concept) and their referents (associated object/concept). (W.W.R., 2018) uses triangle model of meaning involving form, concept and referent to explain how meaning is formed and interpreted.

## 5. Types of meaning

In addition, Widya (2018) also identifies additional types of meaning such as:

- a) Affective meaning: meaning that involves the feelings and attitudes of the speaker.
- b) Reflexive meaning: meaning that is connected to other associated meanings.
- c) Colloquial meaning: meaning that arises due to certain words having a pair.

### **B.1.5 Verb Structure**

Verb is one that function to express action, state or process. In Indonesian, verbs often act as predicates in sentences that show the activity of the subject. Verbs can be divided into several types including material verbs, mental verbs, and relational verbs. Each type of verbs has different characteristic and function in the sentence. In the other context, verbs are differentiated depending on the presence of an object in the sentence, namely transitive verbs, intransitive verbs and ditransitive verbs (Van Valin, 2001).

#### a. Transitive verb

Transitive verb is verb that requires an object to make the meaning complete. This means that the action expressed by a transitive verb must have an object or recipient of the action. In sentence, the object usually follows the transitive verb.

b. Intransitive verb

Intransitive verb is verb that do not require an object to convey the meaning. This verb can stand on their own without the addition of an object, because the action or state they express is clear enough.

- c. Ditransitive verbs are verbs that require two object to complete them in a sentence, a direct object and an indirect object. Usually, the direct object receives the action of verb, while the indirect object is the beneficiary of the action.

Verbs are central elements in sentences and play a key role in grammatical encoding. In research by (thompson, 2003) revealed that Aphasia participant definite preference for verbs with fewer arguments in their utterances. Additionally, (thompson, 2003) included the following findings related to his theory:

1. Verbs argument structure requires greater complexity are more difficult for people with agrammatic Aphasia to produce.
2. Complexity includes the number of arguments and the type of argument structure information contained in the lexical entry of words (verbs with a greater number of arguments or with an argument structure that triggers movement operations that make it more complex.

Research on the traits and issue of verb production in the speech of speakers with Broca's Aphasia has been conducted in several languages, including

Spanish (Centeno & Obier,2001), Italian (Rossi & Bastiaanse,2008), Russian (Dragoy & Bastiaanse,2010), Turkish (Arslan,2016), Indonesian (Anjaningsih,2023). This research is hopefully going to provide comprehensive information regarding the characteristic of agrammatism in agrammatic English speakers which observe through verbal use in natural speech. Previous research used direct observation with participants divide into two groups to collect data. Individuals with grammatical disorder in one group while individual with non-brain damage in one group. The data in this study consists of videos of individuals with Broca's Aphasia speaking in English (taken from YouTube) and also individuals with Broca Aphasia speaking in Javanese (taken from direct observation) for comparison. The researcher seeks to examine the process of words production especially verbs and how this relates to grammatical encoding.