CHAPTER I

INTRODUCTION

1.1 Background of the Study

Constructing and producing sentences is a fundamental aspect of human communication. The sentences that a speaker produces reflect the combined influences of the speakers' linguistic knowledge and the speaker's solution to the task of accessing, organizing, expressing that knowledge within the rapid time frame of speaking. It is about 2,5 to 5 words/second (Levelt, 1989). But the process of organizing and producing the speech is really mistery happened in human's brain. The way of accessing and using the information which consist of some lexical categories (e.g nouns and verbs) in real time as people are trying to understand utterances is one case that is really difficult to be understood.

All human languages distinguish between lexical categories of words. At minimum, each language differentiates between nouns (objects) and verbs (predicates) (Evans, 2000). These lexical of knowledge govern the organization of language in the brain. The common question that usually arise is whether the words from different lexical categories (e.g nouns and verbs) represented in separated neural networks or shared network.

Past research with English has shown that verbs are represented in the left prefrontal cortex, whereas nouns are stored in the posterior brain systems encompassing temporal-occipital regions (Caramazza & Hillis, 1991). This conclusion is supported by both reports from patients of selective dysfunction of word classes (Corina, Gibson,

Martin, Poliakov, Brinkley and Ojemann 2005) as well as by neuroimaging studies conducted in normal adults (Shapiro, Moo, & Caramazza, 2006).

Language scientists use two chief methods to investigate the relationship between language-processing ability and the brain. They are neurophysiological and brain-imaging methods like ERP, magnetoencepalography (MEG), and fMRI have provided important insights into how different parts of the brain work together to support language production and comprehension. The other main way to investigate brain–language relationships is to look at what happens to language processing abilities when the brain is damaged or disabled. (Traxler, 2012:479). To see what happened to this case, it is better to see the neural underpinning of the people. It is aimed to know which parts of the brain participate in which language production and comprehension processes.

Traxler (2012:479) argued that the brain region to learn something about how the brain supports language is called by cerebral hemispheres. One of the hemispheric is the left hemisphere which plays a dominant role in speech and language comprehension in the vast majority of right-handers (~96%) and a substantial majority of left-handers (~70%) (~ means similarity). So, if the left hemisphere of the people is damaged, they also have trouble understanding and producing language. It is also supported by patients who have taken the WADA test. In the WADA test, an anesthetic, usually sodium amobarbitol, is injected into an artery that leads either to the left hemisphere or the right hemisphere. In effect, one half of the brain is put to sleep, while the other half functions as it normally does, except that it does not receive normal input from the other hemisphere. While one half of the brain is anesthetized, patients are asked to name familiar objects. For most people, anesthetizing the left hemisphere causes them to

become mute. Traxler (2012:481) concluded that if part of the brain is damaged, and a person subsequently is unable to do some task (like speak or understand sentences), then the part of the brain that was damaged must have participated in the performance of that task. If a group of people all have the same symptoms, and all have brain damage in the same place, then that part of the brain is necessary for the successful performance of the task.

A number of studies of the aphasic patients has been conducted for several years especially when they were producing the language. Early neuropsychological studies found that patients with lesions in the left temporal lobe and associates areas exhibit processing difficulties with nouns, whereas patients with injures in the left frontal lobe are significantly impaired in processing verbs (Caramazza and Hills, 1991). Shapiro and Caramazza (2009) assumed brain damage can selectively affect the ability to produce or comprehend nouns or verbs.

Aphasia is one of language impairment. Papathanasiou, Coppens and Potagas, (2013) introduced the definition of aphasia from a neurological perspective. He stated that aphasia is an acquired language impairment resulting from a focal brain lesion in the absence of other cognitive, motor, or sensory impairments. This language impairment can be present in all language components (phonology, morphology, syntax, semantics, pragmatics), across all modalities (speaking, reading, writing, signing), and in the output (expression) and input (comprehension) modes. It is important to realize that learning disabilities can affect an individual's life beyond academics and can impact relationships with family, friends and in the workplace.

The production of lexical words in agrammatic aphasics (Broca Aphasia) have also been widely investigated. According to several studies, in retrieving word, verb

production are found to be challenging and difficult for Broca's aphasic speakers (Kambanaros, 2010). It can be seen from the phonological component., morpological component and syntactical component. From phonological component, Kusumawati (2010) conducted *Constraint Induced Aphasia Therapy* to Broca Aphasia which suffered stroke. She found that Broca aphasia patients are difficult to produce these vowel phonemes; / a /, / ɔ /, / o /, / I /, and /ə /. And for consonant phonemes; / p /, / b /, / m /, / t /, / d /, / s /, / n /, / z /, / r /, / l /, / kh /, / g /, / k /, / c / and / j /. From morphology component, Kambanaros (2010) stated that Broca's aphasic speech is characterized by fewer lexical verbs that lack inflections. From syntactical component, Adam (2014) stated that the agrammatic patients tended to produce nouns more than verbs. He added that one of the reasons for this difficulty is that verbs carry more syntactic information than nouns, thus increasing the difficulty of retrieving them from the lexicon. Another reason is both nouns and verbs imply information about semantic features but only verbs impart information about grammatical and thematic information. To conclude, Broca's aphasics demonstrated more problems in producing verbs than nouns. In contrast with Bahasa Indonesia, Anjarningsih, Soebadi, Gofir and Bastiaanse (2009) stated that the verbs of Bahasa Indonesia are not inflected for tense, agreement, and person. Aspectual morphemes also exist in Bahasa Indonesia, but they are for describing the inner structure of actions or events, and only refer to time frames incidentally. So from all the previous research, it can be predicted that verb production may not found to be challenging and difficult for Broca's aphasic of Indonesia speaker.

However, most studiest have examined noun and verb processing within a single language, making comparisons across language problematic in either healthy brain or damaged brain. But most of the studies investigated about semantics, active and passive

sentence, grammatical and syntactical processing. In contrast, the representation of knowledge about lexical words of the damage brain people is viewed rarely.

For the preliminary data, the researcher took the data from one of Aphasia patients who lives in Jl. Menteng VII Gg. Makmur, initially R. The woman who was born on January 1st, 1972 is suffering stroke and she is categorized as Broca Aphasia patients based on the information which was given by neurologist and the medical record of RSUD. Pirngadi Medan, North Sumatera. The data can be seen from the transcript as following:

Preliminary Data

R : *Ambilkan dulu tes itu?*
(Could you like to take a drink, please ?)
Haus kali ku rasa... (I am very thirsty...)
Angkat dulu aku gak ke atas...(Lift me up, please)

HS : *Naikkan sikit tangan kirimu, mak sindi.*
(Lift your left hand, Mak Sindi.)

R : *Ouuch,,susah kali kurasapun!* (Ouch,,,It's very difficult!)
Mana tadi minum ku tadi. (Where is my drink?)

HS : *Nah... (*Here it is.)

R : *Ada tadi..*
Tadi dikasi oang tu ***bat*** *ku tadi?* (Is there any medicine given by them?)

HS : *Ini dia. Koas tadi itu yang ngasinya.*
(Here it is. The candidate doctor gave this.)

R : *Kapan katanya discan?* (When will I be scanned?)

HS : *Dua hari lagi, hari kamis. Disuruh orang tu tadi aku antar berkas ke bawah.*
(Next two days, On Thursday. They asked me to take this papers downstair.)

R : ***be...as*** *apa?* (What papers?)

HS : *Berkas BPJS itu..* (The papers of BPJS).

R : *Ooo..*
Bapak si Tama jadi datang lagi ***rang*** *tu?* ***Kusu...uh*** *bawakan dulu jus timun..*
dokter semalam tu..
dibilangnya itu..
(Will Tama's father come today? I asked him to bring me cucumber juice which the doctor asked to drink yesterday).
dibawanya jus sisak.. (But he brought soursop juice.)

dah tau ***sa.a... asam*** *tu..* (It was really acid.)

HS *: Orang dipikirnya biasanya kau suka jus sirsak.*
(They thought you like it very much.)

R *: Dimana dibuatnya Pak sindi?* ***di maj.. eja*** *itu kan?*
(Where did he put it, Pak Sindi? In that table, isn't it?)

HS *:Ya, takut dia tadi tumpah kalo dimasukkan ke gelas dulu. Ditaroknya aja disitu.*
(Yes, he didn't want it would fell down if it was poured to the glass. So, he put it there.)

R *: Ya..lah..* (Yes, that's right.)

Pral.. rat *kalipun mataku ah..* (I am really sleepy).

Pas ***ma*** *pejam tadi, dah*

Dah datang aja ***ster*** *tadi*. (When I started to close my eyes, the nurse came).

From the transcript above, it can be seen that the patients produced some lexical words impairly. For example: ***bat, be..as, rang****,* ***Kusu...uh, sa.a... asam, ddi maj.. eja, rat, ma,*** *dan* ***ster.*** From the preliminary data which is provided above, the patient produced all kinds lexical words. Eventhough some lexical words are produced impairly. The patient mostly produced verb in her speech but she produced more the impaired lexical words on nouns than on verbs. The preliminary data shows that the patient was very difficult to produce those lexical words. Those are very effortful for them. The patients also produce the unknown words. The researcher could not predict the meaning of the word.

Based on the preliminary data above, it is potentially interested to conduct this study in order to see whether all the kinds of lexical words that are produced by Broca Aphasia patients are impaired. It can also be expected to explain the process of producing lexical words of Broca Aphasia patienst and to describe the reason of producing lexical words of Broca Aphasia patients.

1.2 Problems of the Study

In relation to the background of the study above, the problems of the study are formulated by the following:

1. What kinds of lexical words that are produced in the Broca Aphasia patients' speech production?
2. How do the Broca aphasia patients produce such lexical words?
3. Why do the Broca aphasia patients produce lexical words the way they do?

1.3 The Objectives of the Study

In the relation to the problems, the main objectives of this study are :

1. To find out the kinds of lexical words in the speech production of Broca Aphasia patients.
2. To explain the process of lexical word production of Broca Aphasia patients.
3. To describe the reasons of Broca Aphasia patients produce lexical words the way they do.

1.4 The Scope of the Study

This research is limited to one type of Aphasia, Broca Aphasia. This study is focused on the phonology impairment in lexical words but especially in terms of the four parts of speech; noun, verb, adjective, and adverb.

1.5 The Significance of the Study

The findings of this research would be useful for the two aspects; theoritical and practical. Theoretically, the research findings could provide a basis for a futher research

on Psycholinguistics which was viewed about the study of the psychological and neurobiological factors that enable humans to acquire, use, comprehend and produce language.

Practically, on the other hand, this research could be used as a reference for a futher research especially on non-English-speaking aphasics and who were interested in the language production of aphasic people. In addition, this research would be an answer to some of the problems that occur in the process of language production, especially Indonesia aphasia speakers. While for the future researchers, this research result would be useful in helping them to conduct more in depth studies in language production.

Findings of this research are expected to the relevant and valuable inputs that could enrich the study on lexical words production of Broca aphasia patients. It was expected that the findings could show significant relevancy to the theoretical and practical aspects.