Verbal Fluency Level of Non-Fluent Ischemic Aphasia Sufferers[1]

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Abstract

This study aims at revealing out verbal fluency of non-fluent aphasia sufferers. The objective of this study is to know their verbal fluency progress, in the category of whether there is any protruding ability they have and there is any special characteristic on their utterance. This research occupied descriptive analytic survey. The samples were 30 patients of non-fluent aphasia. The location of the research was in Makassar (Indonesia). Data analysis was processed quantitatively and qualitatively. The finding was the non-fluent ischemic aphasia sufferers had a potential to develop their verbal fluency gradually and had a typical uniqueness of characteristic if compared to other competences.

Key words: verbal fluency, aphasia, ischemic stroke

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With all the functions it has, language is a given thing from the God which has an important role in human life and has set mankind differently with other living creatures. The divine difference emphasizes on human ability to speak grammatically and systematically. Hockett (1958) as quoted by Sumarmo (1991) stated that "animals have language but it can not be analyzed in the same way done to language of human because their language is not systematic, signs-oriented, or meaningful" (p.192). Thus, Alwasilah (2003) stated that language of animal can not serve as an object of linguistic analysis."

Human speech event process is manifested through organs of body specially created to serve particular functions and to one other they are correspondingly related. Language event is started in our brain. When there is an impulse to express one particular thought, feeling, intended, or spontaneous, then it will be processed through speech organ under coordination of brain (the center of *motoric* and *sensoric*) with the help of interwoven lines that the speech impulse goes through.

Language has its place in the supreme position among other functions like remembering, perception, cognition and emotion. Dysfunction or disorder in the brain can create a disruption in one's language ability which is commonly called aphasia. Kusumoputro (1999) stated that aphasia is a language disorder of someone in his oral or written abilities; this is caused by a dysfunction in our brain (p.21-25). The disorder of the brain itself may cause from some diseases but the most frequent factor is a disturbance in blood circulation in brain and also an injury in brain (stroke and trauma) as stated by Yunus (1999).

In connection with this study, the definition of aphasia technically is a state of disruption of a person's ability to express the intention verbally due to a disturbance in certain parts of the brain, especially in the left hemisphere. The disorder is not solely due to the presence or lack of blood supply to their brains, but rather due to the occurance of a blockage of blood vessels that resulting in impaired drainage of blood to the brain. This is in line with the research focus, namely ischemic stroke to people with aphasia.

As have been previously stated by Said (2009) in his writing that in Indonesia aphasia is still untouchable; only a few people want do research on it. This is the main reason to take aphasia as the topic of this study. It is interesting to do research on the way aphasia sufferers speak because physiologically they are different with normal people. Sometimes, some people think that they suffer a mental disorder but in fact they suffer aphasia. Moreover, the number of stroke disease is increasing year to year as it is the main cause of aphasia in Indonesia. It fits with what Indonesian Stroke Center (2007) has informed. This statement is proven by the writer himself. From the 3 big hospitals in Makassar, every month there are about 200 people suffering stroke with various medical histories. Around 12 to 15 percents of is suffering aphasia, this number is claimed to be big (Said, 2009c:28). For the need of this research, the writer only focuses on aphasia which is caused by stroke especially ischemic stroke (*nonhemorrahgic stroke= **NHS**)*. The choice on ischemic stroke is based on the reason that most of the people suffering stroke or about 80% of them will suffer that kind of stroke and the rest will suffer hemorrhagic (15-20%) as stated by Aliah (1996) in his general view on disturbance of blood circulation on brain. He points out that aphasia tends to come to people who have a blocking in their blood vessel so that the circulation of blood to the brain will be facing a disruption. On the other hand, they will experience a language disorder phenomenon.

Aphasia can be classified into several types based on various points of view. For the need of this study, the writer refers to the aphasia category by Poerwadi (1999:17) classifying it based on the patient's verbal fluency, therefore categorizing it into fluent and non-fluent aphasia . Between the two types of aphasia, the writer chooses non-fluent aphasia as the object of this study.

Knowing different classifications of aphasia by different experts (Boston, 1974; Dharma Perwira-Prins 2000; Kirschner & Jacob, 2009) and connecting them to the reality in the field, the writer is called upon to study it. Aphasia issues are problems which deserve comprehensive and proper handling in both South Sulawesi regions in particular Indonesian ones. In the writer's view, the aphasia patients only receive attention only from the neurologists. The involvement of other specialists such as psychologists and linguists is currently urgent. This is so because Jakobson (1971) claims that linguists are responsible for and should be involved in the investigation of aphasia. The findings on errors in language use in aphasia will give a new insight on language rules for the linguists and neurologists.

The study conducted is merely descriptive focusing on the field condition. The first observation revealed the many patients went through speech difficulty with various causes. Such condition intrigues the writer to study and investigate the case particularly the one related to aphasia. After a few month observation and bibliographical review, the writer decided to investigate the speech ability of the aphasia patients, particularly those with ischemic stroke. The study therefore is a further development of a booklet 'Tadir' (Tes Afasia untuk Diagnostik Informasi dan Rehabilitasi) (Aphasia Test for diagnostic information and rehabilitation) by Dharmaperwira and Prins (2000). The booklet offers opportunity for the writer to fill in some open space in it. It presents three primary aspects: diagnosis, information gathering and

presentation, and rehabilitation. The diagnosis mostly for ethical reasons is performed by neurologist, but information gathering and presentation, and rehabilitation should need collaboration among the neurologists, speech therapists, and linguists. The linguist's role so far is not obvious therefore this gap needs to be filled.

There are some aspects which is interesting to analyze from verbal discourse of aphasia sufferers. One of them is their level of verbal fluency. To discuss this deeply (including the decision on what kind of aphasia that on suffers), the six roles of modality (spontaneous speaking, naming, understanding, repeating, reading and writing) can not be denied. This case is important to be revealed soon so that the writer agrees on the title of this article "*Verbal Fluency Level of Non-Fluent Ischemic Aphasia Sufferers*"**.**

Two issues to be answered through this paper are the questions of a general nature and questions of a specific nature. The common question is to what extent does ischemic stroke cause the level of verbal fluency upon the influent aphasia sufferers. While the particular as the research questions are (1) are there any substantial progresses in each category?, (2) Which categories are showing the more rapid development of verbal fluency level?, and (3) are there any specific aspects occurred among influent aphasia sufferers in terms of their verbal fluency development?

Literature Review

As mentioned in Said (2009c) Broca (1861) was the doctor who discovered the aphasia in his patient who had lost his speech ability of which he named 'afemia'. The following two decades Carl Wernicke (1874) and Jules Dejerine (1891) supported Broca's finding (p.3). Based on those findings, Benson (1979) later classified aphasia into fluent aphasia and non-fluent aphasia (p.14). Their findings may become a foundation for medical studies as well as

other studies to explore the further relationship between language and human brain as Roman Jakobson and Lecours (1971) had pioneered the involvement of linguistic science in the study of speech breakdown as they mentioned: *"…to study adequately any breakdown in communication we must first understand the nature and structure of the particular mode of communication that ceased to function* (p.49).

Most researches in the field so far deal with neurological aspect as performed by Luria, Damasio, Brain, Rosenbeck, and others including the ones in Indonesia as Sidiarto Kusumoputro, Lily Sidiarto, Mangantar Simanjuntak, or others like Rini I Dharmaperwira – Prins (speech therapist). On the contrary, from linguistic point of view (particularly) there has not been anything much about the subject. Suhardiyanto (1993) and Sastra (2005) are the linguists who gave attention to this field. Both Suhardiyanto and Sastra chosed Broca aphasia patients for their studies. Other resemblances between both studies are the study non-linguistic factors such anatomy, pathology and the history of the disease of the Broca aphasia patients.

Unlike Suhardiyanto who chose 5 Broca aphasia patients of Indonesian speakers, Sastra chose Broca aphasia patients who speak Minangkabau and Malayu speakers. His focus (2005) is on verbal expression of the patients. He identified 5 errors of verbal utterances which are phoneme replacement, phoneme omission, phoneme addition, phoneme disorder, and word/syllable shortening. He also discovered various factors, linguistic or non-linguistic ones (p.33), causing aphasia to occur in stroke patients.

Suhardiyanto (1993) investigated grammatical flaws of the utterances of Broca aphasia patients focusing on the apparent patterns and their relationship with anatomical, pathological aspects and the disease history. He concluded that the emerging patterns in the 5 cases that he investigated were consistent repetition; initial or final syllable constituent

anticipation; the use of meaning relationship among constituents, and the combinations among the patterns. He also concluded that anatomically the wound of the 5 cases lies in the Broca area at frontal lobules of left hemisphere (p.152-155).

Suhardiyanto (2006) final study concluded that lexicon organization in human brain was apparently organised in a very complex form connected to phonology and semantics (p.190). His final study is limited to lexicon organization based on segment frequency of appearance and meaning relationship use (in the form of anonymy. Cohyponymy, and collocation). However, the fluency rate of speech of the aphasia patients is not yet revealed.

The interest of linguists in Indonesia on neurolinguistics is increasing. In the international congress of Indonesian Linguistic Society on October 2011, several papers addressed neurolinguistics in general, e.g. Handayani who presented neurolinguistic study on the omission and addition of consonant sound in disartria patients. What interests the writer more is psycholinguistic study of the post stroke of Broca aphasia patients (by Hartini, Sidana, and Syihabudin, 2011) with an interdisciplinary approach: neurology, psychology, and linguistics. They have expressed several mistakes in speech of the post-stroke Broca aphasia patients in phonology, morphology, and syntax. One important conclusion of the study is that in those patient had occurred mistake in language use in different levels. To deal with the obstruction in the use of language, the informants were trying to paraphrase, associate meanings and interact in participating in the communication context with his/her interlocutors, e.g. *sekolah* (school) with *kuliah* (lecture) or to associate *keripik singkong* (Cassava Crackers) with *sampeu garing* (p. 256).

There are some discussions which need to be revealed out in corporation with previous researches done previously. One of them is Louis Cummings. Cummings (2007) says

that aphasia is a disorder of all speech abilities such as (1) a disorder on speech and symbol recognition, (2) loosing ability on making, stating and producing utterances, (3) discomfort of reading and writing, (4) not a disturbance of speech neuromuscular mechanism like *disartria* or "cadel", and (5) not an intellectual problem like dementia. Also, he says that aphasia syndrome can locate a disturbance in brain that is by looking at the signs or symptom which is caused by a disease or disorder. The presence of aphasia syndrome in a person shows a disturbance in the hemisphere of left brain which is specifically related to activeness of right hand (right-hander) (p. 8-9).

Another expert important to consider is Susan E. Kohn as quoted by Sastra (2005:80). Apart from giving attention to the phonological aspect of aphasia sufferers, there is an important statement from Kohn which can be made as a basis of this study that is "not all meaning can be understood at a spontaneous utterance, many utterance events can be collected but most of them are not logical".

Beside the two experts aforementioned, Sheila E. Blumstein must also be considered for her statement. She has researched and explained several cases related to aphasia. She focuses also on phonology like Kohn and has reinforced Lecour's (et all.) finding (1971). Blumstein also has researched on aphasic speech event which he booked in his work "Neurolinguistics: An Overview of Language- Brain" (1994:210-236). Corresponding to this research, Blumstein's finding on speech event can be made as a reference. Blumstein says that aphasia sufferers are still able produce single word which is meaningful even though it is not as frequent as jargons (meaningless lexicon).

Research Methodology

This research was conducted using descriptive analytic survey by means of *cohort* method that was epidemiologic research method which was used to study the dynamic relationship between risk and effect factors with fore longitudinal approach, prospective approach (Pratiknya, 2003:184). By means of this approach, the writer was able to identify the level of verbal fluency competency of non-fluent aphasia sufferers.

The setting of this research was in Makassar. Three hospitals, Wahidin Sudiro Husodao, Labuang Baji and Dadi Stroke Center Hospitals, were decided as a place of where the samples were taken. The length of the time was six months (February to July 2009). There were thirty informants selected as the samples of the research and they had satisfied the Inclusive criteria offered (positive suspected stroke ischemic and non-fluent aphasia; males and females, 35 years to 75 years of age; agreed to be the samples of research and be able to speak Indonesian Language). The decision on sampling was done in a purposive technique or "emergent" (*mencuat*) (this terminology first used by Alwasilah) with proportional ratio.

Data were taken gradually from the 30 samples, three times of each person. The first one was in a critical phase (14 days, counted since the first day the patient suffering stroke). The second was one week after critical phase. The third was one month after the second phase.

In collecting the data, the writer chose unsystematic interview and instrument, beside using technique of elicitation. In addition, the recording technique was occupied by the writer so that during the analysis period the recorded data could be repeated again and again to gain better result for this study.

The collected data were scored in two ways; (1) rough score, the possible score is 0-10 and (2) aktivita score, a score which gives standard assessment of the progress in patients' competence by referring to the test of TADIR (hence the 5 initial words the below):

Category 1 = Completely Incompetent (not able to speak completely) (0 Point)

Category 2 = High Incompetent (1-3 Points)

Category 3 = Incompetent (4-6 Points)

Category 4 = less incompetent (7-9 Points)

Category 5 = Normal (10 Points)

To measure the level of verbal fluency of the informant it was be done by counting the total of words from the whole words uttered which were classified into four groups of words, (1) Content Words, (2) Function Words, (3) repeated words, and (4) irrelevant words. A hesitancy like "*eh…eh…"* or a mis-starting speech like "*ba…ba.."* to pronounce the word "*bapak"* 'father' were not considered or counted in the analysis.

In general, verbal fluency of aphasia is considered non-fluent if he uses less than 75 words per minute. On the other hand, if more than 75 per minute it will be called fluent. So that, the pattern will be shown as follow:

$$\text{Score: } \frac{n}{S} \times 60$$

n = total of words

s = time (in second)

The obtained data were analyzed quantitatively and qualitatively. The analysis was done by using the SPSS Program of 15.0 Version. After the quantitative analysis, an interpretation of the data was drawn to get the qualitative analysis.

This research had thirty people as samples who also at the same time became the informants from research population (ischemic stroke patients). They had met all the inclusive criteria. Also, few of the informants did not meet the sample criteria (exclusive) like those who

passed away during the data withdrawing process (3 people), who quitted from this research (1 person), who did not agree to be informant (2 people), who was less than 35 years of age (2 people), who was above 75 years of age (3 people) and also who could not speak Indonesian language at all. Overall, there were 14 people who did not meet the sample criteria.

The thirty informants had been identified as follow orderly as based on their sex and age. The category of sex records 17 men (65.7%) and 13 women (43.3%). While, in the category of age, there were 3 people (10%) above 70 years, 8 people (26.5%) between 61-70 years, 11 people (36.7) between 51-60 years, 8 people (26.65) between 41-50 years and none in the category of age between 35-40 years. To know deeply the informant's characteristics it can be seen the following table 1a:

<Tabel 1a> sex classification of the informants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ML	17	6,7	56,7	56,7
	FM	13	3,3	43,3	100,0
	Total	30	00,0	100,0	

From the table 1a above, it can be seen that there was no significant difference in the number of non-fluent aphasia sufferers between man and women. Apparently, the statistic showed similarity with the 14 people who did not meet the sample criteria which consisted of 8 man and 6 women.

<Tabel 1b> age classification of informant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35 – 40	0	0	0	0%
	41 – 50	8	26,7	26,7	26,7%
	51 – 60	11	36,7	36,7	63,3%
	61 – 70	8	26,7	26,7	90,0
	71 – 75	3	10,0	10,0	100,0
	Total	30	100,0	100,0	

Even though, it had been decided the lowest age classification of the research sample was 35 years and the highest was 75 years, table 1b (informant's age) above showed that the lowest age of all was 43 years and the highest was 72 years. During the data collection time, it was found sample less than 40 years old (2 people) but precisely they were less than 35 years (28 and 34 years old). From the table above it is known that none of particular age which was dominant except those who were 58 and 62 years, each of them was 3 people (10%). In the group category also showed the same tendencies; between 41-50 years 8 people (26.65%), between 51-60 years 11 people (36.7%), between 61-70 years 8 people 26.65%) and between 71-75 year 3 people (10%). None (0%) of the sample was in the range of 35-40 years old.

Analysis

Verbal Fluency Progress of Non-Fluent Aphasia

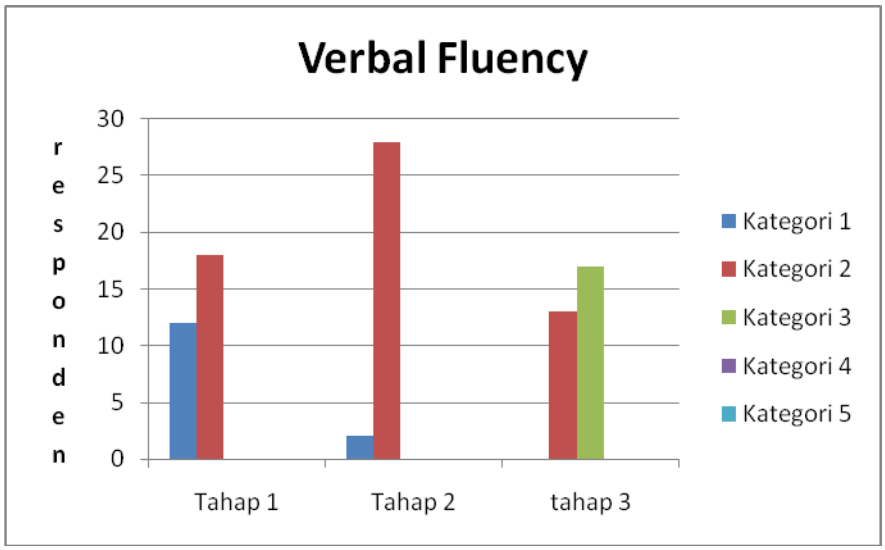
The result of descriptive qualitative analysis can be seen in the following table:

Table 2

VERBAL COMPETENCY LEVEL	PHASE 1		PHASE 2		PHASE 3	
	N	%	N	%	N	%
COMPLETELY INCOMPETENT (Ca**tegory 1**)	12	40	2	6.7	0	0
HIGH INCOMPETENT (**Category 2**)	18	60	28	93.3	13	43.3
INCOMPETENT (**Category3)**	0	0	0	0	17	56.7
LESS INCOMPETENT (**Category 4**)	0	0	0	0	0	0
NORMAL (**Category 5**)	0	0	0	0	0	0

The investigation and the analysis of the data qualitatively on the verbal competence of non-fluent aphasia were explained in table 2 above. From the table it can be known that those who were in category 1 phase 1 there were 12 people (40%) and while approaching the second phase the number decreased, only 2 left (6.7%) and it was totally zero in the 3rd phase. For the second category, in phase 1 there were 18 people (60%), in phase 2 the number increased becoming 28 people (93.3%) and in phase 3 the number decreased again becoming 13 people (43.3%). For the third category, there was no movement at all even in phases 1 and 2. Approaching the phase 3, there were 17 people (56.7%). After that phase 4 and 5 went the same way with phases 1 and 2.

Noticing the changes of frequency above, it was clear that the non-fluent aphasia experienced increasing verbal frequency. Table 2 had shown us clearly that in the phase 3 none of the non-fluent aphasia sufferers was in the category 1 (no competence) whereas in phase 1 there were 12 people and the number decreased becoming 2 people in phase 2. The decrease of frequency for phase to phase in category 1 could be a clue telling us that there was a progress experienced by the samples because the higher category definitely went through progresses in frequency. It is expected in the table 3 as follow that it can explain us about the graphic of verbal competence progress of non-fluent aphasia sufferers.



There were 10 people (AF, MR, DgR, BH, BG, HDgR, MH, SM, StR, PJ, StM, and AdS) from the total number of 12 people in category 1 phase 1, they decreased in category 2 when approaching phase 2 so that the number of people left was 2 (MR and BG) and finally in phase 3 it was completely zero. Pay a close attention to the following utterances:

(1) DgR : [dulo sa…sasaya…iŋin iŋin…maro iŋin…mca? mərae beto…]

(2) MR : [saya…ĵampus, ĵual… mača talo…teni? siwa]

(3) BG : [mɛñčuči, masaq nur, baŋko …nur patarau kɛrĵa]

The utterance 1 above happened when they were asked to tell about their habitual activities before they got stroke. Semantically, it is very difficult to understand DgR's utterance because it contained some irrelevant words and repeated word like "ingin", meaning "want". From its structure the meaning can be guessed that DgR wanted to tell us that in the past he wanted …/something which was/not clear. In trying to understand the utterance of DgR, the writer asked his families to interpret the meaning of DgR's utterance and the interesting point that his family also did not understand it at all.

What MR and BG experienced was different with DgR. In example (2) and (3) above the difference can be seen. The utterance of MR can be interpreted as "I sell some foods and drinks in campus (Haasanuddin University) Technique Faculty". This kind of interpretation was drawn after asking his family about MR's daily activities. While BG's utterance according to her family that she lives together with her only child whose name is Nurhayati (Nur) and works as a labor in a private company. Her husband was died since Nur was in 2.5 years. From this information the meaning of BG's utterance above can be predicted as "BG's daily activity is washing and cooking because Nur is working outside".

None of them experienced progress those in phase 1 category 2 (approaching phase 2) so that the number increased becoming 28 people in phase 2 after having 10 people from phase 1. In phases 3, it remained 11 people from 28, they were still in category 2 because 17 of them moved to category 3. The 11 samples were UM, AM, ED, HAS, HDgR, MAG, SDgNg, SF, FA, AR, AS, MWs, StR, PJ, StM, and UK. Even though the 11 samples were in category 2 and the 17 samples were in category 3, the number of words they uttered was varied. On the other hand, the difference happened in types of words (content words, function words, repeated words and irrelevant words). Technically, the 4 groups words were written differently each other. Casual

form is used for content words, bold style for function words, italic style for repeated words and underlined style for irrelevant ones. For the details please take a look the following examples:

(4) MW : [pəra *susah* saya, ĵualan **di** rumah kərasa **dəŋan** anaqku. bantu bapaqna bawa trɛk luar kota. *susah* pərna ĵatuh auwə indoE palata…patah kakiña. ĵumi tutup waruŋku]

(5) BH : [tupa ha…hari *saya saya* besəda *saya*. bawa pətɛpətɛ kulau. ĵupan vətəran uĵuŋ. soro səronto capəq]

(6) MH : [kantor **di** palopo, sindula. sebulan bəlan səkali rumah sini makasar, **di** boroŋ. *lihat* anak *lihat* kulia təman]

(7) SM : [pətiq čɛŋke **di** tubuŋ. dua **dari** pagi. papəda balu **dəŋan** bapaq ikuq ĵulu *səta*…sore lusap *səta*…saya *səta* ana?. ĵauh boñčɛŋ bəka səppeda]

For example BH, in 64 seconds he was able to utter 15 words (7 content words, I repeated words which he repeated until 3 times, 5 irrelevant words and no function words. BH's competence was actually the same with DgR's since always in category 1 in almost every competence except in giving the name in the level of word and in understanding in the level of words and of sentences BH was able to reach category 2 or 3. Different with BH, the other 3 samples, MW, MH and SM showed the number of words which can be uttered differently. The difference was not only in the number of words and its attachment into some types of words but also in the quality of the utterance.

Likewise, the 17 people in category 3 had the score of verbal fluency level between 25-34 which can be transferred into norm score 3 (category 3). They also vary in the types of words. There was a significant progress in content words, many words repeated, and more irrelevant words.

(8) AM : [saya pe en es, biasa harihari **kə** kantor. pulaŋ, kɛrĵakɛrĵa rumah. **Itu** bəloka ĵɛndəla *sudah* tua *sudah*…**dan** rusak. pəlata mahal oŋkosña. kuaqka kɛrĵa təlusu tapi ibu takut kambuh]

(9) SDgNg : [saya suka kɛrĵa. tapi. manantuku sayaŋ **pada** saya. dia laraŋka kɛrĵa. pusiŋ **ĵuga di** rumah tidak ada kɛrĵa. **di** tətaŋgaĵa dudududuq *Mau* **kə** pasar *mau* natemani. **karena** sekaraŋ strokka tamba nalaraŋ bañak gərak]

(10) SF : [kami tiŋgal **di** komplɛks. dəkat **ke** kantor. səkitar dua ratus məter **saĵa** sampe. ĵalaŋ kakika stiap hariña. *pulaŋ* kantor tidak ada *pulaŋ* kɛrĵa**. ituĵi** tanamtanam **di** pəkaraŋan **kalo** husah musim huĵan]

(11) StM : [saya urus sakolana čuču. **yah**, čuči, masak, bɛrsihbɛrsih **di** rumah, lasuki *kača* ĵandela, *kača* dəbuña bañak. dəkat səkali **dəŋan** pasar. **di** sini ribut nak. rame oraŋ ĵualan]

(12) AdS : [bañak kɛrĵaku bəratu malam **di** hotəl. mati seməda lifña *laŋsuŋ laŋsuŋ* saya *laŋsuŋ* ditəlfon bos. *laŋsuŋ* **kə** ĵəlati. lama kɛrĵa **di** situ, ləbih sərapu səpuluh tahuŋ bulia. səkaraŋ tidak…]

From the examples above, it can be said that verbal competency level of non-fluent aphasia sufferers was still experiencing some progress from time to time even though it did not go the same way with other competences. This kind of progress tells us that how disturbing their verbal fluency. It was different with other competences; some of them might be able to reach the higher level even the highest one for some people who reached particular competence only. According to the writer, the restrictiveness on their verbal fluency level was still acceptable because those taken as the samples of this research were non-fluent aphasia sufferers. Goodglass

et all says that the utterance of non-fluent aphasia is 3-4 words in a group of respiration. In one minute, they could reach 4-5 respiration groups (Goodglass, Kaplan and Baresi, 2011:119). However, the writer is optimistic that the verbal competence of non-fluent aphasia sufferers can be improved through some process like following physiotherapy program and speech therapy with routine.

The Most Significant Category

From the table 2, it can be said that category 2 was the most significant one. This fact was also proven true by table 3. In phase 1, about 60% (18 people) was already in category 2 and it increased becoming 93% in phase 2 since there was a progress from those who were still in category 1; even though in phase 3 it decreased becoming 43.3% or 13 people only. Quantitatively, it showed tendency to be decreased but in fact quantitatively their verbal fluency experienced progresses. In comparison with category 3 phase 3, about 56.7% or about 17 people could reach this phase. For the competence of verbal fluency, maximally they (informants) were able to reach category 3, different with other competences which reached category 4 (dominantly) and even category 5.

Interesting Point on Verbal Competency of Non-Fluent Aphasia Sufferers.

There is an interesting story to be noticed here, that is the experience of DgR in all other competence until phase 3 in which DgR is only in category 1, while his verbal fluency was able to reach category 2 phase 2 until phase 3. After being examined closely, DgR's utterance which consists of 9 words in 65 seconds contained only 1 content word and no function word, 3 times repeating the same words and 5 irrelevant words.

The evidence gives us insight that it is not necessarily for an aphasia sufferer who does not have any competence like DgR to be incapable of having competence in verbal fluency

level. A contrary might also happen like what had been experienced by MR and BG who could reach category 2 for some previous competences. But MR and BG could not reach the category 2 for the level of verbal fluency because both of them were only able to produce a speech of 7 words in 68 seconds until phase 3. In other words, they were only able to touch the highest level of category 1.

Another interesting case found in the utterances of MW, MH and SM. for example, MW always used Indonesian language with Makassar dialect like in the use of "nya" particle which sometimes was not consistent (sometime MW pronounce a –na in [bapa?na] and a –nya in [kakina]. While MH and SM sometimes could not utter perfectly (like the sound [h] in the end of a word like [kulia], meaning "lecruting", it is supposed to be [kuliah] (MH) and [ceŋkeh] → /cengkeh (SM), meaning "clove. MH and SM's cases was predicted by the writer that there might be a possibility of another factor (physiology factor because of attaching disease like asthma) or dialectical factor which was of course needs more time to be studied deeply and specifically.

For verbal fluency level, maximally, they were only able to reach category 3, different with other competences which might reach category 4 (dominantly) and even reaching category 5. Also interesting point that for the level of verbal fluency none of them was in the category 1 phase 3. The 30 informants were only distributed into two categories with a balance ratio (13 people for category 2 (very annoyed) and 17 people for category 3 (annoyed)). This can be interpreted that their verbal fluency in average.

The other thing which became interesting story from non-fluent aphasia sufferers in its relation to verbal fluency was their variation in ability. Some of them showed significant movement in content words, repetition words and irrelevant words. For the last type, showing

more irrelevant words, this case perhaps becomes not a problem for some people, not as a something typical because it commonly happens in the utterance of aphasia sufferers. But, for the writer himself this point is the most interesting spot of their particularity.

Discussion

In relation to verbal fluency rate, the informants' maximum competence only reaches the category of 3 (affected). This indicates that their verbal fluency is disturbed. Other competencies that the writer had investigated particularly on language modality for example (spontaneous talk, understanding, naming, repeating, reading and writing) Some of the patients can reach a higher category even the highest one for certain persons in certain category. The limited competence rate of verbal fluency is natural because those who are taken as the samples of the study are those with non-fluent aphasia. Goodglass et.al. express that the utterances of non-fluent aphasia is averagely 3 to 4 words in a breathing group. In one minute, those patients can achieve 4 to 5 groups of breathing (Goodglass, Kaplan, and Barresi, 2001). It is proven in the study that the utterances of the aphasia patients in one minute they can reach more than 15 words, even though the writer could not be certain whether the words meant by Goodglass et.al. including *content words* or covering function words, repeated words, and irrelevant words as identified in this study. If Goodglass et.al. include all words produced by the patients within one minute, then it means this study confirms it.

The study had obtained the answers for the three questions at the beginning of this report. The verbal fluency rate of non-fluent aphasia from time to time develops (progresses) although unleveled with other competences as described in the writer's earlier study. This matter is clearly seen in several informants who underwent changes from Category 1 (not competent) to Category 2 (highly affected) and from category 2 to category 3 (affected) (look at table 2 and 3).

The two tables reveal that category 2 is the most dominant. Similar case applies to the uniqueness or typicality of verbal utterances of informant. One of them is Dg. R capable of only being in Category I for all other competencies that had been studied before, while for his verbal fluency, he is capable to be in Category 2. Other typicality is that some informants tend to use Bahasa Indonesia with local dialect (Makassarese), and some others are inconsistent in using suffix, while others experience phoneme omission as Sastra (2005) has identified. Their ability varies.

Through findings in several unique cases, the writer may say that the verbal fluency aspect deserves more attention from the speech therapist compared to language modality aspects. One of the problems that the writer faced when facing and communicating with the informants was the difficulty to understand what they said. They tended to produce irrelevant words and function words or repeating certain words. To understand the meaning of example (1) to (3), for instance, is not easy if the writer did not use linguistic intuition (such as looking into the structure and situational context of the user). During the data collection (especially in the hospital) the writer focused on any language aspects used by the speech therapists when handling the aphasia patients. In fact they had not yet used elicitation techniques such as asking the patients to tell their daily activities. This is meant to measure their verbal fluency.

Apart from acquiring answers to the research questions, the writer also found that the aphasia patients' desire to communicate is great but they are hampered by the absence of a person to understand them and to talk to. This includes their close relatives. Therefore, they are reluctant to express their feeling through verbal expression. By following the gradual development of the aphasia patients, in the writer's opinion, the verbal fluency problems of the non-fluent aphasia patients could be minimized. At least, their suffering will be reduced in this

way. It is the time now for the speech therapists to develop techniques to handle the aphasia patients. They need to posses sufficient linguistic knowledge beside medical sciences. One method is to stimulate the patients to increase talking using elicitation technique. The writer however, is optimistic that the non-fluent aphasia patients can improve their competence through participation in the physiotherapy programme, and routine speech therapy.

To face verbal fluency problems of aphasia patients is not the sole responsibility of the hospital (neurologist and speech therapist) but it could involve many parties including psychologist, linguist, and close relatives of the patient as well as the patient him/herself. All parties mentioned can play their role proportionally according to the needs of the patient. The neurologist may try to diagnose for the causes, the speech therapist guides the patient during therapy based on his/her expertise and experience, and the psychologist would deal with psychological problems. The linguist, however, could help with the language aspects. The role of the close relative is of paramount important because they know exactly the daily life of the patient. Those parties mentioned above would be useless unless the patient him/herself is aware and willing to participate in the treatment process and comply with the guidance and directions. Therefore collaboration among different parties is compulsory.

Conclusion

To end, the writer will give a conclusion which goes the same line with the objective of this study. First, verbal fluency level of non-fluent ischemic aphasia sufferers can be improved from time to time even though some of the still produced irrelevant and repeated words. However, their progress so far (according to the research data) is not as good as the progress happened in other competences shown. The movement from category 1 to category 2 for most informants and others from category 2 to category 3 showed significant progress even though

there was no movement from category 3 to category 4 and to next category happened during the research period. Second, category 2 was a dominant category which showed progress on verbal competence. Third, there were some uniqueness related to the verbal fluency level of non-fluent ischemic aphasia sufferers like an increasing in the number of words which could be uttered although most of them were repeated and irrelevant words or the sufferers inconsistency using "klitika", for example.

This research is expected to give contribution to the speech therapist (at least to those serving in the hospital where the study was carried out) hoping that every party would cooperate to overcome this humanity problem. In line with the initial objective, the result of this research is expected to yield a small booklet to be used as a guide for speech therapy effort.

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