

Study and analyze of “Ungrammaticality” in People with Broca’s Aphasia in the Algerian Clinical Environment: Linguistic Approach.

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Abstract:

Through the present article we seek to analyze "Ungrammaticality" in people with Broca's aphasia in the Algerian clinical environment, relying on the linguistic approach. Our starting point in this approach was from clinical observations and recordings of the speech of four people with Broca's aphasia, all of whom suffer from difficulties in producing sentences and oral compositions; however, we will present only one case as a model for analysis, which is the first case. These difficulties led us to the adoption of Blanche Ducarne's diagnosis test (1976), which has been adapted to the Algerian environment.

This analysis has enabled us to stand on the existence of a deficit in the ability to link the different linguistic units that make up speech and enter them into relationships with one another as a result of the deletion of various grammatical tools, which led to the disappearance of these relationships, which directly affected the composition structure. This is mainly demonstrated in resorting to severe abbreviation, adopting a telegraphic speech style, together with the absence of linguistic and grammatical conjunctions.

Keywords : Ungrammaticality - Broca's aphasia - Aphasia diagnosis - Telegraphic speech style - Grammatical disorder

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1. Introduction

The brain is considered to be the center of the production of language, which is an acquired mental ability based on the set of linguistic knowledge mainly represented by the vocabulary and grammar that organize it. One of its characteristics is that it is generated and developed in the mind of the

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individual, enabling them to produce speech and understand what is produced by others.

Accordingly, what is agreed upon regarding the issue of language development is the fact that there are four main stages. The first stage, or (the pre-linguistic stage), corresponds to the first year of life, and includes the first elements of communication. As for the second stage, which corresponds to the end of the second year, it is the stage where the individual begins to use some words, and the first attempts of composition appear. In the third stage, which extends from two to six years, the individual's lexicon develops in a significant manner, along with the maturation of phonological, lexical, and syntactic elements, as well as the development of non-linguistic abilities, to continue in the last stage the representation and refinement of their language for the rest of their life (Lussier, Fellas, 2005, p125).

Keeping pace with this development, and after the completion of language acquisition for individuals, some language disorders may appear as a result of them being exposed to brain injuries, specifically in the left hemisphere, such as language production disorder, as well as "acquired aphasia", which in turn exposes various linguistic aspects, especially the phonetic ones, to certain disorders (Cheminal, 1997). The literature indicates that among the most important injuries that may occur to the brain and affect the individual's linguistic and speech abilities are injuries to the areas specialized in language, which result in a decline in the performance of the linguistic abilities for the injured people, and thus make it impossible to perform language and speech clearly and intelligibly.

consequently, among the injuries that may occur in the areas specialized in language is Broca's aphasia, which results from an injury that occurs in the left frontal lobe, specifically at the level of the third frontal gyrus and the areas adjacent to the lower part of the motor cerebral cortex.

The term aphasia, which corresponds to the Latin term "aphasie", first appeared with "Plato", to refer to those who lose the ability to speak, then "Trousseau" used it later, and exactly in 1865, to give it a new meaning, which is the meaning used today. Whereas to "Broca" it was known as "Aphémie" (Sam, 2008)

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The neurologist "Paul Broca" indicates that damage to the left hemisphere of the brain leads to speech and language disorders. Accordingly, "Broca" defines aphasia as a loss of speech, without paralysis of the organs of speech or loss of intelligence. Additionally, it is associated with damage to the third frontal gyrus.

“Rondal and Seron” also define it as a disorder in linguistic functions that result from damage to the central nervous system for a person who had acquired language before the injury occurred (Rondal et Seron, 2003, p.661).

As for "Mustafa Fahmi", he defines it as a disorder that includes a set of defects related to the loss of the ability to express oneself through speech and writing, or the inability to understand the meaning of spoken words or to find names for some things, or the non-observance of the grammatical rules used in speech or writing. (Fehmi,1975, p.59).

While discussing ungrammaticality in the case of aphasia, it must be worth presenting the concept of grammar, which means studying the rules that govern the construction and composition of the sentence, which is what gives language a basic human characteristic or feature, and is done by linking the sound and meaning together. On the other hand, the grammatical disorder, that is “agrammatism”, means a specific type of pathological linguistic behavior, which is characterized by slow speech in people with Broca's aphasia, in addition to a general decrease at the level of possible vocabulary usage in their speech. It is also characterized by a decrease in the number of grammatical structures and simplifying them, along with the resort to producing very short sentences and words used sequentially, as well as the deletion of various grammatical and linguistic units. It also means difficulty in producing grammatical structures, despite the good production of single words, not forgetting that it is a disorder that accompanies cases of Broca's aphasia (Goudglass, 1976, Kean, 1977, Saffrann et al, 1980).

2. Problem Statement.

Grammatical disorder, or what is also called the "agrammatism" symptom, is associated with a particular clinical table, which focuses mainly on: slow expression and lack of intonation, simplicity of the grammatical structures used, with little variation, and the deletion of a large number of grammatical units, such as: articles, prepositions, conjunctions, pronouns and suffixes, in addition to pronunciation difficulties (Rondal et Seron, 2003, p.666).

Upon reviewing much of what has been written about the subject of aphasia, and taking its different approaches into consideration, we found that the literature and theoretical approaches contain important works, which have been embodied in the emergence of studies that deal with ungrammaticality, such as the study carried out by Nespoulous, Dordain, and Lecours (1989), which deals with cases of Broca's aphasia that are characterized by the emergence of agrammatic discourse in their speech in the absence of a comprehension disorder. They concluded that the grammatical discourse observed in those cases appears in all sentence production tests, while the production of isolated words was retained, and in a comprehensive manner (Nespoulous, 1989)

This is in addition to what was concluded by "Jakobson" in this field. He believes that speech is a matter of selecting linguistic units and composing them within other linguistic units that are more complex. When the speaker carries out the process of producing, or (encoding) the message, they first choose the units at the level of the paradigmatic axis, then compose these units at the level of the syntagmatic axis. In contrast, the recipient receives the message in its complex form that consists of a series of units, and then selects these units in order to decode the message.

Therefore, "Jakobson" distinguishes between two types of disorders: decoding disorders associated with damage to the selection at the level of the paradigmatic axis, and encoding disorders resulting from a disorder of the syntactic function at the level of the syntagmatic axis.

The difficulties of composition - the subject of our study- affect continuity; that is, the direct approach of the linguistic units, which in turn regulates the organization of the syntagmatic axis, which leads to the damage of the production and sending of messages since the aphasic person is unable to use conjunctions and pronouns, Hence the telegraphic speech style emerges. This duality refers to the two axes of language, and also to what distinguishes the linguistic signs (the signifier and the signified), and

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accordingly, the compositional disorders that damage the "continuity" are interpreted by the disruption of the signifier, which leads to difficulties in the encoding process.

According to "Ibrahimi's" studies written in the nineties, these difficulties are based on the cognitive and psychological interpretation of the normal communicative action established by "Colioli" to interpret the linguistic action for the aphasic person, and concludes that aphasia is related to the loss of control over two mental movements, which are the input versus output movements.

Starting from this approach, we posed the following question:

- Do people with Broca's aphasia suffer from compositional difficulties ? And what are the most important symptoms of these difficulties ?

Starting from this question, we formulated the following hypothesis:

- People with Broca's aphasia suffer from compositional difficulties, whereas the most important symptoms of these difficulties are manifested in the inability of the aphasic person to use conjunctions and pronouns, as well as the emergence of the telegraphic style in their speech.

3. The aim of study:

This study aims to identify the most important compositional difficulties suffered by people with Broca's aphasia, which hinder their communication with others.

Methodological Procedures.

In order to answer the research question, and thus verify the formulated hypothesis, we adopted a clinical descriptive approach that is based on the case study technique, using interviewing with cases suffering from Broca's aphasia. To understand the ungrammaticality in all its dimensions, we used the "Blanche Ducarne" test, 1976 (Ducarne,1976), specifically, the section related to describing pictures and spontaneous speech, which is procedurally suitable for detecting ungrammaticality.

Presentation and Analysis of the Results of the Picture Description and Spontaneous Speech Sections.

The Picture Description Section :

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The Picture Description Section:

Table n° 1

Patient's answer	Picture description section/the symptoms	
<p>zanqa[tumubel... yašrew 'ikalb u mra_</p> <p>Street) Car Running The dog And (woman</p>	Telegraphic speech style	First scene
<p>piziria bulanši hnaya Mra. u ʕfal Y.ʕkul Y.ʕša]</p> <p>Pizzeria) Baker Here Woman And Child Eating (something</p>	Deletion of conjunctions	
<p>*umbra[kursī zuš. Lump rʕšal kbəra] mra</p> <p>Room) Chair two Lamp Man (Old woman</p>	Telegraphic speech style	Second scene
<p>[.. *umbra kursī zuš. lump mra kbəra]</p> <p>Verb Noun Conjunction Noun Conjunction Noun Conjunction Noun Adjective</p>	Deletion of conjunctions	
<p>[rʕšal ynaYŷi saffYŷ ...*alada]</p> <p>Man) Pick Apple (...salad</p> <p>Noun (subject) Verb Noun (direct object) Noun (indirect object)</p>	Telegraphic speech style	Third scene
<p>rʕšal[ynaYŷi saffYŷ ... *alada]</p> <p>Noun (object) Verb Noun (direct object) Conjunction (and) Noun (indirect object)</p>	Deletion of conjunctions	

Source:

Symptoms of agrammatism in the picture description section in the first case:

The description of the three scenes, (the street scene, the field scene, and the family scene), was characterized by the variation between the telegraphic speech style, which is based on intermittent description, and the omission of linguistic units; so that the one scene seems to be a set of scenes separate from one another, as is the case with the three scenes.

The composition in the three scenes lacks a set of linguistic and grammatical units, represented by the verb that precedes the description and indicates it in speech. In addition to the absence of links, represented by the conjunction "and" that links between the units to complete the meaning.

On the other hand, there is no complete omission of functional units, but there are units retained in some compositions, such as: the subject, the direct object, and the indirect object, like when the case under study said:

[rʕšal	ynaYŷi	saffYŷ	... ^a alada]
Man)	Pick	Apple	(...salad
Noun (subject)	Verb	Noun (direct object)	Noun (indirect object)

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3.1 The Spontaneous Speech Section.

Table number (02).

Patient’s answer			Spontaneous speech/the symptoms	
[k ¹ nt]	Deletion of linguistic units	First situation Story of illness
[k ¹ nt ... k ¹ nt ... k ¹ nt ... \ddot{Y} abb \dot{c} t nahdar bassf \ddot{Y} manaqdar ^a ... fillil rqa \dot{d} t ...				
I was... I was... I was... I want to speak but I can’t ... At night I slept. sba \ddot{Y} \ddot{Y} assit rassi ... umba [‘] d ... mafham ^a ... wat ^a i .. yaddi t [‘] awgu. In the morning .. I felt my head .. and after that ... I didn’t understand ...my face .. my hand was crooked. wallit manaqdar ^a nahdar .. nhab. nahdar bassf \ddot{Y} ma naqdar ^a]. ... I can’t speak anymore .. I want to speak but I can’t).				
[...(three children two daughters and a son	tlata drf \ddot{r} i zug bnft u wlad...]		Telegraphic speech style	Second situation Story of the family

Source :Symptoms of agrammatism in the spontaneous speech section in the first case:

The aphasic's production was characterized by the absence of some linguistic units in the first situation, and a severe abbreviation in the second situation, which appeared in the form of a telegraphic style. The use of some

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linguistic units such as: (nouns, verbs and conjunctions) was also recorded. Agrammatism appeared in their speech, with the omission of some linguistic and grammatical units. In the first situation for instance, the case under study said the following:

[k¹nt ... k¹nt ... k¹nt ... Ỳabbçt nahdar bassfỲ manaqdar^a ... fillil rqadt ...

(I was... I was ... I was ... I want to speak but I can't ... At night I slept.

sbaỲ Ỳassit rassi ... umba'd ... mafhamt^a ... wat^ai .. yaddi t'awgu.

In the morning .. I felt my head .. and after that ... I didn't understand .. my face .. my hand was crooked.

wallit manaqdar^a nahdar .. nhab. nahdar bassfỲ ma naqdar^a].

I can't speak anymore.. I want to speak but I can't).

Subsequently, the patient began talking about their illness using the past tense (I was), which is a logical use, but they neglected to use some important linguistic and grammatical units in the composition, such as them only using the verb, without other units that must be present in the composition, such as nouns and conjunctions.

[k ¹ nt]
(I was)		
Verb	Noun	Conjunction

On the other hand, and in other sentences, the verb was omitted, but with the presence of other functional units in the composition:

[sbaỲ	Ỳassit	rassi	/]...../
In the morning)	I felt	(my head ...	
Time adverb	verb	Noun	verb

- The absence of all sorts of relationships between units:

[Ỳassit rassi /...../ Umba'd /...../ mafhamt^a /...../]
 I felt my head) And after that (I didn't understand

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The absence of the relationship between the different units, by omitting some important ones, led to the complete destruction of the content of the composition, which in turn led to the lack of clarity of the information for the listener. In the story of their family, for instance, the patient spoke about the number of their children very briefly.

[tlata drfri zu%o bnft u wlad ...]

) (three children two daughters and a son

They also used linguistic and grammatical units in the composition in a consistent manner, which made their speech understandable.

Discussion and Interpretation of the Results

We will start in our analysis from the hypothesis formulated in the study, represented in the fact that people with Broca's aphasia suffer from compositional difficulties, the most important symptoms of which are manifested in the inability of the aphasic people to use conjunctions and pronouns, as well as the emergence of the telegraphic style in their speech.

The results of the present study show the presence of grammatical disorders, or what is also called "agrammatism", which was translated in the form of:

- Telegraphic style.
- Inability to link between the different linguistic units that make up speech and enter them into relationships with one another due to the deletion of various grammatical tools.

We will be presenting three general models of these symptoms:

1. The performance of the research group, from a grammatical point of view, appeared in the form of juxtaposition of two or more words, due to the absence of conjunctions, which are supposed to permeate normal speech.

The deletion of functional linguistic units from the speech of the research group, mentioned in the tables, and placing them side by side in the composition, led to a change in the structure of compositions, which indicates that the disorder is not a phonological or lexical disorder; Rather, it is an inability to compose linguistic units and link them together.

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This type of difficulties is confirmed by "Kleist"; As he describes the linguistic manifestations with the emergence of telegraphic style, together with the little use of grammatical and functional units. He also indicates that these manifestations reflect a clear difference in the degrees of injury, as he believes that in the case of mild injury, some difficulties appear at the level of word formation. Yet as for the case of severe injury, the difficulties extend to the ability of derivation; Whereas the most severe injury leads to the destruction of the level of word organization, and thus the emergence of simple compositions.

These results are consistent with what was stated by "Nespoulous", who believes that the disorder of the grammatical level affects the articles, prepositions, and conjunctions.

"Jakobson" also confirms the emergence of great difficulties at the level of sentence construction, as grammatical expressions disappear, in the first place, including conjunctions and pronouns (Jakobson, 1969).

2. Agrammatism also affects different linguistic units, through the phenomena of deletion and compensation, and to varying degrees. Verbs are thereby deleted and compensated for by the beginning as a result of the lack of balance between two cognitive operations, which are: "input" and "output", according to Ibrahimi's definition (Ibrahimi, 1998-1999). It is therefore a disorder that reflects the loss of ability to use different conjunctions in the speech of the cases under study in the research group, the telegraphic style used by people with agrammatism, Ibrahimi attributes the great deficiency in conjunctions along with the inability to build compositions, to a disruption in the output process.

These results are also consistent with what is said by "Nespoulous" (1986) (Nespoulous, 1989), defining several levels of injury that are represented in the deletion of basic units, compensation for basic units, abbreviation of non-essential units, and simple grammatical morphology. "Goudglass" also believes that three levels are affected in people with aphasia in the case of a grammatical disorder, namely: nouns, verbs, and conjunctions. However, the disorder of these linguistic units is of varying degrees as the degree of disturbance is high at the level of using conjunctions,

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which makes the patient neglect them most of the time, while it is rare at the level of names.

"Goudglass" defines this disorder as a disorder that takes place at the level of the central mechanisms for the compositional processing used in production as well as in comprehension.

As for "Mazaux", he believes that the grammatical and morphological disorder does not result from the loss of grammatical and compositional representations; Rather, it is the result of a temporary malfunction that is not related to the monitoring processes (Maroux, Paradat-Diehl, & Brun, 2007).

1. Within the framework of addressing the type of linguistic units retained by people with aphasia, "Jakobson" believes that the retention of nouns for people with aphasia is better than that of verbs, and that the retention of nouns is better than that of adjectives (Jakobson, 1969).

"Ibrahimi" confirms what "Jakobson" say, through her study, that people with grammatical and morphological disorders suffer from difficulties in producing verbs, while they show abilities in producing nouns (Jakobson, 1969).

These results are consistent with what is stated in Mesli's study; Where he found that people with grammatical and morphological disorders show difficulty in producing verbs, while people with word deficit show difficulty in producing nouns (Miceli et al, 1988).

On the other hand, "Sieroff" believes that grammatical disorder, (agrammatism), destructs the ability to use grammatical information (Sieroff, 2004)

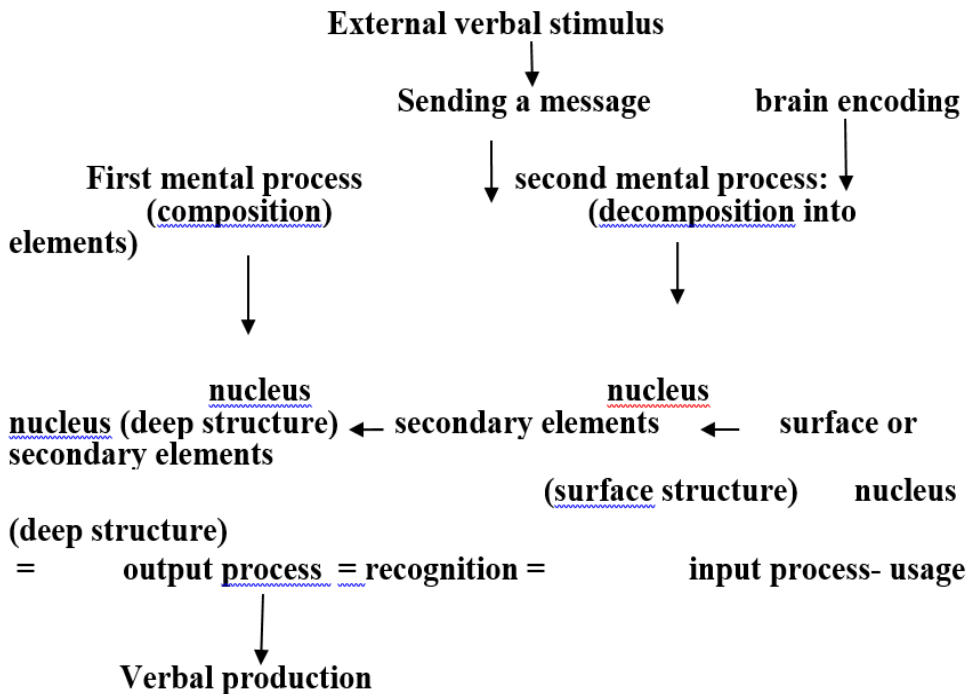
What "Sieroff" mentioned in this context is close to what "Ibrahimi" stated in her study about grammatical and morphological disorders; Where she says that people with grammatical disorders find a great difficulty using their linguistic stock; as they lose the ability to use words correctly (Ibrahimi, 1998-1999)

To more clearly discuss this idea, "Ibrahimi" presented a diagram that embodies the process of verbal communication in a person with agrammatism. It consists of two basic operations: the first takes place

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immediately after the arrival of the stimulus to the brain through the auditory nerve, then the external stimulus is analyzed into its constituent elements, based on the instruction that stimulates the nucleus or deep structure. The second operation is composition, which is carried out by the patient in order to give the correct answer. The aforementioned diagram will be presented as follows:

Diagram number (01) the verbal communication process in people with agrammatism.



Source: (Ibrahimi, 1998-1999)

It is clear from the above graph that people with agrammatism suffer from a deficit in the second operation, that is to say, the input process. This deep deficit deprives the patient of using the linguistic stock correctly.

This deficit reflects the process of constructing grammatical compositions for the case under study. For speech, according to "Jakobson", is not only a set of words that form it. It is rather "words in their relationship with other words in speech through certain connections". The loss of linguistic and grammatical units in speech is also not total, but there are some units that are retained by the person with expressive aphasia. In consequence, what is corrupted in the case under study is the ability to build complete

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grammatical structures that do not lack the important units in the composition. In other words, they are unable to link these words together in the context of the sentence, as they try to provide us with what is important in their information, using the least number of units that can express the ideas they want to convey. It is the same result that "Lanteri" confirms in his study (1995). (Lanteri, 1995)

Accordingly, the impact of aphasia disorder on the grammatical component has been proven, causing what is known as "agrammatism" in adult aphasic people, and thus confirming the hypothesis of the study.

Conclusion.

Through the present article we seek to study “ungrammaticality” in people with Broca's aphasia, in the Algerian clinical environment, relying for this purpose on the linguistic approach. Our starting point in this approach was based on clinical observations and recordings of the speech of four cases with Broca's aphasia, all of whom suffer from difficulties in producing sentences and oral compositions. These difficulties led us to adopt the aphasia diagnostic test of "Blanche Ducarne" 1976, which has been adapted to the Algerian environment.

The results revealed a deficit in the ability to link between the different linguistic units that make up speech and enter them into relationships with one another as a result of the deletion of various grammatical tools, which led to the disappearance of these relationships, which directly affected the composition structure. This was mainly demonstrated in resorting to extreme abbreviation and adopting the telegraphic speech style, along with the absence of linguistic and grammatical conjunctions.

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