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**ASPECTS OF BROCA'S APHASIA-
LINGUISTICS AND THE USE OF PROTOCOLS IN
REMODELING THE SPEECH OF ADULTS WITH
APHASIA**

- SUMMARY OF PhD THESIS -

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Keywords: aphasia, language disorder, linguistics, discourse analysis, aphasic speech, speech patterns, discursive and pragmatic markers of aphasic discourse

Introduction

We all experience difficulties in everyday life, but what differentiates us is the way we try to solve them. No matter the difficulties that may arise they always try to surpass them and continue their lives by forgetting the problems they had to go through. Though, there are times when, no matter how hard they try, difficulties that arise cannot be transcended without help. One of the most important things in people's lives is represented by their ability to communicate. Using language in different settings and in different ways helps people lead a normal life. But, there are times when language may become impaired due to a lesion, brain damage, a disease, a neurological disorder or even a tumour.

Language disorders may vary depending on their cause, the position of the damaged area and severity. According to Alexandra Ciocîrlan and Radu Drăgulescu¹:

„In most cases, a speech error is not the result of a single factor, it does not imply a single aspect of the communication path. These phenomena are determined by an entire linguistic, neuro-psychological and socio-cultural conjuncture”.(trad.n.)

One of the most discussed and debated language disorders worldwide is aphasia, an impairment in which different linguistic levels may be affected.

Thus, the injured person is in a situation where he is unable to cope with physical and cognitive deficits as well as the language and communication disorders that result from brain damage. CVA has a negative impact on social functions as well. The affected person no longer perceives body responses normally but presents difficulties of coordination, balance, verbal expression, all of which have a negative effect on his quality of life². This transition from one

¹ Alexandra Ciocîrlan și Radu Drăgulescu, *Distorsionări ale comunicării. Cercetări de psiholingvistică*, Casa Cărții de Știință, Cluj Napoca, 2013, p. 13.

² J. B. Taylor, *Revelații despre creier*, București, Ed.Curtea Veche, 2011, p.43.

state to another significantly reduces the quality of life of people who have suffered a stroke. According to the World Health Organization (WHO)³ quality of life is defined as:

„[...] individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.”

Based on research conducted by R. Teasell, N. Hussein⁴ and Malcolm R. McNeil, Sheila R. Pratt⁵ stroke can affect the five cognitive spheres as follows:

Attention	Concentrated, sustained, selective and distributive attention
Memory	Visual, auditory, working, semantic, procedural, episodic memory
Executive functions	Initiating actions, speeding up information processing, planning and solving problems
Perception	Visual-space, visual-perceptual, heminegligence, apraxia, agnosia, inattention
Language	Broca's, Wernicke's, transcortical, conduction, global aphasia etc.

Figure1: Cognitive spheres affected by stroke.

The most common language disorder that occurs as a result of a stroke is aphasia. In a study conducted in 2012, Allen L. et al.⁶ highlighted that 38% of stroke survivors suffer from aphasia.

³World Health Organization, *Programme on Mental Health: WHOQOL - Measuring Quality of Life*, WHO/MSA/MNH/PSF/97.4, 1997, p.1. Disponibil online la: http://www.who.int/mental_health/media/68.pdf. Accesat: 16 august 2018.

⁴ R. Teasell, N. Hussein, *Rehabilitation of Cognitive Impairment Post Stroke*, în *Stroke Clinician Handbook*, 2014, p.1. Disponibil online la: http://www.ebrsr.com/sites/default/files/Chapter%205_Cognitive.pdf. Accesat: 20 august 2018.

⁵ Malcolm R. McMeil, Sheila R. Pratt, *Defining aphasia: some theoretical and clinical implications of operating from a formal definition*, în *Aphasiology*, vol. 15, nr.10/11, 2001, p. 905.

⁶ L. Allen et al., *Therapeutic interventions for aphasia initiated more than six months post stroke: a review of the evidence*, în *Top Stroke Rehabil.*, 19(6), 2012 noi-dec, p. 523.

Defined as a „disturbance of the comprehension and formulation of language caused by dysfunction in specific brain regions”⁷ aphasia can affect one or more language levels: semantics, phonology, syntax or morphology.

Aphasic patients are unable to convert nonverbal mental images, thoughts, into the symbols and grammatical organization that form language. At the same time, the grammatical level of the language is also affected, thus the sentences are full of mistakes. Unfortunately, there are times when not only the auditory signals are affected, but the visual and motor signs as well (sign language). Aphasia is not an illness and there is no medication for it. Though, studies have been performed to demonstrate the use of certain drugs (e.g. Piracetam, Bromocriptine) to enhance aphasia recovery, until now none of them was proposed for regular use in aphasia therapy.⁸

Aphasia is an intricate communication disorder that affects thousands of people each year. It is among the most alarming post-stroke cognitive disorder that does not affect patients' intelligence. Aphasic people know exactly what they want to say but may struggle to say it. With a high incidence in European countries, aphasia is more common in men than women leading, in most of the cases, to death or disability.⁹ Aphasic patients often consider themselves inferior to other people and have the feeling that they have lost their personhood.¹⁰

During the first year after being diagnosed with aphasia, recovery is possible even in the case of patients suffering from severe aphasia.¹¹ In order to develop an accurate treatment plan, it is imperative to perform a thorough language assessment. Some researchers are in favour of group evaluation by using standardized batteries¹², others believe that the „group study” method is not the best alternative when it comes to aphasic patients.

⁷ Antonio R. Damasio, *Aphasia*, în *The New England Journal of Medicine*, vol. 326, nr. 8, 1992, p. 531.

⁸K. Salter, R. Teasell, N. Foley, L. Allen. R. Teasell, N. Foley, K. Salter, M. Richardson, L. Allen, N. Hussein, S. Bhogal, J. Jutai, M. Speechley, editori. *Aphasia*, în *The evidence-based review of stroke rehabilitation (EBRSR)*, ediția 16, 2013. Disponibil online la: www.ebrsr.com. Accesat: 20 august 2018.

⁹ Marcelo Berthier, *Poststroke Aphasia. Epidemiology, Pathophysiology and Treatment*, în *Drugs Aging*, vol. 22, nr. 2, 2005, p. 164.

¹⁰ Martin L. Albert, *Treatment of Aphasia*, în *Arch. Neurol.*, vol.55, 1998, p. 1417.

¹¹ A.C. Laska, A. Hellblom, V. Murray, T. Kahan & M. Von Arbin., *Aphasia in acute stroke and relation to outcome*, în *Journal of Internal Medicine*, vol. 249 (5), 2001, p. 420.

¹² Harold Goodglass, Edith Kaplan, *Assessment of aphasia and related disorders*, Philadelphia, Lea and Febiger, 1972.

Speech-language therapy is believed to be the basic treatment for aphasia but the need for a specialised centre is imperative as well. In our country dissemination of information related to aphasia is very poor and no linguistic analysis has been performed, so far, related to patients' speech.

The present PhD thesis is based on both descriptive and interpretive approaches, combining two types of analysis, quantitative and qualitative. By the combination of these two types of analysis, this project is considered to be a critical research, an interpretation of aphasic patients' discourse. This approach has given me the opportunity to identify and analyze the frequency of uttered lexical and grammatical words, phonetic, grammatical, lexical, semantic and pragmatic errors, as well as logical and grammatical mistakes in aphasic speech. At the same time, the interpretation of the signs/markers that provide information about the speaker's intention to convey a meaning through his speech, the emphasis of the linguistic elements (peculiarities) of aphasic discourse, in order to distinguish the characteristics of this type of discourse, added an important value to this PhD thesis.

The desire to describe and present, as widely as possible, this language disorder from a pragmatic, discursive and psycholinguistic perspective by highlighting the lexical, semantic, morpho-syntactic, phonetic and textual aspects of the corpus, explains the use of methods and theories addressed in this thesis.

Based on the interpretation of non-fluent Romanian-speaking aphasic patients' speech obtained through the transcription of the recordings, as well as the uploading of the first Romanian language transcriptions to the AphasiaBank international platform, this study can be considered an innovative research.

Due to the interview method applied in the study, the thesis has a practical structure as well, highlighted in the examples we used in our research. The examples included in the paper characterize the speech of monolingual(Romanian)aphasic patients. In conducting the present research, I also took into consideration the non-verbal elements, because people engaged in a communication process (speaker and hearer) show some emotions which once decoded gives an extra meaning to the transmitted message. These nonverbal elements become markers that change the meaning of the content.

In developing this thesis, I have taken into account Foucault's principle that a text is both a product and a resource. A product because it results from a production process, and a resource because of the possibility of being interpreted. Discourse was best defined by Michel Foucault, who attributed three distinct definitions to it. Firstly, the researcher defined it as „the general domain of all statements”¹³ referring to all texts and utterances that make sense. Secondly, discourse is defined by the author as „an individualizable group of statements”¹⁴ and thirdly as „a regulated practice which accounts for a number of statements”¹⁵.

In fact, the third definition highlights the importance of the rules and structures that make up certain statements and texts. Discourses can not be analyzed solely through the texts that they are made up from. Thus, in these texts, one can observe a presentation of the subject, the ideas evoked by the speaker through his statements.

Discourse is considered to be an event that is important to be understood at the text level. This text is a product of discourse, even if spoken or written by one individual or a group of people. For Foucault, discourse is power, and the analysis of the structures through which words/texts are formed is of particular importance for discourse analysis.

At the same time, this research is also based on the Bakhtinian dialogue that is considered to be the primordial reality of colloquial (current) language. Mihail M. Bahtin has developed a philosophical system based on the paradigm of a dialogue. By this, the Russian philosopher wanted to draw attention to the fact that a dialogue is not just a simple way to convey information, but rather is the very nature of human consciousness¹⁶.

People's existence is related to dialogue. According to Bakhtin, it is more important for a person to take part in a dialogue than to be aware of its content. A dialogue is not undertaken by the need to learn something new, to receive new information, but to the desire of the human being to address his peers, „everything in life is a dialogue, that is, a controversy”¹⁷. More: "To be is to be in contact with someone. When a dialogue ends, everything finishes”¹⁸. Communication is defined as „a complex device of skills in which linguistic and socio-cultural

¹³ Sara Mills, *Discourse*, London and New York, Routledge, 1997, p. 7.

¹⁴ *Ibidem*, p. 7.

¹⁵ *Ibidem*, p. 7.

¹⁶ Apud M. Bahtin, *Problemele poeticii lui Dostoievski*, Ed. Univers, 1970, p. 62

¹⁷ M. Bahtin, *Problemele poeticii lui Dostoievski*, Ed. Univers, 1970, p. 62.

¹⁸ *Ibidem*, p. 356.

knowledge is inextricably intertwined”¹⁹. Communication skills are acquired, developed, but can also be degraded. If there is no dialogue, there is nothing. This is the case of patients suffering from aphasia, who, after being diagnosed with this language disorder, believe that their life is useless and everything has ended.

The approach of the discourse from the structuralist (microstructure of the language) and the functionalist perspective (macrostructure of the language), as well as the involvement of discourse analysis, gives the speaker the opportunity to understand and analyze it in its complexity.

Most of the research performed with regard to aphasic speech is done on the basis of the **formalist or structuralist** perspective, according to which language is analyzed at the level of the sentences, phrases and words, namely by focusing on the lexical and syntactic aspects of the discourse produced by the aphasic patient. The lexical aspect has been studied from a semantic and a grammatical perspective. Thus, this type of analysis focuses on the microlinguistic level.

On the other hand, the **functionalist oriented research** investigates discourse at the level of text macrostructure. It focuses on the general meaning of the text. A text is seen „as an instrument for finding out about something else”²⁰.

The purpose of the research and the corpus

The purpose of this study is to analyze the language skills of a group of Romanian speakers suffering from non-fluent aphasia. Patients’ assessment focuses on narrative discourse, as research has highlighted that spontaneous or semi-spontaneous discourse can provide more insight into an oral aphasic speech than standardized tests.

The PhD study benefitted from 4 main research directions, focused on the phonological, grammatical, lexical, semantic and pragmatic aspects of aphasic discourse. Thus, our aim was to emphasize that:

- ✱ there is a pattern of Romanian speaking non-fluent aphasic patients’ speech;

¹⁹Catherine Kerbrat-Orecchioni, *Nouvelle communication et analyse conversationnelle*, în *Langue française*, 1990, p. 31.

²⁰M.A.K. Halliday, *An introduction to functional grammar*, London, Edward Arnold, 1985, p. 3.

- * aphasic patients have difficulty in evoking certain lexico-grammatical classes;
- * the protocols included in the study are differently addressed and represented by patients suffering from non-fluent aphasia;
- * there are specific signs/markers of aphasic speech, which contain instructions regarding the interpretation of statements.

The present research will be a starting point for the analysis of aphasic speech based on the transcription of recordings obtained through the interview method, which is necessary for the evaluation and treatment of patients suffering from aphasia.

Performing a complex statistical analysis resulting from the correlation of the etiopathogenic data of aphasia with the biological one, as well as the scores obtained from the application of the protocols in an attempt to develop a complex profile for these patients comprising elements of linguistic analysis and data of medical profile, has established the secondary research direction in this thesis.

Besides the major and minor research directions, the PhD study also proposed to carry out an analysis regarding aphasia awareness among the Romanian population, a study that emphasizes once again the importance to fathom the main theme of the thesis.

The corpus on which the research is based on consists of transcripts from the discourse of Romanian-speaking patients (23) suffering from Broca's aphasia. Segments of these patients' discourses are reproduced in the body of the thesis and are differentiated by applying an acronym to each individual patient, an acronym (identifier) consisting of the abbreviation of the patient's name, age, gender and date of the interview (e.g. NM_F_76_26.04.2017). We were interested in analyzing non-fluent aphasic patients' verbal expression disorders. Disorders of written expression and verbal reception have not been interpreted in this study. We propose to analyze the aspects of deviation, linguistic distortion from a psycho-neuro-linguistic perspective, by including notions of pragmatics.

Due to the fact that communication disorders are detected at all language levels (phonetic, phonological, lexical, semantic, morpho-syntactic and pragmatic) and are determined by certain psycho-neurological, socio-cultural factors etc. our analysis is based on these considerations.

This thesis also represents the Romanian contribution to the development of the international database for aphasia, AphasiaBank (<https://aphasia.talkbank.org/>), (<https://aphasia.talkbank.org/browser/index.php?url=Romanian/Aphasia/Kutasi/>)

The structure of the thesis

The present PhD thesis entitled *Aspects of Broca's aphasia- linguistics and the use of protocols in remodeling the speech of adults with aphasia* consists of nine chapters, that include an introduction of the theme (the theoretical framework), the role of linguistics and discourse analysis in the evaluation and treatment of aphasia, description of the research methodology and the obtained results, discussions and conclusions, and the last part contains the final conclusions

The first chapter *Aphasia, a language disorder*, includes an overview of this language disorder, which this work is built up on. As a result of stroke, aphasia affects certain parts of the brain that are responsible for speech. Clinical and historical framework and the types of aphasia are also described in this first chapter.

Chapter two *The role of linguistics in the evaluation and treatment of aphasia* includes a brief presentation of the notion of language, its characteristics, the development and acquisition of language, as well as the importance of linguistics in the evaluation and treatment of aphasia. It also includes a linguistic approach to this disorder. We put a great emphasis on the development of clinical linguistics, which is an important step in the study of language deficiencies. Clinical linguistics can be used in aphasic patients' diagnosis as a first step in the recovery process.

The third chapter entitled *Discourse* aims to define the terms „discourse”, „text” and „language” by defining the various meanings assigned to them. This chapter also includes a description of discourse from a linguistic point of view.

The fourth chapter, *Discourse analysis*, describes discourse analysis as a linguistic field of study. What we propose in this chapter is the presentation of the two perspectives, the structuralist (microlinguistic analysis) and the functionalist (macrolinguistic analysis)one, applied in the investigation of aphasic patients' discourse. We also highlight how gender differences affect aphasic patients' oral expression.

By performing discourse analysis, researchers wanted to explain how people organize/ interpret discourse. Consequently, they have contributed to the description of certain aspects

involved in language acquisition. In order to carry out a thorough analysis, it is necessary to obtain a corpus, formed either from transcripts of recorded conversations or selected documents for analysis. Discourse analysis helps researchers understand patients' ability to convey correct information, use lexical and grammatical resources in order to transmit the conveyed data and the extent of the affected language level(s).

The fifth chapter *Material and methods* includes an overview of the materials and methods used in conceiving the research project. Thus, the PhD thesis is a prospective, multicentric and confidential study. It involves collaboration with several Neurology Clinics from Târgu Mureș, as well as with a private Medical Center, for the recruitment of 23 aphasic patients, in order to record, transcribe, and then interpret their discourse. The study is important because it provides a peculiar view on the strategies and linguistic structures used by patients with aphasia when organizing, developing and formulating their discourse by using the protocols included in the study. It also gives us the opportunity to observe the discrepancy in the approach of the protocols by different aphasic patients, which proves that the same protocol can be described from different subjective perspectives. The main, secondary and related directions of the study are also described in this chapter.

The design of the research project, patients' inclusion and exclusion criteria in the study, the recording of aphasic patients' discourse in compliance with the working protocols, the transcription of the obtained material and the description of the methods of analysis are only a few topics presented in chapter six **Description of the research methodology**.

The protocols included in the study are the ones used in international researches, namely: personal narrative, image description and storytelling. Patients, regardless of gender, age, duration of aphasia, medication, who have signed an informed consent, suffer from Broca's aphasia as a result of stroke were included in the study. The study did not include patients who did not sign the informed consent form, wanted to withdraw from the study, suffer from dementia or have requested any kind of remuneration. The spontaneous and semi-spontaneous discourses were obtained through interviews between the doctoral student and non-fluent aphasic patients, transcription of the recording is done verbatim.

A case of analysis of an aphasic patient included in the studied group is also presented in this chapter.

Research results are summarized in chapter seven entitled *Results*. In order to obtain the most extensive results, we opted for both a quantitative and qualitative analysis of aphasic speech separately for the protocols we used to generate spontaneous speech as well as for those used in generating semi-spontaneous speech. The quantitative analysis revealed aphasic people's preference for the use of nouns, which indicates that these patients prefer descriptions rather than narrations. At the same time, we have outlined the limited use of verbs, adjectives and pronouns in aphasic discourses. More, in terms of prepositions and conjunctions, we have observed a predilection for the copulative conjunction „and”, as well as for the prepositions of place.

The abundant use of prepositions and conjunctions is explained by the repetition of the same preposition for an easier word utterance or an unambiguous evocation of the word required by the context. The incorporeal use of the copulative conjunction „and” as well as the conclusive „so” highlights aphasic patients' predilection for these conjunctions, and their repetition in order to mark the continuity of their statements and ideas.

Discussions and conclusions are described in chapter eight, where a special subchapter is dedicated to *Future research directions*.

The thorough analysis of the lexico-grammatical classes in each protocol has underlined aphasic patients' preference for nouns, followed by verbs, pronouns, and adjectives. This analysis has also highlighted the fact that people with aphasia have a much more productive verbal flow in spontaneous discourse than in the semi-spontaneous one.

In order to obtain conclusive data, we performed an analysis at the level of the three protocols that were separately included in the statistical program, resulting in a total of 5 protocols for analysis. The analysis of the transcripts of the protocols revealed that aphasic patients generated more words in the spontaneous speech (interview), followed by the description of the images and, ultimately, the storytelling protocols. This demonstrates that aphasic patients generate more words when they are allowed to speak freely without any imposed restrictions. The description of images, as well as the storytelling protocols, are tasks that require detailed description and increased attention, two of the ability that aphasic patients lose as a result of the language disorder (aphasia).

The detailed analysis of the lexico-grammatical classes in all protocols has accentuated aphasic patients' predilection for nouns, followed by verbs, pronouns and adjectives. This

analysis as well has highlighted the fact that patients with aphasia have a much higher verbal flow in spontaneous speech than in the semi-spontaneous one.

Performing the quantitative analysis also required the analysis of disagreements (grammatical and logical) produced by non-fluent aphasic patients. The statistical analysis revealed that the speech of these patients abounds in logical mistakes, the grammatical ones being observed in a lower percentage. They remain constant at the level of the semi-spontaneous speech, being higher at the level of the spontaneous one, as evidenced by the difficulty of the protocol itself. The interpretation of this analysis attests the fact that the speech of people suffering from aphasia can be deciphered regardless of the grammatical mistakes they make, but it is much more difficult to understand what these people want to convey through their discourse. Here's an example of a logical mistake to exemplify the above interpretation:

(1) „P: At home, we work every day of what we have worked, or well ... copied (copiete), copied by a ... so ... and we are already working the second time ...yes already a.. about .. one month that we resumed ourselves.” (BO_M_60_22.06.2016) (tr.n.)

Here we have identified the following logical disagreements:

- at home he worked every day something that has already been done (worked);
- if it has already been done why was it copied;
- if it has already been done, why it was done the second time;
- if he has been working for a month, why they resumed it themselves and whom he was „alone” with.

The time required to finish the protocols highlights, once again, the difficulty faced by aphasic patients when producing semi-spontaneous speech. The interview protocol required an average of 7 minutes and 47 seconds, while the „Refused Umbrella” image was described by patients in an average time of 49 seconds.

The analysis of non-flexible lexico-grammatical classes, conjunctions and prepositions, as well as conjunctival and prepositional phrases, revealed aphasic patients’ preference to the use of simple prepositions and conjunctions. Compound prepositions and conjunctions, as well as conjunctival and prepositional phrases, are poorly represented in the aphasic discourse. The constant repetition of these two lexico-grammatical classes can be explained, in my personal

opinion, by the inability (barrier) of the aphasic patient to evoke/utter the desired word. Patients mask their language disorder through this repetition, hence a large number of prepositions and conjunctions used by them. I believe that this repetition can be interpreted as a pattern of aphasic discourse, a pattern that I have encountered in most patients. The deficient use of prepositions and compound conjunctions, as well as of prepositional and conjunctive phrases, reveals the deficiencies that aphasic patients present at the level of these two lexico-grammatical classes.

By conducting the quantitative analysis we outlined the influence of the severity of aphasia on language fluency as well as the determination of the most used lexico-grammatical classes. The analysis also highlighted the fact that there is a pattern of speech at the level of the lexico-grammatical classes.

The analysis performed at the microstructural level consisted of investigating the phonetic, semantic, lexical and grammatical level of aphasic patients' speech included in the study using descriptive and comparative methods.

The analysis performed on the phonological level revealed that consonant substitution in the initial position is the predominant type of phonetic error in all three protocols. Vowel insertion appears in the middle and final position and, to a lesser extent, consonant insertion in the initial position.

Another phonetic error is the omission of phonemes, rather at the level of the consonants than at the level of vowels. Thus, the omission of the liquid consonant /r/ and of the nasal alveolar /n/ is more frequent in the median position. The omission of /i/ and /a/ in semi-spontaneous speech is the most frequent error encountered at the vowel level.

At the phonetic level, we have also encountered errors of vowel fusion, as well as phonetic errors, also called stereotypes. These stereotypes are usually made up of adverbs. In our corpus, we have encountered brief answers to a statement by using adverbs of affirmation /negation: „Yes, yes, yes”. „No, no,” refusal expressed by the use of verbs in their negative form: „I do not know, I do not know.” or responses with an „in echo” approving character: „So, so, so”.

We have also identified errors of the lexical derailment, the use of fillers, difficulty of evoking words, as well as the use of interjections.

At the grammatical level we observed the improper use, omission or addition of the definite and indefinite articles, the use of the present and present perfect tenses and the omission of the auxiliary verb. Also, aphasic patients show difficulty in using the unaccented forms of personal pronouns in accusative and dative and the prepositions of place and time.

The numeral raises a particular issue for aphasic patients with Broca's aphasia. Frequent manifestations of the phenomena are the omission, inversion of the cardinal number series in both types of discourses. The ordinal number is used in the semi-spontaneous speech. The preference for the popular forms is observed in most patients included in the study, because these forms are more pronounced and do not require the use of preposition (which explains the avoidance / poor representation of this lexico-grammatical class in the aphasic discourse). The consecutive utterance of numbers is also affected. Sequential disorders observed in the corpus are those of omission, inversion and blocking. The utterance of the numerals two by two and the inability to say their date of birth are specific patterns of aphasic speech.

At the macrostructural level, I performed the analysis of the aphasic discourse focusing my attention on the extent of the discourse as well as the verbal and nonverbal markers, the discursive and pragmatic connectors used in order to emphasize speakers' intention to communicate. We highlight that at the level of aphasic discourse analysis spontaneous and semi-spontaneous speech are analyzed differently. From here the different approaches in the thesis, but the conclusions can be drawn simply by generalizing the obtained elements.

Once the transcription of the recordings was performed, I noticed that the speech of Romanian aphasic patients abounds in the use of pragmatic markers and connectors. Since spontaneous speech is, in fact, a conversation between the PhD student and the aphasic patient, I resumed my analysis on the use of personal, spatial and temporal deictics as well as pragmatic verbal and nonverbal markers. The interpretation of these markers helped me in the authentic reception of the aphasic discourse.

Aphasic discourse, both spontaneous and semi-spontaneous, respects Dominique Maingueneau's laws of discourse by providing the information requested by the PhD student, even if these are deficient due to the language disorder aphasic patients present (the disruptive element), eventually succeeding in conveying the desired message.

In both types of discourses, I noticed the excessive use of affective words, the repetition of certain terms and the impossibility of preserving the narrative sequence. In the spontaneous speech, this is represented by giving inappropriate answers to the questions of the interviewer while in the semi-spontaneous one by a random description of the events illustrated in the pictures.

Positive as well as the negative state is expressed, in both cases, by the use of interjections. The events are retold in the present simple or present perfect, tenses often used by aphasics for events narration and image description.

In both types of discourses, the presence of the adverbs of place, „here”, „there” and the use of demonstrative pronouns to indicate the space (spatial deixis) where the action takes place are to be observed. The adverb of time „now” and its popular form, as well as the terms that define time units used to describe the time of the action, appears only in spontaneous speech as a consequence of the fact that the use of time reference is not necessary for image descriptions.

A peculiarity of the aphasic discourse observed after performing the macrostructural analysis is the discontinuity of the events. The consecutive order is only rarely preserved, being marked, in these cases by discursive markers, such as copulative conjunctions „and” or „but” and adverbial phrases like: „afterwards”, „after that”.

The story of *The goat and her three kids* is the only protocol in which continuity is preserved by these aphasic patients. Compared to the picture description protocol, here, the patients recognized the main characters of the story, as well as their actions (possibly also through the effort to update the previously stored sequences in their memory).

The use of diminutives for both types of discourses, evocation of the words belonging to the same semantic field, derivation with suffixes and the use of silence (nonverbal markers) to mark frustration, inability or perhaps stubbornness/pain caused by the awareness of the impossibility to convey the desired message can be observed at this level.

Thus, we assist in identifying the linguistic specificity of the aphasic discourse by combining the micro- and macrostructural analysis.

Future research directions are also emphasized in this chapter because aphasic patients' discourse analysis is a necessity in order to determine an appropriate treatment.

The last chapter *Conclusions* aims at presenting the essential findings of this research based on the analysis performed on spoken Romanian language models. The recorded results represent a new direction in the analysis of Romanian non-fluent aphasic patients' discourse, as well as the importance of the separate evaluation and treatment of each language level.

The limitations of the PhD study and future research directions

The strength of this PhD thesis lies in its value in rendering, for the first time, an analysis of the speech of non-fluent Romanian-speaking aphasic patients, based on transcriptions obtained from the recordings of these patients' discourses, as well as the implementation of the first Romanian language transcripts based on the protocols included in the study in AphasiaBank.

However, this thesis has its own limitations as well. First of all, the reduced number of non-fluent aphasic patients included in the study. Although at first sight, a total number of 23 aphasic patients may seem limited, it should be recalled that this thesis did not aim to be a strictly statistical, clinical and linguistic analysis of the sub-population of aphasic patients with neurological problems, in an attempt to highlight statistical correlations with a diagnostic value between these elements. Putting this aspect aside, the present PhD study approached conversely, through its objectives, the problem of changes in the aphasic discourse. We studied in detail all relevant linguistic and grammatical changes in aphasic patients' spontaneous and semi-spontaneous discourses which we correlated, through statistical analysis, with clinical and biological data also considered relevant to the aetiology of the theneurological sphere of this complex disorder.

Although, we have chosen, for the storytelling protocol a story that has been part of the Romanian curriculum for many generations, so the problem of forgetting, due to aging, certain details and/or the narrative thread, especially in people who have not had any further contact with this narrative (such as primary school teachers etc.) can be considered. Thus, in patients who have failed to complete this protocol, the question would be if they knew still remembered enough details so that they could complete the narrative, with or without visual aid (from the perspective of the pictograms).

For the vast majority of patients included in the PhD study, interviews took place in the clinic where they were hospitalized and treated for the underlying neurological condition that led to aphasia. The conditions of hospitalization, although very good, presuppose patients' exposure

to the hospital environment, which does not allow for an optimal interviewing, most of the patients requiring the continuation of the medical treatment and conducting various imaging investigations which, of course, could not be interrupted by the conduct of the study. Performing these interviews in an isolated environment far from the interference of medical staff would have been preferable, thus removing a possible source of error in patients' reports, which could thus have perceived these interviews as an integral part of medical investigation of which many develop an aversion.

The inability to use software or transcription and linguistic analysis programs have led to the manual processing of the transcripts which has extended their processing time.

As well, I would like to implement a postdoctoral study that allows the identification of a pattern of elements or a cumulus of linguistic and grammatical elements, resulting from the analysis of all recordings, that also allows a predictive evolutionary analysis for new cases registered in the database.

The implementation of a questionnaire to investigate aphasia awareness at the national level by accessing research funds through dedicated platforms (UEFISCDI, PN projects, HORIZON2020 platform, etc.) is a necessity as well.

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2. Réka Incze (Kutasi), *Discourse Analysis. An Aid for Studying Aphasic Speech*, în *Revista Transilvania*, nr. 10, 2017, p. 59-63, ISSN- 0255 0539. (<https://revistatransilvania.ro/wp-content/uploads/2018/02/09-Reka-Incze.pdf>)
3. Réka Incze (Kutasi), *The role of linguistics in the evaluation and treatment of aphasia*, in *Bulletin of the Transilvania, University of Brasov, Series IV: Philology and Cultural Studies*, vol. 10 (59), no. 1-2017, p. 47-58. (http://webbut.unitbv.ro/Bulletin/Series%20IV/2017/05_Incze_Linguistics_1.pdf)
4. Réka Incze (Kutasi), *How to cope with language disorders?*, Proceedings - Literature, Discourses and the Power of Multicultural Dialogue, Iulian Boldea (Editor), Arhipelag XXI Press, Tîrgu Mureş, 2017. eISBN: 978-606-8624-12-9, vol. 5, pp. 440-444 (<http://www.upm.ro/ldmd/LDMD-05/LDMD%2005%20Language%20and%20Discourse.pdf>)
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10. Réka Incze (Kutasi), *The use of protocols in the evaluation and treatment of aphasia*, în DEBATING GLOBALIZATION. Identity, Nation and Dialogue, Section: Communication, Public Relations, Education Sciences, Editura Arhipelag, XXI Press, 2017, ISBN: 978-606-8624-01-3, p. 488-494. (mai 2017, <https://old.upm.ro/gidni/GIDNI-04/Cpe/Cpe%2004%2063.pdf>, <https://old.upm.ro/gidni/?pag=GIDNI-04/vol04-Cpe>)