

Common Errors in English Aphasic Discourse

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Received March 6, 2022; Revised May 2, 2022; Accepted June 1, 2022

Abstract. The article generalizes the results of research directed onto singling out the common errors in speech of aphasic patients. Aphasia is characterized by partial or complete loss of speech and is caused by damage in the language areas (Broca's and Wernicke's areas). A lesion in the middle part of the patient's left frontal lobe results in Broca's aphasia and the damage to the left posterior superior temporal gyrus is referred to as Wernicke's aphasia. The major causes of aphasia are strokes, cortical vein thrombosis, traumas of skull and brain, brain infections, tumors, etc. The research is based on the language-in-use descriptive approach to discourse analysis and presents an investigation of 40 documentary video recordings of aphasic patients' speech (free narration and dialogues); the overall duration of the recordings is 180 minutes. The inclusion criterion was aphasia of any type in adulthood. All the patients are English-speaking people (English being their native language) recovering from aphasia. The analysis was done according to the following criteria: intelligibility, coherence, cohesion, grammatical structure of utterances, prosody and intonation, thus combining formalist (or structuralist) and functionalist research paradigms. The research has shown that the most common errors that aphasic patients make when speaking are as follows: syntactic errors, articulatory errors, lexical misuse and slow speech rate. Syntactic and articulatory errors prevail (55% and 50% of all the studied cases respectively), whereas 37.5% of the speakers demonstrated slow speech rate. The speech of 75% of people with aphasia is incoherent. The patients' verbal performance is marked with extensive use of pronouns and repetition of words and phrases.

Keywords: *aphasia, Broca's area, Wernicke's area, English language, speech error.*

Котис Олена, Бондар Тетяна, Серватович Вікторія. Типові помилки у англomовному дискурсі осіб з афазією.

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East European Journal of Psycholinguistics, 9(1), 94–102. <https://doi.org/10.29038/eejpl.2022.9.1.kot>

Анотація. Стаття узагальнює результати дослідження, покликаного виявити типові помилки у мовленні осіб з афазією. Афазії притаманна часткова або повна втрата мовлення, вона зумовлена ураженням мовних центрів кори головного мозку (зон Брока та Верніке). Пошкодження задньої частини лобової звивини лівої півкулі мозку спричиняє афазію Брока, а порушення роботи заднього відділу верхньої скроневої звивини лівої півкулі – афазію Верніке. До основних причин виникнення афазії відносять крововиливи у мозок, тромбоз судин головного мозку, черепно-мозкові травми, інфекції головного мозку, пухлини і т. ін. Наше дослідження ґрунтується на дескриптивному підході до аналізу мовлення та фокусується на особливостях використання мови її конкретними носіями. Стаття презентує аналіз 40 документальних відеозаписів мовлення осіб з різними типами афазії (вільна оповідь та діалоги), загальною тривалістю приблизно 180 хвилин. Критерієм залучення була наявність афазії та дорослий вік пацієнтів. Усі мовці є носіями англійської мови (англійська мова – рідна), котрі знаходяться в процесі видужання. Аналіз було здійснено за такими критеріями: зрозумілість висловлювання, його когезія й когерентність, граматична структура висловлювань, просодичні елементи мовлення та інтонація, тобто ми поєднали структуралістську та функціоналістську дослідницькі парадигми. Виявилось, що найчастотнішими помилками у мовленні пацієнтів з афазією є синтаксичні й артикуляційні огріхи, неправильне використання слів та сповільнене мовлення. Переважають синтаксичні та артикуляційні помилки (55% та 50% від загальної кількості), тоді як 37,5% мовців вирізнялися сповільненим темпом мовлення. Про відсутність зв'язності мовлення свідчать 75% документальних відеозаписів. Таким пацієнтам притаманне надмірне використання займенників, повтори слів та словосполучень.

Ключові слова: афазія, зона Брока, зона Верніке, мовлення, англійська мова, помилки у мовленні.

Introduction

Research of the human brain structure and its relation to language competence and performance at the end of the 19th century led to the discovery of Broca's and Wernicke's language areas. This provoked great interest in investigating how language disorders, caused by specific brain damage (aphasia), are manifested in linguistic performance (comprehension and production) of patients. Hence, aphasia, "caused by a lesion in the middle part of the patient's left frontal lobe" is referred to as Broca's (or motor) aphasia and the one, caused by the "damage to the left posterior superior temporal gyrus" is Wernicke's (or receptive) aphasia (Nasios et al., 2019, p. 3). There are other types of aphasia (global, anomic, primary progressive, mixed non-fluent, etc.), however, in this research we focus on the two types, mentioned previously.

The advent of technology empowered scholars to look for a wider perspective and use modern tools to process language and thus cast light on the specific features of aphasic discourse. The use of MRI technology enabled researchers to investigate impairments in phonological processing (Graves et al., 2008), acoustic parameters of speech were analyzed by Aziz et al. (2020), phonological deficits in language production in patients with agrammatic aphasia became the scope of Nelson's research (Nelson et al., 2020). Furthermore, psychological characteristics of such speakers were the scope of research (Kozynets, 2003; Worrall, 2016) as well as their

impact on recovery of such patients (Hemsley, 1996; Mishchenko, 2020). Speech-language pathologists strive to help patients with aphasia retain their ability to communicate and produce comprehensible discourse thus boosting their integration into society, so factors that influence recovery after strokes have been researched (Pastryk et al., 2019) as well as narratives, produced by such patients (Andreetta, et al., 2012; Linnik et al., 2015). Coherence of discourse of patients with aphasia was researched by Olness and Ulatowska (2011), whereas Togher et al. (2013) dealt with the ways of training communication partners to interact with such patients.

This article seeks to investigate speech performance (and comprehension, where possible) of patients with Broca's and Wernicke's aphasia.

Method

The study involved documentary videos of 40 English-speaking patients. The overall video length is 180 minutes. The recordings can be freely accessed on YouTube channels of healthcare institutions (i.e., County Durham & Darlington NHS Foundation Trust, Flint Rehab, Tactus Therapy) and individuals (Sarah Scott channel and the like) who share their rehabilitation process after strokes, etc. The inclusion criterion was aphasia of any type in adulthood. The dominating type of discourse was personal narration combined with answering questions of an interviewer. The documented discourse underwent linguistic analysis (language-in-use descriptive approach) according to the following criteria: intelligibility, coherence, cohesion, grammatical structure of utterances, prosody and intonation, thus combining formalist (or structuralist) and functionalist research paradigms that proved to be effective for aphasic discourse analysis (Armstrong, 2000).

To ensure quality analysis of aphasic discourse a range of factors that influence rehabilitation success should be taken into account: the type of brain damage, location and type of lesion, age and overall physical state of a patient. In less severe cases, when cerebral blood supply is impaired for a short period of time, patients may regain their ability to communicate in hours or days. However, in the majority of cases it takes much longer to regain former ability to communicate. The process may last weeks or months after the trauma. Furthermore, there are severe cases that require a lot of treatment time. Even so, symptoms of aphasia may still remain. The most common errors typical of aphasic speech are word retrieval errors, errors at the phonological, grammatical and syntactical levels (Kutasi, 2017).

Results and Discussion

One of the spontaneous speech samples displays verbal performance of Laura Cobb (Young Stroke Survivors with Aphasia), a 27-year-old car accident survivor,

who had a stroke and is recovering from aphasia. The duration of her speech is almost 04 minutes.

The speech is intelligible, cohesive and coherent. The narration is well-structured: introduction, the main part and conclusion. However, the speech is very slow, yet clear and rather well articulated. The sentences are short and simple, all the members of the sentences are put in the correct order, no errors, e.g., *I have stroke. I have aphasia.* Complex and compound sentences are sometimes challenging for her: *My friend no go how to talk to me* instead of *My friends don't know how to talk to me.* The vocabulary that is used in the narration seems to be easily retrieved, however there are few articulatory mistakes (tongue slips): [ˈpeɪs] – [ˈpeɪks], [tɪps] – [sɪp]. Sentence stress is correct, notional parts of speech are stressed whereas functional are not. The intonation of the utterances is normal, even though the speech tempo is slower than such of an average language user who does not suffer from aphasia.

The research has shown less successful examples of speech production (Broca's Aphasia). When asked about their previous health condition (*Now tell me what this thing was with your legs last week or week before*), one of the patients with aphasia utters *No good. Egg and knees and ankles* instead of *leg and knees...* This case illustrates articulatory error, they use nominal structures only, even though the patient seems to understand the question. The pauses between words are rather long (10 – 20 seconds), so the speech rhythm is impaired.

For some patients with aphasia answering interview questions is easier than narration. Robert, in his fifties, is answering two interview questions (Aphasia: A loss of words, not thoughts):

Question 1: What does aphasia mean to you?

Answer: It affects me both in understanding what people say and also in speaking. I have to really concentrate when somebody is speaking to me. I get very bothered by other noises and distractions. I have trouble kind of putting the different words together and finding words that put the entire sentence together at times. And then sometimes it can flow okay.

Question 2: What are some day-to-day problems that aphasia has caused for you?

Answer: So I have trouble with giving instructions, placing orders, my biggest problem is dealing with doctors, dealing with a question and answer session. Not like we are doing here, because you've given me something written [interview questions] to help as well.

Robert's speech is cohesive and coherent, his answers are detailed, the sentence structure is extended and grammatically correct, there are both nominal and verbal phrases. The vocabulary is varied and suitable. The speaker admits he has problems with concentration, but even this factor does not deteriorate his speech function.

Another example of an interview with an elderly aphasia patient who has a stroke Fluent (Aphasia. Tactus Therapy). Byron Peterson (BP) is having a conversation with his doctor, Megan Sutton (MS).

MS: Hi Byron! How are you?

BP: I'm happy. Are you pretty? You look good. The utterance seems to be cohesive (syntactic structure is normal), but incoherent. The speaker articulates sounds well, there are no errors.

MS: And what were we just doing with the iPad?

BP: Uhh...right at the moment they don't show the damn thing. Ha-ha!

Bryan's answer demonstrates that he does not understand the syntactic structure of the question. He might not understand the context of the question, too. He must have recognized the word iPad, not paying attention to the tense form used by the interviewer. Moreover, the patient used incorrect tense in the reply (they don't show, not they are not showing).

MS: With the iPad, what were we doing? Like here?

BP: I'd like my change for me and change hands for me. It would happy.

The syntactic structure the patient uses is incorrect, the listener might be confused. Articulation and speech tempo are normal. The utterance is neither cohesive, nor coherent.

BP: I would talk with Donna sometimes. We're out with them. Other people are working with them and them. I'm very happy with them. This girl was very good. And happy and I play golf and hit up trees. We play out with the hands. We save a lot of hands on hold for peoples, for us. Other hands. I don't know what you get, but I talk with a lot of hand for him."

In this extract we observe excessive use of deictic pronouns (*them*), the listener will not understand who Bryan refers to. Moreover, the patient uses a lexical unit *hand* in many structures; this might cause illocutionary silencing, the sense is not relevant for the listener.

The examples of aphasic discourse demonstrate various degrees of intelligibility and coherence. This does not always depend on age of a patient, rather on type of aphasia and rehabilitation process itself.

The typical syntactic errors that the patients with aphasia made, were the following:

- 1) omitting functional parts of speech (articles, prepositions) and pronouns, e.g. *So, [I] have a stroke three years ago;*
- 2) misuse of pronouns: a) *I [my] first half marathon was two years ago;*
b) *Sometime I [my] grammar is not really good, sometimes you're okay;*
- 3) prevalence of nouns and adjectives in sentences: *Um...home...dizzy...lay-headed...fall...friend...call
911...ambulance...doctor...stroke...right...side...left-hemisphere....*

The articulation of the patients is mainly characterized by omission of consonants in words, i.e., patients pronounce vowels only, and mixing phonemes in words (the so-called "spoonerisms" [tips] – [sip]).

Table 1 shows common errors in aphasic discourse of the 40 patients whose narratives were analyzed in this article. The "+" sign shows presence of a certain type of error.

Table 1
Common errors in aphasic discourse

Patient #	Coherence	Slow speech rate	Syntactic errors	Lexical errors	Articulatory errors	Intonation and prosodic errors
1		+			+	
2	+		+		+	
3			+	+		
4			+			
5	+		+	+		
6	+		+			
7		+				
8						
9	+	+				
10		+	+	+	+	
11		+	+		+	
12		+		+		
13		+		+		+
14						
15		+	+		+	
16						
17			+	+	+	
18				+	+	+
19			+		+	+
20			+		+	+
21			+			
22			+	+		
23	+		+	+	+	
24					+	+
25				+		
26			+	+		
27		+				
28	+		+		+	
29	+		+	+	+	
30						
31		+			+	+
32	+	+	+		+	
33		+	+	+		
34	+	+	+		+	
35	+	+			+	
36			+	+	+	
37		+	+		+	
38				+		
39					+	
40						

The results of the study show that in the participants with aphasia three types of error prevail. These are syntactic and articulatory errors (55% and 50% of all the participants respectively, made mistakes when speaking) alongside with low coherence (the speech of 75% patients is incoherent). Moreover, 37.5% of the patients spoke rather slowly that prevented listeners from following the speaker. It must be noted that this speech characteristic does not depend on a patient's age: younger and older people with aphasia exhibited this. The lexical errors occurred in 37.5% of all the cases (the same ratio as for slow speech): the patients struggled to pick the correct word and/or misused words. The speakers also substituted one word by another belonging to the same semantic group (*arm – leg, week – month*). Notably, the percentage of people who spoke slowly and who suffered with choosing the correct words coincides. This demonstrates the tendency that problems with lexical level lead to change in speech rate.

Conclusions

Aphasia is a specific brain damage that often prevents people from normal social interaction due to poor speech performance of such patients. Problems with spontaneous speech production are referred to as Broca's aphasia, whereas challenges of ability to understand speech are usually caused by Wernicke's aphasia. Such health conditions may cause communicative anxiety, but if treated properly, patients may recover and can be integrated into society.

The research of aphasic speech was done in the framework of language-in-use descriptive approach to discourse analysis. Grammatical structure of utterances, vocabulary, prosody and intonation were investigated to make conclusions about intelligibility, coherence and cohesion of aphasic speech. The documentary videos of 40 aphasic patients' speech performance contain trustworthy linguistic evidence to trace the tendency of common errors that are typical for such people. The errors include: grammatically incorrect syntactic structure of phrases and sentences (omission of auxiliary verbs and prepositions, misuse of tense forms, lack of correlation between a subject and a predicate in sentences), excessive use of pronouns, repetition of words and phrases in a sentence. The search for suitable vocabulary led to pauses and slow speech rate and made the patients' verbal performance incohesive. Naturally, such problems in communication may cause illocutionary silencing.

Results of the analysis of 40 aphasic patients' speech can help to improve understanding of methods that can be used to develop approaches to aphasic speech research and help us conclude that linguistic paradigm can offer a lot to a modern linguist/speech-language pathologist, etc. The scope of new research is to investigate aphasic discourse of Ukrainian-speaking patients with aphasia.

References

- Andreetta, S., Cantagallo, A., & Marini, A. (2012). Narrative discourse in anomic aphasia. *Neuropsychologia*, 50(8), 1787-1793. <https://doi.org/10.1016/j.neuropsychologia.2012.04.003>
- Armstrong, E. (2000). Aphasic discourse analysis: The story so far. *Aphasiology*, 14(9), 875-892. <https://doi.org/10.1080/02687030050127685>
- Aziz, M. A., Hassan, M., Razak, R., & Garraffa, M. (2020). Syntactic abilities in Malay adult speakers with aphasia: A study on passive sentences and argument structures. *Aphasiology*, 34(7), 886–904. <https://doi.org/10.1080/02687038.2020.174228>
- Crystal, D. (2012). *The Cambridge Encyclopedia of Language*. Cambridge University.
- Frisco, N. (2015). *Discourse Processing Treatment for Adults with Aphasia*. Ph.D. thesis. Retrieved from <https://core.ac.uk/reader/71977360>
- Graves, W. W., Grabowski, T. J., Mehta, S., & Gupta, P. (2008). The left posterior superior temporal gyrus participates specifically in accessing lexical phonology. *Journal of Cognitive Neuroscience*, 20(9), 1698-1710. <https://doi.org/10.1162/jocn.2008.20113>
- Hemsley, G., & Code, C. (1996). Interactions between recovery in aphasia, emotional and psychosocial factors in subjects with aphasia, their significant others and speech pathologists. *Disability and Rehabilitation*, 18(11), 567-584. <https://doi.org/10.3109/09638289609166318>
- Kozynets, O. (2003). Do problem vyvchennia psykholohichnykh osoblyvostei khvorykh na afaziyu [On the issue of studying psychological features of aphasic patients]. *Naukovyi Chasopys of National Pedagogical Drahomanov University*, 23, 114 -121.
- Kutasi, R. (2017). Discourse analysis. An aid for studying aphasic speech. *Revista Transilvania*, 59 – 63. <https://aphasia.talkbank.org/publications/2017/Kutasi17.pdf>
- Linnik, A., Bastiaanse, R., & Höhle, B. (2021). Discourse production in aphasia: A current review of theoretical and methodological challenges. *Aphasiology*, 30(7), 765-800. <http://dx.doi.org/10.1080/02687038.2015.1113489>
- Mishchenko, M. (2020). Teoretychni aspekty vidnovlennia komunikatsiyi u doroslykh z afaziyeyu, shcho perenesly isul't [Theoretical issues of rehabilitating speech in adults with aphasia after stroke]. *Aktualni Pytannia Korektsiyanoi Osvity*, 197-207.
- Nasios, G., Dardiotis, E., & Messinis, L. (2019). From Broca and Wernicke to the Neuromodulation Era: Insights of Brain Language Networks for Neurorehabilitation. *Behavioural Neurology*, <https://doi.org/10.1155/2019/9894571>
- Nelson, M., Moeller, S., Basu, A., Christopher, L., Rogalski, E., Greicius, M., Weintraub, S. Bonakdarpour, B., Hurley, R., Mesulam, M-M. (2020). Taxonomic Interference Associated with Phonemic Paraphasias in Agrammatic Primary Progressive Aphasia. *Cerebral Cortex*, 30(4), 2529–2541. <https://doi.org/10.1093/cercor/bhz258>
- Olness, G.S., Ulatowska, H.K. (2011). Personal narratives in aphasia: Coherence in the context of use. *Aphasiology*, 25, 1393-1413. <https://doi.org/10.1080/02687038.2011.599365>
- Pastryk, T., Kotys, O., Dyachuk, N., & Milinchuk, V. (2019). Conscious control in speech pathology and speech rehabilitation following stroke. *East European Journal of Psycholinguistics*, 6(2), 89–97. <https://doi.org/10.29038/eejpl.2019.6.2.pas>
- Serdiuk, D., Kashuba, L. (2021). Symptomatyka ta mekhanizmy vynyknennia afaziyi u doroslykh [Symptoms and mechanisms of aphasia emergence in adults]. *SCIENTIA*. Retrieved from <https://ojs.ukrlogos.in.ua/index.php/scientia/article/view/9625>
- Togher, L., McDonald, S., Tate, R., Power, E., Rietdijk, R. (2013). Training Communication Partners of People with Severe Traumatic Brain Injury Improves Everyday Conversations: A Multicenter Single Blind Clinical Trial. *Journal of Rehabilitation Medicine*, 45, 637-645. <https://doi.org/10.2340/16501977-1173>

- Wagenaar, E. Snow, C. & Prins, R. (1975). Spontaneous Speech of Aphasic Patients: A Psycholinguistic Analysis. *Brain and Language*, 2, 281-303. [https://doi.org/10.1016/S0093-934X\(75\)80071-X](https://doi.org/10.1016/S0093-934X(75)80071-X)
- Worrall, L., Ryan, B., Hudson, K., Kneebone, I., Simmons-Mackie, N., Khan, A., Hoffmann, T., Power, E., Togher, L., & Rose, M. (2016). Reducing the psychosocial impact of aphasia on mood and quality of life in people with aphasia and the impact of caregiving in family members through the Aphasia Action Success Knowledge (Aphasia ASK) program: study protocol for a randomized controlled trial. *Trials*, 17, 153. <https://doi.org/10.1186/s13063-016-1257-9>
- Wright, H. (2011) Discourse in aphasia: An introduction to current research and future directions. *Aphasiology*. 25(11), 1283–1285. <https://doi.org/10.1080/02687038.2011.613452>

Sources

- Aphasia: A loss of words, not thoughts. Retrieved from <https://tinyurl.com/zazyszvc>
- Broca's Aphasia. Retrieved from <https://tinyurl.com/2f8y49d7>
- Fluent Aphasia. Tactus Therapy. Retrieved from <https://tinyurl.com/2p8n967m>
- Young Stroke Survivors with Aphasia. Retrieved from <https://tinyurl.com/2dehnh7s>