FACTORS AFFECTING THE EFFICACY OF APHASIA REHABILITATION DOI: 10.24234/se.2021.4.2.274

AUTHORS' DATA

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ABSTRACT

This paper aims to test the influence of premorbid verbal intelligence on the nature of aphasia and spontaneous speech recovery and to study the role of a micro-social environment on the effectiveness of speech rehabilitation.

The quantitative and qualitative methods of analyses as well as special parameters to determine characteristics of the communicative-speech environment and the degree of its influence on the process of speech recovery were selected.

A total of 65 patients with aphasia have been selected to study the effect of multilingualism on the efficacy of speech therapy. Family members of 150 patients with aphasia were interviewed to find out the micro-social environment effects on the process of aphasia rehabilitation and to inquire about a correlation between the degrees of involvement of the patient's environment in the process of speech therapy.

The factor of multilingualism and factor of the communicative-speech environment are interrelated with each other and the choice and appropriate use of language by the patients with aphasia need to be controlled from the outside.

Key words: Aphasia, rehabilitation, speech disorder, speech therapy, multilingualism, communicative-speech environment.

INTRODUCTION

Aphasia is the most common speech disorder caused by focal brain lesions. It is a neurogenic communication disorder that arises as a result of damage to the brain or other parts of the nervous system and appears as a deficit in language abilities (Manasco, 2014). Aphasia usually occurs suddenly, often as the result of a stroke or head injury, but it may also develop slowly, as in the case of a brain tumor. The disorder impairs speech's four basic components: speaking, understanding of language as well as reading and writing. Aphasia rehabilitation is still a challenge and represents a psychological and social problem (Burns, Baylor, Dudgeon, Starks & Yorkston, 2015). According to Vizel (2009) aphasia leads to a change in the personal, family, and social status of the patient and within this perspective. Shklovskiy (1982) mentioned that the family of patients with aphasia became ill. Family member illness entails changes not only in his/her mood but in the mood and behavior of other healthy family members as well (Yankovskaya, 2008).

Dynamics of speech recovery in patients with aphasia depends on several factors: etiology of the disease, location, and extent of brain damage, type and severity of aphasia, age of the patient (Watila & Balarabe, 2015), methods used in the course of therapy, professional level of the aphasiologist or the therapist (Tsvetkova, 2011), and original dexterity/sinistrality Shokhor-Trotskaya (Burlakova) (2001a,b). Based on the reviewed literature we have hypothesized that the process of speech recovery is influenced also by other determinants, such as multilingualism (premorbid knowledge of multiple languages) and communicative-speech environment (involvement of patient's micro-social environment in the process of speech recovery).

Within this review the current study has two main aims:

1. to test the influence of premorbid verbal intelligence (the factor of multilingualism) on the nature of aphasia and spontaneous speech recovery, and

2. to study the role of the micro-social environment (the factor of the communicative-speech environment) on the effectiveness of aphasia rehabilitation.

METHODS AND PARTICIPANTS

To triangulate and to back up the set of findings quantitative and qualitative methods of analysis were selected based on observations and interviews. The research has been conducted with the patients, who spoke two or more languages before acquiring aphasia. 65 patients with different types of aphasia took part in the presented study: 48 of these patients were bilingual, and 17 spoke more than two languages. 150 families of patients with different forms of aphasia were also included in the research.

For investigation of the environmental factors' influence on the efficacy of speech therapy, special parameters which helped to determine characteristics of speech environment and the degree of its influence on the process of speech recovery were selected.

DATA COLLECTION AND ANALYSIS

Data collected is necessary to support the evaluation of interventions and provide an appropriate accountability framework. It is argued that effective data use by the researcher has the potential to improve services for people with aphasia. Within the frame of this study, the data was collected through conducted interviews and observations.

Before conducting the main analyses, data from interviews and observations were tested for normality, linearity, and the presence of outliers (Rosner, 2000; Bradley, 1982). Then it was analyzed using quantitative and qualitative analysis methods; the speech recovery process was examined based on the characteristics of the communicative-speech environment. The focus on text - on qualitative data and numbers - is the important feature of the following research. The qualitative data is the transcription of interviews or notes from participant observation sessions, and quantitative data is using numbers to discover and describe patterns of the study.

RESULTS

To study the effect of multilingualism on the efficacy of speech therapy the following study has been carried out to monitor 65 patients with

aphasia. In the process of observation, we noted specific manifestations of aphasia due to knowledge of two or more languages. At the same time, it was essential to identify speech disorders, induced in patients with aphasia by bior multilingualism: switching from one language to another, language interference, switching of languages in different areas of communication, and so on. Based on the results of the study three main types of speech spontaneous recovery were identified in multilingual patients: parallel, serial and mixed.

In the parallel recovery of languages, aphasic disorders in each language system were equally expressed. Speech in different languages recovered simultaneously. The language fluency was restored to the premorbid level.

In serial recovery one of the languages, not necessarily the one that was dominating in the premorbid phase, started to recover earlier than other altered languages. Change in language predominance and the status of languages was observed. After recovery, the patients reported a temporary loss in certain language skills. Our observations have shown that this phenomenon is the result of speech therapy sessions conducted only in one language and/or the consequence of the single language communication in the speech environment of the patient. This communication language is not always the one that had dominated before the disease. Over time and in the presence of an adequate speech environment, the premorbid status of languages completely recovers.

Mixed recovery was characterized by non-typical disease manifestations in language interference at various levels (phonetic, lexical, grammatical, stylistic), observed in both oral and written communication. In all forms of aphasia auditory and visual differentiation of languages was retained. The subdominant language was more expressed. In many cases, the patients began to use actively the language which almost was not used in the premorbid phase. A typical pattern of recovery was observed in patients. In the initial stages of speech recovery confusion of languages, as well as a very frequent switching from one language to another was not perceived by the patient, whereas the voluntary efforts for interpretation were hampered and sometimes completely impossible. It alters the status of languages and the process of their random selection and use. These types of spontaneous recovery of different languages have been observed in patients with all forms of aphasia. The parallel type of spontaneous recovery had the highest rate. From 65 multilingual patients' parallel recovery was observed in 31 patients (47%), serial - in 20 patients (31%), and mixed - in 14 patients (22%) (Figure 1).

Figure 1.

The proportions of speech spontaneous recovery types in multilingual patients with aphasia



When working with multilingual patients, we concluded that speech therapists have to modulate the impact of patient's micro-social environment on the selection and use of languages based on their premorbid status, and the level of proficiency before the disease. At this point, the involvement of the micro-social environment in the process of speech therapy becomes essential.

Based on long term observations, analysis of survey results (Paylozyan, 2012), and interviews with family members of 150 patients with aphasia we sought to find answers to the following questions:

• To what extent the micro-social environment affects the process of speech recovery and the character of interaction between the patient and speech therapist?

• Is there a correlation between the degree of involvement of the patient's environment in the process of speech therapy and the results of the speech recovery?

The degree of micro-social environment influence on the process of speech recovery and the character of its interaction with speech therapist has been determined based on the following parameters:

- attitude to the speech therapy process;
- willingness to cooperate with the speech therapist;
- following the speech therapy recommendations;
- actively collaborating with the speech therapist.

The observation results allowed us to identify the following types of interaction between the speech therapist and the patient's immediate environment: co-operation, management, indifference, and correspondingly the speech environment of patients with aphasia were classified as active, passive, and formal. Taking into account the above-mentioned parameters, 56 families out of a total of 150 were described as active, 44 - as passive, and 50 families - as formal speech environment.

Active speech environment ("cooperation") was characterized by expressed willingness to participate regularly in speech therapy sessions. The environment was determined to understand the essence of aphasia and to assist the speech therapist in his efforts. They asked a lot of questions about aphasia, and its possible outcome, and the time of recovery, followed the recommendations of the therapist and implemented them, helped the patient with the homework and other tasks. In the case of the active speech environment, we were able to work with the patient not only during the sessions.

Passive environment ("management") also participated in the process of speech recovery but to a lesser extent. The environment was informed about the need for systematic speech therapy sessions, and to some extent agreed with the opinion of specialists. However, this cooperation was limited. Outside the therapy sessions, recommendations of the therapist were followed not regularly, only some episodic assistance was observed. The passive participation of the speech environment in the therapy process was usually due to lack of time. The common explanation that we have heard was

that the patient expresses willingness to work and exercise only with the therapist.

The formal speech environment ("indifference") was characterized by a skeptical or indifferent attitude towards the speech therapy sessions. There were cases of refusal to participate in speech therapy sessions and sometimes attempts were made to "persuade" the patient to discontinue the sessions. In a formal speech environment, the recommendations of the therapist were not followed, and typically a conviction predominated that speech will recover without therapy. Observations have shown that the patient's care was restricted to supporting his/her physical needs.

Results of speech recovery were evaluated based on the four grade system accepted in speech therapy practice: significant (practical) recovery the availability of fluent oral and written language skills with elements of agrammatism and with very few errors in written output; general improvement - patients can communicate using phrases, to compose noncomplex texts based on series of scene images, non-complete recovery of reading and writing skills and in cases of sensory aphasia an overall improvement in listening comprehension is typical; partial improvement improvement in some aspects of speech, such as the ability to communicate using single words or short sentences, or improvement in speech comprehension, etc.; not changed - lack of positive dynamics in the speech status.

The lowest rates of speech recovery were registered in patients with formal speech environments. This group included 50 subjects and significant speech recovery was revealed only in 4 patients (8%), the overall improvement - in 12 patients (24%), partial improvement - in 10 patients (28%), 20 patients (40%) showed no dynamics in the course of treatment. In cases when the micro-social environment had followed the recommendations of a speech therapist, the results of therapy were significant recovery in speech had been observed in 10 subjects (22,7%), overall improvement - in 22 patients (50%), partial improvement - in 18, 2% of patients, and only in 4 patients (9,1%) the speech stayed unchanged. However, the results of speech recovery were still inferior to activity indicators of speech therapy were

higher and significantly different from that of a formal and passive speech environment. In this group out of the 56 patients' significant recovery of speech was revealed in 28 patients (50%), general improvement - in 24 patients (42, 9%), and partial improvement - in 4 patients (7,1%). It is noteworthy that in the group with an active speech environment not a single case of unchanged speech status without positive dynamics was observed.

DISCUSSION

Aphasia leads to a change in the personal, family, and social status of the patient. The family in which there is a patient with aphasia "stops its functioning". Lack of speech, mobility impairments, inability to take care of oneself often disrupt the activities of the family, family relations deteriorate (Vizel, 2011; Shklovskiy, 1982). These also influence the social life of the patients in the contexts like leisure, work, collaboration, and socialization as a whole. In many cases, it is very important to classify speech disorders, induced in patients with aphasia by bilingualism or multilingualism, which is very actual in modern life.

The study shows that multilingualism factors and speech environment significantly influence the efficacy of speech therapy. Features of speech spontaneous recovery are similar to the data obtained by other researchers, stressing the special pattern of multilingual aphasia (Wilson, Henry, Besbris, et al., 2010). Different authors have presented a variety of models for speech therapy in patients with multilingual aphasia (Fabbro, 2001; Paradis, 1997). We have identified the following main types of spontaneous recovery in multilingual patients: parallel (the most common type of recovery), serial and mixed, those have to be differentiated to support the process of speech therapy.

According to Tsvetkova (2011) creating an enabling environment for the patient, providing opportunities for verbal and nonverbal communication, first in a small therapeutic group of patients with aphasia, and then in the broader social environment has an affirmative effect on the positive changes in personality, to overcome the phobia of speech, negative settings, etc. This aspect was also valued and discussed in suggested bilingual methods: dosing languages, switching, translating, and comparing. Thus it is proven that using several languages during the therapeutic process for speech recovery has a big psychotherapeutic effect. Follow-up data and spontaneous utterances of multilingual patients assure that speech therapy is largely determining the further use of the language. Results of the intervention show that multilingual patients experience some discomfort, constraint, and speech phobia if only one language was used during therapeutic sessions.

The involvement of communication partners of patients with aphasia in the process of speech therapy is one of the important aspects of aphasia rehabilitation (Johansson, 2012). Study results show a significant correlation between the characteristics of speech environment (active, passive, formal) and the results of speech therapy. At the same time studies of Glozman (1987; 1989) have shown that aphasia as a result of the communication breakdown is changing a person's self-esteem: there is a feeling of inferiority, fear of and communication. The speaking. hindering impossibility of communication, in turn, increases fear of speech and a vicious circle phenomenon appears. And conversely, expanding communication capability reduces the fear of speech, smoothed out the negative personal settings, and patients begin to assess themselves closer to what has been estimated to be disease. And this is something that was found and proven in the interaction process between the therapist and the patient immediate environment which was described as an active speech environment. The best results of speech therapy have been observed in the group with the active participation of speech environment in the process of speech recovery.

According to Shokhor-Trotskaya (Burlakova) (2001), the recovery of impaired speech function is dependent on the help of the patient's relatives, who should contribute to strengthening the identity of the person and creating a primary communication medium for him. She has also mentioned that speech/language pathologists, doctors, and close relatives, and family members together can generate the settings to restore speech in the patient. That is something very specific within this research that could be seen in the passive and formal speech environments when the cooperation with the speech therapist was limited due to personal and social factors of the patient. At the same time, Watila and Balarabe (2015) state that despite the lack of study of the influence of the environment on the process of overcoming aphasia, a favorable environment, combined with effective therapy improves recovery of speech. And while observing and describing the passive speech environment of patients in this study it was obvious that if the patient has no generated settings to restore his speech there is no sense to think about success in speech rehabilitation. Within this context, it is very important to mention that in the family the re-adaptation of the patient to the new conditions of psychological and physical existence is done (Yankovskaya, 2008) and for this reason bringing family members to the speech therapy sessions leads to the improvement of patient's communications capabilities, reduces the severity of depressive background (Norvils, 2011).

CONCLUSION

Based on the data analyzed and discussion it is possible to state that multilingualism and speech environmental factors are directly linked together. Speech environment provides social control over the use of speech in different languages, according to their premorbid status. It was also stated that often in speech recovery use of a language does not begin to match the situation and the extent of its use before the disease. This causes certain reactions in the patient and/or his family members: discomfort, dissatisfaction, surprise, unwanted jokes. Therefore, the choice and appropriate use of language should be controlled from the outside, especially when a mixed type of recovery. Outside the speech therapy sessions, adequate control over the use of languages is carried out by the patient's speech environment, following the recommendations of a speech therapist. Speech environment is directly related to the recovery of such quality as the appropriateness of the language use according to the situation of communication. We recommend to the patient's relatives to control the speech of the patient, to stimulate or inhibit speech in a particular language, which creates beneficial conditions for the restoration of their arbitrary, informed, and appropriate use of language.

Due to all mentioned above our future research will focus on revealing new effective forms of cooperation between the speech therapist and the patient, as well as the patient's immediate environment (Paylozyan 2018; Paylozyan, 2017).

REFERENCE LIST

- 1. Bradley, J. V. (1982). The insidious L-shaped distribution. Bulletin of the Psychonomic Society; 20:85–88.
- Burns, M., Baylor, C., Dudgeon, B. J., Starks H., & Yorkston K. (2015). Asking the Stakeholders: Perspectives of Individuals with Aphasia, Their Family Members, and Physicians Regarding Communication in Medical Interactions, American Journal of Speech-Language Pathology, March 10, 2015, pp.3-57.
- 3. Fabbro, F. (2001). The bilingual brain: Bilingual aphasia. Brain and Language, 79 (2), pp. 201-210.
- 4. Glozman, Zh. M. (1987). Lichnost I narusheniya obshenoya 148 s.
- Glozman, Zh. M. (1989). Shkala socialnoy reabilitacii bolnokh s porajeniyami mozga // Problemi patologii rechi. Tezisi vsesoyuznogo simpoziuma. Moskva, s. 29-30.
- 6. Johansson, M. B. (2012). Aphasia and communication in everyday life: experiences of person of aphasia, significant others and speech-language pathologists. Uppsala University, 101 p.
- 7. Manasco, M. H. (2014). Introduction to Neurogenic Communication Disorders. Burlington: Jones & Bartlett Learning, p. 2.
- 8. Norvils, S. N. (2011). Iz opita logopedicheskoy raboti po preduprejdeniyu razvitiya emocionalno-lichnostnikh narusheniy u postinsultnikh bolnikh //Defektologiya N3, s. 63-69.
- Paradis, M. (1977). Bilingualism and aphasia. //Studies in neurolingvistics. /Eds. H. Witaker, H.A.Whitaker. – N.-Y. – Academic Press. – Vol.3., pp.65-121.
- Paylozyan, Zh. A. (2017). Vosstanovleniye rechevoy kommunikacii pri afazii– Avtoreferat, dissertaciya na soiskanie stepeni doktora pedagogicheskikh nauk. – Yerevan, 2017.
- 11. Paylozyan, Zh. A. (2018). Formirovanie kommunikativno-rechevoy sredi kak strategiya povisheniya effektivnosti logopedicheskoy raboti.
 Obrazovanie lic s osobennostyami psikhofizicheskogo razvitiya: tradicii i innovacii: materiali mejdunarodnoy nauchno-prakticheskoy konferencii Minsk: BGPU, 2018, s. 265-267.
- 12. Rosner, B. (2000). Fundamentals of biostatistics. 5. Pacific Grove, CA: Duxbury Publishers.

- Shklovskiy V. M. (1982). Socialno-psikhologicheskiy aspect reabilitacii bolnikh s afaziyami // Zh. Nevropat. i psikhiatr. – Moskva, vup. 2 – s. 248-253.
- 14. Shokhor-Trotskaya (Burlakova) M. K. (2001a). Rech i afaziya. M., Izdatelstvo Eksmo-Press 416 s.
- 15. Shokhor-Trotskaya (Burlakova) M. K. (2001b). Strategiya i taktika vosstanovleniya rechi– Moskva 432 s.
- Tsvetkova, L. S. (2011). Afaziologiya: sovremenniye problem i puti ikh resheniya - M., MPSI – 744 s.
- 17. Vizel, T. G. (2009). The question of aphasic nature. Defektology, N 6, p. 65–70.
- Watila, M.M., & Balarabe, S.A., (2015). Factors predicting poststroke aphasia recovery. Journal of The Neurological Sciences, March, pp. 12–18. https://www.researchgate.net/publication.
- Wilson, S. M, Henry, M. L, & Besbris, M. (2010). Connected speech production in three variants of primary progressive aphasia. Brain 133 (Pt 7): 2069–88.
- 20. Yankovskaya, E. M. (2008). Kompleksniy podkhod k psikhoterapevticheskomu soprovojdeniyu semey bolnikh, perenesshikh insult, Avtoreferat dissertacii, SPB., 25s.