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## UTILIZING SPECIALIZED KNOWLEDGE DURING CORRECTIONAL EDUCATION WITH OLDER PRESCHOOL CHILDREN WITH SPEECH DISORDERS

### UTILIZAR LOS CONOCIMIENTOS ESPECIALIZADOS DURANTE LA EDUCACIÓN CORRECCIONAL CON NIÑOS MAYORES EN PREESCOLAR CON TRASTORNOS DEL HABLA

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#### ABSTRACT

The article analyses using specialized knowledge in comprehensive correctional education with older preschool children with speech disorders. This article examines the theoretical and practical, and methodological foundations of specialized knowledge use in the organization of correctional work in overcoming motor alalia in older preschool children. The research was conducted in 2017-2020, during which a retrospective analysis of outpatient cards of children with speech disorders of various aetiology was performed. The study involved 250 children aged 5.5-7 years, who were divided into two groups. The experimental group consisted of 150 children with motor alalia (the average age of  $5.99 \pm 0.75$  years), including 57 girls and 93 boys. The control group consisted of 100 children without speech disorders (the average age of  $6.18 \pm 0.63$  years), represented by 48 girls and 52 boys. All children underwent repeated outpatient neurological (including instrumental) and logopedic examinations. The research revealed that organic lesion of the brain affects not only the clinical presentation of nonverbal symptoms but also psychospeech development. According to the results of the experimental research, the expediency of using a comprehensive diagnostic methodology was proved, where the medical component consisted in studying the peculiarities of bioelectrical activity of the brain on electroencephalography.

#### Keywords:

specialized knowledge, medical and psychological and pedagogical approach, children with severe speech disorders, alalia, diagnostics, methods.

#### RESUMEN

El artículo analiza el uso de conocimientos especializados en educación correccional integral con niños mayores en edad preescolar con trastornos del habla. Este artículo examina los fundamentos teóricos, prácticos y metodológicos del uso de conocimientos especializados en la organización del trabajo correccional en la superación de alalia motora en niños mayores en edad preescolar. La investigación se llevó a cabo en 2017-2020, durante la cual se realizó un análisis retrospectivo de las tarjetas de pacientes ambulatorios de niños con trastornos del habla de diversas etiologías. El estudio involucró a 250 niños de entre 5,5 y 7 años, que se dividieron en dos grupos. El grupo experimental consistió en 150 niños con alalia motora, incluidos 57 niñas y 93 niños. El grupo de control estaba formado por 100 niños sin trastornos del habla, representados por 48 niñas y 52 niños. La investigación reveló que la lesión orgánica del cerebro afecta no solo la presentación clínica de los síntomas no verbales, sino también el desarrollo del psicopelo. Se demostró la conveniencia de utilizar una metodología de diagnóstico integral, donde el componente médico consistió en estudiar las peculiaridades de la actividad bioeléctrica del cerebro en la electroencefalografía.

#### Palabras clave:

conocimiento especializado, abordaje médico y psicológico y pedagógico, niños con trastornos severos del habla, alalia, diagnósticos, métodos.

## INTRODUCTION

An important condition for ensuring high efficiency of correctional and developmental work is interdisciplinary assessment of speech development disorders in children and adolescents, which involves the specialist's specialized knowledge, including medical, psychological and pedagogical components (Pakhomova, 2013; Aleksandrov, Okhrimenko, & Serbyn, 2017; Prontenko, et al., 2019; Babiak, et al., 2022; Griban, et al., 2022). Therefore, the use of specialized knowledge, namely their organic combination in practice is becoming increasingly important in the process of comprehensive integrative attention to children with speech disorders, including motor alalia.

Revealing the essence of the concept of "specialized knowledge", first of all, we should characterize the concept of *knowledge*, which in pedagogy is defined as understanding, retention and the ability to reproduce the basic facts of science and relevant theoretical generalizations (concepts, rules, laws, etc.) (Prysiashniuk, et al., 2019; Tsilmak, et al., 2020; Sheremet, et al., 2020; Bondarenko, et al., 2022). Along with this, the concept of "knowledge" can be considered in a broad and narrow sense. Knowledge in a broad sense is a set of theoretical and practical knowledge and the ability to apply it in various fields of activities; knowledge in a narrow sense (in a separate field) is a conceptual and factual component of educational material, which includes interrelated facts, patterns, theories, generalizations, terms, which is the basis of basic knowledge of pedagogy, including special pedagogy (Hunter, Rushmer, & Best, 2014). Thus, a structured totality of basic concepts of special education; theory, concept, patterns, principles, methods of pedagogical activity, technologies, ethical norms, values and professional competence are structural components of the basic knowledge of a special education teacher.

We define specialized knowledge within the context of our research as systematized scientific and practical knowledge and skills that are not publicly available, well-known and not widespread, i. e. it is the knowledge that expands and deepens basic knowledge, emphasizing the principle of a comprehensive approach to overcoming the problem. The ratio of specialized and basic knowledge is variable in nature, which is determined by the level of development of society and the integration of scientific knowledge in the process of organizing correctional work with older preschool children with severe speech disorders.

The relevance of this range of problems is supplemented by the fact that the awareness of the importance of specialized knowledge in correctional work (Mannapova, et

al., 2020) as a unique organizational resource set the task of developing effective ways of their interaction, in particular the organic combination of psychological, pedagogical and medical methods should assist clear differential diagnosis and delineation of effective ways to overcome speech disorders in older preschool children. This will allow timely attention and taking the necessary measures to organize a comprehensive rehabilitation by means of close interconnection of integrative components.

The integrative medical, psychological and pedagogical aspect as the basis of specialized knowledge in the study of motor alalia involves the study of the relationship of all body systems as a single whole and an obvious indicator of any disorders. Numerous studies confirm the dependence of different disorders on each other in conditions of this state. Therefore, in our opinion, the provision of logopedic treatment to children with motor alalia should be within an integrative approach that takes into account the preserved capabilities of the child's body to the maximum possible extent.

The integration of knowledge, as the basis of holistic perception and understanding of the world, a methodological tool of the educational process is in the centre of scientific attention of prominent teachers of different times, including Ya. Komenskoho, Y. Pestalotstsi, V. Sukhomlynskohu, K. Ushynskoho and others. Numerous studies of physicians (Wear, 2016; Volosovets, et al., 2020; Morabito, et al., 2021), educators and psychologists (Duffy, 2016; Pakhomova, et al., 2021; Babiak, et al., 2022), conducted in the study of disorders of structural and functional organization of the child's brain, which cause various disorders of speech development, convincingly show the importance of a comprehensive approach to detection and overcoming motor alalia problems in older preschool children. The work of representatives of the neuropsychological approach (Lyndina, & Sobotovych, 2015; Gorobets, et al., 2022) are the theoretical and methodological basis for effective early diagnosis of speech disorders due to (local and hypoxic) brain lesions. The problem of identification features of cerebral circulation in children with speech disorders was studied by researchers in the field of medicine (Duffy, 2016). This study became the impetus for scientific research into new ways to overcome severe speech disorders, which are based on a comprehensive approach.

According to Wear (2016), the theoretical basis of studying and assessing the level of functional maturity of the brain, understanding the structure of the defect and predicting learning prospects in children with various developmental disorders is the content and features of modern neurophysiological research methods. Such methods include:

neurosonography used to diagnose CNS diseases; magnetic resonance tomography used for the diagnosis of perinatal cerebrovascular lesions; Doppler velocimetry is a marker of perinatal lesions of the CNS; electroencephalography (EEG) is a method of studying the bioelectrical activity of the brain, which reflects the process of its morphological maturation in ontogenesis.

The studies (Lyndina, & Sobotovych, 2015; Morabito, et al., 2021; Gorobets, et al., 2022) present methods for overcoming functional and organic diseases of the nervous system of various aetiologies in children. The scientists emphasize the pharmacological effect of the use of a neuropeptide medicinal product, which is based on remyelination, glial proliferation and generation of new neurons in the brain, which optimizes neurometabolic and hemodynamic support of the brain during active development and contributes to the regression of neurological symptoms, significant improvement of cognitive, subtle manipulative and speech functions. On the other hand, a representative of the classic nootropics i. e. gopantenic acid is a natural metabolite of gamma-aminobutyric acid (hereinafter – GABA) in nervous tissue. This fact allows us to assume the maximum physiological action of the medicinal product in comparison with other chemical compounds. The action of gopantenic acid is based on two main components: neurometabolic and neurally mediated, which are realized through the activation of the synthesis of acetylcholine and GABA, as the leading links of cognitive and mnemonic functions.

The works by (Utianski & Duffy 2022) propose another relevant method of comprehensive polymodal stimulation impact in overcoming speech disorders and speech delay in children, which includes the use of specialized stimulating reflexotherapy methods, logopedic, psychological and pedagogical approaches against the background of using modern nootropic and antispastic drugs for children diagnosed with severe speech disorders, including motor alalia. The specificity of this method is steel needles stimulating of the speech areas of the scalp and cranial points of the median, which control the brain with the use of drugs (nicotinic acid, the dose of which was gradually increased to the maximum). The scientist emphasizes that a positive effect is observed in 88 % of children as a result of treatment and it is manifested in the appearance of the first words (20 %), coherent speech with increased active vocabulary (38 %), improved pronunciation (65 %), grammatical structure of speech, comprehension logical and grammatical constructions, emergence of abstraction (16.6 %).

Organic lesions of the CNS, which cause severe speech disorders, including alalia, often occur during prenatal

development, when the child's nervous system, including its central parts are in the process of formation. Organic disorders that occur during this period increase in size as the volume of the brain and the area of its cortex grow. It should be emphasized that it is important not only to identify organic (central and peripheral), as well as functional causes of motor alalia, but also to have an idea of the mechanism of development of this speech disorder due to adverse environmental factors. Thus, along with a number of exogenous factors that lead to speech disorders, the research by scientists (Wear, 2016; Babiak, et al., 2022) emphasizes the most harmful effect of radiation on the formation of both the child's CNS in general, and its speech development in particular.

Thus, the analysis of literature sources makes it possible to state that numerous works by scientists in various fields were devoted to the study of the use of specialized knowledge in correctional and developmental work, in particular the integration of medical, psychological and pedagogical components in the educational process. However, the problem of integration approach in special education towards the differential diagnosis and overcoming of severe speech disorders taking into account the medical, psychological and pedagogical aspects is quite fragmentary nowadays. Considering that the analysis of the characteristics of a child with special educational needs and the qualification of his speech status by traditional logopedic approaches are determined mainly by their external, symptomatic manifestations.

In this regard, the purpose of our article is to research the theoretical and practical, as well as methodological foundations of specialized knowledge use in the organization of correctional work in overcoming motor alalia in older preschool children.

## METHODOLOGY

During 2017-2020, we conducted a retrospective analysis of outpatient cards of children with speech disorders of various aetiology.

A total of 250 children participated in the research. Two groups were identified. The experimental group consisted of 150 older preschool children with motor alalia aged 5.5-7 years, the average age was  $5.99 \pm 0.75$  years, including 57 girls and 93 boys.

The control group of children without speech disorders consisted of 100 persons (48 girls and 52 boys), aged 5.5-7 years, the average age was  $6.18 \pm 0.63$  years.

All children underwent repeated outpatient neurological (including instrumental) and logopedic examinations.

Since the implementation of such a research requires appropriate medical qualification or a combination of comprehensive studies, we identified a group of children in this category, who according to anamnestic data were on outpatient observation of a pediatric neurologist and required re-examination to clarify the diagnosis by instrumental examinations, including EEG. Considering the fact that one of the indications for EEG is delayed speech and psychomotor development of children, this type of examination was chosen as the safest method of additional diagnosis for the child, which is important to consider when re-used assessing the effectiveness of medical, psychological and pedagogical impact.

Therefore, a comprehensive medical as well as psychological and pedagogical examination of children with developmental dysphasia, who were under the outpatient observation of a pediatric neurologist was carried out in the same conditions for all children. A request to the parents of the children to appear in their stable emotional state for the examination not being tired and hungry was the necessary preliminary preparation for the examination. This condition is important for more accurate EEG results. We set a number of goals within the context of our comprehensive examination such as: a) to determine the peculiarities of neuropsychological development, its psychophysiological readiness for correctional work; b) to identify objective signs characteristic of various forms of speech disorders, including for motor alalia using instrumental methods of objective diagnosis.

The diagnostic methods of this stage of the research were based on traditional methodological principles of comprehensive examination of speech of children with motor alalia in the process of psychological and pedagogical testing, logopedic examination, determining the development level of components of communicative and speech activity, namely: impressive and expressive speech with their nonverbal manifestations and communicative skills in various forms (dialogue, monologue) of interactive interaction, which gives a broader picture and idea of the state of formation of communicative competence and personality of the older preschool child in general. The author's methodology was developed taking into account the existing diagnostic methods (Duffy, 2016; Pakhomova, et al., 2021) and in accordance with the requirements of educational programs of preschool education institutions and the Basic component of preschool education for language and speech development. In contrast to the existing ones, the author's methodology had a comprehensive approach to the differential diagnosis of motor alalia in children. Namely, the involvement of specialists in the field of medicine contributed to the objective differential diagnosis of

children with severe speech disorders, allowed to distinguish speech disorders by a certain nosological category at the initial stage.

The first stage of the experiment involved determining the structural components i. e. the basic components of communicative competence, their criteria and indicators, the coherence of which as part of the whole provides communicative-speech activity, including determining competence in communication. Thus, the development of the methods for diagnosing the state of the components of communicative-speech activity was the first stage of creating a unified system of formation of communicative competence in older preschool children with motor alalia.

The use of generally accepted methods of diagnosing speech development of older preschool children, as a rule, provides fragmentary information about communicative-speech activity and in fact excludes the possibility of analysing the interdisciplinary relationship of the obtained data. A system of qualitative and quantitative assessment of children's communicative competence and methodological ways of recording differences in its levels and identifying individual variability have been identified in order to overcome this shortcoming.

Thus, a comprehensive diagnosis of communicative competence involved:

- implementation of instrumental examination of bioelectrical activity of the brain of children by EEG in order to identify the characteristic features of neuropsychological development;
- selection and use of a number of tasks that allow, in the process of their implementation on the basis of direct perception of language material and empirical knowledge, to identify practical skills and abilities;
- selection and use of tasks, in solving which the child needs to analyse the language material and show his own abilities and creativity;
- assessment of the effectiveness of tasks accomplishment and comparative interdisciplinary analysis of the data and building on their basis a comprehensive vision of the levels of individual and group communicative competence in older preschool children with motor alalia, according to the following parameters: a) success of specific tasks accomplishment on language material; b) the nature of accomplishment and inhomogeneity or homogeneity of development of the components of communicative development; c) types of mistakes made by children in tasks solving.

The criteria of communicative competence were the components of communicative and speech development. The impressive-activity component included such indicators



as volume and quality of passive vocabulary (understanding and distinguishing close in sound and meaning names of objects, understanding and distinguishing close in sound words, understanding and distinguishing close in meaning actions); understanding of addressed speech (verbal instructions, requests and assignments, words or phrases); development of speech attention, ability to listen to speech, focus on speech perception; understanding words of different grammatical categories and complex syntactic constructions; formation of processes of probable forecasting at the impressive level, research of the phenomenon of impressive agrammatism. The non-verbal-impressive component included such indicators as understanding the emotional state of other people; the ability to give an appropriate motor response in reaction to a verbal instruction; understanding the emotional behaviour of the interlocutor through facial expressions and gestures. The expressive-activity component included such indicators as phonetic-phonemic processes including correct sound pronunciation, development of phonemic hearing, formedness of phonemic representations, ability to phonemic analysis and synthesis, intonation saturation and expressiveness of speech (voice strength, speech rate, intonation), formedness of processes of probable forecasting at expressive level, correct speech breathing; lexical and grammatical side of speech including sufficient vocabulary, understanding the semantics of words and their use in the correct semantic meaning, use of words in the correct grammatical form (morphological correctness, mastery of inflection and word formation), correct grammatical and syntactic structure of speech, the presence of complex sentences in speech; coherent speech with prosodic presentation including the ability to build a dialogue, the ability to retell the text, compose stories of a creative nature, intonation and expressiveness of speech (intonation, logical emphasis, volume, voice modulation, timbre, etc.). The nonverbal-expressive component of communicative competence included such indicators as motivation to communicate, formedness of sensorimotor sphere (general and fine motor skills, oral praxis), development of higher mental functions, formedness of processes of interfunctional interaction of cerebral hemispheres. The communicative-activity component included such indicators as present in monologue speech: the ability to express a request, the ability to greet, the ability to express consent or disagreement, the ability to clearly express one's thoughts and intentions (arbitrariness of speech), the ability to tell about one's feelings; in dialogic speech: the ability to politely answer questions, the ability to understand the situation of communication, intentions and motives of the interlocutor, the ability to initiate, maintain and finish the conversation, the ability to

yield, be honest in communication, the ability to assess the emotional behaviour of the interlocutor by intonation, the ability to empathize (be sensitive, empathetic, careful).

The psycholinguistic periodization of speech development of a child with normative ontogenesis (Utianski, & Duffy, 2022) became a conditional standard for assessing the state of communicative competence formedness in children with motor alalia, which makes it possible to determine not only the level of speech development of the child but also his age lag.

A four-point grading system was used for the convenience of deriving a quantitative characteristics of the child's accomplishment of each task. Analysing the psychological and pedagogical literature on the problem of formation of communicative competence, we came to the conclusion that the level of communicative and speech actions is determined by the correctness, accuracy of tasks accomplishment, proactive attitude, independence and creativity of each child.

Therefore, we ranked the state of communicative competence formedness in older preschool children according to four levels such as high, sufficient, medium, low depending on the method of accomplishment and assessment of the tasks in compliance with specified criteria and indicators.

Along with this, the medical component of the comprehensive diagnostic methodology was to study the features of neuropsychological development, psychophysiological readiness for correctional work, by studying the bioelectrical activity of the brain on the EEG, which reflects the process of its morphological maturation in ontogenesis.

Three levels were identified for each criterion of bioelectrical activity of the brain (slowing of the main rhythm in the frontal, temporal, fronto-temporal-parietal lobes with interhemispheric asymmetry and rhythm disorganization) such as mild, moderate, severe.

We used the coefficient of rank correlation according to the bilateral Student's t-test (for independent, unrelated samples) to compare the results of the research. The results were considered reliable at  $p < 0.05$ .

The research was performed according to the requirements of the Regulations on Academic Honesty of Poltava V. G. Korolenko National Pedagogical University, which were developed on the basis of Ukrainian and world experience of ethical rulemaking. This document was approved by the Academic Council of Poltava V. G. Korolenko National Pedagogical University (Protocol No. 2 of 10.09.2020) and implemented by the order of the Rector of the University (Order No. 1098 of 10.09.2020).

According to its provisions, the members of the scientific community are guided by the rules of ethical conduct and professional communication; respect the principles, values, norms, rules, and conditions of academic honesty in their activities. The consent to participate in the research was obtained from all subjects.

## RESULTS

We selected a group of older preschool children with motor alalia consisting of 150 people (57 girls and 93 boys) diagnosed at the age of about three from the total number of examined children with speech developmental disorders of various aetiology, who were under the outpatient observation of a pediatric neurologist. Anamnestic data of these patients indicate a burdensome perinatal anamnesis. Thus, according to etiological factors, the group of mothers of the examined children was distributed as follows: gestational toxicosis of the first half of pregnancy was inherent in 118 women (78.6 %), signs of placental dysfunction was peculiar for 98 women (65.4 %), rapid or prolonged childbirth was characteristic of 67 females (44.5 %), signs of mild in 50 cases (33.3 %) and moderate in 81 cases (54.1 %) of asphyxia at birth, the threat of abortion was recorded in 41 women, which makes 27.3 %.

The analysis of the results of EEG examination revealed that all studied children with motor alalia (150 people) showed diffuse changes in the bioelectrical activity of the brain. The study of EEG patterns of the examined children revealed clear local changes in biopotentials in the frontal, temporal and fronto-temporal-parietal lobes of the dominant hemisphere in the form of regional slowing of the rhythm with interhemispheric asymmetry and rhythm disorganization, indicating the organic brain lesions.

To estimate the number of oscillations of one or another rhythm, the analysis of the results of the research was used, which allowed to record the slowing down of the alpha rhythm, while in children without speech disorders the age features of the alpha rhythm were noted. It should be emphasized that synchronous rhythms in both hemispheres, absence of acute peaks of electrical activity, stable brain activity, even in the presence of short-term reactions to light or other stimuli are inherent in children without speech disorders on the EEG results. It should be noted that not all children with normative speech development have changes in the EEG. In particular, out of 100 children without speech disorders, only 32 had slight changes in EEG patterns, which were manifested mainly at the mild level. At the same time, the EEG in children with motor alalia shows the following trend: the presence of a motor component in the structure of the studied speech disorder is evidenced by EEG-signs of severe disorders of brain electrogenesis in the form of dysrhythmia and neurophysiological signs of immaturity of cortical structures, changes in zonal differences, interhemispheric asymmetry. These phenomena and their combinations were registered in our research in more than half of the examined older preschool children (102 children), which accounted for 68 % of the total number of children covered by the research. The combination of regional slowing of the rhythm with interhemispheric asymmetry and rhythm disorganization turned out to be prognostically unfavourable in the context of the rates of speech function formation.

Therefore, the comparison of the results of EEG examination of older preschool children with motor alalia was carried out in comparison with the conclusions of this method of instrumental diagnosis of children without speech disorders and are presented in Table 1.

**Table 1. The results of bioelectrical activity of the brain in older preschool children with motor alalia and without speech disorders**

	Children with motor alalia			
	Children without speech disorders			
The main EEG patterns (150 people) %				
(32 out of 100 people)				
Slowing of the main rhythm with interhemispheric asymmetry and rhythm disorganization in the frontal lobes	73 12.0	48.6	12	
Slowing of the main rhythm with interhemispheric asymmetry and rhythm disorganization	32 12.0	21.3	12	
in the fronto-temporal-parietal lobes	45	30.1	8	8.0

The analysis of clinical data allowed to allocate groups of children according to characteristic EEG signs. The obtained data indicate that among older preschool children with motor alalia the most common are slowing of the main rhythm with interhemispheric asymmetry and rhythm disorganization in the frontal lobes (48.6 %), slowing of the main rhythm with interhemispheric asymmetry and rhythm disorganization in the temporal lobes (21.3 %), slowing of the main rhythm with interhemispheric asymmetry and rhythm disorganization in the fronto-temporal-parietal lobes (30.0 %) (Figure 1).

To compare the results of the research, we used the Student's t-test rank correlation coefficient (for independent, unrelated samples), which showed that the difference between the indicators was caused by the difference between the two groups states and not by random data error due to their sample assessment. Sampling indicators became different by all criteria (null hypothesis was rejected and an alternative one with a significance level of  $\alpha = 0.05$  and  $\alpha = 0.01$  was accepted), which indicates a significant difference in brain activity in older preschool children with motor alalia and without speech disorder and confirms the need for comprehensive correctional work.

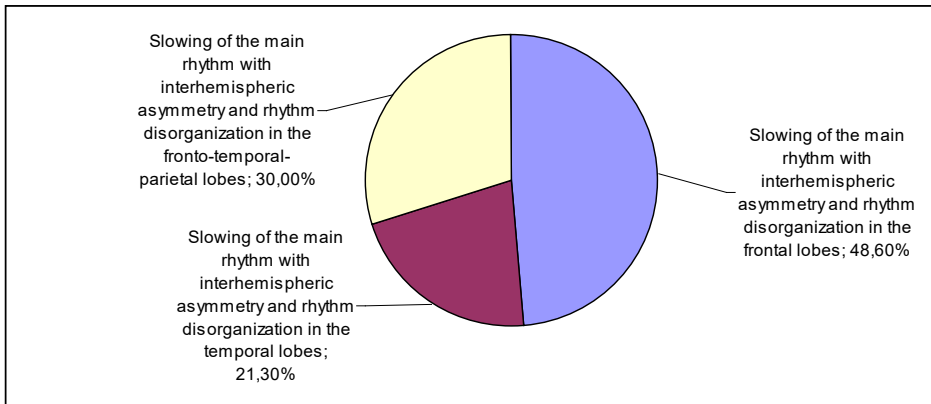


Figure 1. Distribution of EEG manifestations in older preschool children with motor alalia

Analysing the level indicators for each criterion, it was found that changes in biopotentials in the frontal, temporal and fronto-temporal-parietal lobes of the dominant hemisphere in the form of regional slowing of rhythm with interhemispheric asymmetry and rhythm disorganization were unevenly distributed. Higher indicators of moderate and severe levels were observed in children with motor alalia (Figure 2), while in children with normative speech development there was a predominantly mild level of EEG manifestations (Figure 3).

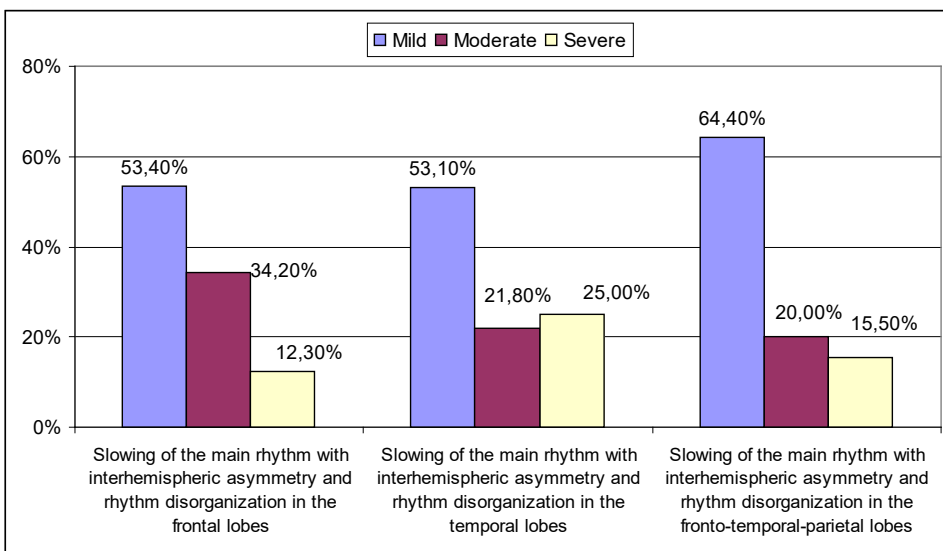


Figure 2. Levels of EEG manifestations in children with motor alalia

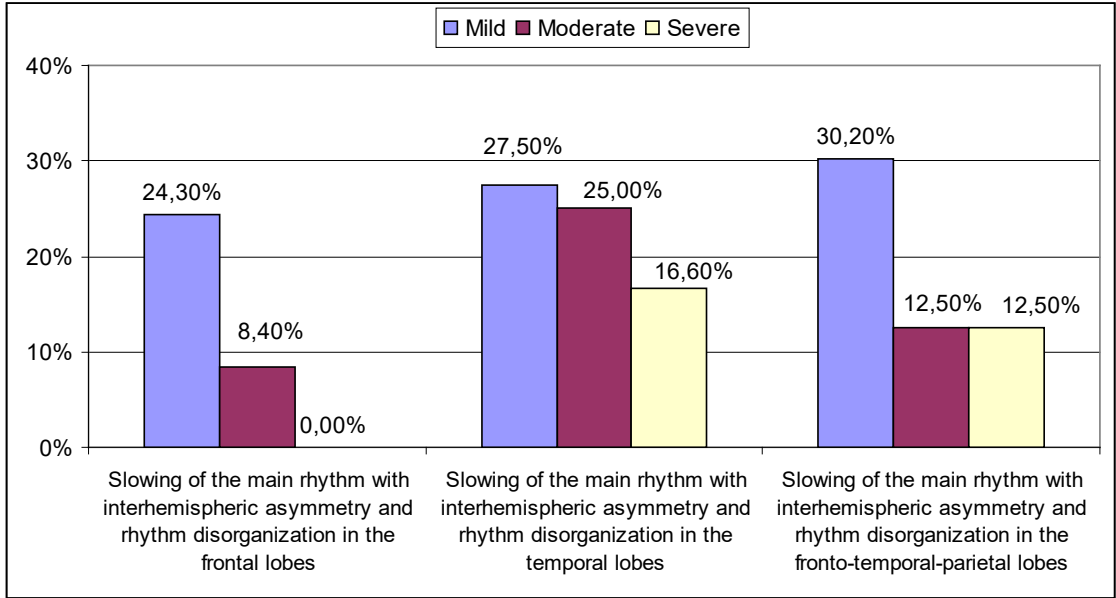


Figure 3. Levels of EEG manifestations in children with normative speech development

Therefore, the results of quantitative electroencephalography examination, taking into account the conclusion of a pediatric neurologist, were used by us to compare the results of logopedic examination.

Thus, comparative data of the results of psychological and pedagogical diagnostic methods indicate significant differences between the performance of tasks in the levels of development of impressive and expressive speech with their nonverbal manifestations and communicative skills in various forms (dialogue, monologue) of interactive interaction.

The levels of communicative competence formedness in older preschool children with motor alalia and without speech disorders are determined according to the formedness indicators of the components of the communicative-speech system; the results are presented in the histogram in Figure 4.

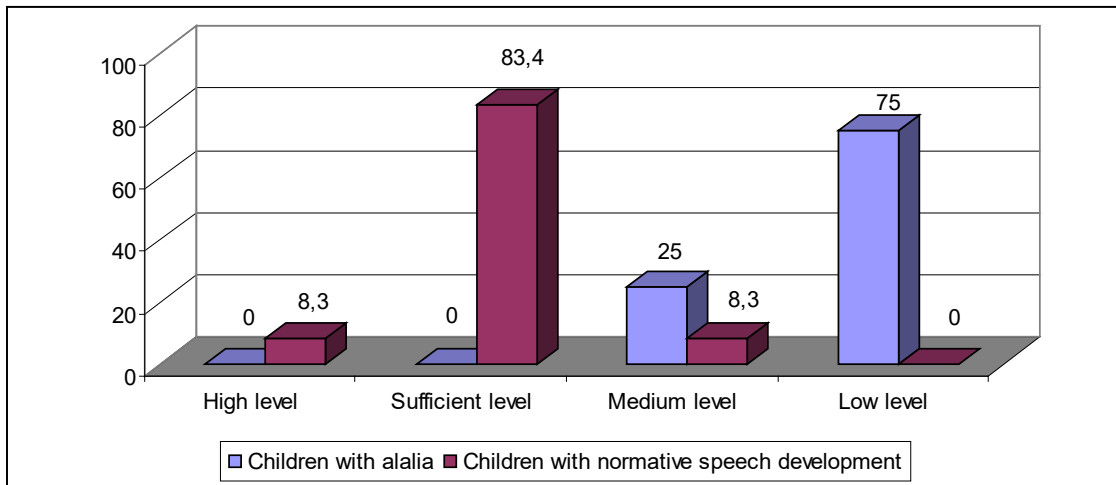


Figure 4. Comparison of communicative competence formedness levels in older preschool children with motor alalia and children with normative speech development

Thus, the results of the research revealed that there were no children with high and sufficient levels of communicative competence formedness among children with motor alalia, only 25 % of children with motor alalia have an average level of communicative competence formedness. A low level was inherent in 75 % of children.



Children with normative speech development showed rather high indicators of the state of communicative competence formedness, a high level in 8.3 % of children, a sufficient level in 83.4 %, and a medium level in 8.3 %. No low level of communicative competence formedness was detected among these children.

## DISCUSSION

Thus, the results of the research mainly confirmed and expanded the conclusions of (Shepoval'nikov & Tsitseroshin 2004) on the creation of a scientifically sound hypothesis of bizarre child development, assessment of its defects, finding rational ways to overcome them using an overall system of clinical, experimental and psychological, as well as pathophysiological studies. In addition, the results correlated with the studies by Lyndina and Sobotovych (2015), on the comprehensive diagnosis and overcoming of clinical manifestations of motor alalia in children. This conclusion can be made on the basis of a preliminary analysis of scientific research (Prisyazhniuk, et al., 2019; Tsilmak, et al., 2020; Volosovets, et al., 2020; Morabito, et al., 2021; Pakhomova, et al., 2021), which were based mainly on integrative approach.

The conclusions by (Utianski & Duffy 2022) on the scientific search for new ways to overcome severe speech disorders, which are based on a comprehensive approach, were supplemented by the ideas about the medical and psychological impact on the formation of psychospeech development of children with motor alalia.

Since our research included a comprehensive approach to overcoming the problem of motor alalia, its results have expanded in the direction of scientific understanding of the impact of organic lesion of the brain not only on the clinical presentation of nonverbal symptoms, but also on psychospeech development, in particular. The influence described by us and proved by the comparative analysis of bioelectrical activity of the brain on EEG, reflects the process of its morphological maturation in ontogenesis.

The comprehensive research allows confirming the conclusion about the state of speech formedness and helps to outline clearer focal areas for the formation of communicative competence in older preschool children with motor alalia. In particular the integration of the medical component into the correctional work of a speech language therapist allows distinguishing speech disorders by a certain nosological category at the initial stage and, of course, does not reduce the importance of the psychological and pedagogical aspect in comparison with the medical one. Our opinion completely coincides with the statement by Wear (2016), who wrote that the creation of a scientifically sound hypothesis of bizarre child development, correct recognition, assessment of its defects, finding rational

ways of learning – all of this is impossible without an overall system of clinical, experimental and psychological, as well as pathophysiological studies.

## CONCLUSIONS

Therefore, it should be emphasized that a comprehensive approach to overcoming motor alalia today involves the study of the relationship of all body systems as a whole and an obvious indicator of any disorders. Numerous studies confirm the dependence of different disorders on each other in conditions of this state. Therefore, in our opinion, the provision of logopedic treatment to children with motor alalia should be within an integrative approach that takes into account the preserved capabilities of the child's body to the maximum possible extent. Modern methods of differential diagnosis and overcoming of various pathological states of children allow to pay attention in time and to take necessary measures for the organization of the complex collection help by means of close interrelation of integrative components.

We see the prospect of further research in the development of methods for the formation of communicative competence in older preschool children with motor alalia, taking into account the integration of medical and psychological components in correctional work.

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