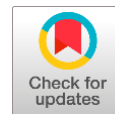


Exploring dysgraphia in elementary school students: assessment and tailored intervention strategies from a psycholinguistic perspective



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Abstract Primary school is a unique period when children develop their writing and orthography skills. If, in preschool age, special attention was paid to the correct holding of the pen and writing simple signs. Then, during the school years, it is necessary to teach the child how to draw letters correctly and write without spelling errors. At this very time, most children experience the phenomenon of dysgraphia. It is a persistent specific disorder of learning spelling knowledge, writing skills, and abilities caused by the underdevelopment of a range of speech and non-speech mental functions. Therefore, it is necessary to diagnose this disorder in time and address this issue. This study aims to define a psycholinguistic approach to the study of dysgraphia in junior schoolchildren, its diagnosis, and individualized correction methods. The primary school age is the period when the focus should be on the child's development. Diagnosing dysgraphia at this age should include adequate correction methods for this problem. It is worth noting that each child is unique, and therefore, methods should be selected based on the peculiarities of a particular case. Well-chosen correctional methods help to quickly and effectively eliminate disorders related to the acquisition of spelling knowledge, writing skills, and abilities caused by the underdevelopment of various speech and non-speech mental functions. While learning and acquiring knowledge, children need to feel confident in their own skills, supported and attended to. Successfully overcoming dysgraphia can affect the child's personal development, increase self-esteem, overcome stress and psychological discomfort, and contribute to the child's psychological well-being and emotional development. The article defines the concept of "dysgraphia," its content, and its symptoms. The authors analyze the peculiarities of primary school age and the cognitive and psychological aspects of a child at this age. In addition, they reveal the content of the psycholinguistic approach to studying dysgraphia. The authors have selected and provided characteristics of individualized methods of intervention to overcome dysgraphia in primary school children.

Keywords: dysgraphia, writing disorders, primary school age, diagnosis, psycholinguistic approach

1. Introduction

In today's educational landscape, the development of writing skills among primary school children is of paramount importance. However, it has been observed that some children face challenges in mastering these skills due to various factors affecting their cognitive functions. Dysgraphia, a disorder characterized by difficulties in writing and spelling, is one such challenge that can significantly impede a child's academic progress and psychological well-being. As primary education lays the foundation for lifelong learning and success, addressing dysgraphia at an early stage is crucial.

The significance of this research lies in its focus on employing a psycholinguistic approach to study dysgraphia in junior schoolchildren. By delving into the intricacies of language processing and the cognitive functions involved in writing, this study aims to provide insights into the diagnostics and individualized methods of correction for dysgraphia. Understanding the underlying mechanisms of dysgraphia and identifying effective intervention strategies can have profound implications for educators, speech therapists, and parents in supporting children with writing difficulties (Zhigora, 2022; Shytyk & Akimova, 2020).

Furthermore, the relevance of this research extends beyond the academic realm. In today's knowledge-based society, effective written communication skills are essential for success in various professional and personal endeavors. By addressing dysgraphia early on and implementing tailored interventions, we can empower children to overcome writing challenges, enhance their self-esteem, and unlock their full potential (Oliinyk, 2022; Danilavichiute, 2022).



Amidst the rising occurrence of writing disorders in young students and the urgent need for early intervention, this research makes a timely and relevant contribution to education and child development. By shedding light on the psycholinguistic aspects of dysgraphia and offering practical solutions, this study strives to pave the way for more inclusive and effective educational practices, ultimately benefiting the academic and social well-being of junior schoolchildren.

2. Literature review

The issue of researching psycholinguistic approaches to studying dysgraphia in primary school children, its diagnostics, and individualized correction methods is not extensively covered in Ukrainian literature. The amount of existing studies does not fully reflect the problem of dysgraphia in primary school children. At present, it is essential to study not only the issue of comprehensive efforts that would consider the peculiarities of diagnosis and individualized intervention methods but also the psycholinguistic approach as the basis for this study.

Thus, the study by N. V. Cherednichenko (2014) thoroughly addresses this issue. The main goal of his research was to reveal the psycholinguistic approach to studying the causes and mechanisms of dysgraphia in young schoolchildren. O. H. Leshchenko (2023) focuses on preventing dysgraphia signs in preschool children. The author emphasizes that signs of dysgraphia may already manifest in preschool age, but diagnosing them can be quite challenging. According to O. H. Leshchenko, preventing dysgraphia includes applying Montessori pedagogy, the use of computer games, etc. These methods can be actively used to prevent dysgraphia and for younger schoolchildren.

N. V. Tentser (2021) devotes attention to developing a complex of psycho-pedagogical tools for diagnosing and correcting dysgraphia disorders in younger schoolchildren. The research highlights modern approaches to studying writing disorders and searches for diagnostic and correctional methods in younger schoolchildren.

I. M. Oliinyk (2022) addresses the issue of written language disorders and emphasizes the importance of increasing the professional competence of primary school teachers regarding timely diagnostics and selecting methods to overcome dysgraphia. The author also identifies the necessity of close cooperation among all participants in the educational process regarding correcting the speech activities of younger schoolchildren with written language disorders.

Scientific research shows that the issue of the psycholinguistic approach to the study of dysgraphia in primary schoolchildren, its diagnosis, and individualized treatment methods remains unresolved.

This study aims to describe the psycholinguistic approach to the study of dysgraphia in primary school children, as well as its diagnostics and individualized treatment methods.

The research is conducted using the general scientific method, which allowed us to study the studies of Ukrainian scientists on the diagnosis and correction of dysgraphia in primary school children. These studies contain various teaching methods, analyses of psychological factors, and methods actively used for diagnosing and overcoming dysgraphia in primary school children. The methods of analysis and synthesis help to reveal the structure and content of psycholinguistic features of dysgraphia. These methods identify the causes of dysgraphia in a child and help to find ways to address it.

3. Methods

The analysis of literary sources made it possible to reveal the essence of written language as a secondary form of linguistic existence, its complexity, and its place in the mental sphere of the individual compared to other higher mental functions. Furthermore, by employing this methodology, distinctive indications of dysgraphia were identified, which manifest themselves in the form of challenges in the formation of orthographic knowledge, frequently in conjunction with other psychological disorders. Additionally, it was employed to elucidate two types of reasons for reading and writing difficulties in children: insufficient brain development at certain stages of life and socio-psychological factors.

The method of systematization was employed to analyze dysgraphia symptoms, which involves challenges in writing comprehension, excessive effort during writing, and physical indicators like a tight pen grip. Various methods, including the psycholinguistic approach, provide insights into mastering spelling skills, emphasizing auditory perception, attention, and memory.

The generalization method involved identifying and addressing symptoms of dysgraphia, which hinder a child's speech activity. This approach aimed to systematically intervene in persistent errors caused by underdeveloped mental functions related to writing skills.

4. Results

Writing disorders in primary school children nowadays are quite common. It is worth noting that four types of speech actions represent language activity: speaking, listening, writing, and reading. Reading and writing are interconnected processes, so their combination can be characterized as "written speech."

According to L. V. Tentser, written speech is a secondary form of language existence. It is characterized by its later emergence in the mental sphere of a person compared to other higher mental functions. It should be noted that the writing

process is considered as a multilevel system, a complex process, and a complex form of human speech activity. Overall, the speech process is based on motor, language, visual, and auditory language analyzers (Tentser, 2021, p. 24).

According to N. V. Cherednichenko, dysgraphia is the persistent failure to form spelling knowledge, skills, and writing habits. It is determined by a range of speech and non-speech mental functions. A distinctive feature of dysgraphia relates to the fact that it can manifest itself both in isolation and in combination with other psychological disorders (Cherednichenko, 2014, p. 24).

According to I. Oliinyk's definition, dysgraphia is a partial disorder of mastering writing skills. It manifests itself in numerous persistent, repetitive errors caused by the lack of development of higher mental functions during the writing process. The lack of development of writing skills is the main cause of dysgraphia (Oliinyk, 2022, p. 92).

In psychology, there are two types of reasons why children struggle with reading and writing:

- The first reason is related to the brain underdevelopment that occurs at certain stages of life;
- The second reason is related to socio-psychological factors (Boryak, 2018, p. 266).

Scientific sources define dysgraphia as a partial disorder of the writing process, primarily associated with the underdevelopment of mental functions involved in implementing and controlling written language in a child. Dysgraphia mainly affects reading and the correct comprehension of written content. Children diagnosed with dysgraphia find it more challenging to learn, memorize, and reflect on the information they receive in writing. However, alongside the disrupted processes caused by dysgraphia, other intellectual abilities remain intact.

The main causes of dysgraphia include:

- Mental disorders arise when there is insufficient coordination between impulses transmitted by the motor nerves of the brain.

- Brain areas involved in processing information that translates thoughts into words function improperly in children.

Symptoms of dysgraphia typically appear around the age of 8 to 8.5 years when the child is already in school and actively mastering writing skills. Signs of dysgraphia include situations where the child writes but does not understand the content written. Such children need to exert considerable effort in writing. They grip the pen too tightly, with certain marks on their fingers. The child lacks the understanding of how to place words and letters properly. The letters are disproportionately sized, and there are many orthographic errors in words (Dysgraphia in children: causes, manifestations, treatment, 2024).

As mentioned above, dysgraphia is particularly evident in the early school years. A child's entry into school marks a new stage in their life. During this period, the mobility of nervous processes increases, and the balance between excitation and inhibition processes is established. However, physiological processes in the early school years develop with some delay. The development of large muscles occurs, while the development of fine motor skills is somewhat delayed. Considering this, it can be explained why children quickly become tired from writing.

A child's entry into school is marked by significant changes, during which a new activity - learning - is formed for the child. Based on such activity, processes are launched aimed at the development of basic psychological formations, with thinking at the center. Gradually, thinking becomes the defining mental function that influences all other cognitive functions - memory, attention, and perception. The development of thinking primarily contributes to the emergence of a new characteristic of a young schoolchild - reflection - awareness of oneself, one's place in the family, class, one's role, and so forth (Yefimenko, 2020).

Psychological processes develop rapidly at an early school age. As A.G. Shevtsova says, after a child enters the 1st grade, new relationships emerge with unfamiliar people - teachers and classmates, and new responsibilities associated with school arise. In a relatively short period, a child needs to assimilate a lot of new and unfamiliar information. Some grasp the material quickly, while others need more attention to this process (Shevtsova, 2015, p. 135).

The formation of basic competence in younger schoolchildren is based on the effective development of pedagogy as a science. One such competence is writing. In preschool education institutions, writing is not given as much attention as it is in school. From the very beginning of schooling, a young schoolchild tries to master this complex activity. During this period, the teacher's attention should focus on how the child writes, the order of letters in words, words in sentences, sentences in paragraphs, and so on.

Unfortunately, not every pupil is capable of mastering writing skills without difficulty. Dysgraphia is a problem that requires timely intervention. Currently, there are many methods and directions of activity primarily aimed at overcoming the disorders that arise in written speech (Karpenko, 2019, p. 71).

The process of mastering spelling has a multi-level and multi-operational psychological structure that children must master and skillfully use. Overall, there are many views of scientists aimed at mastering spelling by students of younger school age. One such approach is the psycholinguistic approach. The content of the psycholinguistic approach lies in defining the mechanism and disclosing the clear structure of spelling skills. The psycholinguistic model of writing skills helps to understand the internal structure of spelling norms and to establish interconnections of linguistic and structural components of spelling skills, which are based on the orthography principle.

The primary orthographic skill is the ability to see an orthogram in a word, distinguishing between the phonetic and graphic components of the word. Successful mastery of this skill demonstrates formed concepts of the sound-letter structure of a word, the ability of students to notice differences between letters and sounds and to understand that not all words are

spelled as they are pronounced. The ability to see phonetic alternation is closely related to the development of the auditory analyzer – auditory perception, auditory attention, and memory (Danilavichiute, 2022, p. 606).

Mastery of orthographic skill occurs at the highest level of a child's consciousness. It is based on conscious concepts that students operate within the writing process. This skill forms orthographic abilities. Researcher D. Bohoyavlensky considers orthographic skill as a certain orthographic ability capable of performing a complex set of actions with an orthogram, relying on already-formed practical experience.

It is worth noting that orthographic skills contribute to the formation of perception in various directions. Thus, auditory perception involves the transmission of phonemes using graphemes and certain graphic drawings, visual perception involves the visual perception of programs in writing, and kinesthetic sensation influences muscular efforts of speech organs and finger movements in the writing process. At the same time, kinesthetic sensation affects the sufficient development of various types of memory – auditory, visual, speech-motor, and motor (Danilavichiute, 2022, p. 606).

One of the foundations of orthographic skill formation is dictation. In this case, auditory, visual, motor functions, thinking, and attention are involved. Writing under dictation develops orthographic vigilance, self-control, and discipline (Zhigora, 2022; Krolivets, 2020).

According to V. O. Shevchenko, the percentage of children who need long-term individual psychological and pedagogical support, social, medical, and speech therapy assistance is actively growing in the NUS Concept. The acquisition of writing skills by children of this age is carried out on the basis of subjects of the language cycle. Thus, the combination of writing, say, with lessons of the Ukrainian language, gives a positive result and contributes to the assimilation and formation of language competence (Shevchenko, 2023).

It is worth noting that the psycholinguistic approach is characterized by a complex of methods that combine speech and writing skills in children with dysgraphia. The peculiarity of the psycholinguistic approach is that it contains linguistic and psychological analysis, pedagogical elements, testing, and individual approaches.

S.V. Striletska notes that when diagnosing dysgraphia in a child, the first thing a teacher should do is explain to the student that their level of intellectual development is not different from the level of intellectual development of other students. Such students must first prove that they are genuinely trying to complete the tasks. Armed with patience and perseverance, they confidently strive toward the set goal (Striletska, 2017, p. 162).

The psycholinguistic approach, combining several methods of overcoming dysgraphia, can help overcome writing disorders in young school-age children. It involves influencing visual and auditory operations and developing interhemispheric interaction. Speech therapy work on dysgraphia correction is structured considering the mechanisms and forms of written language disorders. The development of analytical activity, auditory and spatial perception, memory, thinking, and motor skills plays a crucial role in designing corrective activities for dysgraphia. Oral language skills are reinforced through writing.

It is worth noting that writing disorders do not disappear on their own. For this reason, it is necessary to seek the support of a speech therapist. A specialist will select the most optimal methods for the child, capable of overcoming manifestations of dysgraphia and returning the child to normal school life, where they can learn and absorb the material alongside others.

A team of specialists - a speech therapist, teacher, neurologist, and parents- supports overcoming the consequences of dysgraphia. Only comprehensive work can yield meaningful results. Preventive work should include targeted development of the brain's mental functions involved in writing and reading, sensory functions responsible for perception, functions of spatial concepts, and visual differentiation, as well as graphomotor functions (Popovych et al., 2022).

N. V. Dyachuk notes that speech activity is an intellectual activity. Clear reproduction of the subject in speech involves objective analysis of the reproduced material and using all available mental actions and operations, including analysis and synthesis. The specificity of speech activity is represented by two main ways of its implementation. Thus, it can be expressed in the form of speech activity, speech communication, speech interaction, or in the form of individual internal speech activity expressed through inner speech (Dyachuk, 2015, p. 257).

When dysgraphia is diagnosed in a child, the child's speech activity is disrupted. H. Yakymchuk notes that some techniques are used to diagnose and overcome dysgraphia. Overall, these techniques aim to develop and improve writing skills and phonetic hearing. They include perception, attention, memory, auditory analysis, and synthesis (Yakymchuk, 2018).

Since dysgraphia is a partial disorder manifested in the writing process in the form of a series of persistent, repetitive errors and is caused by the underdevelopment of higher mental functions directly involved in the process of mastering writing skills, correctional work for dysgraphia should include such features as stage-by-stage, duration, and systematicity. Therefore, only persistent work with the child can ultimately yield fruitful results and relieve the child of the inconveniences associated with dysgraphia (Shytyk et al., 2020).

Primarily, working with dysgraphia involves using auxiliary methods alongside the main ones. In considering phonemic analysis, it is necessary to demonstrate to the child how to segment a word correctly, determine the number of letters in a word, divide sounds into vowels and consonants, and so on. Resistance to vowel sounds in sound segmentation helps prevent and anticipate reading and writing errors, such as skipping vowels, adding vowels, mixing them, and alternating them.

The ability to form and correctly identify the syllable of a word with a focus on vowels helps differentiate vowel and consonant sounds, distinguishing vowels from one's own speech.

One of the forms of individualized methods for overcoming dysgraphia in young preschool children is the method of "commented writing." This method is conducted in several stages: in the first stage, the child learns to comment on syllables, where the vowel letter is emphasized with intensified sound. This method is carried out under the close supervision of a specialist - a speech therapist. During the teaching process, the speech therapist emphasizes that each word should be written separately, and when commenting on sentences, it is necessary to indicate that the first word in the sentence is written with a capital letter and a period is placed at the end of the sentence (Popovych et al., 2022).

It is worth noting that dysgraphia in children appears to a greater or lesser extent. For children with a more complex form of dysgraphia, it is necessary to combine techniques of combined writing with the method of rhythmic reading and writing. During reading, the student divides each word into syllables as it is written. The rhythmic version with the uniform pronunciation of words in the orthographic version helps to assimilate each word by syllables and facilitates more effortless reproduction of these words in writing. It is important to emphasize that when a pupil reads words with a certain rhythm, the speech therapist taps out the rhythm at the same time, thereby not allowing the student to stumble or read words with mistakes. This method helps develop a child's orthographic memory at the early stages of schooling (Boychuk, 2020, p. 35).

Zhuravlyova L. S. notes that a symptomatic principle often characterizes speech therapy work on correcting written language disorders without considering the disorder's leading mechanism, as dysgraphia is predominantly defined as a language disorder. Explaining a series of dysgraphia cases solely as underdeveloped oral language would be incorrect, as in some children with dysgraphia, oral language disorders either do not manifest or are not correctly recognized. This, in turn, can lead to the emergence of written language disorders (Zhuravlyova, 2017).

5. Discussions

Dysgraphia is a complex disorder; therefore, its diagnosis and treatment methods should include a comprehensive approach. Consequently, speech therapy activities should be based on speech therapy diagnostics with the use of methodological recommendations for overcoming various types of dysgraphia, including the author's methods that help to focus efforts on certain basics of speech therapy for dysgraphia. In the course of correctional work, manuals with didactic material on the development of correction and speech and writing activities are used.

Ukrainian scholar N. Holub has created didactic content for correcting and developing written language for primary school pupils with speech and writing disorders. This material helps to consider the levels of organization of writing and speaking activities. Particular attention is paid to the following aspects:

- 1) elimination of defects in oral speech, development of phonetic and phonemic abilities, lexical and grammatical word structure, and coherent speech skills;
- 2) development of gnostic, mental, and thinking functions, attention, motor functions, motivational and emotional-volitional spheres, etc.;
- 3) formation of the most essential pupils' competencies - oral, written, linguistic, communicative, etc.

The selection of individualized treatment methods for overcoming dysgraphia includes various didactic materials that influence the formation of the components of writing and speaking activities in their unity and interaction (Holub, 2014, p. 207).

In the research process of the scientific-theoretical analysis of domestic and foreign studies devoted to the chosen issue, it was established that the determining conditions for effective mastery of the skill of writing are the following: an adequate level of cognitive activity, the formation of oral speech, as well as phonetic-phonemic aspects (in particular, sound pronunciation, auditory differentiation phoneme, phonemic analysis and synthesis), lexical-grammatical analysis and synthesis, lexical-grammatical structure, as well as sufficiently developed spatial representations, visual analysis of synthesis and mnesis. Empirical research on this issue should include an organizational, ascertaining and formative-control aspect (Olefir et al., 2023).

When working on eliminating reading and writing disorders, it should be remembered that this type of activity should be carried out simultaneously since the processes of reading and writing are inseparable. At the same time, it is worth remembering that timely and comprehensive examination and properly organized speech therapy determine whether a child will be able to overcome written speech disorders and be successful at the primary stage of school education as well as at its subsequent stages (Serebryannikova, 2020; Mizin et al., 2021; Kalmykova et al., 2022).

As indicated earlier, there are several causes that provoke dysgraphia, namely:

- Underdevelopment of all categories of oral speech - articulation, phonemic perception, lexical-grammatical, and coherent speech.
- Underdevelopment or damage to the child's brain during pregnancy, birth, and postnatally, including exhaustion of the nervous system.
- Social-psychological reasons stemming from a family communication deficit, a lack of preparation of the child for school, and so forth.
- A predisposition to delayed or complete mental development, and so on (Dysgraphia: definition, causes, symptoms, and treatment, 2020).

Many mothers, six to eight years after childbirth, often cannot provide precise and detailed information about the course of pregnancy and childbirth in the early period of the child's life, which is necessary for scientists (Ovchinnikova, 2017).

Among other factors complicating the diagnosis of dysgraphia, we can mention the influence of the prenatal and postnatal periods on the child's development, heredity, brain immaturity, delay in psychophysical development, speech development disorders caused by various factors, and the lack of active communication between parents and the child (Tkachuk, 2022; Shytyk & Akimova, 2022).

Additionally, among the causes that provoke dysgraphia, mental retardation can be included. The factors that provoke mental retardation are mainly similar to those that provoke dysgraphia (Belova, 2021, p. 6).

Genetic factors have been increasingly considered among the range of causes that disrupt the formation of specific writing mechanisms lately. According to some scientists, genetic causes underlie the most severe forms of this disorder (Davydova, 2007, p. 51).

Overcoming dysgraphia is a challenging task aimed not only at correcting speech underdevelopment but also at improving writing skills. O.H. Leshchenko insists that dysgraphia prevention should include methodologies for developing phonemic hearing, phonemic perception, and attention, as well as phonemic analysis and synthesis skills, development of coherent speech, fine motor skills, spatial imagination, etc. Among the means of overcoming dysgraphia, we can also include games such as chess, various developmental games that involve fine motor skills (application, modeling, construction), exciting games, and various verbal methods.

A special role in overcoming dysgraphia should be assigned to parents, who, armed with recommendations from specialists, can influence the child's development by conducting simple activities with the child at home (Leshchenko, 2023, p. 39).

It is worth noting that the effectiveness of corrective work is associated with identifying and systematically analyzing individual manifestations of the disorder. In each specific case, it is necessary to adjust a corrective route that takes into account the main mechanism of the disorder and additional mechanisms influencing the development of dysgraphia. Since the specificity of dysgraphia structure is heterogeneous, specialists use various methods to overcome it, seeking the best ones capable of eliminating its manifestations (Yakymchuk, 2017, pp. 48-49).

Yu.V. Ribtsun emphasizes that the causes of dysgraphia should be sought in preschool age. Psychological difficulties, besides correction by a speech therapist, should also involve psychotherapeutic interventions. Therefore, it is essential to create comfortable conditions for the child's development from the very beginning of their stay in preschool and later in the school setting (Ribtsun, 2019, p. 36).

6. Conclusions

In recent years, there has been a marked increase in interest in the study of dysgraphia. As researchers seek to identify the causes of dysgraphia, they often enlist the support of neurologists and geneticists. The obtained results help to establish what exactly influenced this disorder and, thus, contribute to the search for ways to overcome dysgraphia. Research progress in this area is already yielding noticeable results. Nevertheless, it is too early to talk about the exact causes of dysgraphia. It is necessary to collect all available resources and to establish more deeply the causes that influence the occurrence of dysgraphia.

Ethical considerations

Not applicable.

Conflict of Interest

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References

- Belova, O. B. (2021). Features of speech development in children with intellectual disorders. *Medical education. Series: Improving the quality of higher medical education*, 1, 5-10. https://ojs.tdmu.edu.ua/index.php/med_osvita/article/view/11876
- Boryak, O. V., Kolesnyk, V. V. (2018). On the issue of written speech disorders in children of primary school age. *Proceedings of International Scientific and Practical Conference of Students and Young Scientists "Correctional and Inclusive Education through the Eyes of Young Scientists"*, 6, 263-268.
- Boychuk, Yu. D. (2020). *Actual issues of correctional and inclusive education*. Kharkiv: KhNPU named after H. S. Skovorody, 376 p.
- Cherednichenko, N. V. (2014). The modern approach to the study of the causes and mechanisms of dysgraphia in primary school children with impaired speech development. *Scientific Journal of the National Pedagogical University named after M.P. Drahomanov. Series: Correctional pedagogy (Actual problems of speech therapy)*, 220-225. <https://enpuir.npu.edu.ua/bitstream/handle/123456789/7816/Cherednichenko.pdf?sequence=1&isAllowed=y>

- Danilavichiute, E. (2022). *Psycholinguistic didactic technologies of diagnostic and overcoming speech disorders in younger school students with severe disabilities speech: educational and methodological manual*. Kyiv: Mykola Yarmachenko Institute of Special Pedagogy and Psychology of the National Academy of Pedagogical Sciences of Ukraine, 847 p.
- Dyachuk, N. V. (2015). The speech activity realia: psycholinguistic approach. *Scientific Proceedings of Ostroh Academy National University: Philology Series*, 58, 257-260. http://eprints.zu.edu.ua/31711/1/Nznuoaf_2015_58_99.pdf
- Dysgraphia in children: causes, manifestations, treatment (2024). <https://childdevelop.com.ua/articles/health/347/>
- Dysgraphia: definition, causes, symptoms, and treatment (2020). <https://www.kozaky.org.ua/disgrafiya-viznachennya-prichini-simptomi-i-likuvannya/>
- Holub, N.M. (2014). *Didactic material on correction and development of written speech of primary school students*. Kyiv: Slovo Publishing House, 384 p.
- Kalmykova, L., Kharchenko, N., Kyuchukov, H., Mysan, I., Kalmykov, H. (2022). Theory of L1 Acquisition and Speech Development of Children in Ontogenesis: Methodology, Concept, Practice. *Psycholinguistics*, 32 (1), 66-111. <https://doi.org/10.31470/2309-1797-2022-32-1-66-111>
- Karpenko, V. V. (2019). *Directions of speech therapy work on dysgraphia correction in younger schoolchildren*. Sumy: Sumy State Pedagogical University named after A. S. Makarenko, 71-73.
- Krolivets, Y. (2022). Peculiarities of External Speech Operations in Narrative Speech of Senior Preschool Children. *Psycholinguistics*, 31 (1), pp. 63-91. <https://doi.org/10.31470/2309-1797-2022-31-1-63-91>
- Leshchenko, O. H. (2023). Prevention of symptoms of dysgraphia in preschool children. *Pedagogy of creative personality formation in higher and general academic schools*, 89, 37-40. <http://pedagogy-journal.kpu.zp.ua/archive/2023/89/7.pdf>
- Mizin, K., Slavova, L., Petrov, O. (2021). A contrastive psycholinguistic study of the british emotional concept 'envy' and ukrainian 'zazdrist ': particularities of phraseological objectification. *East European Journal of Psycholinguistics*, 8 (2), 170-188. <https://doi.org/10.29038/EEJPL.2021.8.2.MIZ>
- Olefir, O. I., Drozd, L. V., Padun, V. S. (2023). Methodological foundations of the organization of corrective and preventive work on the formation of prerequisites for mastering written communication skills in children with speech development disorders. *The image of a modern teacher*, 96-13. <http://isp.poippo.pl.ua/article/view/279770/276097>
- Oliinyk, I. (2022). On the issue of dysgraphia treatment in primary school children. On the issue of dysgraphia treatment in primary school children. *Image of the Modern Pedagogue*, 3(204), 91–94. <http://isp.poippo.pl.ua/article/view/259254>
- Ovchinnikova, M. V. (2017). Modern ideas about the etiology of dysgraphia. Proceedings of the all-Ukrainian student scientific-practical conference "Actual problems of correctional pedagogy, psychology and rehabilitation," 86-88. https://www.repository.sspu.edu.ua/bitstream/123456789/5530/1/Aktualni%20Problemy%20Korektsiinoi_2017.pdf
- Popovych, I., Halian, I., Pavliuk, M., Kononenko, A., Hrys, A., & Tkachuk, T. (2022). Emotional quotient in the structure of mental burnout of athletes. *Journal of Physical Education and Sport*, 22(2), 337-345. <https://doi.org/10.7752/jpes.2022.02043>
- Popovych, I., Semenov, O., Hrys, A., Aleksieieva, M., Pavliuk, M., & Semenova, N. (2022). Research on mental states of weightlifters' self-regulation readiness for competitions. *Journal of Physical Education and Sport*, 22(5), 1134-1144. <https://doi.org/10.7752/jpes.2022.05143>
- Ribtsun, Yu. V. (2019). *A child with speech development disorder*. Kharkiv: Ranok Publishing House, Kangaroo Publishing House, 40 p.
- Serebryannikova, E. P. (2020). *Commented letter as one of the methodological approaches for correcting written speech disorders in primary school children*. The collection of scientific works "Current issues of correctional education (pedagogical sciences)", Kharkiv: KNPU named after H. S. Skovoroda, 307-311. http://hnpu.edu.ua/sites/default/files/files/Fak_psihologii/Aktualni%20pytannia%202020.pdf
- Shevchenko, V. O. (2023). *Views on the causes and mechanisms of dysgraphia*. Kharkiv: Kharkiv National University named after H. S. Skovoroda, 603-605. <https://dspace.hnpu.edu.ua/server/api/core/bitstreams/d7e0ba01-adb0-4db7-8ecf-40f9ba788b3e/content>
- Shevtsova, A. G. (2015). Primary school age: traditions and innovation in research. Collection of Research Papers «Pedagogical Sciences», Kherson, KhSU, 68, 134-138. http://nbuv.gov.ua/UJRN/znpn_2015_68_25
- Shytyk, L., & Akimova, A. (2020). Ways of transferring the internal speech of characters: Psycholinguistic projection. *Psycholinguistics*, 27(2), 361-384. <https://doi.org/10.31470/2309-1797-2020-27-2-361-384>
- Striletska, S. V. (2017). Modern pedagogical ways aimed at dysgraphical mistakes correction. *Pedagogical sciences*, 159-163.
- Tentser, L.V. (2021). *Diagnosis and correction of dysgraphia among primary schoolchildren*. Dissertation for the degree of the Candidate of Pedagogical Sciences in specialty 13.00.03 – Correctional Pedagogy. Kyiv: National Pedagogical University named after M.P. Drahomanov, 310 p. https://enpui.npu.edu.ua/bitstream/handle/123456789/39686/Tentser_dis.pdf?sequence=1&isAllowed=y
- Tkachuk, G. I. (2018). Correction of dysgraphia in preschoolers. https://imso.zippo.net.ua/wp-content/uploads/2018/03/2018_03_29_12_Tkachuk.pdf
- Yakymchuk, H. (2017). *The structure of violation in dysgraphia in the selection of the correctional route*. Digital Library NAES of Ukraine, 442-451.
- Yakymchuk, H. (2018). Typical individual variants of primary in children of elementary school age with dysgraphia. *Education of Persons with Special Needs: Ways of Development*, 1(14), 288-296. <https://www.spp.org.ua/index.php/journal/article/view/71>
- Yefimenko, O. P. (2020). School maladjustment as a psychological and pedagogical problem. *Educational project "Na urok"*. <https://naurok.com.ua/vikoviv-osoblivosti-molodshih-shkolyariv-195112.html>
- Zhigora, I. (2022). The formation of spelling literacy in primary school children in terms of personality-oriented learning. *Pedagogical Journal: Doshkilna I Pochatkova Osvita*, 1-2/2022, 66-69. https://znayshov.com/FR/14093/pv_2022_1-2-66-69.pdf
- Zhuravlyova, L. S. (2017). The current state of speech therapeutic correctional work with primary schoolchildren with dysgraphia. *Scientific Journal of the National Pedagogical University named after M.P. Drahomanov*. Series: Correctional pedagogy, 34, 24-32. https://enpui.npu.edu.ua/bitstream/handle/123456789/22102/6_Zhuravlyova%20L.S..pdf?sequence=1&isAllowed=y