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Interdisciplinary Links of Speech Therapy for Individuals or Children with Special Needs

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Abstract: The article highlights the issue of interdisciplinary links in speech therapy, in particular, the philosophy of language. Given that the number of children with special educational needs is increasing, the relevance of the article is indeed justified. Therefore, it is necessary to analyze the problem in question more in detail. The article aims to a) clarify such concepts as "language", "philosophy of language", "hermeneutics", "speech therapy", b) analyze an interdisciplinary approach to preventing and correcting speech disorders in children and adults and c) study the causes of such disorders. Research methods include a detailed analysis of scientific sources, as well as a systematic analysis. As shown by the relevant recent work in this area, the interaction of methods from neurology, neurophysiology and neuropsychology contributes to restoring the functional system of language and speech. Speech disorders are mostly typical for people diagnosed with autism, attention deficit disorder, hyperactivity disorder, Huntington's disease, sclerosis, dementia, and mouth or throat cancer. The novelty lies in the fact that speech therapists should be able to use neurostimulation technologies in the course of corrective work. In conclusion, speech therapy should follow an interdisciplinary approach so that specialists can make an effective diagnosis of speech disorders in children and adults.

Keywords: *language; philosophy of language; hermeneutics; speech therapy; speech disorder; phonemic rhythm; phonemic hearing; person with autism.*

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Introduction

It is difficult to imagine life without communication. Language as a means of thinking allows one to communicate with others, describe the past, anticipate future events, and plan and share information. Language unites people in society. When one listens to the interlocutor, one does not acquire knowledge but simply hears thoughts. Besides, the ancient Greeks highly appreciated and respected language as they understood a continuous connection between the word and one's inner state and the surrounding objects. Given that the number of children with special educational needs is increasing, the relevance of the article is indeed justified. Therefore, it is necessary to analyze the problem in question more in detail.

The article aims to a) clarify such concepts as "language", "philosophy of language", "hermeneutics", "speech therapy", b) analyze an interdisciplinary approach to preventing and correcting speech disorders in children and adults and c) study the causes of such disorders.

First, it is important to clarify such concepts as "language", "philosophy of language", "hermeneutics", and "speech therapy".

In the Academic Explanatory Dictionary of the Ukrainian Language, edited by Bilodid (1970), one can find the following explanation of the word "language": the ability to speak and express one's thoughts (p. 768).

The interpretation of the "philosophy of language" concept is found in the study by Zvonska (2017). It is shown as an interdisciplinary area that studies the nature, origin and functions of speech, its relationships with the surrounding reality and human thinking, as well as how language affects the way people learn about the world, structure this knowledge in their consciousness and represent it in the national pictures of the world.

As is known, ancient philosophers significantly contributed to grammar development as they identified the following parts of speech: nouns, verbs, appellatives, conjunctions and articles. In their research, however, many issues remained unsolved, including the problem of universals and compositions; the nature of language; formal and informal approaches; translation and interpretation of words.

As noted by Synyov (2016), speech therapy is a branch of corrective pedagogy that studies manifestations and causes of speech disorders, as well as develops effective means to prevent them.

Lisovyi & Kvit (2006) claim that hermeneutics is a method, a theory of any interpretation.

Since ancient times, thinkers were interested in language and studied it. In the 18th century, German thinkers introduced the term "philosophy of language" into everyday life. Quite noteworthy is the work by Manchester (1985) who analyzes the theory of Wilhelm von Humboldt (2000), the first one to submit the doctrine of the philosophy of language. The scholar believed that language is an integral system of thinking. He examined the psychological function of language, lexical and grammatical features, and aspects of language variation in its philosophical foundations. In the context of linguistic doctrines, he offered a typology of language, postulates of linguistic relativity, as well as justified the links between linguistic relativity and linguistic variation.

One should pay particular attention to Tester's research (2013) in which the author translated and classified philosophical aphorisms of the German scientist Georg Lichtenberg (2013). Criticizing the views of the Enlightenment, German idealism and British empiricism, the thinker significantly contributed to the philosophy of language.

Due to another German thinker Johann Gottfried von Herder (2002), the philosophy of language began its development (Forster, 2001). His most famous work is "Treatise on the Origin of Language", (Herder, 2002). Today, his three interconnected theories are relevant: the philosophy of language and thought; the theory of interpretation; the theory of translation. Consequently, such important principles as secularism, general interpretation and methodological empiricism appeared in the theory of interpretation, that is, in hermeneutics.

Lycan (2019) analyzes current views on the philosophy of language and thus helps one to understand linguistic mechanisms.

Voznyak (2009) believes that a prerequisite for national revival is the revival of the language. Language, being a political instrument, is becoming a constant confrontation between Ukrainians since it is the code of a nation. The scholar proves the innocence of language, its profound influence on an individual, and its importance for public policy formation. His research allows one to understand the nature of language better and makes it possible to travel through its endless enfilades.

A transdisciplinary approach to studying children with speech disorders

Language issues are covered in an interdisciplinary aspect. Recently, there have been many studies which discuss the problem in question in

different fields of science, such as speech therapy, philosophy, psychology, pedagogy, super pedagogy, typhlo pedagogy, oligophrenopedagogy (Behas et al., 2019; Demchenko et al., 2021; Melnyk et al., 2019; 2021; Onishchuk et al., 2020; Sheremet et al., 2019). As is known, interdisciplinary approaches are based on the use of knowledge of speech therapy together with physiology, neurology, pedagogy and psychology.

Concerning the diagnosis of speech disorders, Lopatynska (2019) emphasizes a transdisciplinary approach that, along with speech therapy examinations, takes into account the indicators of neuroclinical, neuropsychological and neuropsycholinguistic processes. The researcher also considers a neurological approach which enables an active interaction among the participants to improve speech development by using neurological techniques to influence the work of the brain. A neurophysiological approach is a complex of pathophysiological processes aimed at the functioning of communication. At the same time, neuroimaging methods contribute to understanding verbal and non-verbal communication. A neuropsychological approach is used to study mental processes. A speech-therapy approach allows one to determine to which extent speech development is delayed based on conditional ontogenetic markers and communication competence levels. The integration of neurophysiological, neuropsychological and speech-therapy approaches makes it possible to diagnose speech disorders accurately and choose effective methods and techniques to help children with syndromic disorders, speech disorders, and mental development delays.

Lopatynska (2020) describes the use of neurostimulation technologies in speech therapy practice with preschool children with severe speech disorders. The research highlights the need to combine neurological, neurophysiological and neuropsychological methods which together contribute to restoring the functional system of language and speech. Neuroscientific achievements allow one to discover the causes of disorders in the human body as a whole. An optimal combination of medical and speech-therapy achievements leads to the active use of neurostimulation (neurophysiotherapeutic, neuroacoustic, neurological) technologies. Owing to the advances in medical science and psychology, speech therapy is aimed at speech correction, as well as cognitive and motor development of children. In speech therapy, the latest neurocorrective technologies serve to create a positive emotional state, promote speech development and activate impaired mental functions. The use of neurostimulation technologies is indeed an innovation in the corrective work of speech therapists.

Hardin & Kelly (2019) assume that the use of an interdisciplinary approach to treating adults, retirees, and athletes, who received minor traumatic brain injuries associated with cognitive, physical and behavioural symptoms, has a positive effect. The researchers focus on the fact that patients dealing with the consequences of concussion receive medical assistance, are involved in exercise therapy, and consult with neuropsychologists, speech therapists and psychologists to follow recommendations that may help overcome the symptoms of the disease.

Pinchuk (2011) studies the problem of an interdisciplinary approach to teaching children with speech disorders. He highlights the importance of psychological and speech-therapy assistance to children with dysgraphia. The researcher also considers it necessary to develop a joint plan of action by speech therapists and psychologists who together plan and organize an educational environment. Meanwhile, Pinchuk (2011) emphasizes three blocks of tasks, namely, diagnostic, preventive-consultative and corrective-developmental. In this context, one needs to consider the child's capabilities, and cognitive and speech potential. Diagnostics should be aimed at identifying the degree of difficulty with acquiring writing skills and discovering the causes and symptoms behind it. Prevention and consultation should focus on a creative approach to ensuring cooperation between parents and educators to help the child overcome dysgraphia difficulties together. Corrective-developmental work must include exercises that a) develop visual and auditory memory and thinking, b) form phonemic perception, volitional regulation, and sufficient self-esteem and c) enrich vocabulary. Only partnership pedagogy between the pupil, speech therapist, psychologist, teacher and parents can help the child overcome the difficulty with acquiring writing skills.

Weusthoff et al. (2018) analyze the concept of language in the context of interpersonal interaction. According to the authors, the latter is quite difficult to study but extremely necessary for daily life, on which one's state of health depends. A session of psychotherapy can serve as an example since it decreases the patient's mental symptoms and improves his/her state of health. During the session, the specialist uses verbal (speech) and non-verbal (gestures, facial expressions, intonation, "eye contact") communication. Naturally, speech is important as it helps people communicate. One of the well-known methods of automatic analysis is linguistic during which the number of words, divided into positive and negative connotations, can be determined.

Corrective-developmental work on a communicative function of speech

Speech is one of the main mental functions that plays an important role in cognition. In turn, language is a means of communication and thinking that controls one's behaviour.

Nowadays, various specialists who investigate speech disorders can help overcome communication disorders. It refers to audiologists, paediatricians, educational consultants, educational diagnosticians, licensed professional counsellors, licensed clinical social workers, neuropsychologists, occupational therapists, pediatric neuropathologists, physiotherapists, psychiatrists, psychologists, and speech therapists.

Minnis (2019) analyzes speech disorders in detail. There are vocal disorders or disorders associated with the pronunciation of words, such as stuttering, apraxia or dysarthria. Apraxia is a language disorder that results from damage to the parts of the brain responsible for speech. Dysarthria is a motor speech disorder when the muscles of the face, mouth and respiratory system lose their elasticity. Such speech disorders occur in both adults and children. It leads to decreased self-esteem and as a result, stress, fears, anxiety and depression. The causes of speech disorders are as follows: vocal cord damage, brain damage, and muscle and respiratory weakness. Speech disorders are mostly typical for people diagnosed with autism, attention deficit disorder, hyperactivity disorder, Huntington's disease, sclerosis, dementia, and mouth or throat cancer. To diagnose the level of the disorder, psychologists and speech therapists conduct diagnostic tests. Typically, speech disorders improve after the proposed exercises by a therapist or speech therapist. These exercises are aimed at strengthening the muscles of the face and throat.

As noted by Eske (2019), speech is the main way by which one communicates, becomes happy or sad, and demonstrates empathy. The researcher studies the causes and symptoms of disorders and diseases, as well as the ways of their diagnosis and treatment. The human brain consciously and unconsciously controls all specific actions and words since it is responsible for speech signals. In turn, Eske (2019) identifies the following risk factors increasing the likelihood of speech disorders: premature birth; low birth weight; ear, throat or nose diseases; domestic violence. The deficiency or underdevelopment of phonemic hearing leads to a delay in the child's speech development. Normally, speech therapists offer exercises aimed at familiarizing, learning and consolidating new words or appropriate physical exercises.

Unfortunately, war can be the cause of reticence and taciturnity in children and adults. An ongoing war in Ukraine daily causes fears, panic, tears, anxiety and depression. To overcome such a psychological state and make the child talk, Rybchenkov (2022) shares his experience of how psychologists draw, sculpt, embroider and assemble legos with children. Due to play and creativity, children communicate, tell stories, share impressions and become calmer.

The most effective way of treating speech disorders is speech therapy methods, offered for both children and adults (especially after brain damage or apoplexy). According to Santos-Longhurst (2019), speech disorders can involve articulation disorders, stuttering, resonance disorders, receptive language disorders, expressive language disorders, cognitive-communication disorders, aphasia and dysarthria. Speech therapy for children can be based on playing, reading books, drawing, and modelling correct sounds and syllables.

Dmytrenko et al. (2018) claim that children with speech disorders also demonstrate functional and organic deviations in the central nervous system. They periodically suffer from a headache, nausea or dizziness. Besides, such children tend to show disequilibrium, reduced coordination, reduced articulation skills, as well as undifferential finger movements. They are unstable emotionally (irritability, excessive excitability). Such children have difficulties in learning (reading, writing, math) as they quickly become exhausted or feel fatigued. They are prone to unstable attention spans, forgetfulness, low control over their activities, decreased motivation and efficiency, and aggressive reactions to others' comments. In this case, speech therapists should employ neuropsychological methods contributing to the formation of basic functions. As one can see, neuropsychology and speech therapy are indeed integral branches. Therefore, neuropsychological exercises and games can help develop and improve the child's hand-eye coordination, thinking, attention, concentration, memory, and spatial perception.

A detailed review of relevant literary sources shows that comprehensive treatment, i.e., speech therapy together with psychological and psychotherapeutic support, is recommended for children suffering from stuttering. The synchronization of finger movements and speech helps children develop speech motor skills, speak calmly, and articulate clearly with gestures and facial expressions.

Lytovchenko (2021) dwells on how one can prevent and correct stuttering in children. As is known, stuttering is a disease of the cerebral cortex, which is the result of violations in the work of interhemispheric

connections, in particular, insufficient functioning of the right hemisphere. Normally, a nervous breakdown in children occurs because of improper upbringing (one parent allows everything and the other one does not), family quarrels in their presence, fright, physical or mental trauma, and neuroinfections. Stuttering children usually demonstrate increased irritability, vulnerability, tearfulness, and decreased appetite, as well as are prone to sleep disorders, colds and infectious diseases. Their movements are rather stiff and weak. The researcher also focuses on the fact that when a child suffers from stuttering, parents and teachers should never overload him or her with foreign language studies, figure skating or music at school. Besides, it is strictly forbidden for them to practice hockey, football, wrestling, boxing, and basketball, as well as those sports associated with strong muscle tension. At the same time, physiologists recommend daily exercises, rhythmic gymnastics, swimming, rowing, skiing and skating. Such children should not participate in competitions as this can cause emotional arousal and eventually lead to stress. To overcome stuttering, Lytovchenko (2021) offers fifteen rules for good oral presentation, a set of relaxation techniques, individual and group lesson plans, developmental exercises, fairy-tales, games to overcome fear, as well as verses for training voice, rhythm and speech expressiveness. The researcher also discusses corrective work with stuttering children in some important areas: body-oriented approaches; exercises for speech breathing, methods for improving verbal and non-verbal communication; ways of increasing self-esteem and relieving anxiety; a differentiated approach to conducting logorhythmic classes. Methods of body psychotherapy involve the following techniques: cognitive-analytical, breathing- and relaxation-oriented, post-isometric, massage-based, theatrical, expressive, dance-motor, tactile-communicative. It is important to note that psychotherapists and speech therapists widely use cognitive-analytical, breathing- and relaxation-oriented techniques. The most important tasks of correction during speech therapy sessions are the optimization and stabilization of the total body fitness. In this regard, Lytovchenko (2021) suggests special stretching exercises and relaxation techniques. Much emphasis is put on the exercises aimed at expanding the sensorimotor repertoire of the vocal apparatus, namely training the jaws, labial muscles, tongue, neck, shoulders, arms and legs. Therefore, to overcome stuttering it is essential to apply an integrated therapeutic-pedagogical approach to impact not only speech but also personality, motor skills and the nervous system.

Sheremet & Bazyma (2010) consider some aspects of corrective-developmental work on improving the communicative function of speech in

older preschoolers with autistic disorders. They suggest some effective techniques that increase speech activity. Moreover, the researchers highlight the importance of establishing well-coordinated emotional contact with children and creating a trusting and friendly atmosphere for them.

Rudenko & Hordiichuk (2019) study speech disorders and methods of corrective work with children with autism. The authors believe that speech of such children changes with age: some children show better results, others do not. Also, one can notice that children with autism tend to demonstrate an emotional sensitivity to music, rhythmic poetry and visual arts. Speech therapy rhythm plays a prominent role in complex corrective work and helps one improve motor functions and speech (normalize breathing, voice, rhythm and pace). During such sessions, children are offered finger games, music and movement games, and communication games.

Speech disorders are observed in children with autism who seldom use the vocal apparatus, which is why their vocabulary is rather scanty. It is difficult for such children to sustain attention; their imagination and thinking are rather underdeveloped. To develop the child's vocal apparatus, parents should consult with doctors (neurologists, psychiatrists, otolaryngologists, gastroenterologists, allergists), special education teachers, speech therapists, and neuropsychologists. Speech therapists select the following activities to develop the left hemisphere of the child's brain: breathing exercises, passive vocabulary accumulation, teacher's speech perception, and sound imitation.

Barna (2019) discusses some promising methods of corrective work with children with autism. The researcher offers a treatment programme that teaches the child to correctly breathe, pronounce sounds and perform physical exercises to improve body mobility. Consequently, alternative applied methods of treatment are melo therapy, speech therapy, psychotherapy, play therapy, ergotherapy and art. Play therapy has a special effect on language stimulation because during play the child is most open to communication.

Lytovchenko et al. (2018) examine the ways of overcoming hearing and speech disorders in children. The authors assume that preschoolers with such problems should be taught global or analytical reading. Children with hearing disorders normally do not pronounce all the sounds, so breathing training should be a priority. Breathing exercises can involve the following actions: blowing a feather, inflating soap bubbles or balloons, blowing off pieces of paper or cotton wool from the table, and singing each sound separately. When working with a voice, one should apply phonemic rhythm. It means making rhythmic movements with one's hands, and whispering

sounds or words. Tongue-based articulation exercises are suitable for developing the muscles of the vocal apparatus. Considerable attention should be paid to the understanding of intonation and voice strength.

According to Camminga et al. (2021), people with hearing disorders experience social and emotional problems, such as communication difficulties, depression, anxiety and aggression. These problems lead to speech disorders. It follows that a delay in speech development (expressionless speech or articulation errors) indicate physical, neurological, genetic, cognitive, intellectual and emotional disorders.

Thus, an interdisciplinary approach helps speech therapists, special education teachers, neuropsychologists, psychologists and other specialists to make an effective diagnosis of speech disorders in children and adults.

Conclusions

The article provides a detailed overview of articles, reports and manuals by Ukrainian (Lopatynska, 2019; 2020; Pinchuk, 2011) and foreign (Eske, 2019; Hardin & Kelly, 2019; Minnis, 2019; Weusthoff et al., 2018) researchers on interdisciplinary links in speech therapy. It specifies such concepts as "language", "philosophy of language", "hermeneutics" and "speech therapy".

Also, the article shows that a delay in speech development (expressionless speech or articulation errors) indicates physical, neurological, genetic, cognitive, intellectual and emotional disorders.

Importantly, the article proves that interdisciplinary approaches imply using comprehensive knowledge about speech therapy along with physiology, neurology, pedagogy and psychology. The novelty lies in the fact that speech therapists should be able to use neurostimulation technologies in the course of corrective work

One can see that psychological and speech-therapy assistance is mostly based on diagnostic, preventive-consultative and corrective-developmental work. The cooperation among specialists, parents and the child plays an important role in overcoming dysgraphia (a writing-based learning difficulty).

The article pays considerable attention to an interdisciplinary approach to teaching children with dysgraphia, as well as other disorders (apraxia, stuttering, dysarthria). Besides, it considers characteristic features of these disorders and analyzes the essence of corrective work with such children. During speech therapy sessions, children with autism are offered finger games, music and movement games, and communication games.

Finally, the article discusses speech disorders among children with hearing disorders.

Thus, an interdisciplinary approach helps speech therapists, special education teachers, neuropsychologists, psychologists and other specialists to make an effective diagnosis of speech disorders in children and adults.

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