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ORIGINAL ARTICLE

# Combination therapy for patients with a developmental dysphasia: selected approaches based on special education, rehabilitation and psychology in a systematic case study.

**Michal Vostrý[1,2], Ilona Pešatová[1], Barbora Lanková[3], Otakar Fleischmann[2,5], Jaroslava Jelínková[4], Ivana Štolová[2], Radka Beranová[2], Nikola Mundoková[3]**

1 Department of Special and Social Education, Faculty of Education, Jan Evangelista Purkyne University in Usti nad Labem, Czech Republic.
2 Research Centre, Faculty of Health Studies, Jan Evangelista Purkyne University in Usti nad Labem, Czech Republic.
3 Department of Pre-Primary and Primary Education, Faculty of Education, Jan Evangelista Purkyne University in Usti nad Labem, Czech Republic.
4 Department of Languages, Faculty of Education, Jan Evangelista Purkyne University in Usti nad Labem, Czech Republic.
5 Department of Medical Rescue and Radiology Faculty of Health Studies, Department of Psychology, Faculty of Education, Jan Evangelista Purkyne University in Usti nad Labem, Czech Republic.

*Correspondence to:* Michal Vostrý
Hoření 13, Ústí nad Labem, Czech Republic
TEL: +420 721282123, E-MAIL: Michal.Vostry@ujep.cz

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## Abstract

**OBJECTIVE:** The paper deals with the possibilities of the development and the support of individuals with developmental dysphasia with regard to the legislative framework of the Czech Republic in the field of education and presents the results of a systematic case study of a child patient diagnosed with developmental dysphasia (according to ICD-10; F80.1 and F80.2).

**CASE REPORT:** The study aimed to determine the effect of combined therapy using long-term special educational, rehabilitation and psychological intervention, speech therapy and music therapy on the development of the patient's communication skills. The proband was selected by random, stratified sampling based on pre-determined relevant characteristics (age 6 years i.e., before entering primary school, diagnosed with developmental dysphasia). A 6-year-old child patient participated in the research with the consent of the legal representative. The therapy was focused on special educational care, speech therapy, music therapy and psychological intervention (including psychotherapy). During the hospitalization and post-hospitalization care, there was also the presence of a physiotherapist and an occupational therapist.

**CONCLUSION:** The results of the research point out the need for regular and close multidisciplinary cooperation of an occupational therapist, a physiotherapist, a special educator, a speech therapist, a music therapist and a psychologist when working with patients diagnosed with developmental dysphasia. These professions focus specifically on specific areas of support with a focus on cognitive, phatic and motor functions with the support of social adaptability.

## INTRODUCTION

It was about sixty years ago when language and speech developmental disorders were first described and children were diagnosed with congenital aphasia or congenital verbal deafness at that time. These children showed a relatively isolated deficit which was mainly apparent in the development of expressive or language skills as well as receptive language ability. The occurrence of a combination of these variants was possible in the absence of speech disorders, significant hearing loss, emotional disorders, behavioural disorders, or intellectual disabilities (Cohen *et al.* 1989). In children, we may encounter specific speech disorders or developmental dysphasia based on the data that is obtained during an examination. In general, children with specific speech disorders have difficulties with oral speech, thus language difficulties are primarily determined by a speech therapist. Developmental dysphasia can affect different parts of oral language, such as semantic development (vocabulary), phonological development (sounds in spoken language) and grammatical or syntactic development (word order, sentence structure). In addition, children may have a problem with receptivity i.e., problems with understanding the use of language and expressions (Hugh, 2003).

The development of speech and language is a complex process dependent on various systems in the brain. It begins immediately after the birth of the child and, hence, in the event of a problem in one of the system centres, atypical speech and language development may occur (Jovanović-Simić & Slavnić, 2009). Developmental dysphasia is one of the frequent childhood disorders. This is a delay or deficiency in the maturation of speech and language. De facto, this situation can be understood as an expected development deviation. Developmental dysphasia occurs in children with average or even above-average intellectual abilities while excluding hearing impairment, autism and other disorders. The incidence of developmental disorders is estimated at approximately 5 %, of which approximately 3 % are so-called severe developmental dysphasia. According to recent literature, the prevalence of developmental disorders may be as high as 7 %. Albeit, it is more common in boys, or children with family speech disorders issues (Nikolić *et al.* 2019). Yet, the cause of the disorder is not fully known. The diagnosis is established based on basic behavioural findings having excluded other disorders. Possible causes of the disorder include brain developmental anomalies, lateralization of the hemispheres, genetic causes, neurological and cognitive deficits, auditory and phonological perception, motor disorders, psychogenic and emotional causes, as well as disorders of perception and phonological awareness. Environmental factors must not be omitted (Golubović, 2012). Further, there is a risk of the event of a specific speech disorder even at a later school age. These problems may appear, for example, with learning to read as reading is dependent on basic language skills (Bruce *et al.* 1997; Dorothy *et al.* 2006).

Developmental dysphasia can be summarized as a specific disorder of neurological development. As we have already mentioned, this disorder causes children to have either expressive limited communication or receptive or both. It is also important to be able to distinguish dysphasia from aphasia. Severe speech and language disorders occur in aphasia. Meanwhile, dysphasia is a speech disorder that can be defined by a child's delayed ability to learn to communicate and speak. Such disorders can cause a person to have a long-term speech disorder (McLeod & McKinnon, 2007; Sharp & dan Hillenbrand, 2008; Sudarjat *et al.* 2019). In the Czech Republic, the given topic is discerned as an impaired ability to communicate, i.e. an extremely complex, heterogeneous category that ranges from common, e.g., speech sound disorder to serious disruptions of symbolic processes. There are two possible ways of defining impaired communication skills, that is a deviation from the accepted (or codified) language norm in a certain language environment, or based on general principles deviation from the communication intention of the individual (Renotiérová & Ludíková, 2006; Cséfalvay & Lechta, 2013).

### *Educational issues*

When considering the educational process, it is necessary to mention that the knowledge of vocabulary plays a fundamental role in language acquisition. Further, vocabulary is understood as the basis for the development of listening, speaking, reading and writing skills. It is, thus, the basic element of language and the cornerstone of language education. Students with learning disabilities show deficits in reading comprehension and vocabulary acquisition (Nation, 2001; Pany & Jenkins, 1978). In general, students with learning disabilities need explicit instruction because of the problems encountered with word learning strategies. Experts believe that students with learning disabilities need vocabulary practice. In the case of student involvement in the learning process, they pay attention and focus on educational involvement, thereby getting closer to meeting the learning goal. There is a risk of insufficient exposure to explicit vocabulary practice or its absence that may result in limited vocabulary use. If students are to become proficient and fluent readers, they need to understand the meaning of concepts and words (Bryant *et al.* 2003). In addition to knowledge of the graphemathematical system and conventions, students also need to understand the semantic system of hints and conventions. Moreover, they need to take into account the vocabulary that helps them understand what they read. Among other things, they should also be aware of the techniques needed to find connections during the reading process. Thus, the vocabulary needs to be constantly created, expanded and learned. Developing and expanding the vocabulary

of these students is a relatively dynamic task. It involves multiple exposure to vocabulary and its interpretation (Wawryk-Epp, 2004). Pupils need to be instructed to use different approaches to learning words when encountering unfamiliar words. A suitable and appropriate vocabulary teaching approach includes introducing the new word/words in several different contexts within a teaching unit. An educator helps students to learn new vocabulary by, for instance, invoking previous knowledge. Hence, students should study the relationship between new words and already internalized words with the help of meaning cues and reference tools (Aravid & Rajasekaran, 2021). A student with a learning disability struggles with a lack of vocabulary comprehension that may cause various limitations in language activity and lead to insufficient knowledge of context, develop deprived study skills and cause cultural and linguistic differences. Those differences further deepen the given deficit and cause a negative emotional impact on learning. Research suggests that the lack of metacognitive skills and learning strategies can make learning skills more challenging or confusing (Jitendra *et al.* 2004; Vajdya, 1999). From a pedagogical point of view, we understand dysphasia as a communication disorder. This results in difficulties with understanding, language development, words and speech. Therefore, in practice, we encounter pupils whose verbal expression is suppressed. Dysphasia is considered a disabling disorder with a wide range of severity and a multitude of causes. It is divided into Broca's dysphasia, Wernicke's dysphasia and anomic dysphasia and dysphasia can take fluent and non-fluent forms. The latter one is characterized more by lesions in the anterior cerebral hemisphere, while fluent form is characterized by lesions in the posterior part of the cerebral hemisphere (Catts, 2008; Aravind & Rajasekaran, 2020).

*Psychology issues*

In contrast to aphasia arising on a focal basis, developmental dysphasia is a neurodevelopmental disorder caused by specific disorders in the development of the neuronal system. It is a diffuse, microstructural damage to certain areas of the cortex with a decrease in volume and a change in the interhemispheric asymmetry of the speech pathways of the fasciculus arcuatus and pathways of the ventral system (Komárek *et al.* 2014). Developmental dysphasia and its expressive, impressive or mixed forms result in changes in the brain's functionality, which manifest themselves mainly in the areas of behaviour, adaptation and learning ability. Symptoms related to the behavioural functioning of the brain include, for example, sensory deficits, speech disorders, impaired control of emotion modulation, personality changes, memory deficiencies, increased fatigue, and deficits in attention and concentration (Benton, 1979, in.: Kulišťák, 2011). Following the brain damage changes in brain functionality and disorders affecting adaptive behaviour, especially in areas such as social perception, self-control and management, control of emotions, planning and organization, and the ability to learn based on experience may occur (Lezaková, 1982, in.: Kulišťák, 2011). Failure in the area of adaptation results in irritability towards other people, sensitivity to perceived threats, indecisiveness, confusion, problems in decision-making, withdrawal into passivity, sleep disorders, anger, aggression, sadness and a tendency to depression as well as psychosomatic reactions (Bartemaier *et al.* 1986, in.: Kulišťák, 2011). The disruption of the development of higher language structures and thus a weakened ability of interpersonal communication, and a reduced ability of mutual understanding and sharing lead to the development of pathology in the field of communication as a phenomenon of humanity. In particular, the needs for safety, social contact and self-actualization are not satisfied. Individuals experience frustration from the pressure to perform, from being misunderstood by others or from not understanding others, from mockery or deprivation due to unsatisfied needs and stress, which is not a one-time neuronal reaction to a given situation but becomes chronic. Among other things, all this affects the development of a disturbed Self (Levine & Klineová, 2012).

Healthy and appropriate communication styles are used for self-protection in the context of a current stress situation. Gestalt therapy ranks among them (including their polarities) introjection - rejection, projection - appropriation, retroflexion - impulsivity, deflection - receptivity, confluence - withdrawal and egotism - spontaneity. (Joyce ⊠ Sills, 2011). If the stressful situation becomes chronic, the mentioned styles become rigid, unnecessary and ineffective concerning the specific situation. The need for an interdisciplinary approach to individuals with developmental dysphasia is essential. Psychotherapy tries to bring the brain to a state that would, through permanent changes in synaptic transmission, enable adequate satisfaction of basic needs (Kulišťák, 2011) through the application of psychotherapeutic methods and procedures. As Bekirogullari (2018) stated, cognitive behavioural psychotherapy is accepted as an effective method for the therapy of learning disabilities. However, this should be accompanied by procedures aimed at satisfying emotional needs.

*Rehabilitation issues*

Developmental dysphasia is known as a disorder in the area of speech, which is also implied by the name of this diagnosis. However, many authors agree that dysfunctions also occur in other areas (Klenková, 2006). There is the delayed development of gross and fine motor skills moreover concentration on activities, motivation and memory may be weakened. Deviations can also be observed in the graphomotor expression and overall activation of the individual. Therefore, the therapeutic process cannot be understood purely from the point

of view of speech reeducation (Škodová & Jedlička 2003). It is desirable to address the above-mentioned problem areas comprehensively to achieve maximum progress in the individual's development (Lechta, 2005).

Pospíšilová (2019) draws attention to the diversity in the manifestations of this neurodevelopmental disorder in terms of the affected areas of language. To a certain extent, all language components tend to develop more slowly, resulting in a mismatch in the overall development (Smolík & Seidlová-Málková, 2014). As part of rehabilitation care for individuals with developmental dysphasia, we most often encounter speech therapy intervention. However, Dancza *et al.* (2020) also point to physiotherapy, which addresses the sensory-motor aspects of neurodevelopmental disorders. Volemanová (2021) in the therapy of persistent primary reflexes describes the concept of neurodevelopmental stimulation as a building block for all aspects of learning. Since specific therapeutic procedures that would determine the direction of rehabilitation have not yet been established, we most often approach so-called tailoring, i.e. therapy individually compiled for a given individual (Peutelschmiedová, 2005).

Motor clumsiness and restlessness most often appear in children with developmental dysphasia (Škodová & Jedlička, 2003). As part of the intervention, emphasis is placed on the development of gross and fine motor skills, which subsequently positively affects the motor skills and coordination of speakers (Kutálková, 2002). Besides movement therapy sensory perception is closely connected with motor skills and the overall human experience (Doležalová, 2010). Sensorimotor stimulation is primarily associated with physiotherapists and occupational therapists, yet speech therapists work also with senses. The method of sensory integration, which involves sensorimotor and cognitive functions, is now widely used in rehabilitation (Kolář *et al.* 2020). The above-mentioned aspects point to the interconnectedness of treatment-rehabilitation methods (Klusoňová, 2011). Further & Dancza *et al.* (2020) mention occupational therapy focusing on daily activities as one of the other possible interventions that can contribute to the development of a child with developmental dysphasia. Self-sufficiency, which positively affects the child's social readiness, is especially important in preschool age. Vágnerová (2021) describes this social level in terms of communication, behavioural and other social skills as a prerequisite for the inclusion of a child in the school team. In their study, Fedorova & Burlakova (2022) concluded that children with developmental dysphasia have a different and completely individual perception of their shortcomings, which is reflected in their behaviour. To assess suitable therapeutic tools, it is therefore necessary to approach each child individually with regard to their needs. However, in general, it is timeliness that increases the effectiveness of rehabilitation. Therapy should be a part of daily functioning for children (Kolář *et al.* 2011). This could be achieved through play, i.e. a child's natural activity. Ergotherapeutic intervention uses games for the development of the child's psychomotor, sensorimotor and cognitive functions (Klusoňová, 2011). For instance, animal-assisted interventions are another option for supportive therapy in neurodevelopmental disorders. Although there is no uniform standardization yet, it is proven that assisted animal therapy improves the results of the therapy and contributes to a child's learning (Narvekar, 2022). The rehabilitation of children with developmental dysphasia has a long-term nature. Appropriately chosen, coordinated and multidisciplinary cooperation promotes better results (Neubauer, 2010). The necessity of family involvement in therapy is described in more detail by O'Brien (2016). He points out, in the concept of modern rehabilitation, the importance of family cooperation with the therapist. This pro-family approach looks at interventions from a different perspective and offers a new direction in the concept of therapeutic procedures.

## METHODOLOGY

*Aims*

A person with dysphasia is affected by several complications, among which, according to theoretical principles, can be included, for example, learning processes, thought structures or data processing itself. Limits in these processes can have a long-term effect on social isolation. By this, we mean rejection from peers. The research investigation focused on an individual with a diagnosed expressive and receptive speech disorder - developmental dysphasia. The main interest was the examination and the therapy proposal by a special educator. This educator was qualified in the field of speech therapy according to the valid legislative frameworks of the Czech Republic. In addition to special pedagogical approaches, we also applied occupational therapy approaches. These approaches formed the basis of comprehensive rehabilitation. The priority of the experts involved in this investigation was primarily to support personality development. In our case, it was not possible to localize the disability in time, nonetheless, based on these limits, we created the approaches in such a way as to best support the daily life of the given patient.

The presented study deals with a qualitative research investigation of one patient. We point out the diagnosis and applicable methods of interference. The case study reflects the examination of medical specialists and special educators. Further, we point out the examination itself and the results that form the basis for the ideal interventional support. We also point out the child's behavioural manifestations at school and possible limits that may affect his optimal socialization in the school environment. The program of intervention and rehabilitation approaches was focused on the complex personality. Attention was paid to expressive

and receptive speech disorders, i.e. deficiencies in individual language levels of the communication system.

*Methods*

Research supports the need for a multidisciplinary approach. This approach includes assessment and curriculum for each student. Experts including a speech pathologist, a psychiatrist, a clinical speech therapist, a clinical psychologist, a neurologist, an occupational therapist, a special educator and a paediatrician are needed to determine the correct diagnosis of dysphasia. They should recommend the child for an examination as soon as possible. As was already stated the faster the intervention of parents and professionals, the more immediate the therapy of the given child is (Eclersley, 2010; Boom, 2010; Lechta, 2003; Sherratt, 2021). Moreover, for individuals who have impaired communication skills, do not speak and have impaired expressive or receptive components of speech, a detailed differential diagnosis is needed for the correct setting of support measures in speech therapy. Hearing impairment, autism spectrum disorder, mental retardation, cerebral palsy must be confirmed or ruled out. At the lexical-semantic level, we focus on the meaning of the word from a temporal, spatial and relational point of view. In sentence meaning, we evaluate semantic relations expressed in simple sentences, complex relations expressed in complex sentences and subordinate clauses, as well as supra-sentence meaning and transferred meaning, i.e. fixed phrases, twists and metaphors, proverbs and sayings. On the lexical-semantic and morphological-syntactic levels, we determine the vocabulary, the recall of concepts, the frequency of use of demonstrative pronouns, agrammatism, the level of language sensitivity, the understanding of plot images, the use of time conjunctions in sentences. Furthermore, the subject of diagnostics is the formation of questions and negatives, the formation of coordinating conjunctions and subordinate clauses. The maximum number of disorders at the language level is morphological and morphological-syntactic, in particular disorders of verb morphology, prepositional phrases, word order, and difficulties in learning grammatical rules. It means that a disorder at the level of the grammatical structure of the language is a sensitive indicator of a disorder of the language system.

At the pragmatic language level, we focus on the communication intention, the method of requesting information or activities, the announcement of information, and the expression of relationships or feelings. We also observe the exchange of roles during communication, maintaining the topic of the conversation. We determine the ability to maintain several instructions and carry them out in the correct sequence, the level of conducting the conversation, and the activity during dialogue. In the following part, we deal with verbal or written instructions and their implementation. We also emphasize the adequacy and appropriateness of expression in a certain situation, in communication with peers and adults. From the phonetic-phonological level of language, which is not a priority for dysphasia from the point of view of speech therapy intervention we diagnose the pronunciation of individual sounds, articulatory dexterity – elision of sounds or syllables, specific assimilation of sibilants and specific in isolated words, fusion only in the flow of speech and when speaking independently. When using the WM test, we determine the level of phonemic hearing-auditory differentiation. Auditory perception in the sense of analysis and synthesis is determined by the Moseley test. From a speech therapy point of view, the condition of the dentition, respiratory economy, oromotor skills, etc. are also important. The examination also includes the determination of the level of verbal memory, visual perception, rhythmization, graphomotor skills, laterality and the ability to concentrate attention.

The qualitative research method is focused on a systematic case study to further develop the object of interest. It is important to analyze and cross-check the given object. The aim is to reach the conclusions expected from qualitative research (Isari & Pourkos, 2015). The case study was the result of long-term continuous cooperation with a client with impaired communication skills - developmental dysphasia, which affects all language levels in the clinical picture. The following tests and methods were used in the testing: Auditory differentiation test - WM, Diagnostic battery for assessing the development of language knowledge and skills of preschool children (Smolík & Seidlová-Málková, 2014), Moseley test, Timbre hearing test, monitoring of musical creations.

## CASE PRESENTATION

*For reasons of personal data protection, we only present basic, essential and anonymized information without a detailed description of, for example, the relevant place of hospitalization.*

The boy was born into a complete family. Both father and mother graduated from a secondary school. The pregnancy was risky and it was her 4th pregnancy. The mother had two spontaneous abortions in her anamnesis. The birth itself was a cesarean section (sectio-caesarea) for hypoxia, the boy was not resuscitated. Postpartum adaptation was good. The boy's psychomotor development was delayed, and therefore rehabilitation using Vojta´s method was recommended. The boy tried to sit at the age of 7 months and tried walking at the age of 12 months.

Speech did not occur until the age of 2, after which the boy gradually began to form syllables. The boy was hospitalized when he was two years old for stomatitis, chronic otitis media (inflammation of the middle ear), a slight hearing loss was detected, and grommets were installed in both ears when he was 3.5 years old. From the age of 3, the boy was without diapers. From the

age of 3.5, there was a slight development of speech until the age of 4. Dispensary: neurology, phoniatrics, clinical speech therapy up to four years. The following examination at the university hospital was at the age of 4 to confirm or rule out autism spectrum disorders.

The boy almost did not establish eye contact or contact with the surroundings. He had a short-term attention span, did not speak and, according to the paediatrician, developmental delay. According to the results, autism was ruled out and expressive F 80.1 and receptive disorder F 80.2 were confirmed. The parents were recommended to be referred to a special education centre for impaired communication skills on all language levels and psychiatric care, which, however, was terminated after several visits as pointless. Passive and active vocabulary was gradually expanded; two-word sentences and then simple questions were formed. There was a selection of people and objects that were always associated with naming in the pictures, and other parts of speech were gradually included. At the same time, orofacial exercises, lip and tongue motility exercises, breathing economy exercises, and visual control exercises were carried out, e.g. selection of the same or related pictures and objects. In addition, exercises for visual and auditory perception and differentiation were carried out - categorising, selecting, ordering, and the instructions were gradually made more difficult, etc. Speech therapy care in the kindergarten was focused on the development of motor skills of speakers, respiratory economy, phonemic hearing and concentration exercises, which play a significant role in the success of re-education. The technique of diaphragmatic breathing was practised - inhaling through the nose and exhaling through the mouth, working with the exhalation flow, and rehearsing a soft vocal beginning.

*Speech therapy examination before entering elementary school*

From a speech therapy point of view: the dentition is being replaced, breathing is shallow, accelerated when communicating experiences, and proper respiratory economy is not established. In the stream of speech, the speech seems sloppy and careless. With correction and dephasing, speech is better understood. From the phonetic-phonological point of view: there has been a significant improvement in pronunciation - fixation of one vowel remains, weakness is shown in articulatory clumsiness, elision of vowels or syllables, specific assimilation of sibilants and specific in isolated words, fusion only in the flow of speech and during independent expression.

The WM test shows a significant weakening of phonemic hearing, especially in distinguishing both rows of sibilants, inverted words, and paired voiced and voiceless sounds. He orients himself in the word – the first and the last sound (the error rate is higher for paired ones). Moseley test: still below the age norm. He manages the rhythm of words; he does not catch long syllables without imitation. At the lexical-semantic and morphological-syntactic level, the vocabulary is significantly improved, and the recall of concepts is weakened. If he doesn't have an opinion, he often uses demonstrative pronouns to describe it. Agrammatisms are no longer detected during the examination, and the sense of language is weakened. The structure of the sentence that he creates himself is significantly improved in terms of the content and position of the sentence members. At home, he works purposefully on expressing wishes - describing situations and telling stories. Verbal memory is significantly improved, and repetition of sentences is normal. He is currently also practising the repetition of joint sentences. There is significant latency in sentences introducing time conjunctions (when repeated). The understanding of plot pictures is already excellent. However, sentences introducing time conjunctions are still challenging for the boy. The formation of the connection of singular and plural is partially compensated.

Furthermore, it is necessary to focus on the recall of concepts, on the knowledge of the meaning of concepts (synonyms, homonyms, antonyms), on word boundaries, and on the use of all clause elements. Focus on understanding proverbs, sayings and proverbs. To practice creating new words and phrases - in the form of descriptions and experiential stories. Focus on creating complex sentences and subordinate clauses. On a pragmatic level, the boy is able to retain several instructions and carry them out in the correct sequence, he can also hold a simple conversation but is not active in asking. The concentration of attention is low, the boy grows easily tired, and he needs motivation and encouragement. He is able to work independently and complete the task when given feedback. Optics: results in optical memory and visual differentiation are excellent. Graphomotorics: writes with his right hand, grip in a pinch, excellent results in imitation of writing and presented structure, however, immaturity is still evident in character drawing. Expressive and receptive speech disorder - developmental dysphasia diagnosed. Support measures were recommended for the student with impaired communication skills - dysphasia - including an individual education plan. If necessary, writing in print is possible. It is always necessary to make sure that the boy understands the assignments. The boy´s mother explains all concepts in the Czech language, Mathematics and Introductory to Science that he does not know and explains their meaning as a part of preparation for school.

## THE DESIGN AND THE COURSE OF THERAPY

*Special education a speech therapy practice*

The knowledge of individual language levels is necessary in speech therapy practice as it helps us to be well-versed in student´s impaired communication skills. Further, it

helps facilitate our understanding of possible student school performance failure. This knowledge also allows us to better understand the problems not only of students with developmental dysphasia. At individual levels, it is necessary to recommend special educational processes for work with the pupil in subjects of special pedagogical care, but also in individual subjects and educational areas by the framework educational program for basic education. At the phonetic-phonological level, we focus on the pronunciation of individual sounds and the ability to combine these sounds into coarticulation units that form a word - a sentence. The goal is that the sound is pronounced correctly even in words and the sentence is comprehensible to the listener. We recommend practising auditory analysis and synthesis, articulatory dexterity, and specific assimilation. Albeit, pronunciation is not the priority in the initiation of speech therapy intervention for a student with developmental dysphasia. We usually start with the development of the following language levels: At the lexical-semantic level, we focus on the meaning of the word: it is mainly about specific words related to observed objects, activities and properties and words expressing relationships, especially temporal and spatial. In sentence meaning, we observe semantic relationships expressed in simple sentences, complex relationships expressed in complex clauses and subordinate clauses, and last but not least, suprasentential meaning. Transferred meaning: these are fixed phrases, twists and metaphors, proverbs and sayings. We should always follow the student´s current state and the level of vocabulary before the school requirements. In the case of severe forms of dysphasia, you can create your communication book and use different types of communicators. The student must know all the given concepts that are used in the lesson, otherwise, he will not understand. If necessary, the textbooks and texts used must contain simplified language, or we create books (in computer programs) that are illustrative and aim at repeating the already learned phenomenon. The text should be simplified, coloured, graphically highlighted and with an enlarged font. The support measure is represented by an individual educational plan as well as a teaching assistant, who assists the student in education as needed, provides him with feedback and also reformulates questions or phases the task, etc.

At the morphological-syntactic level, we observe the use of parts of speech – nouns, adjectives (personal, possessive) and pronouns (personal, possessive and reflexive), determining gender, number, case, and also tense and degree of adjectives and adverbs. Following that, the sentence is divided into syntagms, we observe the structure of the subject part of the sentence, the structure of the predicate part of the sentence and word order. We focus on creating questions and negatives, creating coordinating conjunctions and subordinate clauses. Based on the current state at this level we try to use simple tasks for the student to demonstrate, with the help of visual aids, that he understands the given sentence even though he cannot express himself accurately verbally yet. The pragmatic level has two levels. On the first level, we map communication intentions, the method of requesting information or activity, reporting information, expressing relationships and feelings, and directing social interactions. In conversational skills, the exchange of roles of speaker and listener, the way of maintaining the topic of the conversation and presuppositions, i.e. the estimation of the partner's knowledge in communication, are monitored. In the second level, we monitor the maintenance of verbal or written instructions and their fulfilment. We also monitor the adequacy, appropriateness and appropriateness of expression in a certain situation, in communication between peers and in communication with adults. At this level, we proceed gradually and always according to pedagogical principles - from the simplest to the most complex. First, we conduct very simple conversations, where one-word answers are sufficient, which are gradually expanded. Moreover, we teach the student to ask questions, which is very difficult for him at first. For example, we expand verbal memory by repeating sentences, followed by two sentences and three sentences, and then compound sentences. This way the student is able to remember instructions from a teacher in a given sequence and is able to carry them out.

## MUSIC THERAPY

Many children with developmental dysphasia have difficulty distinguishing short or rapidly changing sounds. Expressive speech disorders are a manifestation of impaired decoding of input information due to a deterioration of auditory perception. The child's difficulties in expressing themselves are a manifestation of a disorder in perception or discrimination. Children have problems with the amount of information, with the temporal resolution of the interstimulus interval and the resolution between short and long tones. They are also unable to use internal and external redundancy to supplement speech sounds they did not understand and are unable to recognize keywords to understand the overall speech content. They have a disorder of short-term (working) phonological memory, which causes imperfect fixation of speech patterns during speech development, e.g. inability to repeat combinations of several syllables. Thus, auditory stimulation training using systemic music therapy is proven. In a boy with dysphasia, modulated musical sound creations were used to stimulate auditory processing and train cognitive processing of language materials and auditory working memory, given that auditory stimulation training leads to significant improvements in language skills and auditory processing (Murphy & Schochat, 2013; Fisher *et al.* 2009).

It is necessary to use a multisensory approach, i.e. visually present short exercises that are accompanied

by increasingly complex acoustic sounds, first non-verbal sounds, then phonemes, words and sentences. The phonetic-phonological level is always somehow disturbed in students with developmental dysphasia, they often have difficulties with rhythm and intonation. Since rhythmic and tonal information is explicit in music, auditory stimulation with musical material can have beneficial effects on the process of auditory perception. Various musical creations were used for the boy, including rhythmic perception and reproduction. At the same time, we worked with pitch and rhythmic auditory stimulation. Rhythmic auditory stimulation then has the potential to support the processing of language structures (Cumming *et al.* 2015; Planchou *et al.* 2015). Working memory as well as the cognitive system is affected not only by musical training, but also by listening to music which are rich in overtones, especially classical compositions by Mozart, Bach, and Vivaldi. Based on these, we then created musical creations on selected musical instruments with different sound intensities. Modulated musical material increases the perception and processing of auditory information, aids phoneme discrimination, speech processing, and articulation training and positively affects the capacity of auditory working memory (Kampfe *et al.* 2010).

## PSYCHOLOGY

The effectiveness of this therapy lies in its focus on changing cognitive distortions. They include, for example, incorrect opinions, beliefs, and attitudes towards others and oneself, and thus the correction of emotional experience. Altogether it leads to a change in behaviour and increases the ability to effectively manage current problems and thus manage stress better. We can rely on the **rational-emotional therapy** of A. Ellis and his ABC theory, when the emotional reaction that an individual experiences (C) is not the result of the external event itself (A), but the meaning that the individual attributes to the event (B). Moreover, the individual's will to cooperate in change can be supported with the help of A. Beck's **cognitive therapy**. Its goal is to transform negative automatic thoughts (e.g. "I will never do anything well...") into defensive, realistic thoughts ("e.g. "Sometimes I fail at something, another time I will do something well..."). To support positive behaviour and better academic results, it is also appropriate to use the concept of **operant conditioning**, where praise is a means of positive reinforcement. We are based on social learning mechanisms, or rather we use a **social reinforcement** mechanism, the function of which is to fix desirable behaviour and eliminate undesirable behaviour. We use reward and punishment for this. The reward is based on the principle that what we experience as pleasant, we tend to seek out and repeat. Therefore, if we connect a desirable behaviour with a pleasant experience, we strengthen and fix this behaviour. Punishment, on the other hand, is based on the principle that what we experience as unpleasant, we tend to avoid. So if we associate an undesirable behaviour with an unpleasant experience, we eliminate that behaviour.

A problem for individuals with developmental dysphasia can be their complicated, often negative experiences in interaction with others. They prejudicially expect negative feedback and react negatively themselves. In this case, it is appropriate to use an **emotional corrective experience**, when the individual encounters feedback, with behaviour that significantly contrasts with his previous negative experience and expectations. So we do not repeat the vicious circle of the individual's pathological interaction, but we behave differently, friendly, in a kind way. Another problem for individuals with developmental dysphasia is the fact that external influences, situations that they cannot handle, block them and the individual internalizes these blocking external influences, thereby limiting their ability to self-actualize. With the **Rogersian approach**, when we accept the individual with his positives and negatives when we are capable of an empathetic approach and our relationship is congruent, we strengthen the development of the client in a positive, healthy, positive direction. We support his natural personal growth. The client begins to understand himself more and accepts himself, including previously rejected feelings and aspects of his personality. His rigid unhealthy attitudes, forms of behaviour and experience shift to a differentiated, open, healthy experience and behaviour.

When working with individuals with developmental dysphasia, it is not possible to focus only on their cognitive and behavioural areas. Part of their problems is also their emotional domain. If we try to move the client towards an open and differentiated experience, we try to detach the client from the constant planning of the future. A future is anticipated as full of rejection, problems, and disasters and is associated with a negative experience that is often suppressed. In this sense, **Gestalt therapy** is useful, which is focused on the present and is suitable for clients who are, for example, socially inhibited. The client is led to learn to name his experiences, to experience and express his feelings, to take responsibility for them, and simply to learn to experience the present. If the client is not able to accept the experience of a certain effect, for example, anger, if he is not able to adequately experience and vent it and escape from this experience, the so-called **location of affect** occurs. The accommodation of effect leads to increasing tension, which increases affective irritability. High affective irritability, and arousal, increase the tendency to experience stimuli from the environment as negative and thereby increase the risk of a so-called **affective explosion** when the ability to self-control is greatly reduced. It is therefore important to teach the client to adequately and in a suitable place vent their negative emotions and at the same

time to positively reinforce their adequate processing. Manifestations of spontaneous reactions and emotions should not happen at the expense of others, they should not increase the client's egocentric focus. As part of the so-called **self-advocacy training**, we should lead the client to be able to express his opinion calmly, to oppose using adequate arguments, and to be able to say "no" in a cultured manner.

Considering the complexity of the problems associated with developmental dysphasia, it is not appropriate to focus exclusively on a certain method or technique of psychotherapy. Not only interdisciplinary approach is necessary, but also an integrated form of psychotherapy should be applied. At the same time, it is necessary to involve not only experts in working with clients but also their families or social networks.

## OCCUPATIONAL THERAPY

Communication is a very important need not only for children with developmental dysphasia. Through speech they not only communicate their thoughts, but it is a means of interpersonal relations. Communication helps them to integrate into their children's group in which they play and learn. Play is an essential activity for a preschool child and his subsequent development. Occupational therapists use games to train those components which, according to the child's age and abilities, are delayed or there is a malfunction. Play is a natural activity for children, which is why we use it in all modalities of occupational therapy. To increase vocabulary, and visual or auditory memory with children, we play visual or auditory memory games, games boosting attention (e.g. Double), word chain and many others. We also try to further develop logical thinking, abstraction and executive functions that are applied in everyday life. To practice these functions, we mainly use model and simulation games, which have a useful overlap for the child in everyday functioning. In today's modern age, IT technologies are also used. They are usually highly motivating and based on children's interests.

Communication problems affect the child´s emotional attitude as well as the emotional attitude of those closest to him. The occupational therapist works both with the child and at the same time with his parents, either in the form of counselling or by direct inclusion in therapy. In this way, the parent acquires appropriate approaches to a child with problematic communication he can apply at home. This process positively affects the psychological tuning of the whole family. In a child with developmental dysphasia, speech functions are delayed, but sensorimotor deficits may also appear during the examination, so we observe the interconnectedness of these functions and try to correct them together in a coordinated process as part of therapies. An occupational therapist works to improve motor and related functions using the Bobath concept, Neurodevelopmental Stimulation and others. We want to achieve an improvement in the child's coordination, balance or body position, which is a fundamental aspect of successful therapy. By using sensorimotor stimulation, we improve movement coordination and more complex adaptive responses in the child, these therapies are always carried out with an overlap into normal daily activities and school skills with the focus on preschool maturity.

Graphomotor is another means of expression that can be impaired. The occupational therapist offers the child compensatory mechanisms to improve this function. We train the correct grip with the help of attachments through the play we use three-point tweezers, magnetic tables and other aids that can motivate the child to perform better. A significant part of the therapy is the change of positions, the ergonomic posture and the involvement of large muscle groups on the upper limb up to the final grip. A drawing itself can be guided by a song, a nursery rhyme or an automatic series, which the child paints according to the individual steps and verbalizes at the same time. Occupational therapy approaches the child with developmental dysphasia in a comprehensive way and applies its occupational therapy methods to all components (psychic, sensory, motor) that can limit the child's natural development.

## CONCLUSION AND DISCUSSION

The final evaluation of this systematic case study of a child patient diagnosed with developmental dysphasia suggests that combined therapy, which included long-term speech therapy, special education, music therapy (Kämpfe *et al.* 2011) and psychological intervention, had a positive effect on the development of the patient's communication skills. Although certain limitations of the study, such as the limited sample, absence of a control group, and subjectivity of assessment, should be considered, this study provided us with valuable insights. The results indicate that a long-term special educational intervention with targeted speech therapy care and music therapy could contribute to strengthening the patient's communication skills. Speech therapy intervention focused on improving the articulation, comprehension and expression of speech, while music therapy was used to promote communication through musical elements (Zavadenko *et al.* 2020). These approaches were designed with the individual needs of the patient in mind and his specific communication difficulties associated with developmental dysphasia. The psychological intervention provided support for the patient's emotional and social development. Improving these areas can have a beneficial impact on his ability to communicate and interact with others. However, the specific approaches and techniques used in the psychological intervention are not described in detail in this study. It is important to emphasize that due to the limited sample and the

absence of a control group, the results of this study cannot be generally applied to the entire population of children with developmental dysphasia. Further research with a larger sample of patients and controlled trials is needed to confirm these results and obtain further evidence of the effectiveness of combination therapy for children with developmental dysphasia.

*Limits of the study*

Limited sample: As this is a case study, only one specific patient was examined. This means that the results cannot be generally applied to the entire population of children with developmental dysphasia. Further studies with a larger sample of patients are needed to confirm and generalize the results.

Lack of control group: This study did not use a control group to compare the effects of the therapy. The absence of a control group means that it is not possible to determine whether the observed changes in the development of communication skills are the result of the therapeutic intervention or other factors.

Short-term follow-up: The study may have had a limited time frame to observe the effects of the therapy on the development of the patient's communication skills. Long-term follow-up would provide more comprehensive and reliable information about the long-term effects of a therapeutic intervention.

Potential Confounding Factors: The study did not account for or control other factors that could have influenced the development of the patient's communication skills. For example, family and social environment, educational programmes, or other therapeutic interventions beyond the scope of this study may have impacted the results.

It is important to consider these study limitations when interpreting the results and considering further research to better understand the effectiveness of combination therapy in children with developmental dysphasia.

*Future Implications*

The future in the field of therapy for developmental dysphasia in children can be positive and promising. Here are some possible directions that could affect the future of this area:

Individualized therapeutic approaches: Due to the variety of manifestations of developmental dysphasia, it is important to develop therapeutic approaches that are adapted to the individual needs of the child. The future may bring further refinement and personalization of special education interventions, including speech therapy, music therapy, and psychological support along with occupational therapy.

Early intervention: Early diagnosis and intervention are key to maximizing the effects of therapy in children with developmental dysphasia. In the future, it is expected that there will be an emphasis on early identification and intervention at an early age, which may lead to better outcomes and a reduction in long-term communication difficulties. Technological advances: Technological advances such as mobile applications, voice recognition systems, and virtual reality may provide new options for developmental dysphasia therapy. These tools can be used to support communication skills, practice speech and language skills, and monitor a child's progress.

Interdisciplinary collaboration: Developmental dysphasia is a complex condition that requires a multidisciplinary approach. The future may bring even greater collaboration between speech therapists, music therapists, psychologists, educators and other professionals (Kato *et al.* 2021). Team cooperation will enable comprehensive care for children with developmental dysphasia. Research and evidence: Further research in the field of developmental dysphasia is necessary to improve therapeutic procedures. The future should bring continued efforts to gather evidence and systematically evaluate therapeutic interventions so that more effective and efficient approaches can be developed (Palmer & Pauranik, 2021).

## DECLARATION OF COMPETETING INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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