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TIMELY DEVELOPMENT-FOCUSED DIAGNOSTICS AND STIMULATION OF ARTICULATORY SKILLS IN CHILDREN AT THE START AND DURING PRE-SCHOOL AGE. THE DEVELOPMENT OF ARTICULATION IN CHILDREN AND THE QUESTION OF A TIMELY START OF EFFECTIVE STIMULATION IN THE CZECH REPUBLIC

Due to the fact that deviations in childhood articulation development have represented a very frequent problem for a long time, this is an issue that is still open to the necessary implementations of effective procedures in the prevention of articulation deviations in children, timely diagnostics and adequate methods in therapy support. Even so, this area still offers space for presenting unproven and still very visible opinions about topics like: the relentless increase of the number of children with speech disorders or opinions on the necessity to correct articulatory deviations until the end of pre-school age, before the child starts attending school. Also the current state of speech therapy efficiency, especially in relation to children's pronunciation development throughout the population, is an area that could at first sight seem stable, with a developed system of effective care. However, when we attempt to map the current trend of articulatory deviations frequency, there is less valid information available than the issue would require, as well as its presence throughout the population of children of pre-school and school age. If we accept the frequently stated information that about half the children in the Czech Republic start school with persisting deviations of articulation, that it is a stable, not decreasing, rather increasing number of children.¹ There are

¹ K. Neubauer, *Artikulace a fonologické rozlišování hlásek*, Havl. Brod 2011, p. 40; K. Neubauer, V. Vondráčková, *Vývoj artikulace a řečových schopností u dětí v počátku školní docházky*,

the inevitable doubts about adequate form and efficiency of care for children's articulation skills development, because an effective system of care should be able to reach a certain form of influence and decrease of the phenomenon in question. It is also a confirmation of the view that this often underestimated issue has its own dynamic, difficult to recognize, in the development of causes, manifestations and a possible prognosis of further development of motoric speech skills in next generations of children.

An essential issue in the current approach to diagnostics and therapy of articulatory deviations can be the persistent emphasis on describing these deviations rather than identifying their causes, as well as the preference for eliciting isolated phones rather than stimulating the spontaneous development of children's articulation. A proof of this state are often used charts of articulation development, showing the most frequent age – probably statistically – of intact articulation of a certain phone. This data leads to frequent mechanical application of the ideal age to start speech therapy with a child. Pediatricians also use these tools in their practice, often being the initiators of speech therapy care due to periodic medical exams. Their referrals are often based on the effort to see, whether the child can already articulate a certain sound or not. If we apply criteria, which indicate the intact articulation for sibilants CSZ and phones R, Ř should occur at 5 years of age and later, many children encounter speech therapy care when they have already fixated some deviation perception-motoric patterns for these phones.

Another difficult area is the division between the “physiological age for articulatory deviations” or “physiological dyslalia” and the subsequent period of pathological deviations in articulation development. Not only is there no respected information on the meaning of the term “physiological deviations of articulation,” but mostly it is without a doubt that in the period of what we call physiological articulatory deviations mechanisms appear and become fixed. These mechanisms cannot be resolved using non-specific motor exercises for the articulatory organs or auditory differentiation, for they have no influence direct influence on the child's articulation development. The

opomíjené a zásadní téma české logopedie, [in:] Komunikace a handicap II, eds. K. Neubauer, M. Kaliba, Hradec Králové 2014, p. 63; K. Neubauer, Logopedie a surdologopedie, Hradec Králové 2014, p. 111; K. Neubauer, V. Vondráčková, J. Paštiková, M. Zaplatílková, Odchytky vývoje artikulačních schopností u dětí v předškolním a školním věku, [in:] Kontexty vývojových poruch řečové komunikace a specifických poruch učení, eds. K. Neubauer, S. Tübele a kol., Hradec Králové 2015, p. 9; Z. Palková, Fonetika a fonologie češtiny, Praha 1994, p. 350, ad.

need to use a timely targeted training programme for children starting at 2.5–3 years of age is an accepted part of the development-focused approach that respects frequent development phenomena in the area of articulation. A stimulation programme of this type, built based on more than 20 years of clinical practice, is presented by Neubauer.²

RESEARCH INVESTIGATION IN THE AREA OF ARTICULATION SKILLS DEVELOPMENT IN CHILDREN

When we attempt to map the current trend of articulatory deviations frequency, there is less valid information available than it would be expected or required, as well as its presence throughout the population of children of pre-school and school age. To expand the above stated information about 40% of children manifesting dyslalia at the start of their school years, we can present a set of data from three extensive research investigations led at the Department of Special Education, Faculty of Education, University of Hradec Králové.

The first research investigation³ sums up data on a group of 1137 children between 5 and 6 years old, who attended one of the preschools in Náchod in 1985–2006. The author shows a gradual trend of decrease in numbers of speech disorders from an initial value of 55% of children in 1985 to the final value of 44% in 2006. The values oscillate around 50% of children with speech disorders in the research set and considering the presence of children with more severe speech disorders (stuttering, developmental dysphasia, etc.), with different methodology of investigation we may expect values around the respected 40% of children with dyslalia and a stagnant or mildly positive tendency in the presence of articulatory deviations in children between 5 and 6 years of age.

In the second investigation, Novotná⁴ uses a similarly large research set of children who come to enrol to first grades of elementary schools in Nové Město nad Metují in 1996–2010 and she also tries to compare with previous

² K. Neubauer, *Artikulace a fonologické rozlišování hlásek*, p. 5.

³ Š. Hanušová, *Řečové vady u dětí předškolního věku* (Diplomová práce, Katedra SPP, Pedagogická fak. UHK), Hradec Králové 2007, p. 78.

⁴ S. Novotná, *Frekvence a výskyt řečových poruch u dětí při zápisu do ZŠ* (Diplomová práce, Katedra SPP, Pedagogická fak. UHK), Hradec Králové 2010, p. 92.

research done in the Czech Republic in 1948⁵ (and in 1999⁶). The manner of evaluating the data makes it possible to extract information on the representation of the most frequent phones children pronounce with deviations and the development of numbers of children with articulatory deviations at the moment of enrolment into first grade.

The author mentions data out of 1820 children admitted into three elementary schools in 14 years and she shows a gradual increase of children with deviations in their pronunciation. However, it is surprising that the results do not show an increase in articulatory deviations in children compared to the investigation from 1948, which could point to a shift in the composition of articulatory deviations. We can see a decrease in the number of deviations in sibilants from 40% in 1948 to 32.5% deviations in the present and a similarly positive development with the phone Ř, where it is 69% to 57.5%. On the other hand, deviations of the phone L grew significantly from 4.8% in 1948 to 19.5% in the present and deviations of R from 45% to 59%. Watching the above mentioned percentages, we must stress these are always children before the start of elementary school, i.e. 6–7 years old. The author herself points out these adverse values repeatedly: “65% exceeded all values I evaluated in this research. When 46 students start school, with an even distribution of children with and without deviated pronunciation, there will be only 8 pupils in a class with no deviations and 15 with deviations in their pronunciation.”⁷

Another research started in September 2011 in six standard preschools in Jičín district,⁸ which should be longitudinal, leading towards a comparative study of articulation skills development in a group of children, until the second grade of elementary schools. In the first phase between September and October 2011, 147 children underwent an initial speech therapy exam, including an exam of articulation skills and an indicative examination of speech production, and subsequently the first phase data was processed. In June 2012 the data was verified to see which of the children from the first phase of research continue their school attendance, who moved, who received a recommendation to postpone school attendance (RPSA), or who received

⁵ M. Sovák, *Logopedie předškolního věku*, Praha 1984, p. 12.

⁶ Z. Půstová, *Zpráva o průzkumu správné výslovnosti u žáků prvňáčků ZŠ v roce 1999/2000*, [in:] *Diagnostika a terapie poruch komunikace*, Praha 2001, p. 9.

⁷ S. Novotná, *Frekvence a výskyt řečových poruch u dětí při zápisu do ZŠ*, p. 114.

⁸ K. Neubauer, V. Vondráčková, *Vývoj artikulace a řečových schopností...*, p. 64.

a RPSA and was also referred to a preparatory class or a speech therapy class. In subsequent investigation only children who started elementary school attendance were included. In September and October 2012 these children were studied in the same way as in the first phase, now already in the first stage of elementary school in Jičín district.

In the first phase, data was collected from 147 children, in the second phase from 113. Overall, this is a group of 113 intact children who transitioned from a standard preschool to the first grade of elementary school in their place of residence. From the wide spectrum of data on articulation development deviations according to the children's gender or the frequency of certain phones, we can already underscore one finding now, related to efficiency and adequate forms of care, which is mainly related to the group of children not included in both phases of the investigation: even though the result shows more than four articulatory deviations in 65% of children with RPSA, the speech therapy class and the preparatory class admitted only one child each, while the rest stayed in standard preschools. These children should indispensably see a clinical speech therapist who can offer them consistent individual care, which the parents and family could also use in the natural environment of their home.⁹

Comparing with the above mentioned targeted research, this investigation confirms the assumption that deviations remain with most children after the start of their school attendance, in more than half of the cases. The results of articulatory deviations frequency in preschool age, in this research high, were on a frequency level of 86.4%. The start of school attendance showed a lower level of 60.5%, however, this is still more than half the children with articulatory deviations entering the first grade. This unequivocal support of the above working hypothesis is not a positive phenomenon regarding the insufficient speech therapy intervention and expert special education support in elementary schools. The author, confronting the results of her investigation, evaluates the situation in these words: "Without compromise, we need to point out that it is not possible to keep not solving the situation of persistent speech disorders, especially articulation disorders, in the lower grades of elementary schools (60% of children) and then still act surprised at how many children do not like reading and do not read well, how many children have specific learning disorders, etc."¹⁰ The results of investigation in the area of

⁹ Ibidem, p. 65.

¹⁰ Ibidem, p. 66.

children's articulation skills development almost always mention the typical issues found in similar works in this area, especially the difficulty in comparing data from various investigations. Assessing the existence of a certain deviation of pronunciation depends on the subjective evaluation of the researcher, as Palková points out.¹¹ Even so, we can fully support two tendencies in the development of children's articulatory deviations, which are present in all extensive research investigations presented:

- Instead of the often presented opinions on a high increase of articulation deviations in children, development is better described as a long-term stagnant state or a steady mild increase in numbers of articulatory deviations.
- An alarming number of children start their school years with deviations in their articulation development and this trend has a decidedly growing tendency.

The frequently stated and persistent claim about the necessity to adjust such deviations until the end of preschool, before starting compulsory school attendance, becomes a real retarding factor in the development of speech therapy counselling and intervention services for children in the first years of school. This claim is unfortunately directly linked with a limited development of findings on the ideal intervention tactic for adjusting articulation deviations in children at the start of their school years, even though in practice this is a very frequent phenomenon, including the issue of linking the phoneme to the grapheme with a specific phone and an adequate level of cooperation with the school programme. If this area remains on the margins of attention in speech therapy, as well as in the area of specific learning disorders, we can at the very least expect a creeping worsening of the situation.

At present, the period around the start of school attendance can, without exaggeration, be called critical in the development of care for the articulation development of the child. A frequent phenomenon is the loss of contact with a previous programme of articulation adjustment, if it is linked to the pre-school institution and the end of practice in the family. This phenomenon can therefore be called a frequent cause of inefficiency of the care for the child's articulatory development and a trigger mechanism to create lasting pronunciation deviations. This points to the need to give priority to such a form of qualified speech therapy care, that builds on establishing a therapeutic

¹¹ Z. Palková, *Fonetika a fonologie češtiny*, p. 352.

relationship between the therapist (who takes responsibility for the process of intervention in its whole duration) and the child and its family (who are responsible for the child's development and the personal relationship). A programme present in a certain institution the child attends can play a key role in the facilitation of the process of pronunciation deviation adjustment, but it cannot replace the above described relationship.¹²

THE IMPORTANCE OF A DEVELOPMENT-ORIENTED SPEECH THERAPY INTERVENTION

The above mentioned number of difficult factors and adequate forms of support of successful completion of children's articulation development during pre-school and school age should lead us to make an effort to find out what are the causes behind the emergence of such massive numbers of articulatory deviations in the general population of children and what methods might be effective to prevent this.

A general characterisation of possible causes leads us to the environment today's children grow up in, which influences their development. It is a practically known and verified reality that children are influenced by a massive overload of non-differentiated visual and auditory stimuli, noise, mobile phone communication, excessive television and computer multimedia entertainment. This contributes to the deviations and a desensitisation of phonemic hearing, insufficient sensitivity to gentle auditory stimuli. The extent of this influence is, however, a magnitude that is difficult to prove exactly and moreover, the current situation is not purely negative. The positive side is the development of orthodontic care for children, phoniatric care for possible organic complications in the orofacial area. If speech therapy care is structured clearly and focuses on eliminating the causes of deviations of articulatory development, its efficiency may rise significantly. However, it needs to react with the development of a new focus of preventive and intervention measures, depending on the development of the field, as well as the conditions and environment in current society.

An essential issue in the current approach to diagnostics and therapy of articulatory deviations can be the persistent emphasis on describing these deviations rather than identifying their causes, as well as the preference for eliciting isolated phones rather than stimulating the spontaneous development of

¹² K. Neubauer, *Artikulace a fonologické rozlišování hlásek*, p. 43.

children's articulation. This focus must be expanded by the application of findings that will influence the decision-making process about the needs, form and methods in speech therapy, leading it from simple description or simple noting of the presence of deviations of articulatory development towards the causes of the phenomena. The target of development-oriented diagnostics should be focused on explaining specific mechanisms that lead to the emergence of permanent articulatory deviations. I.e., seeing whether there are phenomena in the child's pronunciation that block the development of intact pronunciation of phones that the child is not yet realising correctly.

Development-oriented diagnostics of children's articulation should answer mainly these questions:

- What causes deviations – which specific articulation mechanism causes the development and fixation of articulatory deviations?
- At what stage of development is the production and use of currently non-intact articulation patterns of phones?
- Is it possible to remove the blockage in development or is it necessary to change an already fixed deviated mechanism of phone articulation?

For the approach in question, deviations in articulation development should typically not be perceived as pathological phenomena, but as mechanisms under development, which the child also uses to develop its articulatory skills in accordance with its own perception of speech. They are however non-effective mechanisms leading to the fixation of deviations from intact articulation.

Another feature of the approach presented is the targeting of stimulation of phonemic differentiation and methods of motor development in articulation organs in direct connection to a specific process in speech therapy intervention. The efficiency of widely applied stimulation methods has not been proven, current studies express doubts about it and current stimulation programmes even for children with more severe deviations in speech development, e.g. due to cleft palate, are abandoning the use of preparatory exercises of orofacial motor skills unrelated to a specific articulation skill. This is due to the absence of proof as to the efficiency of these techniques.¹³

Development-oriented approach to diagnostics and therapy of children's articulation development deviations does not require a primary change in diagnostic or therapy tools and materials. It requires a change in their use,

¹³ Ibidem, p. 35.

in the manner of assessing the phenomena diagnosed and the intervention strategy used.

PHONETIC-PHONOLOGICAL INTERVENTION AND TIMELY START OF THE INTERVENTION PROGRAMME

The process of articulation development is at the same time a process of development of phonological differentiation of phones, and these two aspects go together in the child's speech development. At the same time, they may have different dynamics and be different from each other.¹⁴ A child with excellent development of phonological differentiation may have a fixed deviation of a certain perception-motor pattern of a phone or several phones, linked to e.g. auditory imitation of a deviated model in its surroundings or a specific motor adeptness issue, e.g. in the tongue.

The approach to permanent articulatory deviations in fixed dyslalia of specific phones maintains the traditional approach of articulation therapy with frequent use of what we call substitution phones and a share of preparatory exercises, directly linked to specific articulatory movements.

The approach to phonological interchange of phones must respect the physiological development mechanisms, including some temporary phenomena, such as the substitution or elimination of a certain phone. The reason is the fact that many phenomena often called manifestations of dyslalia, are rather interchange of phone patterns, if categorised more precisely, and these interchanges have their indispensable role even in the physiological development of the child's speech.

Phonological contrast therapy must, from its beginning, be linked to the realisation of intact contrasting position of articulatory organs when realising the phone. Only in this way can we fulfil the phonetic-phonological therapy approach, which, in accordance with Guthová¹⁵ leads from the fragmentation of therapy into limited single methods towards a comprehensive approach. This approach is then targeted in form and combination for each individual child.

The influence of an early beginning of appropriate intervention activities in children already at 2–3 years of age on subsequent good development of

¹⁴ J. Bernthal, N. Bankson, P. Flipsen, *Articulation and Phonological Disorders. Speech Sound Disorders in Children*, Boston 2009, p. 48.

¹⁵ M. Guthová, *Dyslália*, [in:] *Základy logopédie*, ed. A. Kerekrtiová, Bratislava 2009, p. 139.

articulation skills has been published repeatedly. Guthová and Šebíanová¹⁶ mention the results of previous attempts to prevent the development of deviations in the phone R,¹⁷ as well as findings from their own speech therapy practice and rather random stimulation in two 2-year-old children. “The result was similar to what Vyštejn states. At 2.5 years they could pronounce L in all contexts and at 3 also R. The phones in questions were spontaneously used with no targeted method of fixation of automatization.”¹⁸ From my own clinical practice, I consider the possibilities of spontaneous production induced in this way, esp. in so-called difficult phones R, Ř or C, S, Z to be frequent and verified in everyday practice. When we speak in the above text about the necessary change of views on the forms and aims of intervention to benefit children with articulation deviations, the already presented and published practical preventive programme based on development-oriented approach¹⁹ should mainly motivate the child’s family (as well as educators) to begin activities to stimulate important elements of the child’s articulation skills development early: physiological level and since the very beginning of articulation development.

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¹⁶ M. Guthová, D. Šebíanová, *Terapie dyslalie*, [in:] *Terapie narušené komunikační schopnosti*, ed. V. Lechta, Praha, p. 193.

¹⁷ J. Vyštejn, *Vady výslovnosti*, Praha 1979, p. 194.

¹⁸ Ibidem.

¹⁹ K. Neubauer, *Artikulace a fonologické rozlišování hlásek*, p. 58.

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DŁUGOTRWALA DIAGNOZA I STYMULACJA UMIEJĘTNOŚCI ARTYKULACYJNYCH U DZIECI W WIEKU PRZEDSZKOLNYM ORAZ SZKOLNYM

Streszczenie: Rozwój w zakresie diagnozy oraz terapii zorientowanych na ewentualne deficyty umiejętności artykulacyjnych u dzieci w wieku przedszkolnym oraz tych rozpoczynających edukację szkolną wykazuje znaczny potencjał dotyczący wszelkich działań zarówno zapobiegawczych, jak i stymulujących, mimo że od dawna aspekty te postrzegane były przez pryzmat przestarzałych i nieuzasadnionych teorii i metod. Tezę tę potwierdzają wymagania odnoszące się do opracowania skutecznej opieki terapeutycznej i prewencyjnej stawiane przed wykwalifikowanymi placówkami logopedycznymi oraz do dostosowania ich do stopnia rozwoju oraz warunków społecznych i środowiskowych. W Republice Czeskiej stała liczba dzieci, wynosząca około 40%, z wyraźną tendencją zwykłą zamiast spadkową, rozpoczyna edukację szkolną z utrzymującymi się deficytami związanymi z rozwojem mowy i artykulacją²⁰. Wyniki te nie są zgodne z wyżej wymienionymi założeniami o konieczności (i praktycznej realizacji) zaleceń dotyczących niwelowania ewentualnych deficytów artykulacyjnych u dzieci jeszcze przed rozpoczęciem obowiązku szkolnego. Powyższy fakt wiąże się w sposób znaczący z bardzo ograniczonym rozwojem badań i ustaleń obejmujących zarówno skuteczne metody, jak i taktykę interwencyjną dotyczącą de-

²⁰ K. Neubauer, *Artikulace a fonologické rozlišování hlásek*; p. 40; idem, *Hodnota a význam vývojově zaměřené diagnostiky a terapie odchylek artikulačních schopností u dětí předškolního věku a v počátku školní docházky*, [in:] *Jinakost ve speciálněpedagogickém kontextu*, ed. J. Huritová, Olomouc 2014, p. 137; Z. Palková, *Fonetika a fonologie češtiny*, p. 360, ad.

ficytów artykulacyjnych u dzieci zaczynających edukację szkolną, choć w praktyce występują one bardzo często (np. łączenie fonemu z grafemem i z głoską), a także z doborem odpowiedniego programu nauki. Można śmiało stwierdzić, że wskazuje to na znaczny brak dbałości o poprawność wymowy dzieci, co z kolei może skutkować trwałymi deficytami wymowy. Konieczne zatem jest przedstawienie wyników badań naukowych, które dowodzą trafności wyżej przedstawionych wniosków dotyczących braku wykwalifikowanej opieki logopedycznej w placówkach przedszkolnych i wczesnoszkolnych. Rozwiązaniem jest zastosowanie programu prewencyjnego ukierunkowanego na rozwój umiejętności artykulacji u dzieci oraz wspieranie tych form interwencji logopedycznej, które bazują na długoterminowej opiece terapeutycznej skierowanej zarówno do dziecka, jak i jego rodziny. Należy nadmienić, że w tym fizjologicznym okresie rozwoju dziecka pojawiające się odchylenia artykulacyjne mają szansę się utrwalić, w związku z tym użycie terminu „fizjologiczna dyslalia” uważamy za nieuprawnione i podkreślamy konieczność długofalowej, profilaktycznej stymulacji artykulacyjnej u dzieci już w wieku 2,5–3 lat.

Słowa kluczowe: zaburzenia artykulacji, diagnoza logopedyczna, długotrwała stymulacja prewencyjna, dyslalia

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Summary: Development-focused diagnostics and therapy of articulatory skills deviations in children of pre-school age and at the start of school attendance shows a significant preventive and stimulatory potential in this area, which has long been marked by persistent obsolete and unfounded claims and methods. This fact is in accordance with the requirement for qualified speech therapy care to develop effective focus of preventive and intervention measures, depending on the development of the field, as well as the conditions and environment in current society. In the Czech Republic, a stable number of children, slightly rising rather than decreasing (around 40%) enter elementary school with persisting deviations of articulation development.²¹ These conclusions are not in agreement with the aforementioned claim about the necessity (and practical implementation) of articulatory deviation adjustments before the beginning of compulsory school attendance. The above mentioned fact is surprisingly linked with a limited development of findings on the ideal intervention tactic for adjusting articulation deviations in children at the start of their school years,

²¹ K. Neubauer, *Artikulace a fonologické rozlišování hlásek*, p. 40; idem, *Hodnota a význam vývojově zaměřené diagnostiky...*, p. 137; Z. Palková, *Fonetika a fonologie češtiny*, p. 360, ad.

even though in practice this is a very frequent phenomenon, including the issue of linking the phoneme to the grapheme with a specific phone and an adequate level of cooperation with the school programme. This fact can be, without exaggeration, called an indicator of a limited efficiency of care about children's articulation and a trigger mechanism producing lasting deviations of pronunciation, and therefore it is necessary to support this fact by presenting results of research studies. The studies presented prove the above stated conclusions and point to the current deficiency of expert speech therapy care in preschools, and especially in elementary schools. The solution is to apply a targeted preventive programme of children's articulation skills development and to support those forms of speech therapy intervention that build on the establishment of a long-term, responsible therapeutic relationship between the therapist, the child and its family. The fact that in the period of what we call physiological articulatory deviations mechanisms appear and become fixed, which lead to the production of deviations from intact articulation, leads to criticisms of using the term "physiological dyslalia" and to underscoring the need for timely preventive stimulation already since the child is 2,5–3 years old.

Keywords: articulation disorders, speech therapy diagnostics, timely preventive stimulation, phonological differentiation of phones, dyslalia