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Distortions of Word Structure Caused by Hearing Impairments. Diagnostic Problems

SUMMARY

The article discusses the issues of word structure distortions resulting from hearing impairments. Their proper identification at the stage of diagnosis is a condition for the development of an appropriate therapy program. The incorrect classification of this type of disorders as lexical problems in a broad sense leads to the wrong identification of the causes of their occurrence, which incorrectly guides logopedic therapy and adversely impacts its efficacy. The article contains examples of analyses of particular disorders at the level of word structure found in the speech of children with impairments, which is intended to facilitate their diagnosis and differentiation from other kinds of disorders affecting lexical units.

Key words: distortions of word structure, speech disorders in persons with hearing impairments

LEXICAL DISORDERS AND DISTORTIONS OF WORD STRUCTURE IN SURDOLOGOPEDIC DIAGNOSIS

Hearing impairments cause lexical disorders of varying intensity and character. Abnormalities in this area may affect both word forms and the semantic aspect of words. Despite the existing obvious differences between them they tend to be treated as problems in the broad sense with the development of the lexicon. Words with the distorted formal structure are also often regarded as a symptom of lexical-semantic or derivational problems. Disregard for the fact that word structure distortions may contribute to exacerbating difficulties with acquisition of the semantic aspect of words (or even trigger their occurrence), as well as

treating distortions of word structures as neologisms has serious practical consequences (cf. Muzyka-Furtak, 2013a, 2014). Avoiding, at the stage of surdologopedic diagnosis, to linguistically analyze in detail the occurring disorders results in errors in identification of the direct causes of their occurrence, i.e. in incorrect diagnosis, and consequently, in the wrongly directed process of treatment (cf. Grabias, 2015)¹.

The starting point for the discussion in the present article is the thesis formulated on the basis of observations and many years of treatment practice that the problem of word structure distortions caused by hearing impairments is disregarded or treated too superficially by surdologopedists. Disorders of this type are commonly found both in the speech of deaf and hard-of-hearing persons, which suggests that it is necessary to devote more attention to them. These disorders embrace several spheres determining the development of linguistic competence, directly entailing both perception and realization limitations.

DISTORTIONS OF WORD STRUCTURE

Distortions of word structure are also termed as word structure deformations, disruptions or disorders, or in broader terms – syntagmatic disorders. As the name shows, they apply to a word as a specific structure: syllabic, phonemic or phonic, and to sound and phoneme combinations. They can be called, as pointed out by the author of the linguistic classification of speech disorders J. T. Kania (2001), disorders of the phonetic or phonological structure of a word. Distinguishing the paradigmatic and syntagmatic disorders out of the segmental ones, he stressed that “The former type disturbs in different ways the unit inventory, i.e. the inventory of sounds or phonemes (depending on the interpretation of the methodology of description), while the latter disturbs the rules of combining units in large structures, first of all in words” (Kania, 2001, 12). Distortions of word structure result from a change in the normatively established quantity, quality or order of its various constituents (Kania, 2001).

In the linguistic classification of speech disorders J. T. Kania (2001) distinguished different kinds of abnormalities concerning the word structure, defining them as syntagmatic disorders as opposed to paradigmatic disorders that pertain to the realization of single sounds.

The question of accurate diagnosis of syntagmatic disorders is not easy or clear-cut, however. According to A. Sołtys-Chmielowicz (2008, 136): “Word

¹ For more on the role of linguistic analysis in surdologopedic diagnosis: cf. K. Krakowiak, E. Muzyka, R. Kołodziejczyk *Diagnoza surdologopedyczna* [Surdologopedic Diagnosis](2015); E. Muzyka-Furtak *Lingwistyczne aspekty terapii zaburzeń mowy dzieci z uszkodzeniami słuchu* [Linguistic Aspects of Therapy of Speech Disorders in Hearing-impaired Children] (2014).

structure disorders as symptoms of delayed speech development are basically of the same nature as normal developmental phenomena observable in younger children.” However, a thorough analysis of distortions of word structures in the case of speech disorders may provide evidence for the dissimilarity of their characteristics to phenomena typical of the development of child’s speech.

The causes of the occurrence of difficulties with the acquisition of correct word structures may be different, from not learning the correct form of a word and difficulties in memorizing the order of the elements in a word, to articulation difficulties, and finally to perception disorders. In the descriptions of language difficulties of children with hearing impairments, too little attention is devoted to syntagmatic disorders. It is due not only to the lack of awareness of the existence of the problem in children with hearing impairments or because of difficulties in analyzing and interpreting words with a disrupted structure, also not only because of a great diversity of distortions of word forms in the speech of deaf and hard-of-hearing persons. The description in this article of distortions of word structures arisen as a result of hearing impairments will be cross-sectional. It focuses on outlining the problem and pointing to the scale of diagnostic difficulties. The collected research material shows that in the speech of children with impaired hearing there really exist characteristic and repeatable ways of distorting word structures typical of a specific case and characterizing the largely individual way of overcoming the perception barrier and realization difficulties resulting from its existence.

RESEARCH PROBLEMS

The aim of this article is to point out the problem of the occurrence of word structure distortions in the speech of hearing-impaired children, and difficulties in diagnosis which distinguish them from other distortions affecting lexical units. Referring to the linguistic classification of speech disorders by J. T. Kania (2001), the author will present the analysis of particular types of syntagmatic disorders.

The research material was collected during the activities conducted by the author in surdologopedic therapy (transcription of recordings) and free talks with the participants in the activities (systematic transcription). The material comes entirely from the school-age children with severe and profound hearing impairments. The presented analyses and interpretations are of qualitative nature. They constitute an exemplification of specific phenomena, their aim being to facilitate the process of identification by surdologopedists of the distortions of word forms and their differentiation from lexical distortions of semantic or morphological character.

THE ANALYSIS OF WORD STRUCTURE DISTORTIONS

The quantitative distortions of words are definitely easier to identify and analyze at the stage of diagnosis than the qualitative ones. People with hearing impairments frequently tend to reduce various elements in words – single sounds, consonant groups, syllables. This phenomenon is, on the one hand, a natural result of perception limitations, on the other hand – of directly related poorer realization abilities². Among quantitative distortions the least anxiety (due to its common appearance also in colloquial speech) is aroused by simplification of consonant groups, both in the initial position (anlaut) e.g. *šotka* ‘szczotka [brush]’, *padoxlon* ‘spadochron [parachute]’, *šymak* ‘šlimak [snail]’, in the medial position, e.g. *f’iše* ‘wišnie [cherries]’, *rapa* ‘lampa [lamp]’, *buteka* ‘butelka [bottle]’ or those in the final position (auslaut), e.g. *l’iś* ‘liś [leaf]’³. Simplifications of final consonant groups may be the outcome of the tendency to reduce the pronunciation effort; therefore not in each case it is connected with the occurrence of perception or articulation difficulties. In children with hearing impairments more than one consonant group simplification may occur in one word e.g. *vože* ‘gwoździe [nails, tacks]’.

A special example of the simplification of consonant groups is reductions in cases of the asynchronous realization of nasal vowels. In accordance with the rules of correct pronunciation, the realization of a nasal vowel does not occur here; instead, articulation is divided between two sounds. In the speech of children with hearing impairments there are many such realizations e.g. *šelonko* ‘cielątko [calf]’, *paiok* ‘pająk [spider]’, *p’eć* ‘pięć [five]’, *žešeć* ‘dziesięć [ten]’, *p’ėnoze* ‘pieniądze [money]’. They may be wrongly treated as proof of problems with the articulation of nasal vowels (as shown by mistakes that can be found in speech-therapists’ opinions).

It may happen that a consonant group is not so much simplified as reduced completely e.g. *zaiō* ‘zajac [hare]’, *uskafka* ‘truskawka [strawberry]’. The word structure is disrupted to a larger extent in such cases; significantly, however, the syllabic structure is retained, this being an important observation regarding the assessment of the perceptual abilities of a particular child, which, in the long term, is very important information for programming a surdologopedic therapy.

² As shown by the results of studies conducted in various groups of children with hearing impairments, i.e. using phono-gestures (Trochimiuk, 2008) and sign language (Łobacz, 2002), the characteristics of the reduction may be different, i.e. it may change depending on the way of acquiring the Polish language

³ Examples illustrating a specific kind of distortion of the structure of a word may also contain other types of phenomena that are deliberately omitted in the analysis. Finding examples that document exclusively one, isolated kind of distortions in cases of hearing impairments is very difficult and would actually deny the facts because the complexity of distortions is typical of hearing deficits, especially the severe and profound ones.

In addition to problems with the realization of consonant groups in the speech of hearing-impaired children, there can be reductions of single sounds, which, as in the former case, may affect their different positions in a word. In the collected material the problem mainly applied to final positions: *kapalu* ‘kapelusz [hat]’, *pase* ‘pasek [belt]’, *p’ese* ‘piesek [doggie]’, *zame* ‘zamek [lock/castle]’, *księsi* ‘księżyc [moon]’. Identification of the mechanism that causes reductions provides an opportunity to describe in-depth the perceptual limitations of a person and their impact on speech development, e.g. a predominance of reductions of final-positions may indicate problems with hearing them (which is an indisputable impediment to perceiving inflectional endings, and consequently, the principal cause of difficulties in learning and using them correctly). From this perspective, paying attention to the occurrence of sound reductions in final positions gains special importance (however, characteristic features of the final position of sounds in Polish should not be forgotten) because it enables making a more exact diagnosis in identifying the causes of different kinds of language difficulties in hearing-impaired persons, not only articulatory ones but also those with grammar acquisition.

In the speech of patients with impaired hearing there are also cases of simultaneous simplification of consonant groups and sound reductions (within the same word), e.g. *kuij* ‘królik [rabbit]’, *śiiek* ‘i ‘cukierki [candies]’. Although this is basically the occurrence of one type of phenomenon: quantitative distortions, the scale of problems with speech is certainly greater in such cases, which is directly evidenced by a significant decrease in utterance intelligibility⁴.

A special case of reductions are those affecting vowels, e.g. *kulal* ‘i, *kulaty* ‘okulary [glasses]’, *brus* ‘bluzka [blouse]’, *autop* ‘autobus [bus]’. In realizations of this type there are serious distortions of word structures caused by a decrease in the number of syllables. The occurrence of such abnormalities is especially alarming because this shows that there are difficulties with the perception of the syllabic nature of words. Detecting disorders that cause reductions of syllables and distinguishing them from other quantitative distortions is extremely important at the stage of formulating a diagnosis because this has a decisive impact on the selection of the types of auditory exercises that are later practiced during therapy, e.g. if reductions pertain to one-syllable words, it will be very important to choose appropriate auditory memory exercises. To exemplify the foregoing problem: if a child pronounces the words ‘ślimak [snail]’ as *śimak*, we are dealing with the simplification of a consonant group, whereas if s/he pronounces the word as *śmak*, then a syllable reduction occurs. A similar phenomenon concerns the examples *patolka* ‘parasolka [umbrella]’ (syllable reduction) and *paraso* ‘parasol [umbrella]’ (consonant reduction). Reductions of single sounds always involve lesser per-

⁴ For more on the problem of assessing the intelligibility of utterances in cases of speech disorders cf. Mirecka (2015).

ception problems than syllable reductions (they can even result exclusively from realization difficulties). In the cases of syllable reductions the degree of word intelligibility is by far smaller, and the underlying cause of such difficulties is far more complex than in the case of consonant reduction. This phenomenon is gradable because the number of reduced syllables can be greater than one, e.g. *bras* ‘prasuje [s/he is ironing]’. In that case, the comprehension of such an utterance outside its situational context is negligible. This is also the case with the co-occurrence of reductions of syllables and consonants (simplification of consonant groups), as in the example of *tor’isa* ‘tornister [school bag]’.

The reverse of reductions of the word structure is its expansion, or the occurrence of epentheses (insertions). According to the studies by A. Trochymiuk (2008) both the above-described reductions (omissions) and epentheses (insertions) manifest themselves particularly clearly in the speech of deaf children using phonogestures, and affect whole syllables, phonemes or phonemic groups. The expansion of the syllable structure of words was an even more frequent phenomenon in the studied group than reductions, especially epentheses disrupting consonant groups. Trochymiuk classifies this as “a strategy for avoiding difficult articulations” (Trochymiuk, 2008, 222). In the case of consonants, one can speak of the lack of articulatory precision and skilled transition from articulation to another.

The cases of epentheses with regard to the studied children’s group in question were a recurrent phenomenon, but it is difficult to conclusively decide whether they can be regarded as more typical of the speech of hearing-impaired children than reductions. The reported cases of epentheses applied both to consonants: *drado* ‘radio’, *żimniatk’i* ‘ziemniaki [potatoes]’, *monde* ‘młotek [hammer]’, *ragv’ita* ‘rakieta [rocket]’, and vowels: *trqvaii* ‘tramwaj [tram/streetcar]’, *xoiizq* ‘chodzą [(they) are walking]’, *śeśeyo* ‘krzesło [chair]’. The intrusions co-occurring with other word structure distortions significantly reduce the intelligibility of utterance, sometimes making it utterly incomprehensible to the receiver, especially outside the situational context.

Qualitative word structure distortions in the cases of limitations of auditory perception are a common occurrence; however, they are certainly more difficult to detect in logopedic diagnosis and to appropriately describe than quantitative distortions.

Out of qualitative distortions, it is somewhat easier to identify complete assimilations, and it is first of all them, according to J. T. Kania (2001), that occur in speech pathology. In accordance with that author’s linguistic classification of speech disorders, what is also characteristic of them is distant assimilation (assimilation at a distance). These data are confirmed with regard to the speech of persons with impaired hearing. Consequently, recurrent and frequent are realizations of the type: *lalasko* ‘żelazko [iron]’, *zerar* ‘zegar [clock]’, *paupka* ‘małpka

[monkey]’, *mam’ot* ‘nam’ot [tent]’, which are examples of complete assimilations taking place at a distance.

As far as the other assimilations are concerned, exceptions in general language are those concerning vowels, which, in the cases of speech disorders, are just as frequent as those pertaining to consonants (Kania, 2001). In the speech of the studied children with hearing impairments, a significant percentage was vowel assimilations, examples of which being realizations of the type: *losterko* ‘lusterko [mirror]’, *patarńa* ‘patelnia [frying pan]’, *v’il’išiska* ‘filizanka [cup]’.

The last difference pointed out by J. T. Kania between assimilation processes taking place in general language and in speech disorders is the occurrence of the perseveration process (along with anticipation characteristic of general language) in cases of articulation pathologies. Examples of this kind of phenomenon in the speech of hearing-impaired persons, confirming the presented findings are: *baŭban* ‘bałwan [snowman]’, *inny* ‘indyk [turkey]’, *g’elga* ‘k’elńa [trowel]’, *x’ixopotam* ‘hipopotam [hippopotamus]’.

Another type of assimilations, in addition to complete assimilations distinguished by J. T. Kania in the linguistic classification of speech disorders, is partial assimilations. They are more difficult to identify and occur decidedly less often in the speech of hearing-impaired persons. Examples of partial assimilations can be the following realizations: *foxel* ‘fotel [armchair]’, *slatk’i* ‘szklanki [(drinking) glasses]’ (with regard to the degree of closure of speech organs), or *xlaga* ‘flaga [flag]’, *faxolka* ‘fasolka [bean]’ (with regard to the place of articulation).

The opposite of assimilation processes are dissimilation processes. In the speech of children with impaired hearing, the phenomena that could be classified as dissimilations are exemplified by e.g. *żgovńica* ‘dżdżownica [earthworm]’, or *v’edurka* ‘wiewiórka [squirrel]’. Their small number is an argument confirming J. T. Kania’s view that dissimilations are a sporadic process.

Metatheses or changes in the linear order of word constituents can affect syllables, phonemes and phoneme groups. In the speech of hearing-impaired children all kinds of them occur but certainly with a lower frequency than quantitative distortions. Some metatheses are easy to recognize, as for example in *śereka* ‘siekiera [axe]’, *dabłyńa* ‘drabina [ladder]’, *xydlaulk’i* ‘hydraulik [plumber]’, or *apalta* ‘aparatus [apparatus/device/camera]’, where only single phonemes are transposed, the intelligibility of the word being thus retained. However, with more complex disorders, which is the case with profound hearing losses, it so happens that it is far more difficult to identify an occurring metathesis because it co-occurs with other changes in the word structure (combined changes) or it occurs as a multiple one – two methatheses in one word, e.g. *rarańko* ‘kalafior [cauliflower]’.

Combined changes result in substantial transformations of word structures (Kania, 2001). Due to the complex picture of articulation disorders caused by a hearing defect, the phenomenon of co-occurrence of different syntagmatic

disorders within one word is found very often. It is therefore justifiable to recognize them as a characteristic feature of the speech of persons with limitations of auditory perception. Especially worth noting is the co-occurrence of quantitative and qualitative distortions: they are often simultaneous reductions and assimilations., e.g. a reduction of the auslaut with a complete assimilation *vedele* ‘vid-elec [fork]’, *inny* ‘indyk [turkey]’, *kapalu* ‘kapelusz [hat]’, or a consonant group simplification with a complete assimilation, e.g. *sesy* ‘księżyc [moon]’ or with a partial assimilation, e.g. *amana* ‘armata [cannon]’, *uubeze* ‘łabędzie [swans]’.⁵

In the case of more severe hearing disorders the word structure can be so distorted that the identification of a word is essentially impossible. Exemplifications of this phenomenon can be realizations like: *rov'inika* ‘chorągiewka [flag], or *xulajitol* ‘hulajnoga [scooter]’. Frequently, substantial distortions of word structure are classified as non-systemic changes, and therefore as a lexical phenomenon, which causes wrong diagnosis, and, consequently, challenges the advisability of measures taken in speech-therapy treatment. In other words, after conducting an analysis, in many non-systemic changes it is possible to diagnose a number of overlapping syntagmatic and paradigmatic disorders. The term that tends to be overused in reference to words with a highly disordered structure, particularly to those difficult to interpret (which are often precisely the combined changes) is the term “neologism” (cf. J. T. Kania, 2001, 14).

LEXICALLY-BASED WORD STRUCTURE DISORDERS

In order to distinguish word structure distortions from a different type of language difficulties caused by hearing impairments (the issue here being mainly lexical-semantic and derivational disorders, cf. Muzyka-Furtak, 2013a, b) an appropriate linguistic analysis is necessary or even crucial.

Sometimes, however, particularly in cases of more severe brain injuries, it can be especially difficult or even impossible to discriminate between word structure distortions and lexical-semantic difficulties. This happens because the occurring abnormalities of the word form can trigger off the process of transfer of meanings (cf. Guiraud, 1976). Indisputably, the investigation of word structure disorders in the context of lexical disorders and of the possibly complete characteristics of a person’s language system of is the only effective solution in this situation, eliminating the probability of making errors in interpretation.

⁵ Some examples documenting the phenomenon of co-occurrence of quantitative and qualitative disorders may have appeared earlier in the text as an exemplification of a single type of word structure disorders.

Such problematic realizations are illustrated by examples like: *na ʋopata* meaning ‘na płocie [on the fence]’), where the metathesis accounted for an association with another, formally similar, lexical unit, or *ośou* (meaning ‘orzeł [eagle]’), where the assimilation of vowels or substitution probably resulted in the transfer of meanings due to the resulting similarity of nouns (‘orzeł [eagle]’ – ‘osioł [donkey]’). In the speech of hearing-impaired persons this type of ambiguously interpreted phenomena is a frequent occurrence.

The problem of paronymy and contamination caused by limitations of auditory perceptions is another question on the borderline between lexical disorders and word structure disorders because underlying lexical disorders there can be association processes that produce changes in meanings on the one hand, and on the other – also changes in the word form (Grabias, 1982, Muzyka-Furtak, 2013c). Despite a different mechanism responsible for their occurrence, they are recognized, after a cursory analysis, as word structure distortions or neologisms. The pronunciation *p’il’izanka* ‘filizanka [(cup)]’ could be classified as assimilation proceeding at a distance and pertaining to the degree of the closure of speech organs (towards a plosive) or as dissimilation (towards a fricative), and at the same time (and this seems to be most probable due to the general characteristics of lexical disorders in hearing-impaired children) such a phenomenon may result from being associated with an activity for which the object named serves (for drinking). Many examples can be provided in support of this interpretation, e.g. *praśculk’i* ‘jaszczurki [lizards]’, *paʋpan* ‘małpa [monkey]’, *tempelatul* ‘temperówka [pencil sharpener]’, *śerp’eń* ‘grzebień [comb]’. Even single problems with articulation (for example those with voicedness so common in hearing-impaired children) and problems with inflection can secondarily induce formal associations that will produce lexical semantic disorders, e.g. *bra...bras...brazek...obraz* (an attempt to define the action of ironing ‘prasować’ [the final form being similar with the word ‘picture’]). In this case it was the search for the right word form that gave rise to irregularities and, with the lack of the appropriate pattern, an association with another known word took place. Phenomena of this type are not syntagmatic disorders despite the fact that errors in analysis could lead to false interpretive conclusions.

As shown by the foregoing analyses, so great is the degree of complexity of problems affecting lexical units in the case of hearing impairments that, as has already been said, only a reliable linguistic analysis allows making a complete and accurate logopedic diagnosis, and consequently, ensures the selection of appropriate working methods and techniques. Therefore, it should each time be the starting point for the prepared plans of therapeutic work. Owing to this, it is possible to reduce the risk of making diagnostic errors and to enhance the individual-

ization of logopedic treatment – to successively correct the designed program of surdologopedic therapy based on the assessment of the child's current abilities and limitations (Muzyka-Furtak, 2014).

CONCLUSIONS FROM ANALYSES. PROGRAMMING OF THERAPY

The diagnosis and description of predominant (i.e. recurrent and most frequent) types of word structure distortions in the speech of impaired-hearing persons is an opportunity to accurately identify the actual (because manifested in language productions) results of perceptual and realization limitations and the applied strategies for overcoming them. This is of special diagnostic value since the ways of overcoming one's own deficits are always case-specific, i.e. characteristic of a given person. A thorough description of word structure distortions enables the detection of strategies characteristic of a particular child for coping with articulation problems but also with problems in the development of the lexical level of language. It allows one to identify the kinds of word distortions typical of a specific picture of speech disorders, and not only to name the occurrent processes but also to provide the complete characteristics of the operations taking place individually within word structures (for example those related to the common occurrence of consonant epenthesis in specific word positions or to the simplifications of consonant groups with their specific structure). The analysis of the ways of distorting word structures, conducted by the logopedist in this way, introduces considerable order into their interpretation, which can in turn prove more than once that the studied child uses his/her typical patterns of activity (and does not have as many problems as a superficial assessment would suggest). Then a therapy program will without doubt be easier to design and could thus constitute a set of exercises planned according to specific rules and designed to correct a specific problem, rather than a set of indeterminate structure. To the surdologopedist designing a therapy program, it is also extremely important to organize information about the ways of distorting words because this enables the identification of the most important obstructions on the path of the developing lexical system. For the foregoing reasons, word structure disorders have to be the object of observation and description in the diagnosing process, but, most importantly, they have to be interpreted properly. At present, very important from this point of view are case studies on word structure disorders induced by hearing impediments. At this stage of development of surdologopedics – also on account of its dynamic development in the recent decade – they should be regarded not only as helpful but even indispensable.

BIBLIOGRAFIA

- Grabias S., 1982, *Paronimia jako proces leksykalny*, „Socjolingwistyka” 4, s. 75–88.
- Grabias S., 2015, *Postępowanie logopedyczne. Standardy terapii*, [w:] S. Grabias, J. Panasiuk, T. Woźniak (red.), *Logopedia. Standardy postępowania logopedycznego* (s. 13–35), Lublin, Wyd. UMCS.
- Guiraud P., 1976, *Semantyka*, Warszawa, Wyd. WP.
- Kania J.T., 2001, *Szkice logopedyczne*, Lublin, Wyd. PTL.
- Krakowiak K., Muzyka-Furtak E., Kołodziejczyk R., 2015, *Diagnoza surdologopedyczna*, [w:] E. Muzyka-Furtak (red.), *Surdologopedia. Teoria i praktyka* (s. 134–155), Gdańsk, Harmonia Universalis.
- Łobacz P., 2002, *Wstępna charakterystyka fonetyczna mowy wybranej grupy dzieci niesłyszących*, „Scripta Neophilologica Posnaniensia” 4, s. 29–50.
- Mirecka U., 2015, *Z zagadnień oceny zrozumiałości wypowiedzi osób z zaburzeniami mowy*, [w:] S. Milewski, K. Kaczorowska-Bray (red.), *Metodologia badań logopedycznych z perspektywy teorii i praktyki* (s. 74–85), Gdańsk, Harmonia Universalis.
- Muzyka-Furtak E., 2013a, *Jakościowa charakterystyka zaburzeń leksykalnych dzieci z uszkodzonym słuchem*, „Logopedia” t. 42, s. 133–145.
- Muzyka-Furtak E., 2013b, *Neologizmy uczniów niesłyszących jako źródło humoru*, [w:] E. Dunaj, I. Morawska, M. Latoch-Zielińska (red.), *Humor w kulturze i edukacji* (s. 181–199), Lublin, Wyd. UMCS.
- Muzyka-Furtak E., 2013c, *Paronimia w rozwoju leksykalnym dzieci słyszących i niesłyszących*, [w:] J. Panasiuk, T. Woźniak (red.), *Język. Człowiek. Społeczeństwo* (s. 685–715), Lublin, wyd. UMCS.
- Muzyka-Furtak E., 2014, *Lingwistyczne aspekty terapii zaburzeń mowy dzieci z uszkodzeniami słuchu*, [w:] D. Baczała, J. J. Błeszyński (red.), *Terapia logopedyczna* (s. 220–236), Toruń, Wyd. Nauk. UAM.
- Sołtys-Chmielowicz A., 2008, *Zaburzenia artykulacji. Teoria i praktyka*, Kraków, Impuls.
- Trochymiuk A., 2008, *Wymowa dzieci niesłyszących. Analiza audytywna i akustyczna*, Lublin, Wyd. UMCS.