Original paper

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Relation between phonological awareness and systematic literacy instruction: is conditionality one-way in consistent orthographies?

Summary: *The aim of the research was to evaluate phonological awareness of the first grade pupils (N = 143) and to determine whether the start of systematic literacy instruction significantly enhanced this ability. The research is of comparative nature and it was implemented during the months of April and May of the school year 2017/18 in Banja Luka and Nikšić. The research question was: Does learning to read and write accelerate the development of phonological awareness or does development of phonological processing flow relatively independently from the start of a systematic literacy instruction? It has been hypothesized that learning to read and write significantly enhances the development of phonological awareness. Our subsamples are in the school systems according to the curricula which anticipate different start of systematic literacy instruction - in the first, that is, the second grades. We used the phonological awareness protocol as a research instrument. The results of the research indicate that there is a tendency - but not reliable enough evidence - that the start of literacy instruction accelerates the development of phonological processing skills. The results obtained on the tasks that demand deep phonemic awareness (word segmentation task) imply the conclusion that analytical exercises contribute to the development of phonemic awareness regardless of the start of the systematic literacy instruction.*

Keywords: *analytical exercises, initial reading and writing, phonemic awareness, preparation period, sentence, word and syllable structure.*

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Introduction

Initial reading and writing is the central area of classroom teaching. This teaching is complicated by numerous differences among students (Milatović, 2019; Stanovich, 1986). In order for all pupils to learn how to read and write, teaching methodology structure of this field distinguishes between the following stages: preparation, learning to read and write or systematic literacy instruction and perfecting the reading and writing (Milatović, 2005; Milutinović and Vučković, 2017).

Phonological awareness is an important prerequisite for learning to read and write (Čolić and Vuković, 2018). Simultaneously, initial literacy is expected to contribute significantly to its perfecting. Development of phonological processing skills begins at preschool age and is systematically intensified at school, especially by analytical-synthetic exercises developed by teaching methodology within the analytical-synthetic method and which are implemented during the preparation period, but also during the systematic literacy instruction stage (Milatović, 2005; 2019; Milutinović and Vučković, 2017). Phonological awareness will enable a child to perceive the structure of sentences and words and then to understand the meaning (Bežen, Budinski and Kolar Billege, 2013).

The knowledge about phonological awareness has largely originated from the research in psychology, speech therapy, phonetics, and proportionally there is a relatively small number of the teaching methodology research. The fact that the findings conducted to date have not brought about unique conclusions is partly due to the language in which the research is done, and partly as a result of a different methodology. Among other things, disagreements arise regarding a causal correlation between phonological awareness and initial literacy, so the central problem in this regard is to determine whether phonological awareness is significantly improved by the start of the systematic literacy instruction or it can equally well (or better) be developed

by exercises anticipated for preparation preceding the literacy acquisition. Bearing in mind that the methodology of teaching initial reading and writing recognizes different models of the order and schedule of learning to read and write (Cvetanović, Negru, Keleman Milojević, 2017; Milatović, 2005; 2019; Milutinović and Vučković, 2017), as well as different duration and content of certain phases (Milutinović and Vučković, 2017; Milatović, 2019), with this research study we wanted to check how and to what extent the start of the systematic literacy instruction influenced the development of the phonological awareness. The aim of the research was to evaluate the phonological awareness of the first-grade pupils and to determine whether the start of literacy acquisition intensifies its development.

Theoretical Fundaments of the Research

Phonological awareness is a part of general metalinguistic ability (Kodžopeljić, 1996), and it refers to the skill of identification and manipulation of sound units (Ziegler et al., 2010). This is the awareness of phonological elements of speech, that is, the segments that are more or less represented by an orthographic system, alphabet, or other. The key factor associated with the phonological awareness research is orthographic consistency (Ziegler and Goswami, 2005; Ziegler et al., 2010), referring to phoneme-to-grapheme correlations, so the more consistent or more shallow ones are the orthographies in which this correlation is clearer, more precise and more consistent, that is, having a phoneme-to-grapheme mapping of 1:1 or striving for such a correlation (Čudina-Obradović, 2014). The size of the unit bearing emphasis in the development of phonological awareness (for example, a phoneme in alphabetical, a syllable in logographic alphabets) depends on the consistency of orthography, which is the fundamental idea of the *grain size theory* formulated at the beginning of this century (Ziegler and Goswami, 2005). This theory links many research

studies into a system asserting that development of phonological awareness should be lead to the level of the unit being the fundament of the alphabet, i.e., the unit recorded by the corresponding letter signs, graphemes. The role of the phonological awareness is more short-lived in consistent orthographies (Moll et al., 2014) and its significance ceases when children learn the letters[2] which are used to write all the sounds and after they form the so-called grapho-phonemic vocabulary (Čudina-Obradović, 2014). In consistent orthographies, phonological awareness is adopted earlier (Caravolas, Lervåg, Defior, Seidlová Málková and Hulme, 2013), which is encouraged by language games (Dragić, 2018; Mićić, 2019).

Although only the term phonological awareness is generally used in research and reports (Teaching Reading in Europe, 2011), this term is formed from a range of phonological language processing skills. Thus, we distinguish between phonological sensitivity and awareness, and phonemic sensitivity and awareness (Čudina-Obradović, 2014; Čolić, 2015). These terms are connected and they build a continuum of phonological awareness (Pufpaff, 2011), and the continuum "forms a series of elements, starting from an observation that speech consists of words towards realization that words consist of phonemes and the ability to manipulate these smallest units" (Vučković 2017: 71). The difference between the terms sensitivity and awareness lies in the fact that the latter is of a metalinguistic nature, i.e., it refers to the conscious manipulation of the speech units (Čudina-Obradović, 2014). Phonological sensitivity is "speech perception, short-term memory, and the speed of naming" (Čudina-Obradović 2014: 116). This skill is a prerequisite for the development of phonological awareness, which means "recognizing words as parts of a sentence, recognizing rhymes, recognizing syllables"

(Čudina-Obradović 2014: 116). Phonemic sensitivity refers to the perception of a phoneme as a unit within a word and implies "identification of sounds (phonemes) in a word and the possibility of splitting words into phonemes, elementary units, as well as the possibility of connecting them into a word" (Čudina-Obradović 2014: 113). Phonemic awareness enables dealing with the smallest parts of words - phonemes, so that various exercises are performed for its development. In this paper we will use the terms phonological awareness (in the basic meaning of identifying and manipulating sentences, words, syllables, rhyme) and phonemic awareness (identifying phonemes in words and manipulating them). In doing so, in the so-called continuum of phonological awareness (Puffpaf, 2011), the continuum of phonemic awareness is also interpolated.

Phonological awareness affects all components of reading: fluency, accuracy, and speed, and it begins to develop from the age of four, according to some studies (Kolić-Vehovec, 2003). Other research studies mention the later occurrence of phonological awareness, around the age of 5–6 (Savić, Anđelković, Buđevac and van der Lely, 2010). It is worth mentioning that the development of phonological awareness in its full spectrum does not happen spontaneously, without training, and that is especially the case with deeper levels of phonemic awareness. Children's interest in word games, rhymes, alliterations, syllables in nursery rhymes as well as the phono-structure of lyric poetry (Vučković, 2009) indicate that some aspects of phonological awareness can also develop in preschool age (Kodžopeljić, 1996; Čolić, 2015).

The research of the phonological and phonemic awareness includes different levels of linguistic organization - from sentence to word (Pufpaff, 2011), and sometimes the research involves the so-called pseudo words. Various tasks are used, such as: deleting or inserting a sound (Moll et al., 2014), comparing words by initial or final sound, extracting initial or final sound (Stanovich, Cunningham

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2 Terms letter and sound are not synonymous with the terms grapheme and phoneme, but we will use them in this sense in the paper, because in teaching methodology research this is common as a consequence of the fact that they are used in school practice and teaching curricula in this sense.

and Cramer, 1984). Research often uses picture cards, which has been particularly criticized in the literature (Subotić, 2011).

A Developmental Continuum of Phonological Sensitivity Skills by Lisa Pufpaff (2009) distinguishes between phonological and phonemic awareness. In this model, phonological awareness is shown by tasks referring to sentence segmentation, word segmentation into syllables, and rhyme tasks (Pufpaff, 2009). Phonemic awareness refers to diverse skills of manipulating phonemes within words, with tasks generally differentiating according to initial, medial or final position of the phoneme (Pufpaff, 2009). There are many combinations of phonemes in words, so it is important to keep in mind that not all tasks are the same in complexity, and that in the initial exercises special attention should be paid to the principle of 'from simpler to more complex'. Thus, for example, the initial position of a phoneme is the simplest for some forms of manipulation (for example, comparing words by the initial sound), followed by final and medial (Milutinović and Vučković, 2017). Researchers choose different tasks for the assessment of phonological awareness, where the choice is mostly not clarified. Exceptions are some research studies in which some tasks are eliminated based on their complexity (Subotić, 2011), and research that take into account the characteristics of certain phonemes, for example the ones with their graphemes written using diacritical marks (Budinski and Kolar Billege, 2012).

Since vowels and consonants are the basic phonological units, some authors have specifically monitored phonemic awareness for vowels and consonants and found that the respondents were significantly better at dealing with vowels (Gonzales, Jiménez and Ortíz Gonzales, 1994). The same authors also checked pupils' manipulation of the first or second consonant of the opening syllable (a consonant cluster at the beginning of a word), with no significant differences obtained, which is partly unexpected. The research was conducted in Spanish and the results differ from those obtained in English (Treiman, 1985). The existence of differences would be expected for this research study, since it appears that in the phonological development consonant clusters are quite demanding for phonological processing at the beginning of a syllable (Savić et al., 2010). In addition, the number of syllables in a word can be a factor that causes difficulties in analysis and synthesis, as well as the sounds where the Latin alphabet letters are recorded using diacritical marks (Budinski and Kolar Billege, 2012). It is also expected that open and closed syllables, as well as some syllabic combinations in words, can cause difficulties in phonological processing (Treiman and Zukowski, 1996; Zec, 2007; Savić et al., 2010). Deep phonological awareness is required for literacy, as "transparent orthographies with a one-to-one mapping between letters and sounds should naturally promote high levels of phonological awareness" (Ziegler et al. 2010: 552).

Phonological awareness at the syllable level may, but does not have to be, a part of preparation for literacy in languages that have phonological orthography (Čudina-Obradović 2014). An omission of a syllable as a unit of analysis can be explained by the fact that it plays a central role in the alphabets of phonemes, since these alphabets "map speech to print at the level of the phoneme" (Yopp and Yopp 2000: 131).

Since phonological awareness is a condition for decoding while reading and encoding while writing (Stanovich, 2000; Elbro, 2005; Moll et al., 2014), initial literacy cannot begin without its development (Bežen, Budinski, and Kolar Billege, 2013). On the other hand, research has shown that phonemic awareness is impossible to develop without a systematic literacy (Castles and Coltheart, 2004). A longitudinal study conducted by Svjetlana Kolić-Vehovec (2003) showed that phonological analysis and synthesis, as well as the tasks of omitting the first and last phoneme, significantly contribute to the prediction of reading fluency at the end of the

first year of learning. The author concluded that "the basic aspects of phonological analysis and synthesis are preconditions for the initial mastery of reading, while the more complex forms of phonological analysis develop under the influence of reading instructions" (Kolić-Vehovec 2003: 17). These findings are supported in the related research identifying the interdependence of the phonological awareness and systematic literacy acquisition (Perfetti, Beck, Bell and Hughes, 1987; Goswami, 2008). However, in the opinion of some authors, more detailed studies of the interdependence of phonological awareness and systematic literacy instruction (especially the teaching methodology ones) are scarce in the literature (Yop and Yop, 2000; Ziegler et al., 2010; Subotić, 2011; Lazarević, 2014).

The Research Methodology

The subject of the research is the phonological awareness of the first-grade primary school pupils in Banja Luka (Republic of Srpska) and in Nikšić (Montenegro). Initial reading and writing is performed in both school systems during the first three years. The mother tongue in the Republic of Srpska is Serbian, whereas, since 2011, the mother tongue in Montenegro has been studied within the subject Montenegrin-Serbian, Bosnian, Croatian Language and Literature. In the Republic of Srpska, the first grade is intended for the preparation for reading and writing, as well as for the acquisition of the block Cyrillic letters. Cursive letters of the Cyrillic alphabet are taught in the second grade and the Latin alphabet is acquired in the third grade (Nastavni plan i program [Curriculum], 2014; Milutinović and Vučković, 2017). In Montenegro, the first grade focuses on preparing for learning to read and write. Learning of the Cyrillic alphabet (block and cursive letters) is performed in the second and the Latin alphabet in the third grade (Program [Programme], 2017). Both of these curriculum orientations are theoretically grounded in the methodology of teaching initial reading and writing, with a number of possible combinations of the order and arrangement of initial literacy instruction (Milatović, 2005; 2019; Milutinović and Vučković, 2017). Although in Montenegrin there are two phonemes more than in the Serbian language, we worked with 30 phonemes that are the same in both languages. This decision also has grounds in the formal title of the mother tongue used in Montenegro (Montenegrin-Serbian, Bosnian, Croatian) – these 30 phonemes are the same in each language given in the title.

The aim of the research was to assess the level of phonological awareness of the first- grade pupils, as well as the interdependence of literacy instruction and phonological awareness. Since one subsample in school is by the curriculum implying initial literacy in the first grade (hereinafter C1, sample from Banja Luka) and the other in teaching is by the curriculum anticipating solely the literacy preparation period for the first grade (C2, sample from Nikšić), we are to determine here whether there are differences in phonological awareness between pupils. Thus, the independent variable is the curriculum in question and its organization of initial reading and writing. Phonological awareness was also checked against independent variables of gender and (non-) existence of speech disorders in pupils.

The main hypothesis: The pupils that start to learn reading and writing in the first grade have the phonological awareness that is developed better than the pupils preparing for literacy.

Supporting hypotheses:

H1: The pupils learning by C1 better define word boundaries in a sentence than the pupils learning by C2.

H2: The pupils learning by C1 better manipulate the syllables in words than the pupils learning by C2.

H3: The pupils learning by C1 manipulate the phonemes better in all tasks than the pupils learning by C2.

The sample consists of 143 pupils (Table 1) and is uniform in terms of the curricula by which the pupils are subjected to literacy. There are slightly more male respondents than female respondents. The first grade is attended by more than 8% of pupils with some of the most common speech impediments present (babblement, stuttering, nasalization, combined speech impediments).

Table 1. Overview of the research sample

Variables		
	M	F
Gender	75	68
	52.4%	47.6%
	Yes	No
Speech and sound impediments	12	132
	8.4%	91.6%
	C1	C2
Curriculum in question	70	73
	48.95%	51.05%

Prior to the beginning of the testing, consent was obtained for pupils' participation in the research. The tests were done individually, on the respective school premises. Testing lasted for a maximum of half an hour per student. At the beginning of each task, the respondents were presented with one example of resolving the task.

The Research Instrument

The research Instrument (Phonological Awareness Protocol) was created for this research and it contains phonological awareness tasks that form the necessary minimum for initial literacy acquisition. In order to neutralise the impact of the working memory capacity (Moll et al., 2014), no single unit has more than five units, that is, sentences have up to five words and words have up to five sounds. The protocol is aligned with both curricula

in question and it has been assessed as valid by 12 teachers with 11–27 years of service.

Tasks in Phonological Awareness Protocol

1. Determining word boundaries in a sentence. In the task, we were gradually levelling the complexity, e.g. by adding more words and by introducing content words (i.e. self-contained units), and gradually adding functional words, i.e., units showing grammatical functions (Mohammed, 2014), so the sentences were given in the following order: I am reading a book. It is raining heavily. The ball is big. The children are playing. A butterfly is flying across the field. Everything is tidy in the room. Milica and Saša are playing. The book is on the table. Fairy tales are nice stories. My mum is playing the piano beautifully.

In the following tasks, we used monosyllabic, two-syllable and three-syllable words, with a combination of open and closed syllables (open syllable ends with a vowel and closed syllable ends with a consonant), and syllables with a single-consonant onset, an empty onset or a consonant cluster at the onset. The onset is the beginning of a syllable. An empty onset means that the syllable begins with a vowel. In addition, the words containing graphemes with diacritics in the Latin script were included, that is, the words with their phonemic composition also including some of the postalveolar palatals.

2. Blending syllables into words: bug, sky, word, hill, two.

3. Splitting words into syllables: alone, house, ball, life, the Sun.

4. Inserting a phoneme at the beginning of a word: with, about, wasp, on, swarm.

5. Inserting a phoneme at the beginning of a word: we, wasp, with, wrap, frog.

6. Phoneme blending into words (or sound synthesis): wall, alone, sky, pupil, saw.

7. Splitting (segmenting) words into phonemes (monosyllable words): yes, he, on, night, dream, hedgehog, badge, bone, garden.

The choice of these words also came from the fact that a consistent orthography with a one-to-one mapping between letters and sounds will enable students to manipulate any word, including those words that are not very frequently given to children in the exercises. We asked teachers (N = 12) for the validation of this Protocol and they all agreed that these words could be a part of the phonemic manipulation for the students. During the examination, the children were asked if they knew what the words actually meant or if they were given an example of a sentence in which the words were used.

Results

The results of the research are given according to the tasks. For each item, we calculated the frequency and percentage of (un)successfulness, the chi-square test (χ^2) and the contingency coefficient (C). The abbreviation p denotes the probability of error (we stated only that part of the result where p<.005), and df is the number of degrees of freedom. Non-parametric statistics were used, taking into account the deviation of the results from the normal curve. All distributions are unimodal and platycurtic with generally high positive kurtosis values. An exception are the results obtained on the task of inserting a phoneme at the beginning or at the end of a word, for which negative values of kurtosis were obtained, which means that the task was performed more poorly than the others (Tables 5 and 6).

If the child is able to resolve the first task, it means that they have mastered the basic level of phonological awareness, and it is clear to them that

each sentence consists of words that are separated in writing. The results are given in Table 2.

Table 2. Determining the boundaries of words in sentences

Sentence	Correct	Incorrect	No response
Čitam knjigu. (I am reading a book.)	130 90.9%	8 6.6%	5 3.5%
Kiša jako pada. (It is raining heavily.)	129 90.2%	10 7.0%	4 2.8%
Lopta je velika. (The ball is big.)	123 86.0%	15 10.5%	5 3.5%
Djeca se igraju. (The children are playing.)	118 82.5%	17 11.9%	8 5.6%
Leptir leti po livadi. (A butterfly is flying across the field.)	126 88.1%	15 10.5%	2 1.4%
U sobi je sve uredno. (Everything is tidy in the room.)	104 72.7%	29 20.3%	10 7%
Milica i Saša se igraju. (Milica and Saša are playing.)	112 78.3%	28 19.6%	3 2.1%
Knjiga je na stolu. (The book is on the table.)	124 96.7%	17 11.9%	2 1.4%
Bajke su lijepe priče. (Fairy tales are nice stories.)	122 85.3%	16 11.2%	5 3.5%
Moja mama divno svira klavir. (My mum is playing the piano beautifully.)	107 74.8%	28 19.6%	8 5.6%

Determining word boundaries in a sentence did not produce homogeneous results, as some sentences with more words, especially function ones (Mohammed, 2014), appeared to be more demanding. In the sentences 6, 7 and 10, the task could not be resolved by about thirty pupils from our sample. We found statistically significant differences with respect to two variables. The (non-)existence of speech impediments causes differences in determining word boundaries in the following sentences: *It is*

raining heavily (χ^2= 14.17; df = 2; p<.001; C=0.3); *The ball is big* (χ^2=7.54; df =2; p<.005; C=0.22) and *Fairy tales are nice stories* (χ^2=6.73; df=2; p<.005; C=0.21). Each time, as expected, the task was completed better by pupils with no speech impediment. Another variable that caused appearance of differences was the curriculum, thus the pupils learning by C1 were significantly more successful in determining word boundaries in the following sentences: *The children are playing* (χ^2= 8.17; df=2; p<.005; C=0.24) and *Everything is tidy in the room* (χ^2= 6.19; df =2; p<.005; C=0.20). The pupils learning by C2 determined word boundaries better in the following sentences: *The book is on the table* (χ^2= 8.64; df=2; p<.005; C=0.24) and *Fairy tales are nice stories* (χ^2=16.92; df=2; p<.001; C=0.28).

The following two tables provide the results related to manipulating syllables, namely: syllable blending (Table 3) and splitting words into syllables (Table 4).

Table 3. Syllable blending into words

Word	nebo (sky)	buba (bug)	dvoje (two)	brdo (hill)	riječ (word)
Correct	138 96.5%	135 94.4%	134 93.7%	137 95.8%	132 92.3%
Incorrect	0	2 1.4%	3 2.1%	2 1.4%	5 3.5%
No response	5 3.5%	6 4.2%	6 4.2%	4 2.8%	6 4.2%

Table 4. Splitting words into syllables

Word	sama (alone)	kuća (house)	život (life)	lopta (ball)	Sunce (the Sun)
Correct	126 88.1%	128 89.5%	112 78.3%	122 85.3%	123 86.0%
Incorrect	11 7.7%	7 4.9%	21 14.7%	12 8.4%	16 11.2%
No response	6 4.2%	8 5.6%	10 7.0%	9 6.3%	4 2.8%

The first task was done very well, with over 90% of correct answers for each word, while the second task was performed slightly less successfully. Splitting into syllables was more difficult in the example words: *life, ball, the Sun,* than in the examples *alone* and *house.* The answers indicate that the structure and arrangement of the syllables play an important role in phonological processing and that these factors need to be taken into account when selecting the words through which initial literacy is performed, that is, the focus should be on the principle of graduality. We found differences among the pupils only in the second task, related to the word *ball.* This word was more successfully split into syllables by the pupils learning by C1 (χ^2=14.85; df = 2; p<.001; C=0.31).

The tasks of inserting a phoneme at the beginning of a given word (Table 5) or at the end of a given word (Table 6) were challenging for students. The results are interpreted by the fact that these requests were most likely not made to pupils earlier, in regular teaching, and we arrived at this conclusion based on the fact that neither curricula anticipated exercises of this type.

Table 5. Inserting a sound at the beginning of a word

Word	sa (with)	oko (about)	osa (wasp)	na (on)	roj (swarm)
Correct	39 27.3%	22 15.4%	34 23.8%	36 25.2%	32 22.4%
Incorrect	53 37.1%	48 33.6%	35 24.5%	46 32.2%	38 26.6%
No response	51 35.7%	73 51.0%	74 51.7%	61 42.7%	73 51.0%

Inserting a sound at the beginning of a word (Table 5) was more demanding than adding a sound at the end of a word. We have obtained statistically significant differences in relation to the variable of speech impediments for two words: *on* (χ^2=7.28; df=2; p<.005; C=0.22) and *swarm* (χ^2=11.66; df=2; p<.001; C=0.27). At the variable curriculum we have obtained statistically significant differences for all words in this task, namely: *with* (χ^2=26.85; df=2; p<.001; C=0.4), *about* (χ^2=16.63; df=2; p<.001;

C=0.32), *wasp* (χ^2=13.72; df=2; p<.001; C=0.3), *on* (χ^2=7.6; df=2; p<.005; C=0.22) and *swarm* (χ^2=6.68; df=2; p<.005; C=0.24). The pupils learning by C1 were more successful each time.

Table 6. *Inserting a sound at the end of a word*

Word	mi (we)	osa (wasp)	sa (with)	omot (wrap)	žaba (frog)
Correct	86 60.1%	59 41.3%	85 59.4%	29 20.3%	63 44.1%
Incorrect	23 16.1%	23 16.1%	15 10.5%	23 16.1%	18 12.6%
No response	34 23.8%	61 42.7%	43 30.1%	91 63.6%	62 43.4%

This task (Table 6) was completed better than the previous one, and statistically significant differences were obtained for all words, where they are to the benefit of pupils learning by C1, except in the case of the word *wasp*, which was better manipulated by the pupils learning by C2. The statistic indicators are as follows: *we* (χ^2=7.08; df=2; p<.005; C=0.22), *wasp* (χ^2=14.20; df=2; p<.001; C=0.30), *with* (χ^2=13.82; df=2; p<.001; C=0.30), *wrap* (χ^2=9.03; df=2; p<.005; C=0.24), *frog* (χ^2=9.02; df=2; p<.005; C=0.22). This is also one of the two tasks in total where variable of gender appeared to have had an impact, namely for the words *wasp* (χ^2=8.55; df=2; p<.005; C=0.24) and *wrap* (χ^2=6.72; df=2; p<.005; C=0.21). Both times the girls were more successful.

Table 7. *Phoneme blending into words (sound synthesis)*

Word	zid (wall)	sam (alone)	nebo (sky)	đak (pupil)	vidio (saw)
Correct	135 94.4%	129 90.2%	122 85.3%	126 88.1%	97 67.8%
Incorrect	4 2.8%	8 5.6%	9 6.3%	1 0.7%	34 23.8%
No response	4 2.8%	6 4.2%	12 8.4%	9 6.3%	12 8.4%

Phoneme blending was completed well. The exception is the word *saw (Translator's note: this is Past Tense of the verb see)*, which is usually found among the words that are often mispronounced and misspelled. Children with speech impediment were less successful in blending the phonemes into the word *pupil* (χ^2=13.39; df=2; p<.001; C=0.31), the girls were more successful in the word *alone* (χ^2=6.24; df=2; p<.005; C=0.20). The variable curriculum indicated differences to the benefit of the subsample C1 for the words: *alone* (χ^2=6.68; df=2; p<.005; C=0.24), *sky* (χ^2=11.09; df=2; p<.001; C=0.27), *pupil* (χ^2=7.96; df=2; p<.005; C=0.23), *saw* (χ^2=31.50; df=2; p<. 001; C=0.42).

As in the first task, we had ten examples in the tenth task as well. We have decided to have more examples in these two tasks since these are the requirements that immediately precede reading and writing. The results are shown in Table 8.

Table 8. *Splitting (segmenting) words into phonemes*

Word	da (yes)	on (he)	na (on)	noć (night)	sam (dream)	jež (hedgehog)	bedž (badge)	kost (bone)	vrt (garden)
C	135 94.4%	134 93.7%	136 95.1%	130 90.9%	133 93.0%	126 88.1%	123 86.0%	121 84.6%	121 84.6%
I	4 2.8%	6 4.2%	4 2.8%	9 6.3%	7 4.9%	11 7.7%	14 9.8%	17 11.9%	17 11.9%
NR	4 2.8%	3 2.1%	3 2.1%	4 2.8%	3 2.1%	6 4.2%	6 4.2%	5 3.5%	5 3.5%

C - Correct; I - Incorrect; NR – No response

The tasks that were most poorly done are the tasks with the words containing consonant clusters *(bone and garden)*, followed by the words containing postalveolar sounds (*badge, hedgehog and night*), while the other examples were more simple for the respondents.

The pupils without speech impediments were significantly more successful in splitting the words than their peers with some of the impediments: *yes* (χ^2=10.97; df=2; p<.001; C=0.27), *he* (χ^2=7.77; df=2; p<.005; C=0.28), *on* (χ^2=11.89; df=2; p<.001; C=0.28) and *dream* (χ^2=8.59; df=2; p<.005; C=0.21). The pupils learning by C1 were better in segmenting the words *badge* (χ^2=7.93; df=2; p<.005; C=0.23) and *garden* (χ^2=10.75; df=2; p<.001; C=0.26).

Discussion

The results obtained on the tasks are not homogeneous. On the contrary, they show that some tasks are more demanding, such as splitting words into syllables, and especially inserting a phoneme at the beginning and at the end of a word. Talking about the aforesaid tasks, we interpret the relative lack of success of the pupils by the lack of their experience regarding such requirements. Namely, the last task in the instrument involves a deeper phonemic awareness, and it is completed better than the tasks with syllables and with phoneme insertion. The reason for pupils' successfulness in the deep phonemic awareness task should be sought in their prolonged exposure to analytical exercises. As emphasized in the theoretical part of the paper, a syllable and the manipulation of the syllable do not constitute a necessity for initial literacy, which is even truer for the tasks of inserting a phoneme into a position. Nevertheless, the phonological awareness of children for such tasks would be an important prerequisite for deep phonemic awareness. Many research studies show that students have difficulty reading (OECD, 2013), which is further expressed when reading with comprehension. One part of the cause for this difficulty is certainly to be found in the teaching of initial reading and writing.

It would be expected that the testing of phonological awareness continuum produces results in some sort of a declining sequence of success, namely, that the initial tasks (aimed at manipulating larger units, starting with a sentence) are completed the best, whereas the final tasks might be completed most poorly. Our results witness the strong impact of training, so we can say that analytical exercises in both school systems are dominated by the sentence and word segmentation tasks. This situation is in line with the curricula in question, and this has been confirmed by the research of pupils' vocabulary (Cvetanović, 2010; Vučković, 2019).

The sentences in which the pupils determined word boundaries are not of the same complexity. Shorter sentences are less demanding, and when the sentences have the same number of words, then their complexity is determined by the structure reflected in the use of content and/or function words. Function words make it difficult to properly segment a sentence (Mohammed, 2014), and the inversion of the word order has the same impact. In our sample, no statistically significant differences were found with respect to the variables of gender, speech impediments, nor the subject curriculum. Few differences we found do not have a consistent effect on the sentence segmentation. The first supporting hypothesis has not been confirmed.

Manipulating syllables is simpler in the blending task than in the segmentation task, which confirms the importance of analytical exercises, especially in words containing consonant clusters (*ball, sun*) and in words that have postalveolar sounds (*life*). The differences between subsamples were not identified to a significant extent, thus the second supporting hypothesis was also rejected.

Inserting phonemes at the beginning or at the end of a word is not a task for which the pupils were prepared, thus it has proven to be the most challenging. This is especially true for the first task. The

pupils obviously lack experience in relation to the tasks like this. Interestingly, the level of complexity of the task is inverted in respect of, for example, segmenting words into phonemes or the tasks of comparing words by the initial sound (Milutinović and Vučković, 2017). Specifically, the requirement to insert a phoneme at the beginning of a word is more difficult than at the end of a word. The existence of the speech impediments affects the successfulness at this task, and the impact is even more pronounced through the start of the systematic literacy instruction, thus the pupils that are in the stage of learning block letters were more successful than those in the literacy preparation period. The situation is similar also with the insertion of the phonemes at the end of a word.

The differences between girls and boys are not pronounced. Their occurrence was reported only with three items, each time in favour of the girls, but no constant influence was found based on this variable.

The tasks of the phonemes blending into words are a direct overture to reading. It has been noticed that the vocal structure of words and syllables within words plays a role in the difficulty of the task. Thus, the word *saw* was successfully segmented by about two-thirds of the pupils in our sample. The pupils learning by C1 are more successful than their peers learning by C2.

The segmentation of words into phonemes was tested solely on the monosyllabic words. Although the examples are relatively simple for phonemic segmentation, we have recorded the pupils' responses indicating that not everyone has developed the skill of analysing words into sounds. The children with speech impediments were less successful in this task than their peers without such impediments. The pupils in the systematic literacy acquisition stage were more successful than their peers in the preparation period in only two examples, thus the variable of the curriculum in question did not

show continuous impact, hence rejecting the third supporting hypothesis.

Conclusions

The pupils in our sample were most successful in sentence and word segmentation tasks, implying that such tasks are subject to exercise, regardless of whether or not the systematic literacy instruction phase has begun. Such an orientation of teaching is expected, as reading and writing are analytical-synthetic processes. In each of the tasks, it appeared that there was a significant difference in the difficulty of the requirements, which depends on the internal structure of a sentence or a word, hence:

– Segmentation of a sentence is influenced by its length (number of words), as well as the existence of content and/or function words, as well as the word order.

– Segmentation of words into syllables is conditioned by the word structure in terms of a number and arrangement of syllables, and in particular the structure and vocal composition of a syllable.

– Splitting words into sounds is conditioned by the number of sounds in a word, but also by their arrangement.

All structures (sentence, word, and syllable) that are the subject of exercises with the pupils during their initial literacy acquisition must be selected and arranged according to the principle of 'from simpler to more complex'. Therefore, the importance is not solely that a word is known or a sentence clear to the children, but it is necessary to pay attention to the selection and schedule of introducing the exercising materials in terms of their phonological structure.

The results obtained through the task of inserting a phoneme at the beginning or at the end of a word, as well as the results achieved in the task of splitting words into syllables, indicate a tenden-

cy that a systematic literacy instruction improves the development of the deeper levels of phonemic awareness. However, the last task testifies to the fact that a high level of phonemic awareness can also be achieved at the preparation stage for learning to read and write, that is, before the start of the systematic literacy acquisition. In this context, we cannot accept the main hypothesis of the research as true, despite the existence of the tendency for the correctness of the assumption. The aim of the research was nevertheless achieved, because we described the phonological awareness of the pupils and identified a number of factors concerning linguistic structures (sentences, words, syllables) which affect phonological processing.

Research suggestions. Future research should include solely the phonemic awareness using multiple types of the phoneme manipulation tasks, namely in words with diverse syllabic structures. It would be important to test, as precisely as possible, the processes of segmenting a sentence with respect to its structure in terms of content and function words.

Recommendations for teaching practice. It is especially important to keep in mind the principle 'from simpler to more complex', from one exercise to the other. This principle, as shown by this research study, as well as some previous ones, has a relative nature. Namely, whereas longer words are more demanding to segment into phonemes, they are much simpler during sentence analysis, since they are most usually the content words. Or, for example, the initial position of a phoneme in a word is the simplest for the exercises of comparing words by the same phoneme, and it is very demanding, for example, for inserting a phoneme at the beginning. In addition, it is important to take into account the syllabic structure of words as well as the structure of syllables.

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ОДНОС ФОНОЛОШКЕ СВЈЕСНОСТИ И СИСТЕМАТСКОГ ОПИСМЕЊАВАЊА: ДА ЛИ ЈЕ УСЛОВЉЕНОСТ ЈЕДНОСМЈЕРНА У КОНЗИСТЕНТНИМ ПРАВОПИСИМА?

Резиме: Фонолошка свјесност је битан предуслов за учење читања и писања, а почетно описмењавање значајно доприноси њеном усавршавању. Развој вјештина фонолошког процесирања почиње у предшколском периоду, а у школи се систематски интензивира, нарочито примјеном аналитичко-синтетичких вјежби, које је методика развила у оквиру аналитичко-синтетичке методе и које се реализирају у периоду припреме, али и током фазе систематског описмењавања.

Циљ овог истраживања био је процијенити фонолошку свјесност ученика првог разреда (Н=143), те утврдити да ли почетак систематског описмењавања значајно унапређује ову вјештину. Истраживање има компаративни карактер и реализовано је током априла и маја школске 2017/18. године у Бањој Луци и у Никшићу. Циљ истраживања остварен је и кроз утврђивање низа чинилаца који се тичу језичких структура (реченица, ријеч, слог), а који утичу на фонолошку свјесност. Основно истраживачко питање било је: да ли учење читања и писања убрзава развој фонолошке свјесности или се развој фонолошког процесирања одвија релативно независно од почетка систематског описмењавања? Постављена је хипотеза да учење читања и писања значајно поспјешује развој фонолошке свјесности. Подузорци су из школских система чији курикулуми предвиђају различит почетак систематског описмењавања – у првом, односно у другом разреду. Употријебљен је протокол фонолошке свјесности као истраживачки инструмент.

Резултати истраживања указују да постоје индиције – али не и довољно поуздани докази – да почетак описмењавања убрзава развој вјештина фонолошког процесирања. Резултати које смо добили на задацима који траже дубоку фонемску свјесност (задатак растављања ријечи) упућују на закључак да аналитичке вјежбе доприносе развоју фонемске свјесности без обзира на почетак систематског описмењавања.

У наредним истраживањима која буду у вези са фонолошком свјеношћу ученика требало би испитивати искључиво фонемску свјесност, уз примјену више врста задатака манипулисања фонемама (нарочито у ријечима које су различите слоговне структуре), и прецизније испитивати процесе растављања (сегментирања) реченице с обзиром на њену структуру.

Кључне ријечи: аналитичке вјежбе, фонемска свјесност, период припреме, почетно читање и писање, структура реченице, ријечи и слога.