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**Mária Gósy, Valéria Krepsz**

*gosy.maria@nytud.mta.hu, krepsz.valeria@nytud.mta.hu*

Research Institute for Linguistics, Hungarian Academy of Sciences, Budapest  
Hungary

## Dichotic word recognition across ages

### Summary

Successful auditory word recognition depends upon acquiring lexical and phonological representations during language acquisition. The intake of information through the auditory system requires an online integration of differing and potentially competing information presented to the two ears. The goal of the present study was to collect developmental data on the auditory-phonetic processing of words in a dichotic listening task with the participation of 320 Hungarian-speaking children between the ages of 3 and 10. Dichotic listening techniques have been used as a sensitive non-invasive procedure to assess language lateralization. Data were scored for each participant as the percentage (and number) of correctly recalled words for the right and left ear input. Results showed a significant increase of the correctly repeated words across ages. As expected, more correctly recalled words were found heard in the children's right ear than in their left ear as an effect of right ear advantage. The dichotic listening method seems to be a good way to detect the auditory-phonetic abilities of typically developing children.

**Key words:** word recognition, dichotic test, Hungarian children, laterality

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## 1. INTRODUCTION

During language acquisition children have to recognize and remember the sound patterns of words despite their different acoustic manifestations (influenced by speakers, speech rate, contexts, etc.). It is usually assumed that the speaker's lexicon contains a representation of each word in an idealized form which is matched to heard speech (Swingley & Aslin, 2000). Children's representations of familiar words are reported to be phonetically well-specified already around the age of two (Walley, 1993). Successful word recognition seems to depend upon acquiring lexical and phonological representations and developing a matching process that links spoken words to these representations.

Children take part in various types of verbal communication from the beginning of their language acquisition. Typically, they hear words and utterances that pass on identical linguistic information to both of their ears. What happens, however, if the acoustic-phonetic patterns of the words coming to the two ears at the same time are different? Would children be able to differentiate and at the same time integrate the acoustic patterns of the different words? The intake of information through the auditory system requires online integration of differing and potentially competing information presented to the two ears (Litovsky, 2015).

The two hemispheres of the human brain are asymmetric both morphologically and functionally (Halpern, Güntürkün, Hopkins, & Rogers, 2005; Kandel, Schwartz, & Jessel, 2000; Riès, Dronkers, & Knight, 2016; Toga & Thompson, 2003). Hemispheric asymmetry is one of the fundamental principles of neuronal organization that develops during language acquisition (e.g. Hugdahl, 2003; Hugdahl & Westerhausen, 2010). Interaural asymmetry of the auditory system has been well documented, and various kinds of asymmetries have been observed at all levels of the auditory system (Jerger & Martin, 2004). Dichotic listening techniques have been used as a sensitive non-invasive procedure to assess language lateralization under clinical settings and among children with and without learning disabilities (e.g. Fernandes, Smith, Logan, Crawley, & McAndrews, 2006; Helland, Asbjørnsen, Hushovd, & Hugdahl, 2008; Hugdahl, 2011; Obrzut & Mahoney, 2011; Thomsen et al., 2004). Doreen Kimura was the first to describe the physiological background of the phenomenon (1961). Jerger and Martin provide a detailed description of the history of the dichotic method (2004). During a dichotic listening test the participant is to listen to different language stimuli at the same time in the two ears. Test materials

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range from syllables (of the shape CV) to words, numerals, nonsense sequences, and even sentences yielding different results (e.g. Andrade de, Gil, & Martinelli Iorio, 2015; Bethmann, Tempelmann, De Bleser, Scheich, & Brechmann, 2007; Kimura, 1961; Meyers, Roberts, Bayless, Volkert, & Evitts, 2002; Moncrieff, 2011; Musiek, 1983; Sætrevik, 2012; Willeford, 1977). Linguistic stimuli and the participant's task may vary depending on the nature and aim of the experiment. The application of this method has become widespread in the eighties of the last century (Hugdahl, 2011; Obrzut & Mahoney, 2011). Results of the dichotic listening tests are affected by the instructions used: the task may simply be free recall, but the experimenter may also direct the participant's attention to stimuli coming to one ear or the other. Furthermore, Moncrieff confirmed that the way data is calculated can also be a decisive factor of what the actual results would be (2011).

A large number of papers using various methods (such as PET, fMRI, MEG, electrophysiological measurements, etc.) confirmed the anatomical basis of right-ear-advantage (REA, see Bethmann et al., 2007; Brancucci et al., 2005; Hakvoort et al., 2016; Hugdahl, 2011; Hugdahl et al., 1999; McFadden, 1993; Penna et al., 2007). REA was shown for the great majority of healthy, typically developed participants, more or less irrespective of age (Dawes & Bishop, 2010; Ettinger-Veenstra et al., 2010; Lebel & Beaulieu, 2009; Mildner, Stanković, & Petković, 2005; etc.). Left-ear-advantage (LEA), on the other hand, shows that the individual's right hemisphere is dominant. If no advantage can be found for either ear (NEA: 'no-ear-advantage'), bilateral or mixed dominance can be assumed, or else it can signal left temporal dysfunction. Whenever left or right hemisphere dominance can be established on the basis of dichotic tests, this tallies with the results of Wada tests (Hugdahl, Carlsson, Uvebrant, & Lundervold, 1997). Dichotic tests are eminently suitable for detecting hemispheric dominance, and even for exploring higher cognitive functions (Hugdahl, 2011; Studdert-Kennedy & Shankweiler, 1970). In addition, it is also possible to check the development of the auditory-phonetic processing of words in children (Meyers et al., 2002) since the auditory system is reported to project bilaterally up to the level of the nuclei of the lateral lemniscus (Hugdahl, 1999).

There are two lines of models that intend to explain REA. One of them is a structural model that was originally proposed by Kimura (1967). According to her theory, REA is based on static asymmetries of the neural pathways that connect the auditory periphery and central auditory structures resulting in various interacting factors. What is important here is that she supposes a better representation of

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information in the opposite hemisphere; therefore, right ear linguistic input has a stronger connection to the left hemisphere (see also Hugdahl, 1998, 2003). Sparks and Geschwind (1968) showed also the importance of callosal transfer within this model. The other approach is commonly called the attention model which is based primarily on verbal behavior. Kinsbourne (1970) proposed that auditory asymmetries arise from an attentional or, more broadly, cognitive bias concerning the given cerebral hemisphere (see Hugdahl et al., 2000).

Inconsistent results are reported in the literature with respect to the age at which hemispheric dominance can first be detected. Some authors assume that, in the case of typically developing children, there is a critical period by the end of which dominance has to be formed; this is taken to be 6 or 7 years of age (e.g. Kimura, 1961). In the development of the connection between the two hemispheres, it has been confirmed that at age 6 a crucial period begins in which the physiological and functional development of the corpus callosum has to start (Westerhausen et al., 2011). In testing six- and eight-year-old children, the authors found that information flow between the two hemispheres (as shown by results of dichotic tests) and observed physiological differences exhibit close correlations; development can be shown to exist in just that age range. They confirmed that the correct recognition of syllables administered to the left ear is closely connected to the state of development of the corpus callosum. They also claimed that it is not a matter of chance that phonological awareness is also stabilized at this age, possibly in connection with current physiological and functional changes.

Moncrieff (2011) studied children between five and twelve years of age by dichotic tests where the stimuli were monosyllabic words and numerals. The results showed REA for nearly 60% of five- to seven-year-olds, over 75% of eight- to ten-year-olds, and roughly 70% of eleven- to twelve-year-old subjects. Almost 30% of the youngest participants, over 20% of the eight- to ten-year-olds, and slightly more than 25% of the oldest group exhibited LEA. Dichotic tests involving numerals were carried out with 200 children between 5 and 13 years (Rosenberg, 2011). Average correct responses showed an increase with age; in the two younger age groups it was items heard in the right ear that were repeated correctly in larger numbers, whereas with the oldest group no such difference was found. In studies involving schoolchildren, the dichotic test results in general confirmed left-hemisphere dominance, and no change was documented in lateralization after the age of 6 (Asbjørnsen & Helland, 2006; Bryden, 1970; Bryden & Allard, 1981; Moncrieff,

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2011; Obrzut & Mahoney, 2011). In Moncrieff and Musiek's study with eleven-year-olds (2002), correct recall of right ear words occurred in 88%, and that of left ear words in 82% of the cases (p. 432). Results of dichotic tests performed with nine-, thirteen- and seventeen-year-old participants showed that older subjects recognized linguistic stimuli better than younger ones (Piazza, Gordon, & Lehman, 1985). Carlsson and colleagues studied typically developing 9- and 14-year-old children and found that for 20% of them no hemispheric dominance could be confirmed (2011). Bless and colleagues processed data coming from 4408 participants representing 64 different first languages (2015). Their dichotic test was run as a mobile app (*iDichotic*), the test material consisted of 36 pairs of CV syllables, based on the pronunciations of (British) English, Norwegian, German, and Estonian native speakers (Bless et al., 2015). Participants' average age was 33 years; the youngest subjects were 8 years olds. The results confirmed REA for participants involved in all languages.

Studies were also conducted with Hungarian-speaking kindergarten and schoolchildren, both typically developing ones and those exhibiting difficulties in learning to read (e.g. Gósy, Huntley Bahr, Gyarmathy, & Beke, 2018; Reinhardt, 2003). Reinhardt (2003) studied 126 children; she tested the presence of hemispheric dominance in groups of 4-5-, 7-8-, and 9-10-year-olds. Her results showed that dominance was established in 65% of 4-5-year-old kindergarten children, 40% of 7-8-year-old schoolchildren, and 58% of 9-10-year-old pupils (in the youngest group the right hemisphere was dominant more often than with the older participants, while in the two other groups left-hemisphere dominance was typically found). In the group of 9-10-year-olds, the occurrence of right-hemisphere dominance was found in a mere 13% of the cases. In a recent study by Gósy and colleagues (2018), 8-10-year-old, typically developing children recalled 14-16 words of the possible 20, fewer from words presented in their left ears, and more of those they received in their right ears. In the case of children with reading difficulties, the ratio of observed hemispheric dominance was significantly lower, and fewer recalled words were produced than by members of the typical group. A number of studies confirmed that various problems like specific language impairment, delayed language development, difficulties in the acquisition of written language, dyslexia, learning difficulties, or autism, all correlate with a poorer performance on dichotic tests (Billett & Bellis, 2011; Dlouha, Novak, & Vokrál, 2007; Ettinger-Veenstra at al., 2010; Gósy et al., 2018; Moncrieff, 2010; Moncrieff & Musiek, 2002; Obrzut & Mahoney, 2011).

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Two basic questions arise concerning the processes underlying the recognition of dichotically presented words: 1. Does processing of two different words coming from the two ears at the same time show age-specific changes? and 2. What is the connection with laterality, again, across ages? The goal of the present study was (i) to collect developmental data on the auditory-phonetic processing of words in a dichotic listening task with the participation of Hungarian-speaking children between the ages of 3 and 10, (ii) to see if we can confirm the existence of development in the sense that the ratio of correctly recalled words increases with age, and (iii) to detect the distribution of ear advantage in the various age groups using different calculations. We hypothesized that children would show (i) gradual increase across ages in the number of dichotically presented words they recalled correctly, (ii) a more intensive increase in the number of correctly recalled words presented in their left ear than in their right ear, and (iii) more frequent REA than LEA and NEA in all ages.

## 2. METHODOLOGY

320 right-handed children aged between 3 and 10 years participated in the study. Children were divided into eight age groups; each group included 40 children (half of them were girls in each group). All of them had normal hearing in both ears (screened at 20 dB HL at octave frequencies from 0.25 to 8 kHz) at the time of testing, no known history of delayed onset of language acquisition, of speech or language difficulties (examined prior to enrollment into the study on language production and perception proficiency, as well as handedness using standardized test batteries), and were native monolingual speakers of Hungarian. The children in this study all had a similar socio-economic status and were recruited from various kindergartens and schools in a large city.

A dichotic listening task was used with 15 pairs of frequently occurring disyllabic Hungarian words (e.g. *almásapka* 'apple/cap', *csiga/béka* 'snail/frog'). Words were used in this study because (i) preliminary data had been successfully collected using words (e.g. Reinhardt, 2003), and (ii) single word presentation makes the test capable of being administered to young children (from the age of 3) (see Moncrieff, 2011). All items of the word list are common, young nursery level Hungarian words. The words were selected so that the list was balanced for phonemic content. Duration of both initial and final syllables were controlled in all word pairs. (Word frequency effects in word repetition tasks for preschoolers and

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elementary-school children were reported to be minimal, see Garlock, Walley, & Metsala, 2001.)

The first part of the test contained five pairs of disyllabic words (ten words); the second part consisted of five times two pairs of disyllabic words on each trial (twenty different words). This means that in the latter case the pause occurred after the two pair trials. The order of the words and the pairs in the word list was held constant throughout the experiments. The words were read by a male voice without any frequency modulation. Recording of the words was processed according to general demands of dichotic listening test materials. Word pairs were matched for time of onset and time of offset resulting in the total duration of each word in a pair being identical. Average root mean square (RMS) amplitude was equalized for each word so that all stimuli were presented at the same RMS amplitude across the entire test. In the first part of the test there was a silent pause of 500 ms between the pairs while there was a silent pause of 600 ms between two pairs in the second part of the test.

The words were presented through earphones to both ears of each child at a volume allowing comfortable listening (55 dB, on average). The participants were asked to repeat as many of the words they heard as they could after each trial, that is, one or two words in the first part of the test and 1 to 4 words in the second part of the test (non-forced or free-report condition, see Hugdahl, 2003). Since this was a free-report (free recall) condition experiment, the children could differentially and freely attend to the right and left ear input. The headphones were not reversed between subjects. Individual testing was performed by both of the authors. Participants' answers were recorded directly onto a computer.

Data were scored for each participant resulting in three index scores: (i) the left ear score index is the total number of correctly recalled words for the left ear input, (ii) the right ear score index is the total number of correctly recalled words for the right ear input, (iii) the both ears score index is the total number of correctly repeated words heard in both ears. Data were processed in four different ways: (i) analysis of the number and ratio of correctly recalled words, (ii) the calculation of simple subtraction (e.g. Moncrieff, 2011), (iii) the method of double word pairs (see Bever, 1971), and (iv) calculation of lateralization indices (cf. Studdert-Kennedy & Shankweiler, 1970).

(i) We determined for each child the number of correctly repeated words heard in the right and in the left ear, respectively, and we calculated the sum of correctly

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recalled words. On the basis of this, we determined the age-specific levels of performance. (ii) Next, we subtracted the number of correctly recalled words heard in the left ear from that of correctly recalled words administered to the right ear. (iii) In the method of double word pairs, we analysed the correct recall of 5x2 pairs of words, a total of 20 words, child by child, then in age groups (cf. Bever, 1971). In the first pairs of double word pairs, we noted the words first repeated by the children. The criterion of ear preference was that at least four (or five) words were correctly repeated from the first members of pairs of words heard in one ear. (iv) We determined lateralization indices (LI, cf. Fernandes & Smith, 2000; Hakvoort et al., 2016; Hugdahl, 2003; Studdert-Kennedy & Shankweiler, 1970; etc.). Lateralization indices are calculated from correctly recalled words (or other linguistic stimuli) in dichotic tests, with the following formula:  $(\text{right ear} - \text{left ear}) / (\text{right ear} + \text{left ear}) * 100$ . In this formula, 'right ear' stands for the number of words heard in the right ear and recalled correctly, and 'left ear' stands for the number of words heard in the left ear and repeated correctly. Negative LI shows right-hemisphere dominance, while positive LI shows dominance of the left hemisphere.

The data were subjected to statistical analyses (GLMM method) using SPSS 19 software. The random factor was 'speaker' in all statistical analyses. Significance was set at the 95% confidence level.

### 3. RESULTS

The data we collected from the dichotic tests will be presented in subsections corresponding to the four manners of calculation.

#### 3.1. Analysis of the number and ratio of correctly recalled words

Participants were able to repeat 20 words on average (67%) out of the total 30 words presented to them, all age groups considered together. The mean of correctly recalled left-ear administered words was 57% in the population tested, and that of right-ear administered words was 76%. Adding the data from both ears to one another, as well as taking the correct recognition of the words administered to each ear separately, the number of correctly recalled words increases from 3-year-olds' performance to that of 10-year-olds. The results are presented in absolute numbers and in ratios, too (Table 1).

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**Table 1.** The numbers and percentages of correctly recalled words in speakers' age groups (total number of words for the two ears together = 30) (N = number, y. = year, min. = minimum, max. = maximum)

**Tablica 1.** Broj točnih riječi i postotak dobiven prisjećanjem s obzirom na dobnu skupinu ispitanika (ukupan broj riječi za oba uha = 30) (N = broj, y. = godina, min. = minimum, max. = maksimum)

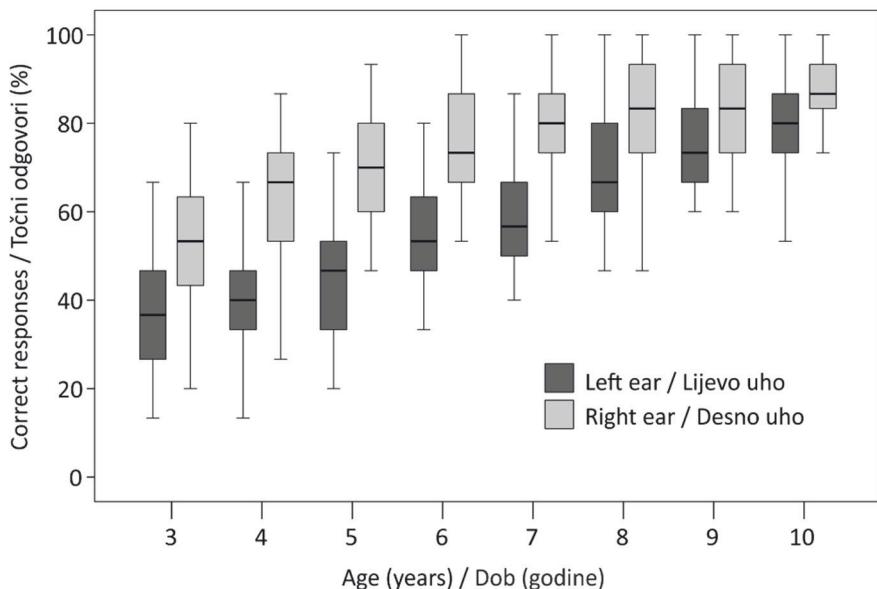
Age (y.) / Dob (god.)	Number of correctly recalled words / Broj točnih riječi dobiven prisjećanjem				
	Two ears added up / Oba uha			Left ear / Lijevo uho	Right ear / Desno uho
	Mean / Prosjek (N/%)	Min. (N/%)	Max. (N/%)	Mean / Prosjek (N/%)	Mean (N/%)
3	14/46	10/13	18/87	6/38	8/53
4	16/52	10/13	20/87	6/39	9/64
5	17/58	13/13	24/93	7/43	11/72
6	20/64	13/33	25/100	8/52	11/77
7	21/68	15/13	28/93	9/56	12/80
8	23/80	15/7	30/100	10/72	12/87
9	24/81	19/53	28/100	11/74	12/88
10	25/85	21/67	29/100	12/81	13/90

The total number of correct recalls in the individual age groups confirms the claim that the number of appropriately repeated words keeps growing with age. In the youngest group we tested, that of three-year-olds, our subjects accurately repeated less than half of the words they heard (7 words on average per ear). The improvement of performance can be said to be even until age 6, yearly 6% on average: four-year-olds were able to correctly repeat 52% of the words, five-year-olds 58%, and six-year-olds 64%. Between ages 6 and 7, that increase became somewhat more moderate, the older children's performance improved by merely 4%. After age 7, the increments between neighboring age groups showed larger differences. Between 7 and 8, the increase is 12%, whereas between 8 and 9, the increase practically stops. The difference between 9- and 10-year-olds was 4%.

Of the words presented in their left ears, children correctly repeated two and a half words fewer than of the words arriving in their right ears (9 words on average, 60%, 11.5 words on average, 76%; respectively). Right-ear-advantage was

confirmed for all age groups (at the group level). The largest difference between the two ears showed up with five-year-old children; they correctly recalled 4.5 words more on average from the right ear than from the left ear. The smallest difference occurred in the two oldest groups: here, the difference was a single word on average.

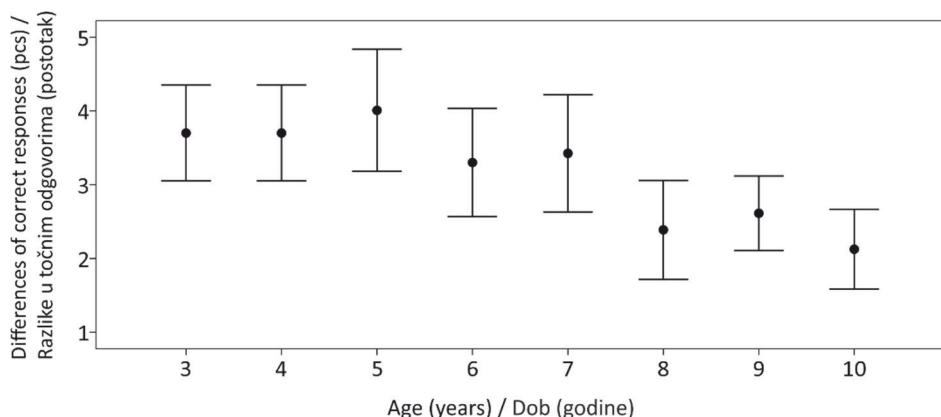
Generalized linear mixed model for the number of correctly repeated words with 'age' (3–10), 'ear' (left, right) and 'gender' as fixed factors was tested. Statistical results confirmed the development of performance on dichotic tests between ages 3 and 10 with significant differences across age groups in the number of correctly repeated words [ $F(7, 473) = 37.595; p < 0.001$ ] and between right and left ear performance [ $F(1, 478) = 107.248, p < 0.001$ ], as well as for the interaction between 'age' and 'ear' [ $F(7, 478) = 24.214; p = 0.001$ ]. There was no significant difference between boys and girls within groups as far as the number of correctly repeated words was concerned. Figure 1 shows the percentages of the correctly repeated words individually for each ear.



**Figure 1.** Correct responses of dichotically presented words across ages (median and standard deviations)

**Slika 1.** Točni odgovori u testu dihotičkog slušanja s obzirom na dob (medijan i SD)

78.5% of the children (251 subjects) repeated more of the words coming to their right ears, and 14% (45 subjects) were more successful with the words coming to their left ears; in the case of 7.5% (24 subjects), no ear advantage was found in the groups we tested. With increasing age, the following trend can be observed: until age 5, the difference between the two ears gradually grows, while between 5 and 10 it gradually decreases; i.e. in these older groups, the performances of the two ears converge (Figure 2). However, we have to be careful in interpreting this result, given that the present study is cross-sectional (that is, not longitudinal).



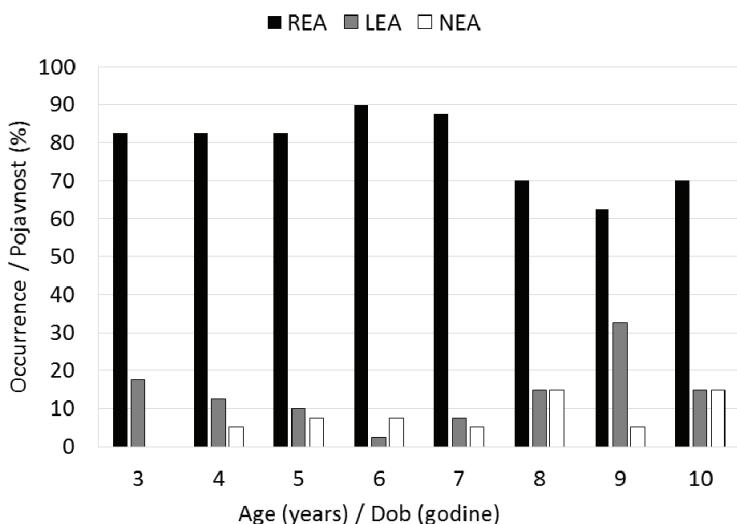
**Figure 2.** Differences of correct responses for words presented in right and left ear (means and standard deviations)

**Slika 2.** Razlike u točnim odgovorima ovisno o desnom i lijevom uhu (aritmetička sredina i SD)

### 3.2. Applying the method of simple subtraction

In this calculation, we subtract the number of correctly repeated words heard in the left ear from that of correctly repeated words heard in the right ear (cf. Moncrieff, 2011). Statistical analyses confirmed a significant difference in those subtraction results (as dependent factors) according to age (as independent factor) [ $F(1, 640) = 9.734; p < 0.001$ ]. Whenever correct repetition of right-ear words surpasses that of left-ear words, the result is a positive integer, when left-ear words fare better, the result is negative. Positive results suggest REA, while negative results suggest LEA (Figure 3). Observed dominance characterized 95.7% of the children. Most children (82% of the subjects) revealed REA; the ratio of participants with LEA was a mere 13.7%,

while 4.3% of the subjects did not exhibit any ear advantage. Looking at the data group by group, we can observe differences across ages. LEA was shown by 17.5% of three-year-olds, 12.5% of the four-year-olds, 10% of the five-year-olds, 2.5% of the six-year-olds, 7.5% of the seven-year-olds, 15% of the eight-year-olds, 32.5% of the nine-year-olds, and 15% of the ten-year-olds. The largest REA was found with six- and seven-year-olds. Three children in the five- and six-year-old groups (each), two children in the four-, seven- and eight-year-old groups (each), as well as one child in the nine-year-old group, and one in the ten-year-old group exhibited NEA. This situation did not occur at all in the youngest group of children.



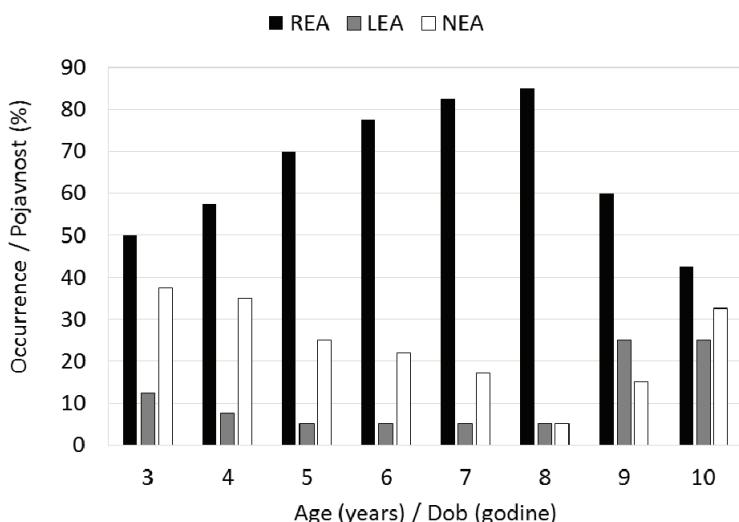
**Figure 3.** The occurrence of REA, LEA, and NEA in the age groups studied, based on the application of simple subtraction

**Slika 3.** Pojavnost REA, LEA i NEA u ispitivanim dobnim skupinama primjenom jednostavnog oduzimanja

### 3.3. Results based on double word pairs

With this method of counting (taking into consideration the 5 times 2 pairs, a total of 20 words), the results diverge from the above data based on simpler calculations. Here, the correctly recalled words ranged from 6 to 10 in the case of right ear input and 3 to 7 in the case of left ear input across ages. For the analysis of ear advantage, we took into account only the first recalled member of the two pairs of words. It was

with 56% of the participants that some ear advantage was observable. The ratio of observed ear advantage increased with age; the smallest ratio (15%) was found with four-year-olds; the largest (85%) with nine-year-olds. The largest increase of observed ear advantage (approx. 30%) was found between five and six years of age. LEA was characteristic of 17% of the children, and REA was observed with 71% (Figure 4). The largest number of right-ear-dominant children was found in the eight-year-old group, and the smallest number with ten-year-olds. Across ages, there were no significant differences in occurrence for children with REA, while with LEA children, there were [ $\chi^2 = 7.195; p = 0.019$ ]. No significant difference was found between boys and girls.



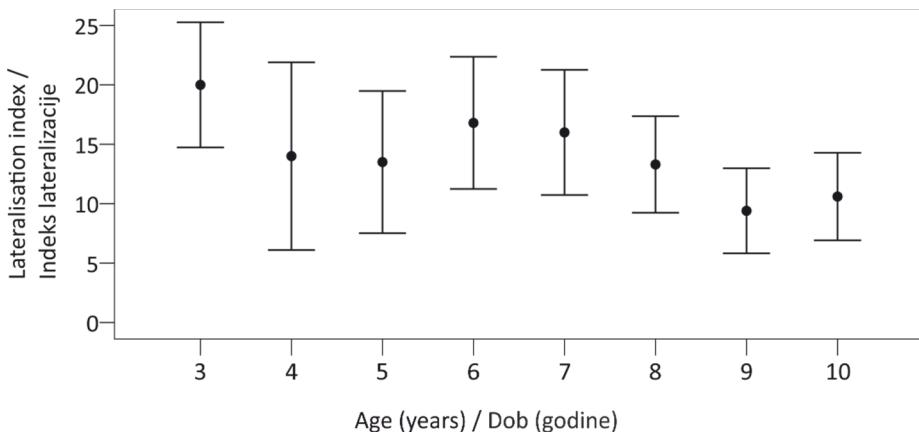
**Figure 4.** The occurrence of REA, LEA, and NEA in the age groups studied, based on double word pairs

**Slika 4.** Pojavnost REA, LEA i NEA u ispitivanim dobnim skupinama s obzirom na dvostrukje parove riječi

### 3.4. Calculating lateralization indices

We submitted our raw data to LI calculations (see Figures 5 and 6). Observed dominance characterized 92% of all children. As most of our participants exhibited REA, group-level LI's were obviously positive. Lateralization indices exhibit a significant difference between kindergarten pupils and schoolchildren. Until age 8,

lateralization indices are relatively high, while in the three oldest groups we received relatively small values. Statistical analyses revealed a significant difference in LI-values (as dependent factors) according to age (as independent factor) [ $F(2, 634) = 11.234$ ;  $p < 0.001$ ].

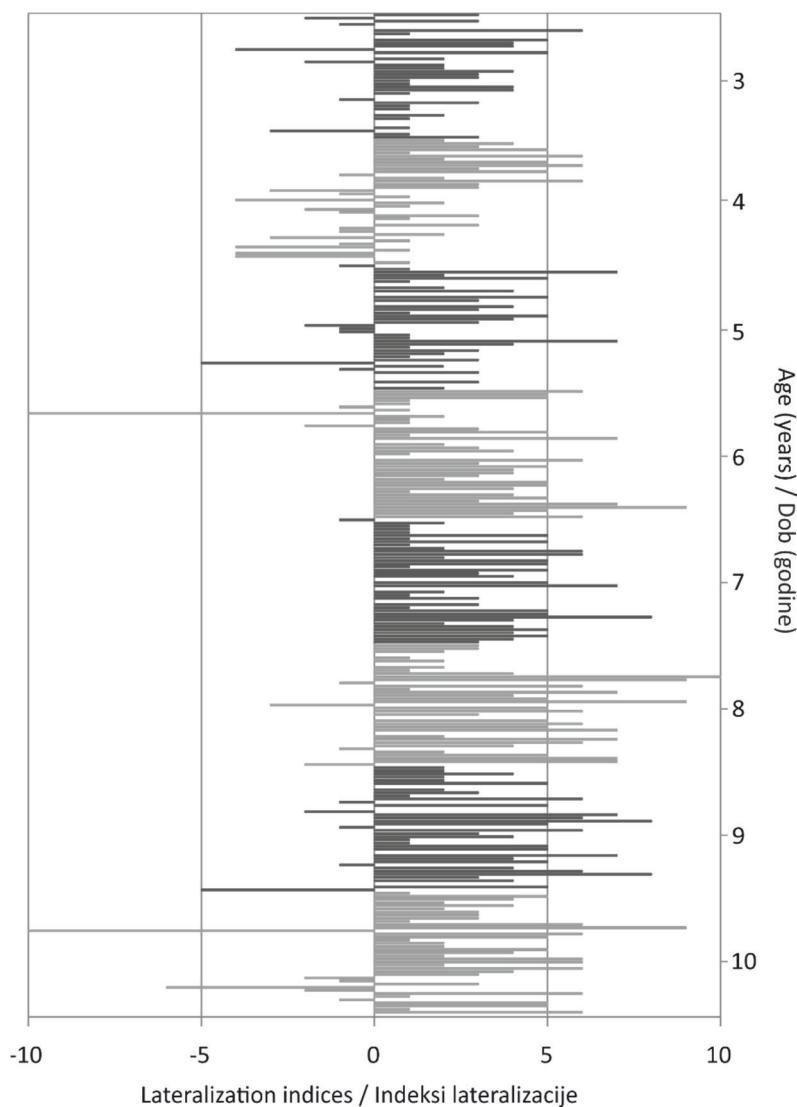


**Figure 5.** Data of the lateralization index by age group (means and standard deviations)

**Slika 5.** Indeks lateralizacije s obzirom na dob (aritmetička sredina i SD)

On the basis of LI, we once more found REA to be confirmed in most cases in each age group. The occurrence of LEA is far more modest, except for nine-year-olds, where this value showed a local maximum. LEA occurred the least frequently with six- and seven-year-olds; it was higher for both younger and older groups. Three-year-olds showed no NEA at all. The values of NEA exhibit a slightly increasing tendency with growing age (except for nine-year-olds). Statistical analyses showed that the occurrence of REA, LEA and NEA based on LI-values exhibit significant differences with growing age [ $\chi^2 = 11.015$ ;  $p = 0.03$ ].

We compared the data we gained from the three methods of calculating ear advantage. Ratios of occurrence of REA and LEA in the age groups studied here practically did not differ between results of simple subtraction and lateralization indices. With the double word pairs method, however, we found a difference: characteristic discrepancies were observable in the age groups of three to five years and at ages of 9 and 10. For six-, seven-, and eight-year-olds, however, occurrences were just slightly different.



**Figure 6.** Ear advantage in terms of lateralization indices between 3 and 10 years (the vertical axis illustrates the children, the horizontal axis shows the LI-values)

**Slika 6.** Prednost uha s obzirom na indeks lateralizacije u dobi od tri do deset godina (okomite linije predstavljaju ispitanike, vodoravne linije pokazuju vrijednosti indeksa lateralizacije)

#### 4. CONCLUSIONS

Previous studies suggested that cerebral asymmetries based on the functional division of labor across various areas of the brain, as well as which cerebral hemisphere is dominant from a linguistic point of view, can be determined from age three on (Best, 1984; Hiscock, 1988). However, the literature contains contradictory claims concerning when exactly ear advantage or hemispheric dominance becomes stabilized. In the present study, we examined 320 typically developing children between three and ten years of age with a dichotic test procedure. The data were processed via a number of calculation methods but the diverse methods yielded rather similar results.

Older children accurately identified more words than the younger ones did, confirming the development of the abilities necessary for word recognition under specific conditions like speech perception control, coordination and integration of the different speech signals. The straightforward explanation may be somewhat speculative, but the fact that a child participates in an increasing number of communicative situations of increasing diversity necessarily contributes to an increasingly better performance in processing incoming linguistic stimuli and this is reflected in the dichotic word recognition task, too. The development of attention with age and its effect on the results of dichotic tests has been offered as an explanatory factor in several studies (e.g. Moncrieff, 2011).

In the present paper, age was found to exert a statistically valid influence on the correct perception of dichotically presented words. Our first hypothesis was thus confirmed. The performance of three- and ten-year-olds differed by 43% (older subjects performed better). The degree of development is higher with younger children than with older ones, but it gradually takes place through all these age groups. The recognition of words administered in the right ear is significantly more accurate at the group level than that of words coming to the left ear. The number of correctly recalled words increases with age; the increase of the correct answers for words coming to the left ear is somewhat more pronounced than the increase of the correct repetition of those heard in the right ear. This suggests that the development of the integration and coordination of the two kinds of linguistic stimuli is larger in the case of words presented to the left ear. The data confirm our hypothesis, and correspond to findings reported in the literature (e.g. Hugdahl, 1999; Moncrieff, 2011).

Data taken from the literature are almost impossible to compare with data from other studies (including our own), due to methodological difficulties. With that

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problem in mind, we compared our data with those of a study in which the ages of the participants were almost identical to those of our subjects but where the dichotic test involved monosyllabic numerals (Rosenberg, 2011). The data, given in percentages, showed a high degree of similarity, both for right and for left ears. Correct repetitions produced by 6-, 8-, 9-, and 10-year-olds were almost identical in the two experiments, with respect to stimuli administered to either ear. Differences between results of the two experiments were found in the case of five-year-olds to a smaller extent, and in the case of seven-year-olds to a larger extent, especially with respect to stimuli presented in the left ear. These results might suggest that the perception of monosyllabic numerals and of disyllabic words may be similar in the given populations.

Participants in the present experiment mostly exhibited REA, but each age group contained subjects with LEA, and NEA also occurred, albeit to an insignificant extent. Our corresponding hypothesis was thus confirmed. Our results are highly reminiscent of the data for the given age range in the literature. We established that, irrespective of the method of calculation, no differences to speak of can be found in the ratios of ear preferences. The occurrence of REA typically diminishes from age eight onwards, and the occurrence of LEA slightly increases (as compared to that observed in younger age groups), as does the ratio of lack of observed preference. We suggest that this finding is in connection primarily with the developmental increases in attention, speech perception, working memory and/or language skills of children that affect ear advantage direction (Moncrieff, 2011).

We cannot explain why nine-year-olds exhibited LEA to an unexpectedly high extent (30% on the basis of data yielded by the simple subtraction method). On the basis of the double word pairs method, it is not only nine-year-olds but also ten-year-olds whose performance suggest diminishing REA and increasing LEA and NEA. This suggests the possibility of a structural reconfiguration of hemispheres and their interconnections as an influencing factor (e.g. Westerhausen et al., 2011).

In an investigation involving a dichotic test with CV-syllables administered to English-speaking young adults, LI-values turned out to be between 2.9 and 30.4 (Penna et al., 2007). In our own material, the LI-values are between 4.3 and 21.0, suggesting that children's results are more homogeneous, although the important difference between the linguistic stimuli used in the two studies (in addition to those of the age ranges) cannot be dismissed, either. The ear-advantage established on the basis of LI-values do not significantly differ from our results based on our previous

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calculations, confirming the fact that the number of correctly recalled words presented in the given ear is crucial across the board. The difference, nevertheless, between LI results and those gained from double word pairs, is that in the former the significant decrease in the occurrence of REA already begins at age 8.

In this study, we did not find any difference between boys' and girls' performances. Note, however, that in her (similar) dichotic experiment, Moncrieff (2011) found gender differences that even changed across age groups. In her data, 5-7-year-old girls outperformed their male peers. With 8-10-year-olds, she found no difference between boys and girls, either in REA or in LEA. In the 11-12-year-old group, however, she found boys to exhibit larger LEA and smaller REA than in the case of girls.

The present paper reported the results of a cross-sectional study. The dichotic listening method seems to be a good way to detect the auditory-phonetic abilities of typically developing children, and one that can be used from a very young age. If the participants' hearing is normal, ear advantage can be established on the basis of repetition of linguistic stimuli. The amount of words correctly recalled on hearing them in the right or left ear also gives us good indicators on the subject's level of attention and memory (cf. Sætrevik, 2012 on cognitive control over attention). Age-specific data of this study could be used for a better understanding of atypical language development under both educational and clinical circumstances.

## REFERENCES

- Andrade de, A. N., Gil, D., & Martinelli Iorio, M. C.** (2015). Benchmarks for the Dichotic Sentence Identification test in Brazilian Portuguese for ear and age. *Brazilian Journal of Otorhinolaryngology*, 81(5), 459–465.
- Asbjørnsen, A. E., & Helland, T.** (2006). Dichotic listening performance predicts language comprehension. *Laterality*, 11(3), 251–262.
- Best, C. T.** (1984). Discovering messages in the medium (Speech perception and the prelinguistic infant). In H. E. Fitzgerald, B. M. Lester, & M. W. Yogman (Eds.), *Theory and research in behavioral pediatrics* (pp. 97–145). New York–London: Plenum Press. <https://doi.org/10.1002/dev.420160610>
- Bethmann, A., Tempelmann, C., De Bleser, R., Scheich, H., & Brechmann, A.** (2007). Determining language laterality by fMRI and dichotic listening. *Brain Research*, 1133(1), 145–157.

- Bever, T. G.** (1971). The nature of cerebral dominance in speech behaviour of the child and adult. In T. Huxley, & E. Ingram (Eds.), *Language acquisition: Models and methods* (pp. 89–103). London: Academic Press. doi: 10.1525/aa.1974.76.1.02a00870
- Billet, C., & Bellis, T. J.** (2011). The relationship between brainstem temporal processing and performance on tests of central auditory function in children with reading disorders. *Journal of Speech, Language, and Hearing Research*, 54(1), 228–242.
- Bless, J. J., Westerhausen, R., von Koss Torkildsen, J., Gudmundsen, M., Kompus, K., & Hugdahl, K.** (2015). Laterality across languages: Results from a global dichotic listening study using a smartphone application. *Laterality*, 20(4), 434–452.
- Brancucci, A., Babiloni, C., Vecchio, F., Galderisi, S., Mucci, A., Tecchio, F., ... Rossini, P. M.** (2005). Decrease of functional coupling between left and right auditory cortices during dichotic listening: An electroencephalography study. *Neuroscience*, 136(1), 323–332.
- Bryden, Ph. M.** (1970). Laterality effects in dichotic listening: Relations with handedness and reading ability in children. *Neuropsychologia*, 8(4), 443–450.
- Bryden, Ph. M., & Allard, F. A.** (1981). Do auditory perceptual asymmetries develop? *Cortex*, 17(2), 313–318.
- Carlsson, G., Wiegand, G., & Stephani, U.** (2011). Interictal and postictal performances on dichotic listening test in children with focal epilepsy. *Brain and Cognition*, 76(2), 310–315.
- Dawes, P., & Bishop, D. V. M.** (2010). Psychometric profile of children with auditory processing disorder and children with dyslexia. *Archives of Disease in Childhood*, 95(6), 432–436.
- Dlouha, O., Novak, A., & Vokřál, J.** (2007). Central auditory processing disorders (capd) in children with specific language impairment (SLI) – Central auditory tests. *International Journal of Pediatric Otorhinolaryngology*, 71(6), 903–907.
- Ettinger-Veenstra, H. M. van, Ragnehed, M., Hällgren, M., Karlsson, T., Landtblom, A., Lundberg, P., & Engström, M.** (2010). Right-hemispheric brain activation correlates to language performance. *Neuroimage*, 49(4), 3481–3488.

- Fernandes, M. A., & Smith, M-L.** (2000). Comparing the fused dichotic words test and the intracarotid amobarbital procedure in children with epilepsy. *Neuropsychologia, 38*(9), 1216–1228.
- Fernandes, M. A., Smith, M-L., Logan, W., Crawley, A., & McAndrews, M. P.** (2006). Comparing language lateralization determined by dichotic listening and fMRI activation in frontal and temporal lobes in children with epilepsy. *Brain and Language, 96*(1), 106–114.
- Garlock, V. M., Walley, A. C., & Metsala, J. L.** (2001). Age-of-acquisition, word frequency, and neighborhood density effects on spoken word recognition by children and adults. *Journal of Memory and Language, 45*(3), 468–492.
- Gósy, M., Huntley Bahr, R., Gyarmathy, D., & Beke, A.** (2018). Dichotic listening and sentence repetition performance in children with reading difficulties. *Clinical Linguistics and Phonetics, 32*(9), 115–133.
- Hakvoort, B., van der Leij, A., van Setten, E., Maurits, N., Maassen, B., & van Zuijen, T.** (2016). Dichotic listening as an index of lateralization of speech perception in familial risk children with and without dyslexia. *Brain and Cognition, 109*, 75–83.
- Halpern, M. E., Güntürkün, O., Hopkins, W. D., & Rogers, L. J.** (2005). Lateralization of the vertebrate brain: Taking the side of model systems. *The Journal of Neuroscience, 25*(45), 10351–10357.
- Helland, T., Asbjørnsen, A. E., Hushovd, A. E., & Hugdahl, K.** (2008). Dichotic listening and school performance in dyslexia. *Dyslexia, 14*(1), 42–53.
- Hiscock, M.** (1988). Behavioral asymmetries in normal children. In D. L. Molfese, & S. J. Segalowitz (Eds.), *Brain lateralization in children: Developmental implications* (pp. 85–169). New York: Guilford Press.
- Hugdahl, K.** (1998). Dichotic listening: Probing temporal lobe functional integrity. In R. J. Davidson, & K. Hugdahl (Eds.), *Brain asymmetry* (pp. 123–156). Cambridge, MA: MIT Press. doi: 10.1017/S1355617700001569
- Hugdahl, K.** (1999). Brain lateralization: Dichotic listening studies. In G. Adelman, & B. H. Smith (Eds.), *Elsevier's encyclopedia of neuroscience* (pp. 276–279). Amsterdam: Elsevier.
- Hugdahl, K.** (2003). Dichotic listening in the study of auditory laterality. In K. Hugdahl, & R. J. Davidson (Eds.), *The asymmetrical brain* (pp. 441–475). Cambridge, MA, US: MIT Press. doi: 10.1016/j.jchemneu.2007.03.002

- Hugdahl, K.** (2011). Fifty years of dichotic listening research – Still going and going and... *Brain and Cognition*, 76(2), 211–213.
- Hugdahl, K., Brønnick, K., Kyllingsbæk, S., Law, I., Gade, A., & Paulson, O. B.** (1999). Brain activation during dichotic presentation of consonant-vowel and musical instruments stimuli: A <sup>15</sup>O-PET study. *Neuropsychologia*, 37(4), 431–440.
- Hugdahl, K., Carlsson, G., Uvebrant, P., & Lundervold, A. J.** (1997). Dichotic-listening performance and intracarotid injections of amobarbital in children and adolescents. Preoperative and postoperative comparisons. *Archives of Neurology*, 54(12), 1494–1500.
- Hugdahl, K., Law, I., Kyllingsbaek, S., Bronnick, K., Gade, A., & Paulson, O. B.** (2000). Effects of attention on dichotic listening: A <sup>15</sup>O-PET study. *Human Brain Mapping*, 10(2), 87–97.
- Hugdahl, K., & Westerhausen, R.** (2010). *The two halves of the brain*. Cambridge, MA: MIT Press.
- Jerger, J., & Martin, J.** (2004). Hemispheric asymmetry of the right ear advantage in dichotic listening. *Hearing Research*, 198(1–2), 125–136.
- Kandel, E. R., Schwartz, J. H., & Jessel, T. M.** (2000). *Principles of neural science*. New York: McGraw–Hill.
- Kimura, D.** (1961). Cerebral dominance and the perception of verbal stimuli. *Canadian Journal of Psychology*, 15(3), 166–171.
- Kimura, D.** (1967). Functional asymmetry of the brain in dichotic listening. *Cortex*, 3(2), 163–178.
- Kinsbourne, M.** (1970). The cerebral basis of lateral asymmetries in attention. *Acta Psychologica* (Amst), 33, 193–201.
- Lebel, C., & Beaulieu, C.** (2009). Lateralization of the arcuate fasciculus from childhood to adulthood and its relation to cognitive abilities in children. *Human Brain Mapping*, 30(11), 3563–3573.
- Litovsky, R.** (2015). Development of the auditory system. *Handbook of Clinical Neurology*, 129, 55–72.
- McFadden, D.** (1993). A speculation about the parallel ear asymmetries and sex differences in hearing sensitivity and otoacoustic emissions. *Hearing Research*, 68(2), 143–151.

- Meyers, J. E., Roberts, R. J., Bayless, J. D., Volkert, K., & Evitts, P. E.** (2002). Dichotic listening: Expanded norms and clinical application. *Archives of Clinical Neuropsychology, 17*(1), 79–90.
- Mildner, V., Stanković, D., & Petković, M.** (2005). The relationship between active hand and ear advantage in the native and foreign language. *Brain and Cognition, 57*(2), 158–161.
- Moncrieff, D. W.** (2010). Hemispheric asymmetry in pediatric development disorders: autism, attention deficit/hyperactivity disorder, and dyslexia. In K. Hugdahl, & R. Westerhausen (Eds.), *The two halves of the brain* (pp. 561–601). Cambridge, MA: The MIT Press. <http://dx.doi.org/10.7551/mitpress/9780262014137.001.0001>
- Moncrieff, D. W.** (2011). Dichotic listening in children: Age-related changes in direction and magnitude of ear advantage. *Brain and Cognition, 76*(2), 316–322.
- Moncrieff, D. W., & Musiek, F. E.** (2002). Interaural asymmetries revealed by dichotic listening tests in normal and dyslexic children. *Journal of American Academy Audiology, 13*(8), 428–437.
- Musiek, F. E.** (1983). Assessment of central auditory dysfunction: The dichotic digit test revisited. *Ear and Hearing, 4*(2), 79–83.
- Obrzut, J. E., & Mahoney, E. B.** (2011). Use of the dichotic listening technique with learning disabilities. *Brain and Cognition, 76*(2), 323–331.
- Penna, S. D., Brancucci, A., Babiloni, C., Franciotti, R., Pizzella, V., Rossi, D., Torquati, K., Rossini, P. M., & Romani, G. L.** (2007). Lateralization of dichotic speech stimuli is based on specific auditory pathway interactions: Neuromagnetic evidence. *Cerebral Cortex, 17*(10), 2303–2311.
- Piazza, M., Gordon, D. P., & Lehman, R.** (1985). Reading ability and the development of lateralization of speech. *Language Sciences, 7*(1), 73–84.
- Reinhardt, M.** (2003). Változik-e az agyfélteke-dominancia kimutathatósága 5 és 10 éves kor között? [Does brain laterality change between the ages of 5 and 10?]. *Alkalmazott Nyelvtudomány, 3*(2), 91–105.
- Riès, S. K., Dronkers, N. F., & Knight, R. T.** (2016). Choosing words: Left hemisphere, right hemisphere, or both? Perspective on the lateralization of word retrieval. *Annals of the New York Academy of Sciences, 1369*(1), 111–131.
- Rosenberg, G. G.** (2011). Development of local child norms for the Dichotic Digits Test. *Journal of Educational Audiology, 17*, 57–63.

- Sætrevik, B.** (2012). The right ear advantage revisited: Speech lateralisation in dichotic listening using consonant-vowel and vowel-consonant syllables. *Laterality, 17*(1), 119–127.
- Sparks, R., & Geschwind, N.** (1968). Dichotic listening in man after section of neocortical commissures. *Cortex, 4*(1), 3–16.
- Studdert-Kennedy, M., & Shankweiler, D.** (1970). Hemispheric specialization for speech perception. *Journal of the Acoustical Society of America, 48*(2), 579–594.
- Swingley, D., & Aslin, R. N.** (2000). Spoken word recognition and lexical representation in very young children. *Cognition, 76*(2), 147–166.
- Thomsen, T., Specht, K., Hammar, Å., Nytingnes, J., Ersland, L., & Hugdahl, K.** (2004). Brain localization of attentional control in different age groups by combining functional and structural MRI. *NeuroImage, 22*(2), 912–919.
- Toga, A. W., & Thompson, P. M.** (2003). Mapping brain asymmetry. *Nature Reviews Neuroscience, 4*(1), 37–48.
- Walley, A. C.** (1993). The role of vocabulary development in children's spoken word recognition and segmentation ability. *Developmental Review, 13*(3), 286–350.
- Westerhausen, R., Luders, E., Specht, K., Ofte, S. H., Toga, A. W., Thompson, P. M., ... Hugdahl, K.** (2011). Structural and functional reorganization of the corpus callosum between the age of 6 and 8 years. *Cerebral Cortex, 21*(5), 1012–1017.
- Westerhausen, R., Moosmann, M., Alho, K., Medvedev, S., Hämäläinen, H., & Hugdahl, K.** (2009). Top-down and bottom-up interaction: Manipulating the dichotic listening ear advantage. *Brain Research, 1250*, 183–189.
- Willeford, J. A.** (1977). Assessing central auditory behavior in children: A test battery approach. In R. Keith (Ed.), *Central auditory dysfunction* (pp. 43–72). New York: Grune and Stratton. <https://doi.org/10.1177/152574018500900102>

**Mária Gósy, Valéria Krepsz**

*gosy.maria@nytud.mta.hu, krepsz.valeria@nytud.mta.hu*

Institut za lingvistiku, Mađarska akademija znanosti, Budimpešta  
Mađarska

## **Prepoznavanje riječi dihotičkim slušanjem u različitoj dobi**

### **Sažetak**

Slušno prepoznavanje riječi ovisi o usvajanju leksičkih i fonoloških reprezentacija u procesu usvajanja jezika. Ulagne informacije koje se primaju slušanjem različite su za svako uho. One su, stoga, i konkurentske pa se tijekom integracije podražaja međusobno natječe u obradi. Cilj je ovog istraživanja da se prikupe razvojni podaci slušnog (fonetskog) procesiranja riječi primjenom zadatka dihotičkog slušanja. U istraživanju je sudjelovalo 320 ispitanika, govornika mađarskog jezika u dobi od tri do deset godina. Dihotičko se slušanje koristi kao osjetljiva, neinvazivna istraživačka metoda za procjenu lateralizacije jezika. Podaci su obrađeni tako da je za svakog ispitanika, s obzirom na ulagne informacije u svako pojedino uho, izračunat postotak (i broj) točnih riječi po prisjećanju. Rezultati pokazuju značajan porast broja ponovljenih riječi s obzirom na dob. Očekivano, točnije prisjećanje riječi pokazalo se za one podražaje koje su djeca čula u desnem uhu, čime se potvrđuje prednost desnog uha (engl. *right ear advantage* – REA). Dihotičko slušanje je kvalitetna istraživačka metoda za procjenu slušnih, tj. fonetskih sposobnosti djece urednoga govorno-jezičnog razvoja.

**Ključne riječi:** prepoznavanje riječi, dihotičko slušanje, djeca, mađarski, lateralizacija

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### **Ana Matić**

*ana.matic@erf.hr*

Faculty of Education and Rehabilitation Sciences, University of Zagreb  
Croatia

### **Marion Coumel**

*m.coumel@warwick.ac.uk*

University of Warwick, Coventry, UK

### **Marijan Palmović**

*marijan.palmovic@erf.hr*

Faculty of Education and Rehabilitation Sciences, University of Zagreb  
Croatia

## **Lexical processing of children with dyslexia: An eye-tracking adaptation of the Reicher- Wheeler task**

### **Summary**

The aim of the study is to determine the relative influence of phonological and lexical knowledge on lexical processing of children with dyslexia. It is part of research of the role of phonotactics in lexical knowledge and dyslexia. The Reicher-Wheeler paradigm (Reicher, 1969; Wheeler, 1970) was adapted, and phonotactic probabilities in words (W), pseudowords (PW) and non-words (NW) were manipulated in a lexical superiority task. Both offline measures and online eye movements were recorded and analysed. The findings are discussed within the Dual-Route Model framework. The results suggest that: 1) predictably, unimpaired readers outperform children with dyslexia; 2) both groups appear not to predominately rely on lexical knowledge, whereas phonological knowledge seems to help processing only for controls; 3) phonotactic probability manipulations seem not to affect overall performance. The preliminary findings imply that dyslexia affects reading in all orthographic contexts and add further support to the findings that PW processing is particularly impeded in dyslexia (e.g.

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Rack, Snowling, & Olson, 1992), despite the transparent orthography of the Croatian language. The study additionally highlights the importance of obtaining online measures in psycholinguistic studies with atypical population.

**Key words:** dyslexia, lexical processing, Reicher-Wheeler task, Dual-Route Model, eye movements

## 1. INTRODUCTION

Dyslexia is a learning difficulty with multiple facets, each of which depends on the properties of languages and their respective orthographic systems and on the inner strategies a person develops over time in order to cope with everyday situations. This combination of general, linguistic and individual factors makes it an impairment difficult to study and understand, resulting in a profusion of definitions and subcategories of dyslexia. It might arise from brain-related and genetic factors and a whole range of symptoms can be associated with it including, among others: impairments in processing speed, automatisation deficits, working memory difficulties, phonological deficits, comorbidities with other learning difficulties (Reid, 2016).

Studies on dyslexia have contributed to shaping theoretical models aiming at accounting for reading processes not only in impaired readers, but in typically developing population as well (e.g. Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001; McClelland & Rumelhart, 1981). The present work will mainly focus on the applications of the Dual-Route Model of reading (Coltheart et al., 2001) in understanding the pattern of impairments underlying word reading in children with dyslexia. It will focus on the comparison of impaired and typical readers, as well as on identifying the patterns of processing differences in terms of the type of information the two groups mainly rely on during lexical processing.

### 1.1. Lexical processing in unimpaired and impaired readers

Research on word processing has established the existence of word superiority effects in unimpaired readers. In other words, in this population, letters are easier to identify when presented in words (W) (Adams, 1979; Cattell, 1886; Ferraro & Chastain, 1997; Grainger & Jacobs, 1994) than in pseudowords (PW) and non-words (NW). The most widely used methodological approach to investigate this phenomenon remains the so-called *Reicher-Wheeler (R-W) paradigm* (Reicher, 1969; Wheeler, 1970). It assumes a forced choice task in which participants are asked to identify which of the two letters was present at a specific position in the previously presented stimulus. Subsequent studies proved that a pseudoword superiority effect could emerge in typically developing readers. In that case, participants are able to more easily identify letters presented in a pseudoword respecting the orthotactic constraints of the tested language than in non-words. Crucially, these effects are more limited than those

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of the word superiority effect (see Carr, Davidson, & Hawkins, 1978; Coch & Mitra, 2010; Jacobs & Grainger, 2005; McClelland & Johnston, 1977).

Studies including impaired readers have led to more controversial findings. Chase and Tallal (1990), for instance, found neither word nor pseudoword superiority effects in children with dyslexia. However, more recently, word superiority effects were observed in their reading behaviour. Grainger, Bouttevin, Truc, Bastien, and Ziegler (2003) tested children diagnosed as dyslexic that were identical to control children in terms of both reading and chronological age, as well as to a group of adult participants using the Reicher-Wheeler paradigm. Their results showed that all participants displayed the classic word superiority effect over non-words. Ziegler et al. (2008), working with the same paradigm, observed the same effect in response times, but not in accuracy.

As for pseudowords, much of the literature tends to prove that readers with dyslexia exhibit substantial difficulties processing them. For instance, Rack et al. (1992), in a review of studies using a reading level match design in investigating the pseudoword reading deficit in the dyslexic population, concluded that they suffer from significant impediments in reading pseudowords. Nevertheless, Grainger et al. (2003) observed a pseudoword superiority effect in impaired readers which paralleled that of unimpaired readers, even though the former, as expected, displayed difficulties pronouncing them.

Interestingly, Grainger et al. (2003) and Reilhac, Jucla, Iannuzzi, Valdois, and Démonet (2012) found that words and pseudowords led to the advantage of the same magnitude over non-words in the two groups of children, i.e. there was no word superiority effect as compared to pseudowords. In the group of adults (Grainger et al., 2003), on the contrary, both word and pseudoword superiority effects were found. The authors attributed this finding to the fact that children did not master a fully developed semantic lexicon at the time of testing. Thus, the advantage displayed on words and pseudowords over non-words was probably rooted in the phonological knowledge the children had of the orthotactic constraints of the tested language, i.e. words and pseudowords contained letter combinations of higher frequency than non-words.

## **1.2. Eye movement patterns and dyslexia**

Online measurements might constitute a fertile tool in identifying less fluent and less automatic reading patterns impaired readers most likely suffer from. One could then

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expect other patterns of between-group differences to surface in online measurements such as eye-tracking.

Eye movement research on dyslexia has indeed proven useful in reflecting participants' processing problems in reading. Since 1970s, it has been repeatedly found that their fixations and regressions are longer and more frequent, while their saccades are shorter than in typically developing readers (e.g. Biscaldi, Fischer, & Aiple, 1994; but for a review see Rayner, 1998). These patterns are also observed in developing readers. However, with increasing age and with the automatisation of reading, their fixation durations decrease and their saccade length increases. On the contrary, readers with dyslexia continue to struggle (e.g. Lefton, Nagle, Johnson, & Fisher, 1979). Significant differences in eye movements between typical and atypical readers have also been detected in other languages (e.g. Italian – DeLuca, Borrelli, Judica, Spinelli, & Zoccolotti, 2002; German – Hutzler & Wimmer, 2004), where eye movement patterns seem somewhat different than those reported for English. It is also rather important to mention that differences are observed in relation to the type of stimuli (words vs. pseudowords; e.g. DeLuca et al., 2002), which clearly reflects differences in lexical processing. Essentially, it has been proven multiple times that eye movements are a mere reflection of the underlying processing problems of dyslexia, and not the cause of disturbances.

The properties of the investigated language and its orthography influence the processing deficits which can be detectable in eye movements. The transparent orthography and fine granularity of the Croatian language (phoneme-grapheme ratio is nearly 1:1) should suffice to read any phonotactically legitimate string of letters. In the case of words, no knowledge of a word is necessary in order to read it. In addition, the R-W task itself does not require any overt word knowledge; therefore, an opportunity was open to manipulate the phonological (phonotactic) information in the Reicher-Wheeler paradigm in order to obtain a clearer picture of the phonological nature of dyslexia as a learning difficulty.

### **1.3. Theoretical background and previous findings**

Several interpretations of the *word* and *pseudoword superiority effects* have been proposed. One of them, for instance, hypothesises that the pseudoword superiority effect arises from participants' misperception of pseudowords as words (Jacobs & Grainger, 2005). This could be a consequence of top-down influences, such as the ones described by McClelland and Rumelhart (1981) in the Interactive Activation

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Model. Within this framework, lexical item activation at a high processing level alternatively favours or inhibits the low-level activation of individual letters. Thus, misperception of an entire pseudoword can trigger the activation of a close word and thereby strengthen the letters composing this inadequate lexical item. Based on this model, the absence of a word superiority effect in Chase and Tallal's study (1990) was explained by the fact that children with dyslexia probably had not developed top-down processes at the time of testing.

Another approach to dyslexia relies on the postulates of the Dual-Route Model of reading (Coltheart et al., 2001) in order to account for some of the dyslexic symptoms, such as difficulties processing regular or irregular words. According to this model, reading of an item proceeds along one of two alternative processing routes: the lexical route or the non-lexical route (Hawelka, Gagl, & Wimmer, 2010). The first one holds responsibility for the processing of irregular or, in languages with transparent orthography such as Croatian, familiar words. These items can then be processed either by the direct route from the orthographic input lexicon to the phonological output lexicon or by passing through the semantic lexicon. The second route is in charge of regular or unfamiliar words processing which rests on a grapheme-to-phoneme conversion. The two routes converge onto the phonological output buffer.

The Dual-Route Model has led to several accounts of dyslexic symptoms. On one hand, subjects with impairments in the lexical route – i.e. surface dyslexia – are not able to accurately read irregular or familiar words (Coltheart, Masterson, Byng, Prior, & Riddoch, 1983). On the other hand, phonological dyslexia, which ensues from deficiencies in the non-lexical route, leads to defective reading of pseudowords and non-words (Sartori, Barry, & Job, 1984; Temple & Marshall, 1983). An important prediction in a language with transparent orthography is that, among a population of impaired readers, processing of familiar items such as words should not have to endure consequences from impairments in the lexical route: words can in that case be straightforwardly decoded via the grapheme-to-phoneme conversion pathway. Reading of pseudowords, by contrast, should be defective if dyslexia arising from impairments in the non-lexical route because accurate deciphering of these items requires reliable knowledge of grapheme-to-phoneme correspondence rules. Finally, pseudowords should be processed more easily than non-words, i.e. there should be a pseudoword superiority effect (McClelland & Johnston, 1977), if orthotactic constraints, and thus phonological knowledge, play a role in atypical readers.

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In this framework, the data obtained by Grainger and colleagues (2003) can be interpreted as follows. The absence of word superiority effect in both groups of children (vs. adults) suggests that none of these participants could rely on top-down processes typically arising in the lexical route. The authors explain this with the limited extent of children's lexical semantic knowledge as compared to adults, thereby refuting the possibility of a damaged lexical route. The existence of a pseudoword superiority effect, however, combined with the fact that the magnitudes of the word and pseudoword superiority effects over non-words were the same, shows the sensitivity of both groups of children to orthotactic constraints of the language in use. This supports the idea that the non-lexical route could be successfully exploited. In sum, this pattern of results does not allow to draw any firm conclusion about the impairment of one or the other route of lexical processing. Yet, the differences in lexical processing between individuals with dyslexia and unimpaired readers might be subtler, so that delayed behavioural measurements may not be sensitive enough to enable researchers to detect individual differences. These potential methodological drawbacks and inconsistencies shaped our decisions to design a similar study with the addition of eye movement recordings.

Additionally, a considerable amount of psycholinguistic studies tries to identify which linguistic variables affect cognitive processes such as lexical decisions and how they exert their influence. Phonotactic probability is one of them. Nevertheless, findings regarding its effect on reading performance have been inconclusive. The results of the study by Chetail, Balota, Treiman, and Content (2015) generally corroborate the hypothesis that the configuration of consonant and vowel letters influence polysyllabic words processing in English; on the other hand, Schmalz and Mulatti (2017) did not find any effect of phonotactic probability on lexical decisions. We therefore decided to address this question in the present study. We also manipulated the phonotactic probability information during stimuli construction.

## **2. THE PRESENT STUDY**

### **2.1. Aims and objectives**

The aims of this study are to test whether typical and impaired readers differ in lexical processing and to inspect the relative influence of phonological and lexical knowledge on lexical processing of these children in Croatian in terms of accuracy, reaction time and eye movement measures. Therefore, the objective is to examine whether participants

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would rely more on phonological, and thus abide to the orthotactic constraints of their mother tongue, or on lexical path or knowledge, in order to solve the experimental task.

This study represents also the first step towards a more comprehensive research into the role of phonotactics in language processing, typical and impaired. General human sensitivity to the statistical properties of the input strings of sounds can explain the properties of early child's vocabulary in terms of neighbourhood density and phonotactic probabilities within a single mechanism of statistical learning (see e.g. Takač, Knott, & Stokes, 2016). In this sense, phonotactic information becomes an important topic for studying dyslexia, an impairment defined as a *learning* difficulty. If phonotactic information could explain the differences between typical and impaired readers, independently of the connectionist approach in the study by Takač and colleagues (2016), in subsequent steps a claim about the single impaired mechanism in dyslexia, i.e. statistical learning mechanism, could be made. This would, in turn, provide an explanation of the background impairment in dyslexia independently of the orthographic system of a particular language. However, since dyslexia is defined as a learning difficulty, and since the connectionist approach assumes the single mechanism of statistical learning for all processes in language development, the present study has not been conducted within the connectionist model to avoid circularity.<sup>1</sup> This study thus relies on the principles of the Dual-Route Model.

It is, thus, important to dissociate participants with dyslexia on the lexical superiority task (Reicher, 1969; Wheeler, 1970) in order to establish whether the task is suitable for such a dissociation at all and, if possible, to see what explains the difference between participants with dyslexia and unimpaired readers in the Croatian language, i.e. in an orthographic system that allows for clear predictions based on lexical semantic knowledge and phonological information for both groups within the Dual-Route Model, as shown in the Introduction.

We also adapted the methodology for two main reasons: 1) it has been found that monitoring fixation location is extremely important in experiments testing atypical populations (Patching & Jordan, 1998), and 2) naming times and lexical decision times seem to be less valid estimates of word processing than eye movements (Kuperman, Drieghe, Keuleers, & Brysbaert, 2013). These observations constituted a rationale for building up an experiment using eye-tracking methodology and for including and analysing online eye movement measures on top of pure accuracy and reaction time.

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<sup>1</sup> N.b. The claim about only one learning mechanism responsible for the language development and difficulties would follow from the model itself, and not from the empirical data.

## 2.2. Predictions

To this end, we make the following predictions based on the Dual-Route Model:

1. If both groups of readers rely on phonological and lexical knowledge to solve the task, they should perform better on words than on pseudowords and better on pseudowords than on non-words ( $W > PW > NW$ );
2. If they rely only on phonological knowledge, they should perform equally on words and pseudowords, and better on both than on non-words ( $W = PW > NW$ );
3. If they rely neither on phonological, nor on lexical knowledge, the same performance should be observable across all three types of stimuli ( $W = PW = NW$ );
4. If they rely solely on general lexical knowledge, they should perform better on words than on both pseudowords and non-words, while performance on the latter two should be the same ( $W > PW = NW$ );
5. The strongest prediction is that participants with dyslexia and typically developing children will differ in the pattern of results: if participants with dyslexia have phonological deficits, then they should exhibit pattern 4, while the control group should exhibit pattern 1 or 2; i.e. D ( $W > PW = NW < C$ ) ( $W \geq PW > NW$ ), where the difference between group means overall lower scores in the D group.

We expected that difficulties in reading pseudowords in children with dyslexia (as reported in e.g. Rack et al., 1992) would be reflected in eye movements, mostly in the sense of longer gaze durations (DeLuca et al., 2002). Nevertheless, due to inconsistent previous findings, we were unsure as to whether this would surface in accuracy and reaction time. Moreover, based on the recent discoveries about the influence of letter combinations on processing (see Chetail et al., 2015), we assumed that phonotactic probability would foster lexical processing, at least in the control group.

## 3. METHODOLOGY

### 3.1. Participants

In total, 13 school-age children participated in this study, 7 children with dyslexia (4 F, 3 M) and 6 control children (4 F, 2 M), with their ages ranging from 9;1 to 10;6 (Table 1). They all attended elementary school and their participation was previously agreed upon with the school speech and language pathologist (SLP). Parents and teachers were first introduced to the study design and research questions, and the

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consent forms were sent out afterwards. The final decision on the participants' inclusion in the study was made with the SLP. All children with dyslexia underwent the standard diagnostic procedures and were diagnosed by SLP experts. Parents signed the consent forms and we were informed by the school SLP that most of the children were either already educated within the individual approach to teaching or were currently in the process of finalising the standard legal procedures in order to be assigned one. We did not perform any pre-tests for the two following reasons: parents agreed for their children only to participate in the experiment, and most of the children were tested less than 6 months before the study, so too little time had passed for the re-testing to be performed. As is the case with most standardised diagnostic tests, two assessments using identical materials should be at least 6 or 9 months apart to avoid the learning effect.

**Table 1.** Characteristics of both groups of participants; control group (Cs) and dyslexic group (Ds)

**Tablica 1.** Podaci o djjema skupinama ispitanika; kontrolna skupina (Cs) i djeca s disleksijom (Ds)

Participants (groups) / Sudionici (skupine)	N	Gender / Spol		Age / Dob			
		M	F	M	SD	Min	Max
Ds	7	3	4	9,9	0,4	9,1	10,6
Cs	6	2	4	9,4	0,5	9,1	10,5

### 3.2. Materials and procedure

We adapted the Reicher-Wheeler task (Reicher, 1969; Wheeler, 1970) to the Croatian language and the frequency of letter combinations was carefully controlled for. This was important because the effect of phonotactic probability was taken into account in subsequent analyses. The list of stimuli consisted of 30 words (15 three-syllable frequent W with high phonotactic probability and 15 non-frequent W with low phonotactic probability); 30 pseudowords containing letters matching a word counterpart (15 three-syllable PW with high phonotactic probability and 15 three-syllable PW with low phonotactic probability); and 30 non-words with illegal phoneme combinations. The stimuli in the word condition varied in terms of word classes (i.e. 5 nouns, 9 verbs and

1 pronoun for the frequent condition, and 6 nouns, 3 verbs, 3 adjectives and 3 adverbs for the infrequent condition). This was not controlled for since the main focus was to specifically pay attention to the frequency and length of the stimuli and, even more important, to make sure that the letter in the middle of the word could be replaced with another letter and still constitute another existing word. The entire list of stimuli is provided in the Appendix at the end of the paper.

For the purpose of conducting the study, an eye-tracker with chin rest was used (SMI Hi-Speed View 500), with sampling frequency of 500 Hz. The task was pre-programmed within the SMI Experiment Centre programme. Each participant was tested individually. After the calibration procedure, where children had to fixate a small moving circle, and a short familiarisation phase, randomised stimuli appeared on the screen. Participants were exposed to an item from one of the three conditions (W, PW or NW) for 500 ms and were subsequently required to select, out of two presented letters, the one that had been seen in a specific position in the previously shown item, making the test a two-alternative forced choice (by clicking on it with the mouse). They were previously instructed to look at the correct letter in the middle of the screen and press the button. After that, the next item appeared on the screen. Only one participant looked away from the screen, but since this happened at the very beginning of the trial, the entire procedure was immediately stopped and repeated. Each trial lasted around 15 minutes and all participants were provided with refreshments. A few weeks after the experiment, one of the authors awarded the participants with a diploma for the participation.

**Accuracy**, **reaction time** and **dwell time** were recorded and analysed in IBM SPSS 20 using non-parametric statistics. **Accuracy (Acc)** was measured as the percentage of correctly chosen letters within each condition; **reaction time (RT)** was measured as the time extending from the appearance of the question phase (choosing the correct letter) until the mouse click (in ms); **dwell time (DT)** was measured as the gaze duration or the total duration of fixations on the correct letter (in ms).

## 4. RESULTS

### 4.1. Descriptive statistics

Table 2 summarises the average performance of both groups of participants across conditions (W, PW and NW).

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**Table 2.** Descriptive statistics: average performance in accuracy (Acc), reaction time (RT) and dwell time (DT) for both groups of participants across all three conditions (W, PW and NW; high and low phonotactic probability)

**Tablica 2.** Deskriptivna statistika: srednja vrijednost za varijable točnost (Acc), vrijeme reakcije (RT) i trajanje fiksacije (DT) za obje skupine ispitanika u sva tri uvjeta (riječ, pseudoriječ i neriječ; visoka i niska fonotaktička vjerojatnost)

Measures; conditions / Mjere; uvjeti	Acc; W prop. M (SD)	Acc; PW prop. M (SD)	Acc; NW prop. M (SD)	RT; W ms M (SD)	RT; PW ms M (SD)	RT; NW ms M (SD)	DT; W ms M (SD)	DT; PW ms M (SD)	DT; NW ms M (SD)
Ds (7)	0.86 (0.07)	0.83 (0.19)	0.68 (0.13)	4022.38 (484.82)	4043.81 (739.63)	4280.46 (1342.10)	54.76 (49.83)	64.98 (61.39)	76.64 (55.19)
Cs (6)	0.96 (0.04)	0.97 (0.03)	0.87 (0.04)	4327.98 (993.75)	4606.59 (1034.65)	4445.46 (1198.33)	206.23 (102.54)	193.95 (99.80)	206.24 (124.12)

The descriptive statistics suggest that mean scores in accuracy, reaction time and dwell time differ between groups. As shown in Table 2, in terms of accuracy, the group of children with dyslexia responded less accurately and their results varied more than those of the control group. Mean scores of reaction time were similar across groups and conditions. Larger differences between the two groups can be observed in dwell time since the control group fixated the correct letter for up to four times longer than children with dyslexia. Even though longer dwell time in some research situations may reflect higher processing costs and an increased cognitive load (e.g. uncertainty or difficulty in extracting information), similarly, when participants are asked to search for a certain item, their dwell time increases up to the point of final selection thereby indicating the level of certainty of their choice (for the entire discussion on the matter see Holmqvist et al., 2011, pp. 386–389). Since in this particular testing situation children were instructed to choose the correct letter, longer dwell time was interpreted as an indicator of certainty of an upcoming conscious choice. Therefore, as the control group tends to fixate the correct letter longer, it implies that its members recognized it with more confidence.

The normality of results distributions was assessed using a Shapiro-Wilk Test and, additionally, in terms of skewness and kurtosis, where values between -2 and +2 were considered indicative of a normal univariate distribution (George & Mallery, 2010). According to these parameters, some of the variables were normally or approximately normally distributed (i.e. Acc for W and NW; RT for W and NW; DT

for W and PW) and some were not (i.e. Acc for PW; RT for PW; DW for NW). Despite the normality of distribution of some variables, due to general inconsistency and especially due to the small number of participants, non-parametric statistical methods were used in all the subsequent analyses.

#### 4.2. Between-group comparison across conditions and measures

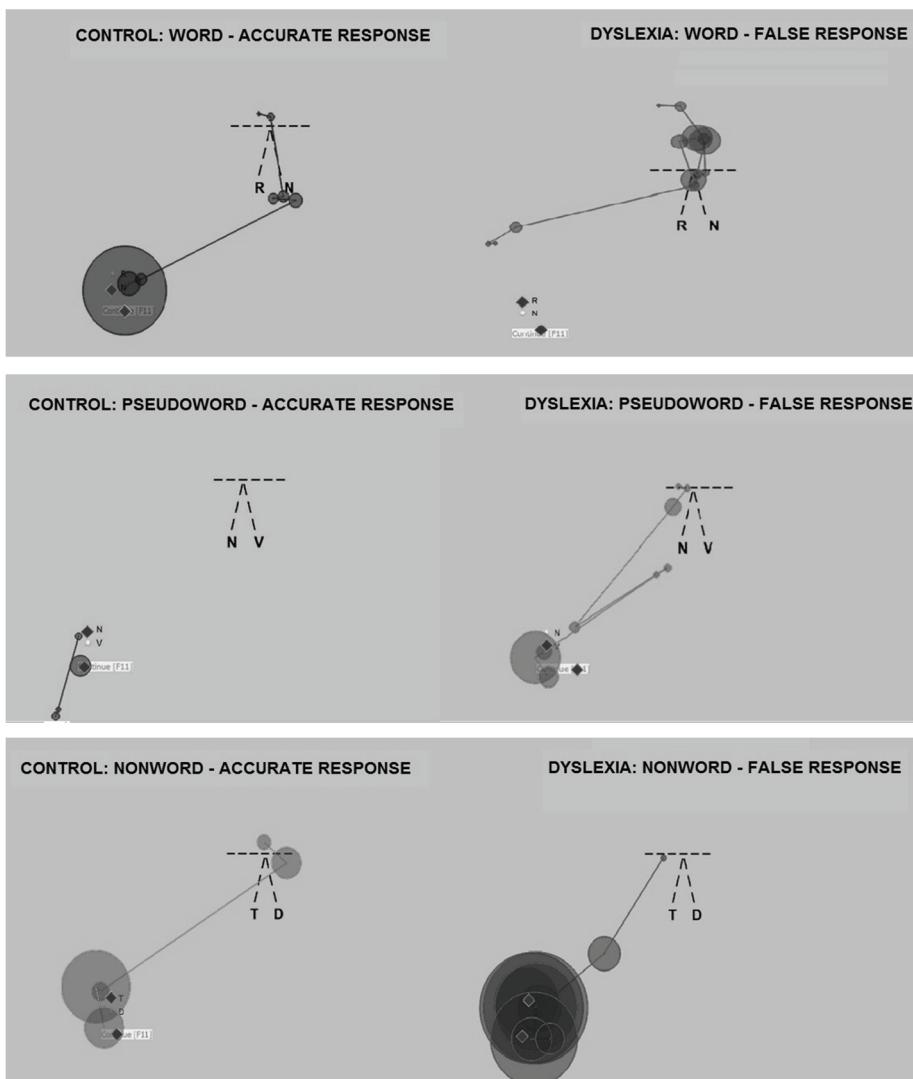
Eye-tracking results show the main difference obtained in this study, i.e. the difference between the participants with dyslexia and unimpaired readers. This difference in performance across conditions between the two groups of participants is illustrated in Figure 1.

However, the complex design and a small number of participants complicate the statistical analyses of the results. It is due to the experimental design that all three factors (group, condition, phonotactic probability) could not be taken into a single analysis (words and pseudowords were manipulated for phonotactic probabilities, but all non-words consist of only illegal letter combinations). As previously stated, a small number of participants and the inconsistent normality of distribution call for a non-parametric version of the repeated measure ANOVA. We followed the procedure suggested by Wobbrock, Findlater, Gergle, and Higgins (2011) which consists of ranking the variables and performing a regular ANOVA on the ranked data.

The results indicate that the main effect of group (dyslexia vs. control) was obtained for accuracy ( $F(1,11) = 15.362; p = 0.002$ ) and dwell time ( $F(1,11) = 14.401; p = 0.003$ ), while no difference was found for the reaction time ( $F(1,11) = 0.328; p = 0.578$ ). The main effect of condition (W, PW, NW) was not statistically significant, neither the interaction between the factors.

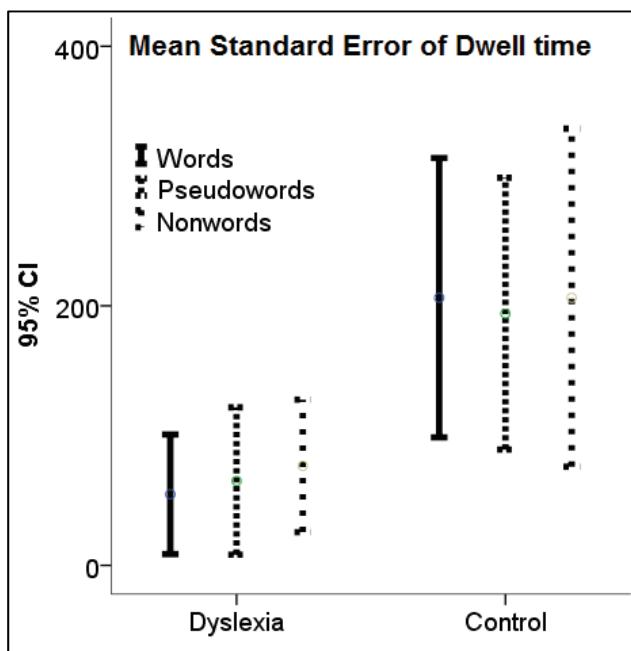
Further comparison (non-parametric version of one-way ANOVA, i.e. the Kruskal-Wallis Test) reveals that the difference between groups was obtained for W and NW condition on accuracy (W: H(1) = 5.602;  $p = 0.018$ ; NW: H(1) = 9.05;  $p = 0.003$ ) and for W, PW and NW condition on dwell time (W: H(1) = 8.163;  $p = 0.004$ ; PW: H(1) = 4.592;  $p = 0.032$ ; NW: H(1) = 5.224;  $p = 0.022$ ). No statistically significant differences were obtained for reaction time (W: H(1) = 0.082;  $p = 0.775$ ; PW: H(1) = 0.735;  $p = 0.391$ ; NW: H(1) = 0.184;  $p = 0.668$ ). For mean values see Descriptive statistics provided in Table 2.

Figure 2 additionally shows the mean standard error (MSE) for dwell time for both groups across all three conditions. Relatively small MSE indicates that one might expect similar distribution of results in the population. Therefore, although this study is preliminary and includes a rather small number of participants, one could expect similar results to be replicated in larger studies.



**Figure 1.** The comparison of performance of two randomly chosen participants from both groups, across all three conditions: a) words, b) pseudowords, c) non-words (each circle represents one fixation, and its size reflects its duration, while the red rhomb represents the mouse click)

**Slika 1.** Usporedba izvedbe dvaju nasumično odabralih ispitanika iz obje skupine u sva tri uvjeta: a) riječ, b) pseudoriječ, c) neriječ (svaki krug predstavlja jednu fiksaciju, pri čemu veličina kruga predstavlja trajanje fiksacije, dok crveni romb označava pritisak miša)



**Figure 2.** Mean standard error (MSE) for dwell time for both groups across all conditions

**Slika 2.** Srednja standardna pogreška (MSE) za varijablu trajanje fiksacije (DT – engl. *dwell time*) za obje skupine ispitanika u svim uvjetima

Overall, it can be observed that the pattern not visible in off-line measures (i.e. reaction time) did become evident in online eye movement measures. This is further discussed in the Discussion.

#### 4.3. Within-group performance patterns

The next step of the study was to observe and then compare the task solving patterns within each group across the three conditions. This was important in order to understand the relative influence that each type of knowledge (phonological vs. lexical) may play in these two groups. In other words, we wanted to investigate whether the groups differ in the type of information they tend to rely on when presented with different stimuli. To this end, a Friedman Test has been performed within each group of participants. The statistically significant difference between

conditions (W, PW, NW) was obtained for both groups only for accuracy (ACC; D:  $\chi^2 = 8.0$ ;  $p = 0.018$ ; C:  $\chi^2 = 8.3$ ;  $p = 0.016$ , as opposed to non-significant  $p$  values for the other two variables: RT; D:  $\chi^2 = 2.0$ ;  $p = 0.368$ ; C:  $\chi^2 = 0.3$ ;  $p = 0.333$  and DT; D:  $\chi^2 = 3.4$ ;  $p = 0.180$ ; C:  $\chi^2 = 1.0$ ;  $p = 0.607$ ). Since Friedman Test does not allow for pairwise comparisons, Table 3 reports the tendencies based upon the mean ranks.

**Table 3.** Tendencies in task solving patterns based upon the mean ranks (Friedman Test) which parallel the initial predictions

**Tablica 3.** Tendencije u obrascima izvedbe temeljene na srednje rangiranim vrijednostima (Friedmanov test) koje odgovaraju inicijalnim prepostavkama

Measures / Mjere	Accuracy / Točnost	Reaction time* / Vrijeme reakcije	Dwell time / Trajanje fiksacije
Ds (7)	W>PW>NW**	W>PW>NW	W<(PW=NW)
Cs (6)	W≈PW>NW**	W>PW>NW	(W=NW)>PW

\* Better performance presented here corresponds to shorter RTs. / Bolji rezultat odgovara kraćem vremenu reakcije (RT).

\*\* Statistically significant differences (Friedman Test) / Statistički značajne razlike (Friedmanov test)

Finally, in order to test whether phonotactic probability affected overall performance, each group's mean performance in accuracy, reaction time and dwell time was compared for high (15) versus low phonotactic probability (15) stimuli in the W and PW condition (NWs were not analysed since they consist of impossible letter combinations by default). For this purpose, a two related samples t-test (Wilcoxon Signed Ranks Test) was conducted. No significant differences between frequent and infrequent conditions were found. In other words, manipulations of phonotactic probability did not affect accuracy, reaction time and dwell time in neither group of participants.

## 5. DISCUSSION

The overall results of this pilot study show a clear difference in lexical processing between participants with dyslexia and typically developing readers. In addition, they show different lexical processing patterns regarding their reliance on the type of information used (lexical vs. phonological). These differences were salient enough to be

detected both in accuracy (to some extent) and online measures (eye movements). The task seems to be easier to perform for the unimpaired than for the impaired readers in all conditions (visible in dwell time); and in words and non-words (visible in accuracy). That is to say, the control group was more accurate, made fewer errors (but was not faster, as opposed to Ziegler et al., 2008) and fixated the correct letter for a longer amount of time. Although we could not perform a more robust and detailed analysis, these findings corroborate our last prediction that the two groups will show different patterns of results (see prediction No. 5 in the section 2.2. Predictions).

Within groups, behavioural differences between conditions were detectable only in accuracy. On one hand, our pattern of results shows that for both groups, words are significantly easier to process than non-words. In line with the previous research, there was a word superiority effect in both groups of children (Grainger et al., 2003; Reilhac et al., 2012; Ziegler et al., 2008). The status of pseudowords remains less clear as the processing pattern is not consistent across variables. This allows us only to make assumptions based on the performance tendencies. If the performance of impaired readers with this kind of item is reminiscent of previous research highlighting their difficulties in pseudowords processing (Rack et al., 1992), the performance of the control group of children somewhat indorses the existence of a pseudoword superiority effect in unimpaired readers (Carr et al., 1978; Coch & Mitra, 2010; McClelland & Johnston, 1977). This might be explained by the familiarity of letter combinations in pseudowords that was sufficient to facilitate their processing (Hooper & Paap, 1997; Ziegler & Jacobs, 1995), i.e. their reliance on phonotactic information. The absence of clear significant difference between pseudowords and non-words processing in impaired readers (Table 3 shows only potential tendencies) in a way contradicts the findings by Grainger et al. (2003) and Reilhac et al. (2012), who observed the emergence of a clear pseudoword superiority effect in participants with dyslexia, as well. This pattern of results could potentially be imputed either to a knowledge of orthotactic rules still in development (they would in that case be significantly delayed as compared to control children) or to impairments in letter-position encoding, a symptom characteristic for dyslexia (Lachmann & van Leeuwen, 2007; Reilhac et al., 2012; Salmelin, Kiesilä, Utela, Service, & Salonen, 1996; Vidyasagar & Pammer, 2010).

Within the Dual-Route Model framework, we could interpret our preliminary results as evidence that the control group of children rather relied on the non-lexical route, potentially because their semantic lexicon was not fully developed at the time of

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testing (Grainger et al., 2003), or due to the transparent orthography of the language and a phonological nature of the task.

It is interesting to note that phonotactic probability manipulations affected word processing neither for dyslexic nor for the control group of children in the study. This might be surprising, as we would expect more frequent combinations of letters to be more easily recognised by unimpaired participants. For the impaired readers, the results indicate potential difficulties in relying on phonological knowledge.

Finally, if we did anticipate that control children's performance on pseudowords would surpass that of participants with dyslexia, the fact that the latter group performed poorer than the former on words and non-words reading as well (detected in eye movements) suggests that they suffer from a more general impairment affecting their lexical processing resources in all three orthographic contexts. It is thus important to reiterate here the importance of using online measurements in investigating dyslexia, as it allowed us to identify a general impairment that was not systematically detectable in accuracy and reaction time measures.

## 6. CONCLUSIONS

The present study entitles us to characterise dyslexia as an impairment affecting reading of items in all lexical conditions. However, its exact nature and the loci of impairments responsible for the symptoms, based on our sole findings, remain underspecified. In line with the previous research, the eye-tracking data, as an added value of this study, further corroborate the fact that pseudoword processing is particularly impeded in individuals with dyslexia. This is somewhat puzzling since the transparency of the Croatian language might have facilitated pseudoword processing. Despite the limitation of the study that stem from the small number of participants, general tendencies seem to show that unimpaired readers were more able to rely on the phonological knowledge than the impaired readers, who seem not to be able to exploit either lexical or phonological information in order to complete the task.

The lexical superiority task proved to be sensitive enough – especially with the application of the eye-tracking technique – to detect differences between the impaired and unimpaired readers, and to observe differences in processing patterns. In this sense, current study serves as a basis for upcoming research with similar design. Still, to allow more robust statistical analyses, future studies should certainly include more participants.

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## REFERENCES

- Adams, M.** (1979). Models of word recognition. *Cognitive Psychology*, 11(2), 133–176.
- Biscaldi, M., Fischer, B., & Aiple, F.** (1994). Saccadic eye movements of dyslexic and normal reading children. *Perception*, 23(1), 45–64.
- Carr, T., Davidson, B., & Hawkins, H.** (1978). Perceptual flexibility in word recognition: Strategies affect orthographic computation but not lexical access. *Journal of Experimental Psychology: Human Perception and Performance*, 4(4), 674–690.
- Cattell, J. M.** (1886). The time taken up by cerebral operations. *Mind*, 11(42), 220–242.
- Chase, C., & Tallal, P.** (1990). A developmental, interactive activation model of the word superiority effect. *Journal of Experimental Child Psychology*, 49(3), 448–487.
- Chetail, F., Balota, D., Treiman, R., & Content, A.** (2015). What can megastudies tell us about the orthographic structure of English words?. *The Quarterly Journal of Experimental Psychology*, 68(8), 1519–1540.
- Coch, D., & Mitra, P.** (2010). Word and pseudoword superiority effects reflected in the ERP waveform. *Brain Research*, 1329, 159–174.
- Coltheart, M., Masterson, J., Byng, S., Prior, M., & Riddoch, J.** (1983). Surface dyslexia. *Quarterly Journal of Experimental Psychology*, 35(3), 469–495.
- Coltheart, M., Rastle, K., Perry, C., Langdon, R., & Ziegler, J.** (2001). DRC: A dual route cascaded model of visual word recognition and reading aloud. *Psychological Review*, 108(1), 204–256.
- DeLuca, M., Borrelli, M., Judica, A., Spinelli, D., & Zoccolotti, P.** (2002). Reading words and pseudo-words: An eye movement study of developmental dyslexia. *Brain and Language*, 80(3), 617–626.

- Ferraro, F., & Chastain, G.** (1997). An analysis of Reicher-task effects. *The Journal of General Psychology*, 124(4), 411–442.
- George, D., & Mallory, M.** (2010). *SPSS for Windows step by step: A simple guide and reference*. USA, Boston: Pearson.
- Grainger, J., Bouttevin, S., Truc, C., Bastien, M., & Ziegler, J.** (2003). Word superiority, pseudoword superiority, and learning to read: A comparison of dyslexic and normal readers. *Brain and Language*, 87(3), 432–440.
- Grainger, J., & Jacobs, A.** (1994). A dual read-out model of word context effects in letter perception: Further investigations of the word superiority effect. *Journal of Experimental Psychology: Human Perception and Performance*, 20(6), 1158–1176.
- Hawelka, S., Gagl, B., & Wimmer, H.** (2010). A dual-route perspective on eye movements of dyslexic readers. *Cognition*, 115(3), 367–379.
- Holmqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H., & van de Weijer, J.** (2011). *Eye tracking: A comprehensive guide to methods and measures*. Oxford, UK: Oxford University Press.
- Hooper, D., & Paap, K.** (1997). The use of assembled phonology during performance of a letter recognition task and its dependence on the presence and proportion of word stimuli. *Journal of Memory and Language*, 37(2), 167–189.
- Hutzler, F., & Wimmer, H.** (2004). Eye movements of dyslexic children when reading in a regular orthography. *Brain and Language*, 89(1), 235–242.
- Jacobs, A. M., & Grainger, J.** (2005). Pseudoword context effects on letter perception: The role of word misperception. *European Journal of Cognitive Psychology*, 17(3), 289–318.
- Kuperman, V., Drieghe, D., Keuleers, E., & Brysbaert, M.** (2013). How strongly do word reading times and lexical decision times correlate? Combining data from eye movement corpora and megastudies. *The Quarterly Journal of Experimental Psychology*, 66(3), 563–580.
- Lachmann, T., & van Leeuwen, C.** (2007). Paradoxical enhancement of letter recognition in developmental dyslexia. *Developmental Neuropsychology*, 31(1), 61–77.
- Lefton, L., Nagle, R., Johnson, G., & Fisher, D.** (1979). Eye movement dynamics of good and poor readers: Then and now. *Journal of Reading Behaviour*, 11(4), 319–328.

- Ljubešić, N., & Klubička, F.** (2016). *Croatian web corpus hrWaC 2.1*. Slovenian language resource repository CLARIN.SI. Available at <http://nlp.ffzg.hr/resources/corpora/hrwac/>
- McClelland, J., & Johnston, J.** (1977). The role of familiar units in perception of words and nonwords. *Perception & Psychophysics*, 22(3), 249–261.
- McClelland, J. L., & Rumelhart, D. E.** (1981). An interactive activation model of context effects in letter perception: I. An account of basic findings. *Psychological Review*, 88(5), 375–407.
- Patching, G., & Jordan, T.** (1998). Increasing the benefits of eye-tracking devices in divided visual field studies of cerebral asymmetry. *Behaviour Research Methods, Instruments, & Computers*, 30(4), 643–650.
- Rack, J. P., Snowling, M. J., & Olson, R. K.** (1992). The nonword reading deficit in developmental dyslexia: A review. *Reading Research Quarterly*, 27(1), 28–53.
- Rayner, K.** (1998). Eye movements in reading and information processing: 20 years of research. *Psychological Bulletin*, 124(3), 372–422.
- Reicher, G.** (1969). Perceptual recognition as a function of meaningfulness of stimulus material. *Journal of Experimental Psychology*, 81(2), 275–280.
- Reid, G.** (2016). *Dyslexia: A practitioner's handbook* (5th ed.). West Sussex, UK: John Wiley & Sons.
- Reilhac, C., Jucla, M., Iannuzzi, S., Valdois, S., & Démonet, J.** (2012). Effect of orthographic processes on letter identity and letter-position encoding in dyslexic children. *Frontiers in Psychology*, 3, 154.
- Salmelin, R., Kiesilä, P., Uutela, K., Service, E., & Salonen, O.** (1996). Impaired visual word processing in dyslexia revealed with magnetoencephalography. *Annals of Neurology*, 40(2), 157–162.
- Sartori, G., Barry, C., & Job, R.** (1984). Phonological dyslexia: A review. In R. N. Malatesha, & H. A. Whitaker (Eds.), *Dyslexia: A global issue* (pp. 339–356). The Hague: Martinus Nijhoff Publishers.
- Schmalz, X., & Mulatti, C.** (2017). Busting a myth with the Bayes Factor: Effects of letter bigram frequency in visual lexical decision do not reflect reading processes. *The Mental Lexicon*, 12(2), 263–282. <https://doi.org/10.1075/ml.17009.sch>
- Takač, M., Knott, A., & Stokes, S.** (2016). What can Neighbourhood Density effects tell us about word learning? Insights from a connectionist model of vocabulary development. *Journal of Child Language*, 44(2), 346–379.

- Temple, C., & Marshall, J.** (1983). A case study of developmental phonological dyslexia. *British Journal of Psychology*, 74(4), 517–533.
- Vidyasagar, T., & Pammer, K.** (2010). Dyslexia: A deficit in visuo-spatial attention, not in phonological processing. *Trends in Cognitive Sciences*, 14(2), 57–63.
- Wheeler, D. D.** (1970). Processes in word recognition. *Cognitive Psychology*, 1(1), 59–85.
- Wobbrock, J. O., Findlater, L., Gergle, D., & Higgins, J. J.** (2011). The aligned rank transform for nonparametric factorial analyses using only ANOVA procedures. In D. S. Tan (Ed.), *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'11)* (pp. 143–146). New York: ACM Press.
- Ziegler, J., Castel, C., Pech-Georgel, C., George, F., Alario, F., & Perry, C.** (2008). Developmental dyslexia and the dual route model of reading: Simulating individual differences and subtypes. *Cognition*, 107(1), 151–178.
- Ziegler, J. C., & Jacobs, A. M.** (1995). Phonological information provides early sources of constraint in the processing of letter strings. *Journal of Memory and Language*, 34(5), 567–593.

**Appendix** The entire list of stimuli used in the study  
**Prilog** Lista podražaja korištenih u istraživanju

Words (W) / Riječi	Pseudowords (PW) / Pseudoriječi	Non-words (NW) / Neriječi			
High phon. prob. / Visoka fonotakt. vjer.	Low phon. prob. / Niska fonotakt. vjer.	High phon. prob. / Visoka fonotakt. vjer.	Low phon. prob. / Niska fonotakt. vjer.	Illegal phoneme combinations / Nemogući nizovi fonema	
PUNICA (PURICA)	KUHALO (KUHANO)	PUDAKA	NUĐILO	DKAPUA	UDLNIO
SJEDITI (SLEDITI)	MOŽDINA (MOŽDANA)	CJEMATI	SOGZANA	MEAITJC	OASGZNA
OSTAJE (OSTARE)	MUDRICA (MODRICA)	OSNITE	ZUDREGA	NTSIOE	RDGEAZU
IMATI (IMALI)	MULJATI (MUKATI)	USITI	TUZVAVI	STUII	TZVAVIU
OGRADA (OBRADA)	KLECNUTI (KLEKNUTI)	OSANDA	PLETŠUVI	NDAAOS	TŠLPUVIE
CIJENITI (CIJEDITI)	KLAUZULA (KLAUZURA)	FRAMNITI	KLEHĆULA	AMNTFRII	HĆKULLAE
PROЛИTI (PROBITI)	TURŠIJOM (TURPIJOM)	PRESATI	TOVZIJOM	ESPTRAI	VZIJTOMO
STANICA (STARICA)	SROZALE (SREZALE)	STADAKA	BROŽILE	AASKTDA	OIŽBLRE
VODITI (VOZITI)	UGASLI (URASLI)	VAPATI	USIGDI	IAPVTA	IGSDIU
KAMATA (KARATA)	OTKOČEN (OTKOŠEN)	KASIVA	OŠKODAN	SVKAIII	OŠKDNAO
RANITI (RADITI)	NESTALNI (NESTAŠNI)	REJATI	SESTRVNI	AJRTIE	ESTNSVRI

Words (W) / Riječi		Pseudowords (PW) / Pseudoriječi		Non-words (NW) / Neriječi	
High phon. prob. / Visoka fonotakt. vjer.	Low phon. prob. / Niska fonotakt. vjer.	High phon. prob. / Visoka fonotakt. vjer.	Low phon. prob. / Niska fonotakt. vjer.	Illegal phoneme combinations / Nemogući nizovi fonema	
KOSITI (KORITI)	UMJETNO (UVJETNO)	KAMATI	ITŠEFNO	IAKMTA	EITŠFNO
PORUKA (PODUKA)	VRUĆICA (VREĆICA)	PORITE	VAJFICA	PTIEOR	VJFIACA
MORATI (MORITI)	UKUSNO (UKUPNO)	TARITI	IVUGNO	IIRTTA	OVGNAI
KOJIMA (KOLIMA)	LUŽINA (LUPINA)	KASAMA	GUHANA	AAMKSA	UAHGNA

*Note.* Word list was obtained from the Croatian web corpus hrWac (Ljubešić & Klubička, 2016). The words in brackets represent the words that differ from the target word in one letter, which is the manipulation within condition that characterises the original R-W paradigm.

**Ana Matić**

*ana.matic@erf.hr*

Edukacijsko-rehabilitacijski fakultet Sveučilišta u Zagrebu  
Hrvatska

**Marion Coumel**

*m.coumel@warwick.ac.uk*

Sveučilište u Warwicku, Coventry  
Ujedinjeno Kraljevstvo

**Marijan Palmović**

*marijan.palmovic@erf.hr*

Edukacijsko-rehabilitacijski fakultet Sveučilišta u Zagrebu  
Hrvatska

## **Leksička obrada djece s disleksijom: adaptacija Reicher-Wheelerovog zadatka mjerenjem pokreta oka**

### **Sažetak**

U ovome se radu nastoji utvrditi utjecaj fonološkog i leksičkog (semantičkog) znanja na leksičku obradu kod djece s disleksijom. Istraživanje je pilot veće studije utjecaja fonotaktičkih obavijesti u jezičnoj obradi. Upotrijebljena je Reicher-Wheelerova paradigma, poznatija kao zadatak leksičke superiornosti. Zadatak se sastoji od kratkog prikaza riječi, nakon čega na zaslonu ostaju samo oznake položaja pojedinih grafema. Od sudionika se traži da odaberu grafem za koji misle da je bio na nekom položaju u riječi (nakon prikazivanja riječi *punica* prikaze se ——, pri čemu se za treći grafem daje izbor n/r). Reicher i Wheeler su primijetili da su sudionici uspješniji ako su podražaji riječi (R), a ne pseudoriječi (PR) ili slučajni nizovi grafema, neriječi (NR). Za ovo je istraživanje zadatak leksičke superiornosti modificiran tako da uključuje R, PR i NR, a u R i PR dodatno se manipuliralo fonotaktičkim obavijestima, tj. ovi su podražaji dodatno podijeljeni u dvije skupine; one s visokom i one s niskom fonotaktičkom vjerojatnošću. Mjerila se točnost i analizirali su se pokreti oka.

Predviđanja su se temeljila na modelu dvostrukog puta prema kojem se leksička obrada sastoji od izravnoga leksičkog (semantičkog) i neizravnog (fonološkog) puta; ako ispitanik ne zna ili ne prepozna riječi, neizravni mu put omogućuje preslikavanje grafema u fonem, što

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rezultira prepoznavanjem riječi "odozdo". Budući da u većini slučajeva disleksijska podrazumijeva neki oblik fonološkog poremećaja i budući da se ona definira i kao poremećaj učenja (a fonotaktičke se obavijesti uče mehanizmom statističkog učenja), ovo je istraživanje sasvim opravdano.

Rezultati pokazuju jasnu razliku između djece s disleksijom i djece urednoga jezičnog razvoja. Sudeći prema rezultatima obje se skupine više oslanjaju na opće leksičko znanje, dok fonološko pomaže u leksičkoj obradi samo kontrolnoj skupini djece. Potvrđeni su brojni prethodni nalazi posebnih teškoća djece s disleksijskom u obradi PR, bez obzira na transparentnu ortografiju hrvatskog jezika. Fonotaktičke se vjerojatnosti nisu pokazale značajnim za leksičku obradu. Moguće je da su razlike previše suptilne za mali broj ispitanika. Veličina uzorka ograničenje je ovog istraživanja pa su se istaknuli samo najveći efekti. No, s obzirom da narav zadatka ne traži eksplisitno prepoznavanje riječi pa oba leksička puta imaju ravnopravnu ulogu u njegovu rješavanju (za razliku od zadatka leksičke odluke), može se potvrditi da je uzorak ipak prikladan za istraživanje fonološke i leksičke strane mentalnog leksikona. Iako je uzorak malen, mala srednja standardna pogreška – posebno u skupini djece s disleksijskom – naznaka je da bi slični nalazi bili dobiveni i slučajnim odabirom drugog uzorka.

**Ključne riječi:** disleksijska obrada, leksička obrada, Reicher-Wheelerov zadatak, model dvostrukog puta, pokreti oka

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**Hotimir Tivadar**

*hotimir.tivadar@ff.uni-lj.si*

Faculty of Arts, University of Ljubljana  
Slovenia

## **Future of Slovene as a former Yugoslav language (Speech and language between language dictators and real life)**

### **Summary**

Often, in public and professional circles, the Slovene language is treated as a priceless commodity that needs to be respected, nurtured and protected. Unfortunately, the result of such care is more often than not a misunderstanding of the diversity of linguistic types, as well as limited communication that may convince speakers that their knowledge is lacking. The resulting article discusses the existing outlook on the publicly spoken language in the realms of media and science in Slovenia. Most importantly, we offer a simple solution – speech (speaking) and speech research with a target goal: to develop high quality public discourse.

**Key words:** Slovene language, standard language, linguistic norm, media speech

## 1. THE PURPOSE OF THIS ARTICLE AND RESEARCH METHODS

The article offers a look into the current situation when it comes to Slovene public speech at the turn of the century by taking into account how speech developed in the past, as well as the developments when it comes to contemporary Slovene language. The issue of Slovene language being caught between literal and non-literal (standard and non-standard) use brings about many problems, mostly in public situations but especially in the media. The research methods used are empirical, based on experience and past research, and also lectures done by the author. The empirical findings<sup>1</sup> are linked to phonetic research that was made on practical material by using instrumental and perceptive phonetic analysis (with computer software such as KAY-Elementrics, Cool Edit and Praat, Boersma & Weenink, 2017) in cooperation with the Institute of Phonetics in Prague and Zagreb. The results were published in several articles (Tivadar, 1999, 2003a, 2003b, 2010, 2012). The basic research method is the descriptive method.

Along with phonetic research and research into the Slovene language, this article also takes a look at the contemporary social situation in Slovenia, as well as the philosophical and political thoughts of important Slovene intellectuals (especially Tine Hribar (2004) and France Bučar (2003)), who significantly influenced the formation of the Slovene public space at the turn of the millennium.

It should also be pointed out that the scientific conclusions in this article are not absolute and are the result of phonetic research of selected materials that are representative of the contemporary Slovene media space (such as, speech of radio announcers – Tivadar, 2004a, 2004b, and of TV presenters and journalists on the national television RTV Slovenia. Some of them (in 2018) are currently employed at a highly rated privately owned television station – Tivadar, 2010, 2012).

Contemporary public discourse and codification of language must take place within the concept of a diverse contemporary use (Tivadar, 2016), but also within the concept of the broad acceptance of literary language (Palková, 1997; Tivadar, 2010, 2012) that must be codified in the contemporary *Normative guide* and the dictionary

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<sup>1</sup> Since 1997, the author has been researching public speech in Slovenia and published numerous articles in Slovenia and the world. Alongside his work on the Faculty of Arts in Ljubljana and occasionally Maribor and Koper, he also collaborates, since 1997, with the national RTV as a consultant, guest in various shows and as a lecturer in the Centre for Education and Training RTV Slovenia – *Izobraževalno središče RTV Slovenija*, most intensively from 2003 until 2010 – lectures subjects in orthoepy, phonetics and rhetoric.

– the 'current' *Slovene normative guide* was published in 2001, the dictionary was made in 1970 and merely updated in 2014. Because of its general accessibility on the Fran portal (<https://fran.si/>) it also functions among the general and professional public as a practical manual and therefore importantly affects the contemporary written and spoken public discourse. The findings and conclusions in this article are based on the relative representativeness of the analysed media texts and speakers.

## 2. AN INTRODUCTION TO SLOVENE AND EUROPEAN NATIONALITY

In the former Yugoslavia, Slovene was a language that, for all intents and purposes, was not used on the state level of the Socialist Federal Republic of Yugoslavia and was limited only to the then Socialist Republic of Slovenia. Instead, the Serbo-Croatian language was present at all times through culture (music, theatre, film), sports (especially collective sports such as football and basketball), and also state and military institutions on the territory of Slovenia and within Slovene culture (especially after 1919). It was precisely the language that was used in the army that gave rise to the first major resistances and aspirations for independence by championing the use of Slovene language in public (Gjurin, 1991; Tivadar, 2012). Between 1945 and 1990, Slovene was a language that lived a half-functional life in Slovenia. Speakers of Slovene in the central part of Slovenia (Ljubljana and the surrounding towns) were quite dominant (often to the point of exclusion) against those who could not speak Slovene<sup>2</sup>. It should be pointed out that in Slovenia the most popular sport – football – was regarded as a sport for immigrants (in the novel by Andrej E. Skubic *Fužinski bluz*), same as basketball (in the novel by Goran Vojnović *Čefurji raus!*).<sup>3</sup> Various forms of intolerance did appear in certain central Slovenian areas and industrial centres (Jesenice, Velenje, Trbovlje ...) that were tied to language, which to Slovenes is (was) the most important national and nation building element, which in the past also connected the people of various origin that lived in the area of what is now the

<sup>2</sup> Sociolinguists warn about excluding foreign speakers because of the Slovene language, where they explicitly point out that Slovene must remain 'a dominant public language on the territory of the Republic of Slovenia', which is or should be important for the development of the language and retaining and strengthening the number of its speakers (Stabej, 2010, p. 219).

<sup>3</sup> The ironic position of immigrants was and still is depicted in popular music by R. Magnifico (the song *Kdo je čefur*, Magnifico, 1995), who also tackles other marginalised groups (for example, homosexuals, the song *Halo, gospodična*, Magnifico, 2000).

Republic of Slovenia, as well as the entire Slovene national territory (Tivadar, 2015a). Particularly due to its small size and existence on the crossroads of many cultures, this tendency for self-preservation was always present among Slovenes and in the 19<sup>th</sup> century, during the Spring of Nations, it gave birth to extreme national movements (nationalisms), such as the most important movement in this region called *Drang nach Osten*, as well as various other German cultural associations that became more prominent within the Slovene national movement<sup>4</sup>. It should be mentioned that the Slovene national territory is extremely regionally marked and had to make compromises within the Slovene language to make it more homogenized (Stabej, 2010, pp. 42–43). The question of the Slovene language is also the question of its relationship to the language spoken by regular people, which was characterised in terms of region and (rural) status.<sup>5</sup> This social (rural) and regional stratification of Slovene language is observable in the great dialectal diversity of the Slovene language, which was then standardized in terms of writing during the 19<sup>th</sup> century and standardized in terms of speech during the 20<sup>th</sup> century (Tivadar, 2010). Up and until the end of the 80s it was not recognized on a state (inter-republic) level and even during the 70s there were still massive socio-political campaigns for the use of the Slovene language in public in Slovenia (Pogorelec et al., 1983; Tivadar, 2014). Slovene linguists and public workers in the former Yugoslavia did not want to intervene linguistically in other Yugoslavian republics, however, they did want to position Slovene in a dominant role on the territory of Slovenia and grant it equal status on the state level (Stabej, 2010, p. 139). The fact is that the Serbo-Croatian language was a compulsory subject in schools in Slovenia and the only commanding language in the Yugoslav (and subsequently Slovene) army. This demand for public speech to be spoken in Slovene language on the Slovene territory in all institutions, from the Republican Assembly to the Military Court in Ljubljana, was the basis on which Slovenian independence was then built (Tivadar, 2012).

After Slovenia gained its independence in 1991, the people in Slovenia and the language itself began turning more to the west and less towards the South Slavic region and began building its Euro-Slovenian identity. The concept of the Euro-Slovene was

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<sup>4</sup> Purism was present in Slovenia practically since Primož Trubar onwards and was also proportionally positively valued, if not overdone – term moderate purism (Kalin Golob, 1996, p. 86).

<sup>5</sup> The intertwining between rural and tribal origins is depicted also through the rite of inaugurating Carantanian dukes, which was allowed by the ruling Franks, while the same time it was the local influential farmers or *kosezi*, who monitored the inauguration as representatives of the people (Grafenauer, 1952).

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supposed to represent a final positioning into the European space. It is worth mentioning here that the Slovene nation is rather young and immature.

Only as late as in the 20th century did we achieve not only state sovereignty, but also affirmation as a nation of thinkers. In short, it was a period of being late, since we already affirmed ourselves as a nation of poets in the 19th century. With our thoughts and poetry we /.../ co-create. (Hribar, 2004, p. 22).

### **3. SPOKEN SLOVENE IN THE SECOND HALF OF THE 20<sup>th</sup> CENTURY**

Slovene speech was dominant in the former Socialist Republic of Slovenia (1945–1990), while at the same time it coexisted culturally and nationally with the Serbo-Croatian language, which held a prestigious position in state and public institutions. This was mirrored in slang, which by the end of the 20<sup>th</sup> century was heavily influenced by the dominant language of the Social Federal Republic of Yugoslavia (Gjurin, 1974). However today, the major influences come from English, although some connections with the Croatian region are also being discovered by younger linguists (Pulvirenti, 2016). In the 3<sup>rd</sup> millennia, the Slovene language once again opened up to the world and the influences of the global language that reflect in public and everyday communication, from the economy to lectures to state visits (Tivadar, 2014). This raises the question of Slovene statehood, which was rather timid in its expression in the general culture until the end of the 80s (if we highlight just the Slovene quasi-national television and billboard commercial campaign *Slovenija, moja dežela!*; Repe & Kerec, 2017), although at that time the rise of Slovene self-confidence was already beginning (Hribar, 2004, p. 28). There was no talk of a state or special emphasis put on the idea of a nation, as this was considered anti-state in the old Yugoslavia, while in the new Yugoslavia it was considered as an anti-socialist act (Stabej, 2010, p. 139; Toporišič, 1991a).<sup>6</sup> Even later, national identity was significantly less expressed than in other SFRY republics.<sup>7</sup>

<sup>6</sup> Even today in Slovenia, striving for the nation and independence is often negatively valued or considered unnecessary. This is strongly opposed by the philosopher Tine Hribar, who defends independence and formation of Slovenes as a nation with an independent state (Hribar, 2004, p. 23, p. 151).

<sup>7</sup> Largest nationalistic excesses that should have been sanctioned more intensively, were the activities of the Slovene National Party (*Slovenska nacionalna stranka*, president Zmago Jelinčič), which chose as its political slogan *Naredimo to deželo spet slovensko* (*Make this land Slovene again*) for the 1992 elections that

This positive non-nationalistic trend is observable even today (nationalism in Slovene linguistics is discussed in more detail in Tivadar, 2018).<sup>8</sup> There was actually no need for special emphasis on the national, since apart from certain apartment complexes, Slovene territory was quite nationally homogeneous and immigrants were well integrated into society, which also points to the historical tolerance of the Slovene nation. The biggest danger came from the Yugoslav National Army (YNA) and military objects across Slovene towns and on the border. Thus it was the army that the Slovene nation fought against the most in terms of culture (weekly magazine *Mladina*, demonstrations on the trial against the JBTZ (Janša, Borštner, Tasič, Zavrl) quartet that was spoken in Serbo-Croatian in the middle of Ljubljana) and later also through a short military conflict (June-July War).

Slovene language and the entire global public space is nowadays profoundly under the influence of a single *lingua franca*, English, which is in a way afforded the status of a working language, even though other national languages on the level of the European Union are supposed to be equal (Hribar, 2004, p. 203) but in reality are not – for them the declared European multilingualism means being familiar with several 'bigger' languages (Tivadar, 2014). Škiljan directly talks of linguistic imperialism of the English language in this globalised world that envelops all languages, even the bigger ones that can fight back on a regional or state level. In truth, even languages with larger number of speakers are becoming a sort of minority language when compared to English (Škiljan, 2002, pp. 284–286).

#### 4. LINGUISTIC CONFIDENCE

In an open Europe and a global world, a new form of nationality came to life, the Euro-Slovene (Hribar, 2004), whose basic characteristic is openness. For this openness

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alludes to the infamous words spoken by Hitler when arriving in Maribor: 'Machen Sie mir dieses Land wieder deutsch.'

<sup>8</sup> Currently, 2018, there is no national party on the rise in Slovenia (during parliamentary elections in 2018, the Slovene National Party (*Slovenska nacionalna stranka*) received only 4.17% of the votes), which does not mean that this might not change in the future, when looking at the rise of the right in Europe (example, Austria, FPÖ candidate Norbert Hofer, presidential campaign 2016; slogan *Deine Heimat braucht dich jetzt*) or that certain non-explicit national parties will, unfortunately, adopt nationalistic points of view. Philosopher Hribar is of the opinion that in the 3<sup>rd</sup> millennium we did plenty to stop the extreme right and that there is no influence by the extreme right in Slovenia at the onset of the new millennium (Hribar, 2004, p. 213).

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to be unstrained, linguistic confidence is needed, which takes for granted using the Slovene language on Slovenian universities, EU institutions and within the United Nations.<sup>9</sup> The discussion regarding literary language is often-times taken negatively in Slovene linguistics. At the same time, in the 3<sup>rd</sup> millennium, there is still an ongoing search for a new, contemporary Slovene, even though the Slovene language has a tradition in the media spanning almost 90 years (Brojan, 1999; Tivadar, 2003a) and has achieved its full formation in the 20<sup>th</sup> century.

The Slovene nation in part developed on the basis of opposing the other; first the German master, then the Yugoslav master. Slovene national awareness grew and still grows today, although unfortunately, mostly on the basis of opposing its neighbours, especially those from the south, like the neighbouring Croatia and also by opposing migrants that came in 2015 and 2016 across the south Balkan road (this was followed by erecting a razor barbed wire fence). Conflicts with the neighbouring Croatia, where one of the consequences is an unsolved border problem that resonates with the public, are thus even more illogical and incomprehensible since there was no conflicts on the linguistic front in contemporary times (The Slovene map of dialects for the most part did not cross the southern region, even if there are a few linguistic groups that are similar to Slovene dialects; example, Dialektološka sekcija ISJFR ZRC SAZU, 2016). Unfortunately, there is a lack of emphasis on the common points of both nations and languages among the Slovene and Croatian public (ties between the Kajkavian and Slovene language, ties between Istrian and Obmursko in both states etc.; Šekli, 2013). There is plenty of success and cooperation with tourism and economy (winters in Slovenia, summers in Croatia) and the same goes for scientific exchange. Why then are there such conflicts in the public – from the border question, Teran wine protection and the Ljubljana Bank savers and the purchase of Mercator by Agrokor and the failed purchase of Sunčani Hvar by Terme Čatež? This is a question

<sup>9</sup> Despite the aforementioned decline or halting of the right (Hribar, 2004, p. 213) it is still worrisome that in Slovenia simply the linguistic confidence and the desire for a wide circle of speakers to be able to speak the national language is nowadays characterized as nationalistic (for example in Gorjanc, Krek, & Popič, 2015). At least in the professional public those discussing this should make a clear distinction between nationalism and striving for quality linguistic knowledge. Since superficial accusations with 'nationalists' or even worse terms relativises and obscures the truly negative nationalistic acts, which for now are quite rare in Slovenia.

that media and public speech researchers will need to answer concretely in the future.<sup>10</sup>

In actuality, the regional conflicts within both states are bigger than those between the aforementioned neighbouring states (opposition between Ljubljana : Maribor; Zagreb : Split, etc.). Inner-national conflicts among the proverbially unified Croats (an opinion formed by the Slovene public) even with football, for example at the EURO 2016 that also had regional background (conflict: the capital vs. the rest of Croatia, especially Dalmatia) confirm this statement.<sup>11</sup> The intertwining of Slovene and Croatian languages is historically mandated and with new and easier migrations (the removal of the Schengen border between the states) it will become even more intensive. School and the standardized language strictly divide the two languages, nations and cultures. Unfortunately, ideology (often encouraged by foreign, non-Slavic regions) often obscures (Slavic) cultural similarities and only depicts the differences. This was claimed also by Ivan Cankar:

Within the Austro-Hungarian monarchy itself we are chopped into little pieces, so to speak. Political contacts among these pieces are practically hamstrung. I could say that in terms of politics, despite a single sceptre and a single anthem, Zagreb is almost further away from Ljubljana than Paris or Madrid. It will take great effort and a lot of patience to straighten what history and malicious politics have bent out of shape. We began to seek a way in the last few years to come to political contact at least among those pieces of the Yugoslav that are doomed to live in the monarchy. (Cankar, 1967).

It should be noted that Cankar strove for a joint Yugoslav state, which would also include Croats. Pointing out the differences between Slovenes and other South Slavs mirrors a time from a hundred years ago, when Slovene identity was still being strengthened through such differences. Both independent states, today members of the European Union, have no more reasons left to be unconfident and can connect equally in matters of culture and politics with the neighbouring and closely related Slavic nation.

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<sup>10</sup> As a Slovenistics expert and a Slovene I would like to point out the proverbial conflict and (self)destructiveness, also jealousy of the Slovene individual that often overshadows positive attributes (charitableness, honesty and modesty).

<sup>11</sup> A similar claim could be said about Carinthia Austria where the linguistic difference is much greater, but where cultural similarities to Slovenia could be even greater than to other parts of Austria and the German speaking world.

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#### 4.1. What is the proper Slovene?<sup>12</sup>

The question that often arises in Slovenia is – what is the proper Slovene, what is a beautiful Slovene language? At the same time, there is an ongoing search for the 'truly ideal' speaker. Then there is also the opposing opinion that Slovene is a 'hard', 'antiquated' language and that there is no need to be so 'literary rigid'. In the last 10 years there were great polemics regarding the novel by Goran Vojnović *Čefurji raus!* (Vojnović, 2008), where he writes in a specific genre (style) of the Slovene language – on purpose and to be slightly provocative it could be called *fužinščina* (Fužine are the suburbs of Ljubljana. Mostly inhabited by people coming from the south region of the ex-Yugoslavia and they have consequently developed a unique and distinct sociolect popularly called *fužinščina*).

This could include various jokes connected with everyday life in Fužine, for example (Velonyg, 2008):

Denis pozvoni Sanelu na domofon: 'Dobar dan. A je Sanel doma?'  
Sanelova mama odgovori: 'Ni Sanela doma. Sanel brca košarku.'

'SAAAALMIIIREEE! A čuješ ti mene kaj jaz tebe slišim!!!!'

Profesor za matematiko iz srednješolskih časov:  
'Vas dva zadaj, dajta tiho!'

'Bom kupo pištol pa bom pol vse pomrl da bo kri tekala po šipa.'

'Sanel prid doma na kosilo, bo vse mal po mal mrzl.'  
Učitelj: 'Dečki, deklice – teci tek trkom!'

'Čamile, neh se kolesat po travl!'

What was the reaction by native speakers of Slovene when reading these sentences? Laughter, disgust, anger... in short, emotional responses, same as with the content and language of the novel *Čefurji raus!*, it is full of primal emotions. Which is not bad for the book – it is simply the style of the language.

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<sup>12</sup> See Tivadar, 2016.

Looking at the film roles in Slovene films and shows (radio and television) at the break of the millennium, we arrive at an interesting conclusion – *čefurji, immigrants from the south*, are often doormen (Veso in the TV-series *Naša mala klinika*), cleaning ladies (Fata in the TV-series *TV Dober dan*), garbage collectors (film *Kajmak in marmelada*), in the film *Kajmak in marmelada* also members of the mafia... (a little bit about this already in Tivadar 2003b, 2008, p. 115). And all of them possess a distinct 'south accent'. This is also the Slovene language. With these humorous television characters the stereotypical (arrogant) view of the 'southern immigrants' is enforced.

#### **4.2. Dialects and Slovene literary language**

Nowadays, there are still numerous Slovene dialects in existence, which in the past were often described as ugly, but especially lately also as a treasure and an invaluable beauty of the Slovene language (Smole, 2015; Tivadar, 2009). Some predicted that dialects would disappear already in the middle of the 20<sup>th</sup> century (Vodušek, 1950, p. 1150) or at least that they will gradually disappear. Yet the dialects persevered in Slovenia. This means that the geographical diversity is also being preserved (dialects) and not only the social diversity of the language (sociolects). Many local media, commercial and national, strengthened these dialects and have delivered them outside the local homestead (Tivadar, 2008b; Valh Lopert, 2013). This then begs the question whether the language in Slovenia is (mostly) socially defined (the English example in Great Britain, Skubic, 2005) or is the Slovene language defined through dialects, considering the differing economic and cultural development of individual regions (Hanžek, 2000). Sociological value of dialects – social and geographical (so called social genres (*socialne zvrsti*)) division by Toporišič into literary and non-literary, dialectal speech (Toporišič, 2000) is mirrored also on the programme of the national RTV television.<sup>13</sup> Higher socio-economic-cultural development of the centre,

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<sup>13</sup> Diversity and a certain influence of various provincial environment does not mean that Ljubljana is not the centre, just by looking at the amount of news during prime time daily news shows by the commercial POP TV and the National TV Slovenia, Ljubljana occupies more than 80% of them. This is according to research done for March 2006 by the long-time TV employee Marko Prpič (Prpič, 2006; Tivadar, 2008a, p. 138). One finding by Marko Prpič is very interesting, it claims that in comparison with previous years the two shows (*24ur* and *TV Dnevnik*) in 2006 are more similar than two years ago, both publish fewer news and have less agents. However, he would not relinquish the list of 292 people

Ljubljana, dictates higher influence of private speech of the central area within the local and state level media. However, it is not the only dialectal speech in public, it can be said that most Slovenes identify with their own region (Tivadar, 2003a, 2006).<sup>14</sup>

Researching and often overly enforcing personal and non-public linguistic variety also gives rise to its contrast – longing and glorifying the 'beautiful' Slovene language, which came to light also during reviews and criticisms of Vojnović's novel *Čefurji raus!*. In Slovene linguistics since the 60s, the literary language is considered to be the 'highest', most perfect, most demanding, most prestigious linguistic variety:

High(est) social form of a language /.../ Literary (standard) language is also the most conscious social form /.../ Natural live spoken foundations are found in the environment with the largest prestige. For Slovene language this means Ljubljana and the wider city environment around it. (headword *knjižni jezik* 'literary language', Toporišič, 1992, pp. 82–83).

The following could be added to this definition:

When those speaking literary Slovene and those writing literary Slovene would truly adhere to imperfect or wrong rules of grammar and the dictionary, nothing would encourage them to improve their learning /.../ Since what is right in pronunciation is that, which is confirmed by the speech practice of the linguistic area and sections of the population that dictate such things. (Toporišič, 1967, p. 115, p. 118).

If these things are understood in the sense of the natural development of a language, many of the words from this definition can be agreed with. However, the literary language is not some private, spontaneously developing subject. The underlined part of the text ('linguistic area and sections of the population that dictate such things') can be linked to the popular practice among proofreaders (for speech and writing) on the RTV Slovenia and elsewhere and with gentler words, which is the consequence of broad-mindedness and high quality pedagogical work of authors Cvetka Šeruga Prek and Emica Antončič:

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constantly appearing on both televisions due to fear of abuse since election time was closing in. This state of things can be detected even today, but there is little talk of this in the public.

<sup>14</sup> Are there 'Fužine' in Murska Sobota or Maribor, is a rhetorical question for another discussion, a hypothetical answer based on experience is NO.

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What we listen to today in Slovene National Assembly, in schools – from primary to the university, on our local radio and TV stations, in courts, churches, funerals, press conferences and public presentations etc., is for the most part very far from a proper standard Slovene and too obviously betrays the regional origin of the speakers, their inability to hear and control their speech and their weak awareness of the speech situation they found themselves in. /.../ With great refinement we should chase the fragile equilibrium between our scientific system and the development of living speech and at the same time not give in to pressures of ignorance and 'theories of spontaneity'. (Šeruga Prek & Antončič, 2003, p. 7, p. 12).<sup>15</sup>

Also in this quotation is the tendency towards the absolute and ideal and a lot of criticisms towards (non-ideal) public speech, while the authors also point out the suitable relationship between public and private speech. The words 'veneration' and the excessive elitism of literary pronunciation are rarely expressed in modern public speech, but are often emphasised in schools (Tivadar, 2006), and also in relation to dialects (Smole, 2015). This 'elite' outlook was most clearly depicted during a round table back when the current *Lexicon* (Slovenska akademija znanosti in umetnosti [SAZU], 2001) was just being published and a conflict ensued between two seemingly, also in terms of education, opposite sides – *the presenter side* from practical experience (Ajda Kalan, Nataša Dolenc) and *the scientific side* (Jože Toporišič, Janez Dular). Problems arose with numerals ending in -ájst – *dvanájst*, *trinájst* ... (in the *Slovene 2001* the stress is codified on the last syllable). Radio presenters and speech mentors protested on the basis of 'no one speaks like that', while the scientific side claimed that 'true, natural Ljubljana citizens' pronounce only in that manner (examples are taken from the round table regarding the *Slovene orthography* (Slovenska akademija znanosti in umetnosti [SAZU], 2001), on the 16<sup>th</sup> of May 2002, 19.00–22.00, published during the *Studio at 17 o'clock* (*Studio ob 17-ih*), on the 20<sup>th</sup> of May 2002, on Channel 1 of the Radio Slovenija, see Tivadar,

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<sup>15</sup> In the aforementioned words by both speech editors on the radio and theatre there is an opposition between science (linguistics and linguists) and practice (editors on the radio and in the – within this quote the emphasised word *scientific (system)* warns of this. Only rarely is this opposition explicitly worded (for example, Svetec, 2000, where the actor in an interesting manner question the use of the *Dictionary of Standard Slovene* and at the same time argues for the importance of an expert-editor in the theatre). This opposition is often also ostensible and conditioned by the lack of knowledge of those who use the language, which is a consequence of unsuitable speech lessons within the Slovene educational system (from primary school and up to college).

2003a; Tivadar & Jurgec, 2003). It is worth noting that other radio journalists present on this round table argued that *dvánajst* is better since it is then better understood whether this is 'dva-' or 'pet-' -najst. Taking into regard the movable stress position in Slovene, this could actually contribute to a better and easier understanding. However, among numerals from 12 to 19 there is practically no phonemically similar first part (clear articulation therefore suffices) and at the same time the numeral 12 is an independent unit and has almost nothing in common with the number 2. Besides, the stress in English is also on [-teen], which in no way decreases comprehension.

The argument over the stress on numerals between 12 and 19 is especially unnecessary if we take into account the geographical diversity of Slovenia: approximately half of Slovenia has stress on the root and the other on the last syllable (Ljubljana, according to contemporary surveys, has stress predominantly on the root, if the speaker or their parents are not from outside of Ljubljana; Tivadar, 2012) and an already established variable codification in the *Dictionary of Standard Slovene* (Slovenska akademija znanosti in umetnosti [SAZU], 1970–1991). The manner and intensity of argumentation on the aforementioned round table showed partiality and emotional reactions when linguistic questions were concerned, which is not scientific and mostly showcases absoluteness and exclusion. The exposed division according to geographic origin is otherwise a Slovene characteristic in a positive and negative sense.<sup>16</sup> A quote by the winner of the Kresnik award Štefan Kardoš:

/.../ The handicap of those not from Ljubljana could begin to crop up in another way. It seems that fashionable (if not even unmarked) language of Slovene literature is becoming more and more the Ljubljana dialect and all other dialects remain only as a form of stylistic colouring of various types of markings. If this is so, then for an author to live on the periphery will truly become a handicap – living on the periphery will mean living away from the living language of literature. /.../ (Kardoš, 2007, p. 56).

Resistance against the centre is nothing new, but exaggeration could contribute to new divides such as those from the 16<sup>th</sup> and up to the 19<sup>th</sup> century when Slovene joined together based on a common written language. At that time, the central

<sup>16</sup> Also in contemporary phonetic research the dialectal origin is an important criteria when describing Slovene language, which usually means the 'central Slovene' language (Jurgec, 2011).

Slovene literary language stepped back against the all-encompassing common Slovene linguistic code (Tivadar, 2010).

#### **4.3. Croatian relationship towards literature and the dialect from a Slovene point of view**

If we as foreign speakers of Croatian language compare the relationship towards the spoken literary language in contemporary Croatian textbooks, we can see the clear distinction between literary and non-literary.

Even younger Croatian colleagues in their textbooks clearly state:

The impossibility to define from which area a certain radio or TV speaker originates from is the best proof of his or her proficiency in terms of speech and pronunciation. Everyone recognises him or her as a speaker of Croatian language but is at the same time unrecognisable as speaker from a certain part of Croatia. (Kišiček & Stanković, 2014, p.134, translated by Luka Ličar and Hotimir Tivadar).

The importance of proper pronunciation by TV hosts, their public image and their orientation into non-dialectal pronunciation was stressed by Ivo Škarić and Gordana Varošanec-Škarić who claim that most of television speakers still exhibit traces of their organic (dialectal) speech. The selection of television speakers depends mostly on their talent for speech and not so much on how close their primary speech is to the standard language, as used to happen in the past. Due to the great variety in dialects and the distance of these speakers from the standard language it puts that much more importance on additional and thorough education of TV hosts in orthoepy (Škarić & Varošanec-Škarić, 1994, pp. 11–12). Slovene language is even more diverse in dialects than the Croatian language, which is why orthoepy and proper education is important for publicly spoken Slovene. Kišiček and Stanković point out that the standard language is not used at home but rather in public. In other non-public speech situations the dialectal speech is used, which shows the richness of linguistic diversity (Kišiček & Stanković, 2014, p. 134). The fact that in Croatia the rhetoric-speech science and also practice is present within the University since the 60s surely helps achieve such speech maturity (the establishing of the Phonetics Department (*Odsjek za fonetiku*), 1966). The Croatians do not discuss regional origin, the 'true speaker', speech and 'refreshing the language' as it happens in Slovenia. This Slovene insecurity in regards to standards and desires to alter the literary (standard)

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language obviously shows how insecure Slovene linguists are, which comes as a consequence of a lack of tradition and linguistic self-confidence and also a lack of knowledge when it comes speech traditions and the media.

#### 4.3.1. RP-pronunciation in Slovene and Croatian

The theory is clear in numerous standard languages, we can take as an example the Czech language and the definition of their standard language as generally accepted (Palková, 1997, p. 321). This also exists in Slovene in the form of a unified spoken standard language, RP-pronunciation, based on written Slovene, with the vowel stress basis of central Slovenia, meaning Ljubljana and its surroundings, without the reduced vowel-consonant clusters. This claim can be made based on contemporary media research (Tivadar, 2010, 2012). However, Toporišič proposes that due to the large number of dialects in Slovenia there exists a commonly accepted (1976, 1991b) or literary (2000) RP-pronunciation in Slovenia, which is predominantly based on the speech spoken in Ljubljana. Nevertheless, this terminology and description, proposed by Toporišič, does not sufficiently cover the actual and everyday use of the language. Varošanec-Škarić, in her research of changes in the accentuation system and the adoption of these within the Standard Croatian language (2003), first defines English, which is RP-English (originally a term by Jones, Received Pronunciation, 1926; he also lists the Windsor Lewis, 2003, which proposes the term 'General English' that was used already in 1972 in the *Concise pronouncing dictionary*; Varošanec-Škarić, 2003, pp. 485–486). Here, she additionally points out that regional speech and the so-called prestigious regional speech are no longer relevant to the standard language. Varošanec-Škarić in her book *Fonetska njega glasa i izgovora* (2010) uses two terms, generally Received Pronunciation (*općeprihvaćen izgovor (hrvatskog)* – OPIH) and Received Pronunciation (*prihvaćen izgovor* – PI), which points to a level of standardization and an orientation towards general acceptance, as with Palková (Varošanec-Škarić, 2010, p. 147). Forming a standard based on the origin of the speakers was a tendency of Toporišič (see previous chapter) and is also the tendency of some younger linguists (Jurgec, 2011). In a contemporary language, especially a standard language, it is important that the language is generally accepted among its speakers, first and foremost in the geographical area of a country. At the same time, Varošanec-Škarić says that a linguist should describe and not prescribe a contemporary standard speech, which is then 'inserted into dictionaries and manuals' (Varošanec-Škarić, 2003, p. 486).

Of key importance for general acceptance in Slovenia is the national media house with decades of linguistic and cultural tradition – radio 90 years and television 60 years (Tivadar, 1999, 2003a). Speakers are chosen through speech auditions, additionally educated (learning centre, Tivadar, 1999) and have a great influence on the listeners (many speakers later move to commercial media houses (Tivadar, 2006)).

## 5. THE IMPORTANCE AND ROLE OF THE NATIONAL TELEVISION RTV

This chapter seeks to emphasise the importance of the National RTV-house, which is even greater today due to the general accessibility of archives – the reversibility of the spoken language – something that commercial televisions lack or require payment for. HTV (*Hrvatska televizija* – Croatian Television) uploads many talk shows to YouTube, while Slovene RTV very rarely does this.

As said before, Slovene national territory was fragmented throughout history and nationality was built based on a common language (literary Slovene), while Croatian nationality was created foremost on the basis of state and law traditions (Zajc, 2006, pp. 12–13). Slovene national RTV Television was the one that since setting up the radio (1928; more in Tivadar, 2003a) began to also establish Slovene in the public space. Spoken language in Slovene schools was still subordinate to written communication (Tivadar, 2015b). Slovene linguistics, except for the 1946 monograph *Slovensko pravorečje* (Rupel, 1946), had no independent Slovene orthoepy, and there was also no active research into speech and media language. Speech was based on the rules written in the Slovene syntax, which meant greater ties into written language. This often meant excessive speech interpretation akin to reading and learning by personal feeling. After the media was democratised, the likeability factor came to the forefront: while on the radio the main factor was the 'pleasant' voice and the ability to communicate properly, on television it was the appearance, voice and also the ability to communicate properly. Lately, on television, this is limited only to – *pleasant voice and appearance*.

On many spoken media, the auditions became the standard (picking presenters, journalists and others) that help achieve greater critical mass, which enables better choice. A pioneer in executing such auditions was the Radio Slovenia, where at the beginning they mostly picked candidates to be educated as speakers – their criteria was very strict and sometimes subjective, clear criteria especially for the Slovene

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language and speech were not established: 'pleasant, appealing, deep and velvety' voices (quality of voice was defined for the Croatian language in Varošanec-Škarić, 2005), 'limited' dialectal elements, systemic criteria were limited to proper pronunciation of phonemes, stress and the absence of a dialect, 'pleasant' speech melody, fluid speech (fluency), and less so when it came to suitable sentence intonation and sensible accentuation. Learning was based on lessons with a teacher (mentor) and later with a phonetician. Often experienced speakers (presenters), who then became mentors, did their work based on feeling and 'aesthetic' criteria. The absoluteness and non-variability when it comes to stress or phonemes was thus a logical consequence, since a single speaker or a narrow group of speakers as a model in general have no variability – variability is introduced through different speakers coming from different dialects, languages. Even the relatively new orthoepy manual that was produced based on experience and rules from Toporišič's grammar (Šeruga Prek & Antončič, 2003), does not allow, for example, labiodental duplicates before alveolars /l/ and /r/ in anlaut and root position ([vlada, vrata]), even though its use, according to some research of the spoken language and also the speakers reading the texts on the CD that came with the aforementioned manual – is at least duplicated, therefore [vlada/wlada, vreme/wreme]. The labiodental variant may even be dominating (Gošte, 2012; Tivadar, 1999, 2013). When it comes to labiodental pronunciation, despite tolerant and sensible dealings regarding education on the RTV Slovenia or in theatres (*author's experience*), the two authors, in accordance with Toporišič's point of view in the *Slovene Grammar*, even claim:

SP 62 (*Slovenski pravopis / Slovene orthography*, 1962) still allowed before l, lj and r the pronunciation of labiodental v. This change was made after the publication of Toporišič's *Slovene grammar* (1976) and the *Načrta pravil za novi slovenski pravopis* (*Rules guidelines for the new Slovene orthography*) (1981). Regarding the pronunciation of v before root v /probably they mean r/ and l (vreme, vlada) there is still quite a few polemics and resistances going on, mostly with speakers outside central Slovenia. (Šeruga Prek & Antončič, 2003, p. 152).

If size and the intertwining of Slovene national territory is taken into account, the restriction into 'central' in 'non-central' speech is simple, but when taking into account the linguistic reality and modernity, it is unsuitable – what is a central speech? What is the 'true Ljubljana speech'?

This excessive care for language, based on the Ljubljana speech, in many cases still survives today. It should be noted that the RTV programme council on 21<sup>st</sup> of April 2009 during its sessions opened up a discussion on language, which is to be commended, and even on the session itself an extensive debate developed regarding language and speech. However, the media barely mentioned this and even the television house barely mentioned that there indeed was such a discussion about language (what the discussion was like and what they talked about seemed not to be important enough for the wider public). Final consequences of this initiative and the decisions made on the session were: critical monitoring of the programme (by selected individuals), better editing of speakers, creation of a guide, etc. The debates by the RTV programme councillors (from journalists to politicians and other public persons) were most of all intended to emphasise their own worries regarding the language, which is limited only to the activities of editing certain (chosen!) assessors. These were supposed to be well known mentors for speech on the Radio Slovenia, who already co-created the spoken language of the national media in the last few decades and also caused the awe and trepidation towards Slovene (literary) language and speech in general. Fear of proper language leads toward linguistic insecurity.

During this session by the programme council a new orthoepic direction was set: the speech of the Slovene National Radio is the ideal that the National Television should try to emulate, since the radio has a decades long tradition of educating presenters. Nothing was said of the existing radio norms, speakers on the radio and television, and the relationship between television and radio.

## **6. CONCLUDING REMARKS ON SPEECH AND THE SLOVENE LANGUAGE IN REGARDS TO THE CROATIAN LANGUAGE**

The fact is that the standard language in Croatia is the prestigious and pan-Croatian linguistic code, self-evidently exalted and owned by a self-confident Croatian public speaker (Kišiček & Stanković, 2014). Often, there are intensive discussion on literature and standards in Slovenia, the national component and research into speech is often burdened with a private, dialectal speech code, which brings along a plethora of peculiarities and incredible phonetic occurrences. Slovene public speech is left over to spontaneity or perfect control and editing, the two extremes that lead to an extreme, dictatorial relationship towards the language. A higher, general level of speech cannot be attained this way.

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The only solution to improve Slovene speech is through media, film and theatre speech research and by taking into account proper arguments (empirical research). The wrong way would be to prove 'real' solutions based on one's grandeur and tradition or fashion, which is a simple solution that only manages to multiply 'experts' for phonetics or rhetoric, which is such a 'fine sounding' word for the general public. More high quality research can be possible only within an organised and institutionalised (research) unit for language and speech, for example, within the Phonetics' Institute (or Department) on the Faculty of Arts in Ljubljana, similar to those that already exist in Zagreb or Prague, to mention only some of the closer Universities for Slovenes (in terms of space, culture and history).<sup>17</sup>

Research into Slovene speech is crucial especially in the 3<sup>rd</sup> millennium. 'Current' research that can be found in the *Slovene grammar* and *Slovene orthography* in many cases does not reflect the actual state of the language and is often the reason for a lot of communication noise when teaching Slovene and also when considering the wider context.<sup>18</sup>

In particular, it is necessary to highlight the view on language and speech from the perspective of an expert on Slovene language and culture – from a linguistic (development and peculiarities of Slovene language), cultural (meaningfulness and function of the language in Slovenia and in international territory) and also literary (including film and theatre creativity) directions of observation and research of a scientific object, which is the Slovene language in its spoken form. Slovene (literary) language is an economic, social and national strength and life of the entire Slovene territory in a geographic and spiritual sense. It has its tradition and image that is unlike any other personal spoken expression. Elitism and nihilistic exclusion and geographic limitation of the 'slightly' different simply due to small mistakes or diverse variants lead to a reduction of an already small number of speakers of Slovene. The only limitation to the standard language is the quality of the message and communication.

<sup>17</sup> Slovene territory has plenty of schools for rhetoric, various speech and performance school, faculties and institutes that deal with media questions (Tivadar, 2016). While on Slovene faculties and other schools there is no internationally comparable institute for speech research.

<sup>18</sup> It should be mentioned that cooperation with external institutions is crucial – National RTV Slovenia, POP TV, numerous radio stations and other spoken media, which through their financial, technical, staff and organisational abilities could help carry out projects. Cooperation could take place through commissioning expertise reports and various courses and by executing concrete project that would be of interest to media houses.

## REFERENCES

- Boersma, P., & Weenink, D.** (2017). Praat: Doing phonetics by computer. Retrieved from <http://www.fon.hum.uva.nl/praat/>
- Brojan, M.** (1999). *Začetki radia na Slovenskem*. Ljubljana: Modrijan (Radio Slovenija).
- Bučar, F.** (2003). *Porušena harmonija sveta*. Dob pri Domžalah: Miš.
- Cankar, I.** (1967). *Izbrano delo I* (Ed. J. Vidmar). Ljubljana: Mladinska knjiga.
- Dialektološka sekcija ISJFR ZRC SAZU. (2016). Karta slovenskih narečij z večjimi naselji (dopolnjeno karto Tineta Logarja in Jakoba Riglerja (1983), Inštitut za slovenski jezik Frana Ramovša ZRC SAZU, Geografski inštitut Antona Melika ZRC SAZU ter Inštitut za antropološke in prostorske študije. Ljubljana: ZRC SAZU. Retrieved from [https://fran.si/204/sla-slovenski-lingvisticni-atlas/datoteke/SLA\\_Karta-narecij.pdf](https://fran.si/204/sla-slovenski-lingvisticni-atlas/datoteke/SLA_Karta-narecij.pdf)
- Gjurin, V.** (1974). Interesne govorice sleng, žargon, argo. *Slavistična revija*, 22(1), 65–81.
- Gjurin, V.** (1991). *Slovenčina zdaj!*. Ljubljana: Art agencija.
- Gorjanc, V., Krek, S., & Popič, D.** (2015). Med ideologijo knjižnega in standardnega jezika. In V. Gorjanc, P. Gantar, I. Kosem, S. Krek, M. Bratanić, W. Browne, & V. Cvrček (Eds.), *Slovar sodobne slovenščine: problemi in rešitve* (pp. 32–48). Ljubljana: Znanstvena založba Filozofske fakultete.
- Gošte, A.** (2012). *Izgovor fonema /v/ v sodobnem medijskem govoru* (Diploma paper), University of Ljubljana, Slovenia.
- Grafenauer, B.** (1952). *Ustoličevanje koroških vojvod in država karantanских Slovencev (Die Kärntner Herzogseinsetzung und der Staat der Karantanerslawen)*. Ljubljana: Slovenska akademija znanosti in umetnosti (Triglavská tiskárna).
- Hanžek, M.** (2000, October). Znanje in revshchina. *Revija SRP*, 8(39–40), pp. 118–122.
- Hribar, T.** (2004). *Euroslovenstvo*. Ljubljana: Slovenska matica.
- Jurgec, P.** (2011). Slovenčina ima 9 samoglasnikov. *Slavistična revija*, 59(3), 243–268.
- Kalin Golob, M.** (1996). Jezikovnokulture smeri na Slovenskem: romantiki in realisti oz. puristi in protipuristi. In A. Vidovič Muha (Ed.), *Jezik in čas* (pp. 77–91). Ljubljana: Filozofska fakulteta.
- Kardoš, Š.** (2007, July 21). Prekmurski kot blagovna znamka. *Večer*, p. 56.

- Kišiček, G., & Stanković, D. (2014). *Retorika i društvo*. Zagreb: Naklada Slap.
- Magnifico. (1995). Kdo je čefur. On *Kdo je čefur* [CD]. Ljubljana: Menat Records.
- Magnifico. (2000). Halo, Gospodična. On *Sexy boy* [CD]. Ljubljana: POP Records.
- Palková, Z. (1997). *Fonetika a fonologie češtiny*. Praha: Univerzita Karlova.
- Pogorelec, B., Bajt, I., Dular, J., Fras, S., Gantar, K., Gnanuš, O. ... Schrott, S. (Eds.) (1983). *Slovenščina v javnosti: gradivo in sporočila*. Ljubljana: Republiška konferenca Socialistične zveze delovnega ljudstva Slovenije in Slavistično društvo Slovenije.
- Prpič, M. (2006, October 13). Ljubljana – media star. *Časnik Večer*. Retrieved from <http://www.vecer.si/clanek2006101305118504>
- Pulvirenti, L. (2016). Med jezikovno drugačnostjo in strategijami podomačevanja: izposojenke v slovenščini ter pomeni in raba besede ful. In A. Zupan Sosič (Ed.), *Drugačnost v slovenskem jeziku, literaturi in kulturi / 52. seminar slovenskega jezika, literature in kulture* (pp. 125–128). Ljubljana: Znanstvena založba Filozofske fakultete.
- Repe, B., & Kerec, D. (2017). *Slovenija, moja dežela: družbena revolucija v osemdesetih letih*. Ljubljana: Cankarjeva založba.
- Rupel, M. (1946). *Slovensko pravorečje: navodila za zborno ali knjižno izreko*. Ljubljana: Državna založba Slovenije.
- Skubic, A. E. (2001). *Fužinski bluz*. Ljubljana: Študentska založba.
- Skubic, A. E. (2005). *Obrazi jezika*. Ljubljana: Študentska založba.
- Slovenska akademija znanosti in umetnosti. (1970–1991). *Slovar slovenskega knjižnega jezika* [SSKJ] (Vols. 1–5). Ljubljana: DZS.
- Slovenska akademija znanosti in umetnosti. (2001). *Slovenski pravopis*. Ljubljana: Založba ZRC SAZU.
- Smole, V. (2015). Ko nareče v družini zamre. In H. Tivadar (Ed.), *Država in narod v slovenskem jeziku, literaturi in kulturi / 51. seminar slovenskega jezika, literature in kulture* (pp. 18–26). Ljubljana: Filozofska fakulteta.
- Stabej, M. (2010). *V družbi z jezikom*. Ljubljana: Trojina.
- Svetec, A. (2000). Zakaj sem tudi s pomočjo lektorice/lektorja ob uporabi SSKJ – nemočen? *Kolokvij o umetniškem govoru, 13. april 2000.* (pp. 93–98). Ljubljana: Akademija za gledališče, radio, film in televizijo, Katedra za odrski govor in umetniško besedo.
- Šekli, M. (2013). Zemljepisnojezikoslovna členitev kajkavščine ter slovensko-kajkavska jezikovna meja. *Slovenski jezik / Slovene Linguistic Studies*, 9, 3–53.
- Šeruga Prek, C., & Antončič, E. (2003). *Slovenska zborna izreka. Priročnik z vajami za javne govorce (knjiga in zvočna zgoščenka)*. Maribor: Aristej.

- Škarić, I., & Varošanec-Škarić, G. (1994). Skupna slika govora Hrvatske televizije / Overall image of speech on Croatian television. *Govor*, 21(2), 1–12.
- Škiljan, D. (2002). *Govor nacije: jezik, nacija, Hrvati*. Zagreb: Golden marketing.
- Tivadar, H. (1999). Fonem /v/ v slovenskem govorjenem knjižnem jeziku. *Slavistična revija*, 47(3), 341–361.
- Tivadar, H. (2003a). Aktualna vprašanja slovenskega pravorečja. In S. Gajda, & A. Vidovič Muha (Eds.), *Współczesna polska i słoweńska sytuacja językowa* (pp. 281–299). Opole: Uniwersytet Opolski, Instytut Filologii Polskiej; Ljubljana: Univerza v Ljubljani, Filozofska fakulteta.
- Tivadar, H. (2003b). Kontrastna analiza slovenskih i hrvatskih vokala (mogući izgovorni problemi sa slovenskog aspekta) / Contrastive analysis of Slovene and Croatian vowels (some pronunciation problems of Croatian speakers of Slovene). *Govor*, 20(1–2), 449–466.
- Tivadar, H. (2004a). Fonetično-fonološke lastnosti samoglasnikov v sodobnem knjižnem jeziku. *Slavistična revija*, 52(1), 31–48.
- Tivadar, H. (2004b). Priprava, izvedba in pomen perceptivnih testov za fonetično-fonološke raziskave (na primeru analize fonoloških parov). *Jezik in slovstvo*, 49(2), 17–36.
- Tivadar, H. (2006). Slovenski medijski govor v 21. stoletju in pravorečje – RTV Slovenija vs. komercialne RTV-postaje / Slovene media speech in 21<sup>st</sup> century – RTV Slovenija vs. commercial RTV Stations. In Z. Palková, & J. Janoušková (Eds.), *Kapitoly s fonetiky a fonologie slovanských jazyků* (pp. 209–226). Praha: Filozofská fakulta Karlovy univerze.
- Tivadar, H. (2008a). *Kakovost in trajanje samoglasnikov v govorjenem knjižnem jeziku* (Doctoral thesis). Ljubljana, Praga: [H. Tivadar].
- Tivadar, H. (2008b). Pravorečje, knjižni jezik in mediji. In M. Pezdirc (Ed.), *Slovenski jezik, literatura, kultura in mediji: zbornik predavanj* (pp. 24–35). Ljubljana: Center za slovenščino kot drugi/tuji jezik pri Oddelku za slovenistiko Filozofske fakultete.
- Tivadar, H. (2009). Pomen glasoslovja in pravorečja pri učenju slovenščine (s poudarkom na porabskem primeru). In I. Novak Popov (Ed.), *Slovenski mikrokosmosi – medetnični in medkulturni odnosi (Slovenski slavistični kongres, Monošter, 1.–3. oktober 2009)* (pp. 41–51). Ljubljana: Zveza društev Slavistično društvo Slovenije.
- Tivadar, H. (2010). Slovenski jezik med knjigo in Ljubljano. In I. Novak Popov (Ed.), *Vloge središča: konvergenca regij in kultur (Slovenski slavistični kongres,*

- Ljubljana, 30. september–2. oktober 2010*) (pp. 35–44). Ljubljana: Zveza društev Slavistično društvo Slovenije.
- Tivadar, H.** (2012). Nove usmeritve pri raziskavah govora s pogledom v preteklost. *Slavistična revija*, 60(4), 587–601.
- Tivadar, H.** (2013). Aktualna problematika sandhi v slovenščini. In S. Gajda, & A. Vidovič Muha (Eds.), *Sandhi w językach słowiańskich* (pp. 269–278). Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.
- Tivadar, H.** (2014). Nacionalno v slovenskem jeziku. In M. Jesenšek (Ed.), *Slovenski jezik na stičišču več kultur* (pp. 266–279). Maribor: Mednarodna založba Oddelka za slovanske jezike in književnosti.
- Tivadar, H.** (2015a). Med državo in strateško pozicioniranim majhnim narodom, utemeljenim na jeziku, literaturi in kulturi. In H. Tivadar (Ed.), *Država in narod v slovenskem jeziku, literaturi in kulturi / 51. seminar slovenskega jezika, literature in kulture* (pp. 7–8). Ljubljana: Filozofska fakulteta.
- Tivadar, H.** (2015b). Vloga pravorečja in njegovo poučevanje v slovenskem osnovno- in srednješolskem izobraževanju. *Jezik in slovstvo*, 60(3–4), 161–172, 252.
- Tivadar, H.** (2016). Položaj pravorečja in retorike v sodobnem svetu: govorno neznanje in z njim povezana socialna diferenciacija. *Slovenščina danes – Dialogi*, 52(7–8), 135–150.
- Tivadar, H.** (2018). Slovensko pravorečje kot samostojna kodifikacijska knjiga?. *Slavia Centralis*, 11(2), 158–171.
- Tivadar, H., & Jurgec, P.** (2003). Podoba govorjenega slovenskega knjižnega jezika v Slovenskem pravopisu 2001. *Slavistična revija*, 51(2), 203–220.
- Toporišič, J.** (1967). *Jezikovni pogovori II*. Ljubljana: Cankarjeva založba.
- Toporišič, J.** (1976). *Slovenska slovnica* (1st ed.). Maribor: Založba Obzorja.
- Toporišič, J.** (1991a). *Družbenost slovenskega jezika: sociolingvistična razpravljanja*. Ljubljana: Državna založba Slovenije.
- Toporišič, J.** (1991b). *Slovenska slovnica* (3rd ed., reviewed and extended edition). Maribor: Založba Obzorja.
- Toporišič, J.** (1992). *Enciklopedija slovenskega jezika*. Ljubljana: CZ.
- Toporišič, J.** (2000). *Slovenska slovnica* (4th ed., revised and expanded edition). Maribor: Založba Obzorja.
- Valh Lopert, A.** (2013). *Med knjižnim in neknjižnim na radijskih valovih v Mariboru*. Maribor: Litera.

- Varošanec-Škarić, G.** (2003). Prenošenje silaznih naglasaka na proklitiku u općem prihvaćenom hrvatskom izgovoru. *Govor*, 20(1–2), 469–489.
- Varošanec-Škarić, G.** (2005). *Timbar*. Zagreb: FF press.
- Varošanec-Škarić, G.** (2010). *Fonetska njega glasa i izgovora*. Zagreb: FF press.
- Velongy** (2008, October 9). *Primeri iz fužinskega vsakdana* [Blog post]. Retrieved from <https://www.mojvideo.com/uporabnik/velongy/blog/primeri-iz-fuzinskega-vsakdana/503>
- Vodušek, B.** (1950). Pripombe k slovenskemu pravopisu. *Novi svet V., II. knjiga*, pp. 947–954, 1045–1052, 1149–1152.
- Vojnović, G.** (2008). *Čefurji raus!*. Ljubljana: Študentska založba.
- Zajc, G.** (2006). *Kje se slovensko neha in hrvaško začne: slovensko-hrvaška meja v 19. in na začetku 20. stoletja*. Ljubljana: Modrijan.

**Hotimir Tivadar**

*hotimir.tivadar@ff.uni-lj.si*

Filozofski fakultet Sveučilišta u Ljubljani  
Slovenija

## **Budućnost slovenskoga kao jezika bivše Jugoslavije (Jezik i govor između jezičnih diktatora i svakodnevne uporabe)**

### **Sažetak**

U javnom i poslovnom kontekstu prema slovenskome jeziku često se odnosi kao prema fenomenu koji treba poštivati, hraniti i čuvati. Nažalost, pretjerana briga vrlo često za rezultat ima nerazumijevanje raznolikosti jezičnih stilova, ograničavanje komunikacije i uvjeravanje govornika da im je znanje manjkavo. U članku se raspravlja o postojećem pogledu na slovenski govoreni jezik u okviru medija i znanosti. Također, nudi se jednostavno rješenje – govor (govorenje) i istraživanje govora s ciljem određivanja kvalitetnoga javnog diskursa.

**Ključne riječi:** slovenski jezik, standardni jezik, jezična norma, medijski govor



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**Diana Tomić**

*dtomic@ffzg.hr*

Filozofski fakultet Sveučilišta u Zagrebu  
Hrvatska

## Prikrivena sustavnost

### Sažetak

Rad donosi određenje pojma prikrivene sustavnosti i pregled istraživanja spomenutog fenomena. Pregled istraživanja sadržava informacije o istraživačkim metodama, skupinama ispitanika i glasovima kod kojih se pokazalo postojanje prikrivene sustavnosti. Istraživačke metode korištene za istraživanje dijele se u tri temeljne skupine: akustička analiza, fiziološke metode (elektropalatografija i ultrazvuk) te skale za slušnu procjenu. Ispitanici kod kojih se potvrdilo postojanje prikrivene sustavnosti su djeca bilo urednog razvoja ili s govorno-jezičnim oštećenjima, djeca s oštećenjem sluha kojima je ugrađena umjetna pužnica te odrasle osobe za vrijeme učenja stranih jezika. Prikrivena se sustavnost najčešće pokazala pri izgovoru pravih konsonanata ili konsonantskih skupina te likvida.

**Ključne riječi:** prikrivena sustavnost, akustička analiza, instrumentalne metode, VAS

## 1. UVOD

Prikrivena sustavnost (engl. *covert contrast*) označava sustavno razlikovanje glasova na subfonemskoj, obično, barem laicima, perceptivno nerazlikovnoj razini. Sama pojava primijećena je u dječjem govoru te se u anglofonoj literaturi o usvajanju jezika naziva "fenomen fis" zbog izgovora riječi *fish* [fiʃ]. Također, anglofona literatura bilježi i naziv "fenomen wabbit" uz objašnjenje da dijete odbija prihvati izgovor odrasle osobe smatrajući da je taj izgovor identičan dječjem izgovoru (Crystal, 2008). Naziv dolazi zbog nemogućnosti izgovora glasa [r] u engleskoj riječi *rabbit* (hrv. zec) i pojave tipične supstitucije glasom [w]. Naziv fenomena nastao je tijekom istraživanja u situacijama u kojima bi dijete ciljanu riječ izgovorilo supstituiranim glasom, poslije čega bi istraživač ponovio riječ onako kako ju je čuo, ali bi se dijete nastavilo prepirati uvjeravajući ga da govori pogrešno jer dijete čuje dvije različite riječi. Prilagođeno hrvatskom, situacija bi izgledala slično ovoj: dijete kaže [liba], istraživač ponovi [liba], dijete ga ispravi govoreći: "Nije [liba] nego [liba]!", a odraslome te dvije [libe] zvuče podjednako. Budući da je stav pionira razvojne lingvistike da djeca usvajaju jezik i govor s ciljem postizanja pravilnog izgovora, tj. izgovora odraslih, Crystal nudi objašnjenje samog fenomena navodeći da je dječja percepcija razvijenija od proizvodnje i da su fonološki oblici riječi pohranjeni u mozgu ili da dijete posjeduje dva odvojena leksička sustava: jedan za proizvodnju, a drugi za percepciju govora (Crystal, 2008: 191). U novije se vrijeme, osim kod urednoga govorno-jezičnog razvoja, sam fenomen potvrđuje i u istraživanjima govorno-jezičnih poremećaja i oštećenja te kod odraslih osoba koje uče strani jezik.

Prikrivena se sustavnost nalazi na granici istraživačkih područja fonetike i fonologije te govori o njihovom odnosu, zbog čega je izrazito zanimljiva, kako eksperimentalno tako i teorijski. Dva su osnovna razloga zbog kojih se prikrivena sustavnost intenzivnije istražuje i eksperimentalno potvrđuje tek u novije vrijeme. Prvi je taj što se većina analiza dječjega govora temeljila na transkripciji, dakle na slušnoj, odnosno subjektivnoj i perceptivnoj procjeni odraslih osoba. Zbog perceptivnih ograničenja odrasli ne slušaju dječji govor tražeći specifičnosti u njemu, već ga kategoriziraju u skladu s prethodno razvijenim kategorijama materinskog jezika. Slijedom toga, postupak transkripcije dječjega govora oslanja se dominantno na kategorijsku percepciju materinskog jezika, zbog čega je transkript dječjega govora pojednostavljen i uklopljen u njegov fonološki sustav. No suvremene objektivne metode, poput akustičke analize i instrumentalnih metoda, bilježe pravilnosti u

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govoru koje odrasli uglavnom ne percipiraju i koje nije moguće zabilježiti transkripcijom, dakle, kategorijskom procjenom. Drugi je razlog dugogodišnja pretpostavka da je dječji fonološki sustav devijantan fonološki sustav odraslih pa djeca trebaju tijekom razvojnog procesa savladati ispravne oblike. Znanstveni zaokret stoga predstavlja usmjerenost na govornika, odnosno na dijete, na mogućnosti njegovog izgovora, ne zanemarujući pritom i odlike slušanja odraslih.

Ovaj rad donosi terminološko određenje samog pojma i pregled istraživanja prikrivene sustavnosti. Istraživanja su prikazana osvrćući se na istraživačke metode korištene za ispitivanje prikrivene sustavnosti, skupine ispitanika i glasove kod kojih je do sada izmjerena.

## 2. TERMIN PRIKRIVENA SUSTAVNOST

Engleski je termin prvi upotrijebio Hewlett (1988). Uz naziv prikrivena sustavnost, u literaturi se za isti pojam koriste i ovi nazivi: subfonemski kontrast (engl. *supphonemic contrast*), nepotpuna neutralizacija (engl. *incomplete neutralisation*) (Warner, Jongman, Sereno i Kemps, 2004) ili pseudo-neutralizacija. Također, kao što je već spomenuto, lingvistički izvori (Crystal, 2008) ovaj fenomen nazivaju fenomen *fis* (zbog izgovora engleske riječi *fish* – hrv. riba) ili fenomen *wabbit* (zbog izgovora engleske riječi *rabbit* – hrv. zec). Gibbon i Lee (2017b) u uvodniku broja posvećenog prikrivenoj sustavnosti navode kako djeca (artikulacijski i akustički) proizvode različite glasove, ali njih slušači/procjenitelji transkribiraju istim fonetskim simbolom, te da nije rijetko da u istraživanjima ili kliničkoj praksi transkripcija, dakle, kategorijска percepcija odraslih osoba, neutralizira taj kontrast. Određenje samog pojma usmjerilo je izbor hrvatskog termina. Riječ sustavnost je izabrana zbog toga što se usustavljeno javlja kontrast između pojedinih glasova, a prikrivena jer se ne primjećuje bez fizioloških ili akustičkih mjerena, odnosno, u novije vrijeme, perceptivnih zadataka koji u procjeni glasova ne upućuju procjenitelja na kategorizaciju već na procjenu kvalitete, o čemu će više riječi biti u nastavku rada. Također, hrvatski je naziv takav da omogućava dosljedno terminološko praćenje novih znanstvenih rezultata te mu se može pridružiti termin prikrivena nesustavnost za engleski termin *covert errors*, koji se također javlja u ovom istraživačkom prostoru.

Prvi je o prikrivenoj sustavnosti pisao Kornfeld (1971) otvarajući mogućnost da odrasle osobe ne čuju fine detalje u govoru djece, ali da ni djeca ne proizvode jednake razlike kao i odrasli, već selektivno biraju između mogućih razlikovnih obilježja

vidljivih kod odraslih, dodajući da razlika između djece i odraslih nije vidljiva samo u proizvodnji, već i u percepciji. To ilustrira analizom konsonantskih skupina /s/+konsonant u inicijalnoj poziciji (#sK-), u kojima se frikativni dio javlja na početku, ali ne kao potpuno artikuliran glas, već kao šum na početku izgovora okluziva. Ipak, sedamdesetih godina samo određenje pojave bilo je prilično daleko. Tek Scobbie (1998), prepostavljujući da fonološki razvoj prednjači fonetskom, navodi različite uzroke pojave pojednostavljenih oblika u dječjem govoru. On kao moguće izvore navodi netočne ili nepotpune fonološke reprezentacije pohranjene u dječjem leksikonu, zatim netočne artikulacijske pokrete koje dijete koristi za vrijeme izgovora glasa, a zbog kojih slušač perceptivno drugačije odnosno pogrešno kategorizira dječji govor, te uporabu točnih artikulacijskih pokreta, ali na neprikladan način, primjerice s netočnom vremenskom organizacijom pokreta koji pak dovode do netočne kategorizacije dječjega govora kod odraslih. Spomenuti uzroci zaista rezultiraju dječjim načinom izgovora koji razvojno napreduje, pročišćava se i precizira te dostiže kategorije pojedinog jezika. Budući da se unutar fonološke reprezentacije različiti elementi različito oblikuju tijekom razvoja, dječje fonološke reprezentacije zaista možemo smatrati nepotpunima. Nadalje, urođene sposobnosti određuju kvalitetu artikulacijskog znanja koje se manifestira u obliku artikulacijskog pokreta, dok je on istodobno uvjetovan motoričkim sazrijevanjem. Potvrdu za to daju istraživanja na ispitanicima s fonološkim poremećajima koji su pokazali prikrivenu sustavnost u govoru što je pozitivno utjecalo na uspjeh terapije, dok je kod onih kod kojih se nije javila prikrivena sustavnost uspjeh bio manji (Forrest, Weismer, Elbert i Dinnsen, 1994; Forrest, Weismer, Hodge, Dinnsen i Elbert, 1990; Maxwell i Weismer, 1982).

Scobbie, Gibbon, Hardcastle i Fletcher (2000) navode i razloge zbog kojih odrasli ne mogu percipirati prikrivenu sustavnost, odnosno izgovor različitih ciljnih glasova percipiraju homofono. Uzroci za to su sljedeći (Scobbie i sur., 2000): razlike pojedinih akustičkih tragova u dječjem izgovoru premalene su, odnosno subliminalne i izvan dometa ljudske percepcije; vrijednosti akustičkih parametara nisu razlikovne unutar određene jezične zajednice ili se ne smatraju primarnim perceptivnim tragovima, zbog čega ih procjenitelji spontano ne uključuju u perceptivnu analizu, akustičke su razlike u dječjem govoru devijantne, javlja se prevelika varijabilnost artikulacijskog pokreta s obzirom na snagu i vremensku organizaciju ili se javljaju čimbenici poput akustičkih tragova u izgovoru okolnih glasova koji maskiraju odgovarajuću uporabu prikladnih akustičkih razlika za ciljni glas. Ipak, od 2000-ih naovamo prikrivena se sustavnost sve češće mjeri prvenstveno zbog dostupnosti

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metoda koje je mogu potvrditi, iako ni one nisu bez mana. Iz tih razloga prikrivena sustavnost, odnosno stupnjevite promjene tijekom razvoja glasova, prestaje biti fenomen koji se opisuje te se počinje mjeriti (Hewlett i Waters, 2004). Ipak, kako navode Gibbon i Lee (2017a), percepcija glasova, dakle kategorije, temelji se na kompleksnoj matrici akustičkih tragova (engl. *acoustic cues*), od kojih svaki trag može nositi sustavnost, stoga je prilično zahtjevno odrediti mjere ili čak instrumente s kojima će se pokušati potvrditi ta skrivena pravilnost.

### 3. PREGLED ISTRAŽIVANJA PRIKRIVENE SUSTAVNOSTI

#### 3.1. Istraživačke metode korištene u istraživanjima prikrivene sustavnosti

##### 3.1.1. Akustička analiza

Najranije primjenjena metoda koja je potvrdila pojavu prikrivene sustavnosti jest akustička analiza. Kronološki pregled istraživanja pojedine skupine glasova pokazuje i napredak akustičkih mjera korištenih za analizu.

Razliku u dječjem izgovoru odraslima naizgled istih glasova, kao što smo već spomenuli, prvi je primijetio Kornfeld (1971) koji akustički analizira dječji izgovor engleske riječi *glass* (hrv. staklo) i *grass* (hrv. trava), obje realizirane kao [gwas]. Akustička analiza pokazuje da se izgovoreni glasovi, iako ih odrasli kategoriziraju kao [w], međusobno razlikuju po vrijednostima F2, koje su pak drugačije od razlika u vrijednostima za F2 kod odraslih za glasove [r] i [l] u inicijalnoj poziciji. Akustička analiza likvida uključuje srednju vrijednost lokusa F2.

Drugo antologjsko istraživanje proveli su Macken i Barton (1980) koji su longitudinalno pratili razvoj zvučnih i bezzvučnih okluziva u engleskom jeziku kod četvero djece, dvije djevojčice i dva dječaka u dobi od oko godine i šest mjeseci do dvije godine i nekoliko mjeseci. Autori su akustički potvrdili postojanje prikrivene sustavnosti mijereći vrijeme uključenja glasnica (VUG). Tijekom mjerjenja VUG-a autori prepoznaju tri razvojne faze: prvu, u kojoj nema akustičke potvrde o postojanju razlike u izgovoru ciljnih zvučnih ili bezzvučnih okluziva; drugu, koju dijele na dvije podfaze (A i B) tijekom kojih VUG zvučnih i bezzvučnih okluziva prvo ulazi unutar perceptivnih granica zvučnih okluziva kod odraslih (2A), a potom se taj prostor širi te se vrijednosti približavaju vrijednostima zvučnih okluziva (2B), no razlike u toj fazi još uvijek nisu dovoljne da bi ih odrasli percipirali kao bezzvučne glasove. Tijekom

treće faze trajanje VUG-a kod djece približava se vrijednostima odraslih, uz veliku individualnu varijabilnost. Rezultati su pokazali da većina primjera dječje proizvodnje pripada skupini zvučnih okluziva, a u trećoj fazi razvoja pokazuju obrasce na temelju kojih se može smatrati da se u proizvodnji razdvojila kategorija zvučnih i bezvučnih okluziva. Također, treća faza ima dvije podfaze. U prvoj (3A) vrijednosti VUG-a nalikuju vrijednostima odraslih, tj. upadaju u kategoriju različitih fonema po zvučnosti, ali su neupitno duži u trajanju, dok se u drugoj podfazi (3B) približavaju vrijednostima odraslih.

Poslije istraživanja Macken i Barton (1980) uslijedile su brojne akustičke analize okluziva. Maxwell i Weismer (1982) analiziraju govor jednog ispitanika s fonološkim procesima u dobi od 3;11 s razvijenim izgovorom svega nekoliko okluziva ([b], [m], [n] i [d]) i, prema perceptivnim testovima, supstitucijom većine okluziva i konsonantskih skupina s [d]. Akustička analiza okluziva temeljila se na trajanju faze zatvora od slabljenja drugog i trećeg formanta prethodnog vokala do faze eksplozije okluziva.

Gierut i Dinnsen (1986) analizirajući okluzive kod dvoje ispitanika s fonološkim poremećajima otkrivaju da se prikrivena sustavnost može i ne mora javiti. Dječak i djevojčica u dobi od 4;6, odnosno 4;3 godine, nisu imali razvijen izgovor okluziva u inicijalnoj poziciji, iako je razlikovanje okluziva s obzirom na zvučnost bilo prisutno u intervokalskoj i finalnoj poziciji. Akustička analiza uključivala je VUG i trajanje faze zatvora.

U ranije spomenutom radu Hewlett (1988) analizira izgovor zvučnih i bezvučnih alveolarnih i velarnih okluziva u inicijalnoj poziciji u riječima kod ispitanice s fonološkim poremećajem u dobi od pet godina. Akustička je analiza uključila sljedeće mjere: a) VUG pojedinog inicijalnog okluziva, b) frekvenciju najvišeg spektralnog vrha u fazi otpuštanja izmjerenu iznad 2 kHz, c) oblik spektra u fazi otpuštanja.

Forrest i Rockman (1988) akustički analiziraju govor trojice dječaka u dobi od 3;6 do 4;8 godina kod kojih se počela javljati razlika u zvučnosti. Korištena je metoda imitacije jer se željelo dobiti najrazvijeniji izgovor za svaku riječ. Uključili su mjere: amplituda eksplozije (engl. *burst amplitude*) u odnosu na vrijednosti amplitude na početku sljedećeg vokala i amplituda aspiracije, koja je mjerena u središnjoj točki između eksplozije (engl. *burst onset*) i početka vokala. Također, od ostalih akustičkih mjer korištene su smanjena spektralna energija prije početka fonacije (zvučnosti), tranzijenti prvog formanta i promjene vrijednosti  $f_0$ . Razlog zbog kojeg je uporaba drugih akustičkih mjer osim VUG-a u akustičkoj analizi okluziva važna jest veza tih

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mjera i VUG-a, koji zbog poremećaja ne mora nužno biti aktivan akustički trag. Artikulacija od bezvučnog okluziva prema vokalu javlja se prije nego što započne fonacija pojačana samom aspiracijom. Baš aspiracija produljuje trajanje VUG-a. Tranzijenti su stoga pokazatelj aktivnosti larinks-a, a dobiveni rezultati nisu pokazali tranzijente F1 što se može objasniti vrlo sporim otpuštanjem zatvora za vrijeme izgovora okluziva. Relativni intenzitet eksplozije pokazao se kao značajan akustički trag za percepciju okluziva jer pokazuje promjene tlaka u usnoj šupljini implicirajući da je supraglotalno postavljanje za zvučne okluzive većeg volumena u odnosu na bezvučne okluzive. Zbog toga opet vrijednosti VUG-a trebaju biti kraće jer povećan volumen nadgrkljanske šupljine dovodi do vibracije glasiljki. Forrest nastavlja sa sličnim istraživanjima na djeci s fonološkim poremećajima (Forrest i sur., 1990), te analizira proizvodnju [t] i [k] u inicijalnoj poziciji primjenjujući tada noviju metodu momenata spektra (engl. *spectral moment*) u prvih 40 ms bezvučnog okluziva. Četiri su momenta spektra: centar gravitacije ili težište (engl. *mean*), potom standardna devijacija, nagib spektra (engl. *skewness*) i istaknutost glavne amplitude (engl. *kurtosis*) (hrvatski nazivi preuzeti iz Vujasić (2014)).

Skupina autora predvođena Ann Tyler također je tijekom devedesetih provela nekoliko istraživanja prikrivene sustavnosti kod ispitanika s fonološkim poremećajima za vrijeme izgovora okluziva. Prvo istraživanje (Tyler, Edwards i Saxman, 1990) uključivalo je četvero ispitanika u dobi od 4;10 do 5;3 godina. Od akustičkih mjera korišten je samo VUG, određen kao vremenski interval od faze otpuštanja do početka vibracija vokala koji slijedi. Slično je istraživanje o razlikovanju zvučnosti u inicijalnoj poziciji provedeno kod šestero ispitanika s fonološkim poremećajima uključenih u terapiju čije su vrijednosti VUG-a uspoređivali s vrijednostima djece urednoga govorno-jezičnog razvoja (Tyler i Saxman, 1991). Treće istraživanje iste autorice uključuje sintezu prva dva s obzirom na razlikovanje okluziva (mjesto i zvučnost) kod ispitanika s fonološkim poremećajima (Tyler, Figurski i Langsdale, 1993). Uz VUG, akustička analiza uključuje i jednadžbu lokusa. Ta se mjeru pokazala korisnom u analizi izgovora kod ispitanika koji su velarno mjesto artikulacije pomicali prema alveolama.

Kod odraslih govornika također se pokazuje prikrivena sustavnost, ali za vrijeme učenja stranih jezika. Takvo istraživanje o razlikovanju zvučnih i bezvučnih okluziva [p] i [b] kod izvornih govornika arapskog jezika koji uče engleski provode Eckman, Iverson i Song (2015). U istraživanju je sudjelovalo devetero ispitanika od kojih petero nije pokazivalo razliku u zvučnosti između [p] i [b] u engleskom jeziku. Akustička

analiza temeljila se na vrijednostima VUG-a budući da su i ranija istraživanja pokazala da za vrijeme izgovora stranog jezika govornici rade određene "kompromise" koji se akustički mogu kvantificirati kao vrijednosti, primjerice VUG-a, izmjerene između vrijednosti tipičnih za materinski i za strani jezik.

Prva istraživanja koja se bave analizom frikativa i poremećenog izgovora frikativa provedena su osamdesetih godina prošlog stoljeća. U usporedbi s brojem istraživanja koja akustički analiziraju okluzive, mogli bismo reći da su brojčano manje zastupljena, iako nam to samo govor o razvijenosti akustičkih mjera. Naime, vizualna je inspekcija spektrograma s ciljem određenja količine zvučne energije u određenom frekvencijskom dijelu spektra prilično nezahvalna za obradu veće količine podataka (Vujasić, 2014). Tek je razvojem mjera momenta spektra krajem osamdesetih akustički opis frikativa postao precizniji, a time i istraživačima zanimljiviji. Daniloff, Wilcox i Stephens (1980) akustički analiziraju izgovor glasa [s] kod šestero ispitanika s poremećajem izgovora glasova i dvoje kontrolnih ispitanika u dobi od 6;6 do 7;6 godina. Oslanjaju se na spektar šuma kao akustičku mjeru jer je kod djece urednoga govorno-jezičnog razvoja spektar šuma kompaktan u području od 5 do 11 kHz te su vidljivi snažni spektralni vrhovi na 6 i 10 kHz. Baum i McNutt (1990) akustički analiziraju spektralne i vremenske karakteristike izgovora frikativa [s] i [θ]. Za razliku od prvog istraživanja, autori koriste mjere momenta spektra, centar gravitacije ili težište, čije su vrijednosti niže nego kod ispitanika s tipičnim izgovorom glasa [s]. Li, Edwards i Beckman (2009) analiziraju kod dvogodišnjaka i trogodišnjaka izgovor alveolarnog frikativa [s] i postalveolarnih frikativa [ʃ] odnosno [ç] u engleskom i japanskom jeziku. Akustička analiza uključuje četiri mjere momenta spektra i prijelaz u nizu konsonant i vokal (KV) kojim se mjeri F2 na početku vokala. Za početak frikativa autori uzimaju javljanje aperiodičnog zvuka praćenog šumom iznad 2 500 Hz. Kraj frikativa označava početak (engl. *zero crossing*) periodičnog vala vokala.

U pregledu istraživanja prikrivene sustavnosti kod frikativa također treba spomenuti istraživanja na odraslim govornicima koji uče strani jezik (Eckman, Iverson i Song, 2014). Akustička analiza razlike u zvučnosti između [s] i [z] kod izvornih govornika španjolskog koji uče engleski temeljila se na trajanju frikativa. Naime, kod bezvučnih je frikativi trajanje frikcije duže (npr. 97 ms za bezvučne frikative u odnosu na 50 ms za zvučne), jednako kao i trajanje prethodnog vokala koji je dulji prije zvučnih okluziva. Još jedan akustički kriterij za razlikovanje po zvučnosti bilo je preklapanje zvučnog perioda i frikativnog šuma.

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Likvide su uz Kornfelda (1971) analizirali i Hoffman, Stager i Daniloff (1983), Chaney (1988) te McLeod i Isaac (1995). Hoffman i sur. (1983) analizirali su izgovor glasa [r] i njegove supstitucije s glasom [w]. Ispitanici u dobi od 6;6 do 8;4 izgovarali su [r] u inicijalnoj poziciji u riječi, ali unutar rečenice. Korištene akustičke mjere bile su središnje frekvencije na početku F1, F2 i F3, trajanje glasova [r] i [w], trajanje sljedećeg vokala i relativna amplituda konsonanta u odnosu na pripadajući vokal. Chaney (1988) uspoređuje izgovor likvida i kliznih glasova kod djece urednoga govorno-jezičnog razvoja i djece s poremećajima izgovora glasnika. Kao akustičke mjere koristi tranzijente prva tri formanta i promjene drugog formanta koji se brzo mijenja između konsonanta i mirnog stanja vokala. Kod djece, kao i kod odraslih, zabilježeni su obrasci u pojavi formanata. Glas [j] ima nizak F1, a visoke F2 i F3, [w] ima niske vrijednosti F1 i F2, a visoke F3, [r] ima niske vrijednosti F1, a srednje vrijednosti F2 i F3, dok [l] ima niske vrijednosti F1, srednje F2 i visoke F3. Promjene drugog formanta govore o razlikovanju [j] od ostalih poluvokala, dok je kod [w] trajanje izgovora kraće nego za [r] ili [l].

Konsonantske skupine i njihova ostvarenja također pokazuju pojavu prikrivene sustavnosti. Istraživanje koje uspoređuje ostvarenje konsonantske skupine s+okluziv (#sO-) kao okluziva uspoređuje dva ostvarenja okluziva, a za dodatni uvid u dječji izgovor analizirani su okluzivi i frikativi u inicijalnoj poziciji, budući da je jedan od fonoloških procesa koji se često javlja i kod djece s poremećajima izgovora glasnika baš izgovor frikativa kao okluziva (Tyler, 1995). Čini se da pojednostavljivanje konsonantske skupine nije samo supstitucija, nego se izgovor ciljnog okluziva umjesto cijele skupine razlikuje u odnosu na izgovor okluziva izvan skupine. Čak i ranija istraživanja spomenute autorice pokazuju da VUG okluziva izgovorenih umjesto skupine pripada tzv. kraćim vrijednostima (engl. *short-lag*) koje su karakteristične za izgovor bezvučnih glasnika. Druga je mjeru trajanje aspiracije kod bezvučnih okluziva. Treća, manje korištена mjeru je trajanje okluzije u izgovoru intervokalskog okluziva u prednaglašenom slogu u odnosu na okluziv izgovoren umjesto konsonantske skupine. Kod frikativa treba spomenuti one mjerne koje bilježe promjene u izgovoru ispitanika s poteškoćama: trajanje, intenzitet šuma, frekvencijski raspon šuma te, naravno, moment spektra. Ostvarenja #sK-skupina istražuju i Scobbie i sur. (2000). Od akustičkih mjera uzimaju VUG i spektralni nagib jer smatraju da bi se početak fonacijskog ciklusa mogao razlikovati za [t] i [d]. Iz toga izvlače mjeru koju nazivaju istaknutost prvog harmonika (engl. *first harmonic prominence*), a koja govori o relativnom udjelu fundamentalne frekvencije u spektru na početku fonacije. Gulian i

Levlett (2009) akustički analiziraju konsonantske skupine okluziv+/r/ (#Or-) i kreću od akustičkih karakteristika za glas [r] (nizak F3, rastući F2 susjednog vokala). Svjesni ograničenja u dječjem govoru, konkretno upitnih mjera F3, autorice mjere samo F2 u dvije vremenske točke. Prva točka je početak vokala, a druga jedna četvrtina ukupnog trajanja vokala. Na taj način kvantificiraju rastući F2 i regresivno zaključuju o prisutnosti glasa [r]. Razlika u vrijednosti F2 u prvoj i drugoj vremenskoj točki može biti pozitivna, što potvrđuje prisutnost glasa [r].

Pregled akustičkih istraživanja završavamo dvama istraživanjima suprasegmentalnih obrazaca (Carter i Gerken, 2004; Tyler i McOmber, 1999). Tyler i McOmber (1999) analiziraju prozodijske elemente za vrijeme izgovora riječi u množini kod djece s fonološkim poremećajima. Za akustičku analizu koriste trajanje vokala, najvišu vrijednost  $f_0$ , promjene u  $f_0$ , prosječnu vrijednost  $f_0$ , najveću vrijednost intenziteta i intenzitetske promjene. Rezultati pokazuju razliku između imenica u jednini i množini; imenice u množini imale su dulje vokale, najviše vrijednosti  $f_0$ , prosječne vrijednosti  $f_0$  i promjene u vrijednostima  $f_0$  kod jednog dijela ispitanika. Carter i Gerken (2004) koriste niz mjera za određenje trajanja na početku glagola i na početku imena koji su korišteni kao testni materijal. Budući da su imena bila duža i kraća, uspoređivali su trajanje u ostvarenju dužeg imena (Cassandra) koje su ispitanici kratili (Sandy).

### 3.1.2. Instrumentalne metode

Instrumentalne metode primjenjuju se u analizi prikrivene sustavnosti u posljednjih tridesetak godina i važne su za opisivanje prikrivene sustavnosti jer pružaju izravne informacije o pokretima jezika u različitim fazama izgovora (Gibbon i Lee, 2017a). Kako navode, već i "sirovi" podaci pružaju vrijedne informacije o mogućoj pojavi prikrivene sustavnosti bilo na temelju vizualne inspekcije ili objektivnom kvantifikacijom brojčanih indeksa poput mesta artikulacije, količine jezično-nepčanog dodira, simetričnosti dodira ili pojave varijabilnosti. Prvo elektropalatografsko istraživanje kod djece s poteškoćama u govoru proveli su Hardcastle i Morgan (1982) ispitujući izgovor konsonanata i konsonantskih skupina. Istraživanje je uključilo troje djece u dobi od 13, 14 i 6;9 godina, od kojih je starije dvoje djece imalo dispraksiju i dizartriju, dok je najmlađi ispitanik uključen u istraživanje s dijagnozom zakašnjeloga govorno-jezičnog razvoja. Svi ispitanici imali su poteškoće sa slušnim razlikovanjem glasova, što implicira smanjenu kvalitetu fonološke reprezentacije. Jezični je materijal uključivao glasove u inicijalnoj i finalnoj poziciji i u dva različita vokalska okruženja,

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te podražaje s konsonantskim skupinama u različitim pozicijama. Rezultati su pokazali pokrete za vrijeme velarnog izgovora kod jednog ispitanika, što akustička analiza ne može pokazati, oblikovanje zatvora za vrijeme izgovora velara u finalnoj poziciji itd. Iako rezultati nisu donijeli čvrste zaključke, otvorili su cijeli novi istraživački prostor. Gibbon (1990) proučava artikulaciju alveolarnih i velarnih okluziva kod dvije djevojčice s obzirom na položaj jezika pri izgovoru spomenutih glasova. S obzirom na tadašnje spoznaje o fonološkom razvoju i fonološkim procesima, može se govoriti o procesu prednjeg izgovora velara (engl. *velar fronting*) i o stražnjem izgovoru alveolarnih glasova (engl. *alveolar backing*) koji se ne smatra uobičajenim razvojnim procesom. Elektropalatografija (EPG) pokazuje da obje djevojčice razlikuju alveolarne okluzive od velarnih s obzirom na jezično-nepčani kontakt, iako samo jedna proizvodi okluzive tako da je razlika i slušno vidljiva. Podaci objašnjavaju njihove artikulacijske geste, a kao mjere jezično-nepčanog kontakta koriste najveći stalni kontakt (engl. *maximum stable contact*), dakle jezično-nepčani kontakt tijekom okluzije te fazu otpuštanja (engl. *release phase*). Kod ispitanice čiji izgovor alveolarnih okluziva procjeniteljima nije bio razlikovan utvrđeno je da je u fazi otpuštanja pri izgovoru alveolara područje kontakta velarno i da se kontrast ne može proizvesti jer je u toj fazi vrh jezika snižen. Iako je sama artikulacijska gesta dobra, njezina vremenska organizacija ne dovodi do odgovarajućeg izgovora. Druga je ispitanica u fazi otpuštanja spustila tijelo jezika u odnosu na vrh zbog čega je takav izgovor percipiran kao ciljni glas. Elektropalatografski podaci potvrdili su postojanje prikrivene sustavnosti, a ovaj rad prvi put spominje važnost pojave fenomena s obzirom na ishod rehabilitacijskog postupka jer pojava prikrivene sustavnosti može biti pokazatelj tijeka rehabilitacije koji slijedi faze urednoga govorno-jezičnog razvoja. Sljedeći rad iste istraživačke grupe donosi rezultate artikulacije alveolarnih okluziva kod devetogodišnje ispitanice čije geste za ostvarenje jezično-nepčanog kontakta odstupaju od urednih artikulacijskih obrazaca (Gibbon, Dent i Hardcastle, 1993). Ovo istraživanje potvrđuje spoznaju da su artikulacijske geste kod djece s odstupanjima od urednog razvoja duže u trajanju. Kao podražaji korišteni su okluzivi u različitim položajima u slogu i riječi. Ispitivan je stupanj zatvora tijekom tri faze artikulacije (pristup, mirno stanje / najveći zatvor i faza otpuštanja). Rezultati pokazuju neuobičajenu prostornu organizaciju artikulacijskih pokreta za ciljne glasove s alveolarnim mjestom artikulacije te da se, neovisno o perceptivnoj procjeni – bilo da su procijenjeni kao alveolarni ili kao velarni konsonanti, takvi glasovi gestovno razlikuju od gesta za izgovor alveolarnih glasova kod kontrolnog ispitanika. Rezultati

EPG-a pokazuju da se pri izgovoru ciljnih alveolarnih okluziva zatvor, tj. suženje (engl. *constriction*) javlja u velarnom području, no područje jezično-nepčanog kontakta se proširuje u fazi najvećeg središnjeg suženja na palatalno područje, stoga nalikuje na dvostruku velarno-alveolarnu artikulaciju s djelomičnim alveolarnim kontaktom. Područje središnjeg kontakta širi se i na alveolarnu i post-alveolarnu regiju. U fazi otpuštanja područje kontakta je u području velarne regije uz mediopalatalni kontakt. Također, primijetili su i lateralni kontakt jezika pri izgovoru alveolara. Budući da su rezultati pokazali duže trajanje artikulacijskih gesti, nude dva moguća objašnjenja: da ispitanik manipulira trajanjem kako bi dobio kontrast između alveolarnih i velarnih glasova ili da se radi o složenom artikulacijskom pokretu za koji je potrebno više vremena. No, kako se velarni izgovor alveolarnih konsonanata razlikuje i akustički i elektropalatografski od ciljnog izgovora velara, te su ranije spomenute artikulacijske geste obrazac koji se provodi u većem dijelu izgovorenih riječi, autori zaključuju da se radi o prikrivenoj sustavnosti. Razliku između izgovora alveolarnih i velarnih okluziva istraživala je i Friel (1998) u studiji slučaja osmogodišnjeg dječaka kod kojeg se javljao prednji izgovor velara, fonološki proces koji je trebao biti prevladan u urednom govorno-jezičnom razvoju. Elektropalatografski rezultati pokazuju da se atipičan jezično-nepčani kontakt javlja kod izgovora objiju skupina glasova, i to povećana površina dodira u palatalnom području za alveolarne i velarne okluzive u inicijalnoj poziciji te dvostruka velarno-palatalna artikulacija za ciljne velarne glasove u finalnoj poziciji. Rehabilitacijski postupci koji su uključivali vizualnu inspekciju artikulacije pomoću EPG-a pokazali su dobre rezultate.

Sljedeće značajno istraživanje provedeno je na bezvučnim koronalnim šumnicima u engleskom jeziku [s, ſ, tʃ, t] kod desetero ispitanika u dobi od 7;11 do 16;3 godina (Gibbon, Hardcastle i Dent, 1995). Ispitanici su imali zajedničku dijagnozu funkcionalnih poteskoća izgovora glasova. Izgovor glasa [t] je kod svih ispitanika bio uredan, dok su ostala tri glasa, kako ih autori nazivaju žlijebni glasovi (engl. *groove consonants*), bila distordirana s dentalnim, palatalnim ili lateralnim izgovorom. Analiza elektropalatografskog signala provedena je u jednoj anotacijskoj točki (palatografskom okviru (engl. *frame*)) za okluziv i frikative, odnosno u dvije točke / dva okvira za afrikatu. Izbor anotacijske točke za okluziv i frikative temelji se na najvećem broju kontakata elektroda, dok je za afrikatu izabrana ista točka, ali između faze okluzije i faze frikcije, a kao druga točka izabran je početak platoa stabilnog jezično-nepčanog kontakta između faze otpuštanja i kraja faze šuma, tj. frikcije. Iako se izbor anotacijskih točaka nameće zbog poznavanja artikulacije

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urednoga govora, kod djece s artikulacijskim odstupanjima to nije bilo jednostavno, posebno zato što je teško izdvojiti područje stabilnog jezično-nepčanog kontakta. Perceptivna procjena izgovorenih glasova podijelila je ispitanike u tri skupine. Dvoje djece pripalo je skupini palataliziranog izgovora, jedno dentalnog, a sedmero lateraliziranog izgovora. Rezultati dobiveni EPG-om pokazuju prikrivenu sustavnost kod prve skupine ispitanika (palatalizirani izgovor). Jedan ispitanik razlikuje okluziv od okluzivnog elementa u afrikati, dok drugi obje geste smješta u široko područje od alveola do tvrdog nepca. Općenito, njihov izgovor karakterizira usko sužavanje praćeno oblikovanjem središnjeg žlijeba u palatalnom i velarnom području, uz dodatak jezično-nepčanog dodira i u području alveola. Ispitanik s dentalnim izgovorom pokazuje određenu pravilnost, i to asimetrično oblikovanje žlijeba s lijeve strane. Skupina s lateraliziranim izgovorom šumnika pokazuje priličnu heterogenost, no potpuni kontakt javlja se na tvrdom nepcu za one glasove koje su slušači procijenili kao lateralizirane. Mjesto artikulacije varira cijelom dužinom nepca – od postalveolarnog do velarnog. Iako je kod nekih ispitanika vidljivo grupiranje, opći je zaključak da artikulacijski pokreti ove skupine obuhvaćaju široko područje.

Pregled elektropalatografskih istraživanja povezanih s prikrivenom sustavnošću završava s istraživanjem na odrasлом ispitaniku s rascjepom nepca (Gibbon i Crampin, 2001). Artikulacijski poremećaj uzrokovani je rascjepom, a manifestira se, između ostalog, poteškoćama u razlikovanju alveolarnih i velarnih okluziva u engleskom jeziku koji se izgovaraju kao srednjejezični palatalni okluziv [c]. Rezultati elektropalatografske analize pokazuju da je pri izgovoru ciljnoga glasa [t], iako percipiranog kao [c], mjesto artikulacije prednje u usporedbi s izgovorom ciljnoga glasa [k]. Također, pokazalo se da pri izgovoru [c] dolazi do lateralnog otpuštanja zračne struje (engl. *lateral release*) nakon kojeg slijedi faza lateralne frikcije. Korištene su slične anotacijske točke kao i u prethodnim istraživanjima iste autorice: a) pristup zatvoru (engl. *approach to closure*), b) najveće suženje (engl. *maximum constriction*), c) artikulacijsko otpuštanje (engl. *articulatory release*), d) faza eksplozije (engl. *stop burst*) i e) početak fonacije (engl. *onset of voicing*). Osim elektropalatografskih (a-c) i akustičkih (d i e) mjera, korišteni su i indeks centra gravitacije (engl. *Center of Gravity*, COG), kao prostorna mjera, te indeks artikulacijskog otpuštanja (engl. *Articulatory Release Index*, ARI). Rezultati pokazuju razliku u artikulaciji ciljnih glasova s obzirom na mjesto. Vrijednosti COG-a pokazuju prednje mjesto artikulacije pri izgovoru [t] u odnosu na [k]. To dodatno potvrđuju i pristup zatvoru (a) i najveće suženje (b), ali ne i artikulacijsko otpuštanje (c). Također, elektropalatografski rezultati potvrđuju lateraliziranu artikulaciju

(otpuštanje i frikciju) kod osoba s rascjepom nepca koja je slušno zamijećena i u ranijim istraživanjima, ali i razlog zbog kojeg se razlikovanje okluziva prema mjestu artikulacije neutralizira. Naime, umjesto vrhom jezika, za postizanje zatvora pri izgovoru okluziva, osobe s rascjepom nepca intenzivno koriste leđa jezika, posebno prednji dio.

Drugu veliku skupinu instrumentalnih istraživanja čine ultrazvučna istraživanja. Ultrazvuk je, za razliku od elektropalatografije, manje invazivna metoda pa stoga i prihvatljivija za istraživanja na mlađim ispitanicima. On pruža informacije o položaju i obliku jezika od vrha do korijena na temelju kojih se mogu analizirati položaji za vrijeme izgovora pojedinih glasova. Zbog toga se čini da bi ultrazvučna istraživanja mogla donijeti značajan napredak za razumijevanje perceptivno određenih fonoloških procesa kod djece. Do danas je poznato samo jedno ultrazvučno istraživanje koje je pokazalo prikrivenu sustavnost kod djece za vrijeme izgovora velara (McAllister Byun, Buchwald i Mizoguchi, 2016). Uz ultrazvučno ispitivanje, u istraživanju s dvoje ispitanika korištena je akustička analiza. Ultrazvučna mjera koju autori koriste jest koeficijent razine izdignutosti, KRI (engl. *Dorsum Excursion Indeks*, DEI) (hrvatski termin preuzet iz Carović, (2014)). Zharkova (2013) određuje indeks kao mjeru izdizanja leđa jezika prema nepcu te se očekuje da će biti viši kod glasova kod kojih je takav pokret važan pri izgovoru, primjerice kod velara ili zatvorenih vokala. Uz KRI, McAllister i sur. (2016) kao akustičke mjere koriste VUG i moment spektra eksplozivnog dijela okluziva. Istraživanje se bavilo prednjim izgovorom velarnih okluziva [k, g] (engl. *velar fronting*). Kod ispitanika u čijem je izgovoru utvrđena prikrivena sustavnost, VUG i tri od četiri mjere momenta spektra nisu pokazale značajne razlike, dok je prikrivena sustavnost dobivena jedino u analizi istaknutosti glavne amplitude (engl. *kurtosis*) i indeksa KRI. Budući da je taj ispitanik testiran dva puta, prije početka terapije i poslije, treba naglasiti da ni njegovi rezultati nisu dosljedni. Naime, prikrivena je sustavnost potvrđena akustičkom analizom prije početka terapije, a ultrazvučnim rezultatima poslije terapije. Smatraju da je razlog za to vokalsko okruženje. Istaknutost glavne amplitude značajna je kad su ciljani okluzivi okruženi stražnjim vokalom, dok je KRI u istoj točki snimanja zamjetan kod prednjih vokala. Dakle, rezultati objiju analiza pokazuju prisutnost prikrivenе sustavnosti kod ispitanika koji razlikuju alveolarne i velarne okluzive i kod jednog ispitanika koji ih ne razlikuje, dok kod drugog takav oblik pravilnosti u izgovoru nije utvrđen ni za akustičke ni za ultrazvučne mjere, što ne znači da ga nema, već samo da spomenute mjere to ne pokazuju. Zaključno, čini se da ovi rezultati potvrđuju da je prikrivena

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sustavnost faza u urednom govorno-jezičnom razvoju, koja se, kao što su Macken i Barton (1980) pokazali, javlja prije perceptivno zamjetnog kontrasta, što znači da će ispitanik razliku između alveolarnih i velarnih okluziva pokazati prije sa stražnjim vokalima i da je istaknutost glavne amplitude utjecajnija mjera od KRI-ja. No s obzirom na ograničenja govornog materijala, dodatna su istraživanja potrebna prije nego što se donesu čvrsti zaključci.

Čini se da će ultrazvuk biti važna metoda u istraživanju dječjega govora u budućnosti jer su prevladane određene prepreke, primjerice istraživanje bez uporabe stabilizacijskog sustava, što je važno za istraživanja s djecom. Također, istraživači razvijaju specijalizirane mjere, tj. indekse, koji su važni za mjerjenje pojedinih fenomena, prikaz podataka i usporedbu (za raspravu o trenutno dostupnim finim mjerama za ultrazvučna istraživanja kod djece vidi Zharkova, Gibbon i Lee, 2017). Instrumentalne metode u usporedbi s akustičkom analizom pružaju drugačije informacije o prikrivenoj sustavnosti, što predstavlja velik istraživački doprinos. Naime, ako glasove, kao što je već rečeno, smatramo matricama, svaki element matrice (obilježje, odnosno artikulacijski pokret) može sadržavati prikrivenu sustavnost. Ako se ona ne potvrdi određenim mjerama ili metodama, to ne znači nužno da je nema, već da određeni element u matrici (engl. *cue*) nije mjerен.

### 3.1.3. Skale za slušnu procjenu

Treću skupinu metoda korištenih u istraživanju prikrivene sustavnosti čine različite skale za procjenu kvalitete izgovora. Novija istraživanja slušne procjene prikrivene sustavnosti potaknuta su rezultatima akustičke analize i fizioloških metoda, a kreću od pretpostavke da odrasli, ako su testirani na prikladan način, mogu perceptivno primijetiti fine fonetske razlike. Uspoređujući tri različite metode: vrijeme odgovora u zadatku prisilnog izbora (engl. *response times in forced-choice*, FCRT), prisilni izbor uz procjenu kvalitete kategorije (engl. *forced-choice identification followed by direct magnitude estimates of category goodness*, FC-DME) i jednodimenzionalnu vizualnu analognu skalu VAS (engl. *unidimensional visual-analog scaling*, U-VAS) za procjenu stupnjevitosti u dječjem izgovoru, pokazalo se da VAS daje najbolje rezultate (Urberg-Carlson, Munson i Kaiser, 2008). VAS je zadatak koji od ispitanika traži da stupnjevito procijene psihofizički parametar tako da označe koliko njihova percepcija podražaja odstupa od prototipnog (Munson, Edwards, Schellinger, Beckman i Meyer, 2010). Prvi su je upotrijebili Massaro i Cohen (1983), najdetaljnije je opisana u istraživanjima za procjenu boli, a do danas su provedena brojna istraživanja za procjenu kvalitete izgovora kod djece

(Julien i Munson, 2012; Munson i sur., 2010; Munson, Schellinger i Carlson, 2012; Schellinger, Edwards, Munson i Beckman, 2008). U različitim fazama istraživanja istraživačka grupa bila je okupljena oko projekta Padiologos (voditelji Beckman, Munson i Edwards). Većina istraživanja koristila je dječji govor iz spomenute baze, a kao podražaji korištene su riječi s frikativima kao ciljnim glasovima budući da oni pripadaju skupini kasnih glasova u razvoju. Najčešće su korišteni frikativi i to u kombinaciji od šest podražaja u odnosu poput ovog: [s] za [s], [s] za [θ], s:θ, θ:s, [θ] za [s] i [θ] za [θ]. Podražaji su normalizirani i akustički opisani prema psihoaustičkim mjerama (uporaba ERB-a umjesto Hz za frekvencije ili sona umjesto dB za glasnoću) (Munson i sur., 2010). U prvom istraživanju s podjednakim brojem podražaja iz svake od šest opisanih kategorija ispitanici su dobili liniju koja je na jednom kraju bila označena slovom *s*, a na drugom slovima *th*. Slušali su podražaje te su trebali procijeniti koliko je glas koji su čuli udaljen od prototipa pojedine kategorije. Rezultati su pokazali da slušači prepoznaju i razlikuju svaku od šest kategorija. U drugom istraživanju korištena je rečenica u koju su umetnuti podražaji. Rečenica je oponašala govor starijeg djeteta (bez fonoloških procesa i s nižim  $f_0$  i formantskim frekvencijama) i mladeg djeteta s uobičajenim fonološkim procesima, primjerice supstitucijama likvida i višim vrijednostima  $f_0$  i formanata. Ispitanici su odgovarali binarno (da ili ne) na pitanje o prihvatljivosti glasa [s]. Rezultati su pokazali da rečenica i dob djeteta ne utječu na rezultate prikladnosti pojedinog podražaja. U dalnjim istraživanjima varirali su uporabu rečenice u kojoj je podražaj, utjecaj uputa (spominjanje distordiranog izgovora), ali i frekvencijsku usklađenost podražaja i rečenice u koju je umetnut. Zaključuju da različiti elementi utječu na percepciju, jednako kao i iskustvo, ali da je VAS neupitno dobar alat za procjenu finih razlika u izgovoru pojedinih ciljnih glasova (Munson i sur., 2012). Rezultati su potvrđili da odrasli mogu odbaciti fonološku obradu govora s nastojanjem uspostavljanja kategorija i govor obradivati fonetski procesirajući sitnije detalje (Schellinger, Munson i Edwards, 2017). Međutim, ta su istraživanja pokazala da se procjena slušača također razlikuje. Nisu zabilježeni podaci o tome da se kod nekih slušača javlja isključivo kategorijalska procjena, ali je i stupnjevitost u procjeni stupnjevita, tj. različita kod različitih slušača. Da bi VAS u procjeni dječjega govora, posebno u kliničkoj praksi, pronašao svoju primjenu, potrebno je bolje razumijevanje odraslih procjenitelja. Osim utjecaja pažnje na percepciju fonetskih detalja u govoru (Munson, Schellinger i Edwards, 2017), čini se da i radno pamćenje utječe na sposobnosti procjenitelja te da oni koji dosljednije primjenjuju kontinuiranu procjenu imaju veći kapacitet radnog pamćenja (Kong i

Edwards, 2011). U svakom slučaju, VAS neupitno ima svoje mjesto u perceptivnim istraživanjima prikrivene sustavnosti, no svakako je potrebno profilirati procjenitelje prema različitim kriterijima, od iskustva s atipičnim govornim uzorcima do radnog pamćenja.

### 3.2. Skupine glasova kod kojih se pokazala prikrivena sustavnost

U drugom dijelu pregleda istraživanja prikazat ćemo rezultate akustičke analize za prethodno spomenute akustičke mjere.

Budući da se najčešće istražuju okluzivi, korištene mjere u tim istraživanjima su: VUG, moment spektra, ali i jednadžba lokusa, frekvencija najvišeg spektralnog vrha u fazi otpuštanja te oblik spektra u fazi otpuštanja, zatim amplituda eksplozije (engl. *burst amplitude*) u odnosu na vrijednosti amplitude na početku sljedećeg vokala, amplituda aspiracije mjerena u središnjoj točki između eksplozije (engl. *burst onset*) i početka vokala, smanjena spektralna energija prije početka fonacije (zvučnosti), tranzijenti prvog formanta i promjene vrijednosti  $f_0$ . Najčešće se ispituju razlike u zvučnosti i razlike u mjestu artikulacije (alveolarno-velarno). U nastavku prikazujemo dostupne vrijednosti za pojedinu akustičku mjeru, uz osrvt na veliku raspršenost rezultata za engleski jezik.

U literaturi nalazimo određena neslaganja oko referentnih vrijednosti VUG-a. Macken i Barton (1980) u svom istraživanju za razlikovanje zvučnih od bezvučnih okluziva koriste +30 ms za bilabijalne i alveolarne okluzive, odnosno +50 ms za velarne, iako se +20 ms može uzeti kao najniža vrijednost koju možemo percipirati. Kako bi odredili referentne vrijednosti VUG-a za odrasle, autori se pozivaju na ključna istraživanja za engleski jezik (Lisker i Abramson, 1964; Klatt, 1975 i Zlatin, 1974 prema Macken i Barton, 1980) u kojem VUG za pojedini okluziv iznosi: [b] od +1 do +11 ms, [d] od +5 do +17 ms, [g] od +21 do +27 ms, [p] od +47 do +81 ms, [t] od +67 do +87 ms, [k] od +70 do +90 ms.

Često VUG djelomično potvrđuje ili ne potvrđuje prisutnost prikrivene sustavnosti (Forrest i Rockman, 1988; Forrest i sur., 1994, 1990; Gierut i Dinnsen, 1986; Hewlett, 1988). Rezultati istraživanja Gierut i Dinnsen (1986) pokazuju da nema razlike u trajanju faze zatvora niti VUG-a između zvučnih i bezvučnih okluziva prema mjestu tvorbe kod jednog ispitanika (npr. trajanje zatvora za [b] iznosi 135,68 ms, a VUG 26,58 ms, dok za [p] iznose 144,36 ms, odnosno 25,69 ms), no razlika je sustavno vidljiva kod ispitanice (npr. trajanje zatvora za [b] iznosi 160 ms, a VUG 18,4 ms, dok za [p] iznosi 188,61 ms, odnosno 37,78 ms). Sličan obrazac

vidljiv je i za ostale skupine okluziva, što pokazuje stupnjevitost poremećaja. Ni kod Hewletta (1988) akustička analiza nije pokazala statistički značajne razlike za vrijednosti VUG-a osim kod jednog dječaka, ali su zamjetne spektralne karakteristike između dviju skupina glasova. Vidljiva je tendencija da djeca imaju dulje vrijeme uključenja glasnica, jednako kao i veću varijabilnost mjerena akustičkim parametara. Također, koartikulacijski utjecaj vokala izraženiji je kod izgovora velara [k]. Akustička analiza nije pokazala razliku u okluzivima kod ispitanice s fonološkim poremećajima, no VUG i spektralna obilježja pokazuju značajan utjecaj okolnih vokala uz izraženu varijabilnost. Zanimljivo je da, osim varijabilnosti, autor komentira i koartikulaciju, te se čini da je ispitanica s fonološkim poremećajem zbog količine anticipacijskih koartikulacijskih pokreta zapravo motorički spretnija, no kako je to s obzirom na poteškoće manje vjerojatno objašnjenje, autor navodi da se zapravo radi o tzv. "statičnoj" koartikulaciji, u kojoj se isti položaj zadržava od eksplozije do faze mirnog stanja vokala. Dakle, anticipatori pokreti su strategija pripreme artikulatora da bi se izbjeglo pomicanje u određenim fazama koje su važne za ostvarenje kontrasta, što rezultira gomilanjem pokreta s jedne strane i lošijom vremenskom organizacijom s druge. Uz to, prijelaz između segmenata se kristalizira kao potencijalno teško mjesto.

Forrest i sur. (1990) u akustičkoj analizi koriste moment spektra. Ispitanici s fonološkim poremećajima (tri od četiri) ne razlikuju ispitivane okluzive, dok je za jednu ispitanicu akustička analiza pokazala razliku. Usporedivši njezine rezultate s rezultatima kontrolne skupine, čini se da je razlikovanje [k] i [t] dobiveno na drugačiji način nego kod djece urednog razvoja, što može implicirati zakašnjeli razvojni tijek. Prilično heterogene rezultate donosi i Tyler u trima istraživanjima koja procjenjuju ishod rehabilitacije. U prvom radu (Tyler i sur., 1990) kod prvog ispitanika izgovor okluziva u svim riječima kategoriziran je kao [g], iako su prosječne vrijednosti VUG-a bile 22,65 ms za velare i 28 ms za alveolare, odnosno 21,18 ms za ciljane zvučne glasove u odnosu na 29,39 ms za bezvučne. Posljednja je vrijednost izrazito povećana poslije terapije (81,33 ms). Kod drugog ispitanika vrijednosti VUG-a prije terapije bile su 14 ms za velare i 22,94 ms za alveolare, odnosno 18,06 ms za ciljane zvučne glasove u odnosu na 18,89 ms za bezvučne. Poslije terapije sve su vrijednosti izrazito narasle (zvučni – 235,11 ms, bezvučni – 428,06 ms, alveolari – 448,67 ms i velari – 214,5 ms). Kod ovo dvoje ispitanika u prvoj je točki mjerjenja primijećena prikrivena sustavnost. Četvrti je ispitanik pokazivao razlike u vrijednostima VUG-a za kontrast zvučnosti i prije terapije (zvučni – 29,65 ms, bezvučni – 23,72 ms, alveolari – 30,22 ms i velari – 22,76 ms), no kako nije bio uključen u terapiju nakon osam

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tjedana, vrijednosti su uglavnom nepromijenjene (zvučni – 20,11 ms, bezvučni – 26,83 ms, alveolari – 22,44 ms i velari – 24,5 ms). Rezultati drugog istraživanja iste istraživačke skupine (Tyler i Saxman, 1991) pokazuju varijabilnost u rezultatima. Na primjer, vrijednosti za N1 su [b] od -43 do 17 ms, za N2 od 3 do 34 ms, a za N3 od 0 do 12 ms. Općenito, kod ispitanika s fonološkim poremećajima vrijednosti VUG-a dulje su i varijabilnije te ne slijede uvijek obrasce dobivene kod djece s urednim govorno-jezičnim razvojem. Primjerice za glas [b] iznose od 4 do 19 ms (D1), od 8 do 235 ms (D2) i od 5 do 47 ms (D3). Poslije terapije se mijenjaju, ali su i dalje varijabilne i netipične te iznose, primjerice, za [b] od -10 do 18 ms (D1), od 7 do 15 ms (D2) i od 6 do 19 ms (D3). Varijabilnost se povezuje s razvojem razlikovanja po zvučnosti i opada učvršćivanjem motoričke vještine. Unutar skupine ispitanika s fonološkim poremećajima nije zabilježena pravilnost s obzirom na trajanje terapije. Treće istraživanje iste autorice uključuje sintezu prva dva s obzirom na razlikovanje okluziva (mjesto i zvučnost) kod ispitanika s fonološkim poremećajima (Tyler i sur., 1993), a kao mjeru uvelo je i jednadžbu lokusa uz VUG. Ta se mjera pokazala korisnom u analizi izgovora kod ispitanika koji su velarne okluzive izgovarali prednje. Vrijednosti nagiba za [g] i [d] nisu se razlikovale prije terapije i kod dvoje ispitanika nalikovale su vrijednostima za [g] kod djece urednoga govorno-jezičnog razvoja.

Usporedba vrijednosti VUG-a u engleskom jeziku kod odraslih govornika koji uče strani jezik također pokazuje određene trendove, ali ne i apsolutnu prisutnost prikrivene sustavnosti (Eckman i sur., 2015). Naime, vrijednosti VUG-a kod bezvučnih okluziva variraju od 58 ms za [p] do 80 ms za [k], dok su vrijednosti kod zvučnih od 1 ms za [b] do 21 ms za [g]. S druge strane, arapski zvučni okluzivi imaju negativne vrijednosti VUG-a zbog vibracija glasnica tijekom zatvora i iznose od -40 do -90 ms. VUG kod bezvučnih okluziva u arapskom, u kojem [p] nije kategoriziran kao fonem, iznosi od 15 do 35 ms i bliži je vrijednostima zvučnih okluziva u engleskom. Akustička analiza pokazala je prikrivenu sustavnost kod dvoje od petero ispitanika kod kojih transkripcija nije pokazala razliku u zvučnosti. Prosječna vrijednost VUG-a za glas [p] kod prvog ispitanika iznosi 70 ms, a za [b] 27 ms, dok je kod drugog vrijednost za [p] 19 ms, a za [b] 11 ms i nije statistički značajna. Unatoč tome, ističu važnost mjerjenja prikrivene sustavnosti jer ona govori o procesu ovladavanja fonologijom stranog jezika. Čini se da je ovo još jedna potvrda da se segmentima stranog jezika ovladava pod utjecajem materinskog.

Rezultati dobiveni akustičkom analizom frikativa također djelomično potvrđuju prikrivenu sustavnost i čak više nego kod okluziva naglašavaju potrebu za razvojem

dodatnih akustičkih mjera (Holliday, Reidy, Beckman i Edwards, 2015), iako bismo mogli reći da postoji potreba i za dodatnim istraživanjima s dosad poznatim mjerama. Korištene mjere u ranijim istraživanjima su određenje spektralne energije u spektru šuma, a u novijima četiri momenta spektra, trajanje frikativa te preklapanje zvučnog perioda i frikativnog šuma.

Daniloff i sur. (1980) akustički analiziraju izgovor glasa [s] kod šestero ispitanika s poremećajem izgovora glasova i dvoje kontrolnih ispitanika u dobi od 6;6 do 7;6 godina. Kod djece urednoga govorno-jezičnog razvoja spektar šuma je kompaktan u području od 5 do 11 kHz te su vidljivi snažni spektralni vrhovi na 6 i 10 kHz. Ispitanike grupiraju prema vrsti sigmatizma i prema tom kriteriju dvoje djece ima dentalni sigmatizam, dvoje lateralni, a dvoje nije kategorizirano. Ispitanici s dentalnim izgovorom glasa [s] pokazuju zvučnu energiju manjeg intenziteta koncentriranu u području od 6 do 12 kHz, bez izraženih vrhova i, za razliku od ispitanika s urednim izgovorom, promjene spektra manje ovise o glasovnom okruženju. Lateralni izgovor glasa [s] akustički pokazuje raspršenje u spektru na području od 4 do 9 kHz ili od 4 do 10 kHz. Osim prisutnosti šuma u nižem spektralnom području (4 kHz), vidljivi su manji, ali brojniji vrhovi. Treća skupina ispitanika nije pokazala spektralne pravilnosti u izgovoru glasa [s]. Iako ne govore izravno o prikrivenoj sustavnosti, i iz ovog se istraživanja može zaključiti da, unatoč distordiranom izgovoru, ispitanici ostvaruju određene pravilnosti u izgovoru. Novije istraživanje koje koristi četiri momenta spektra potvrđuje prikrivenu sustavnost, pokazuje određena razvojna obilježja kod djece, ali i otkriva određene posebnosti u izgovoru frikativa kod odraslih govornika engleskog i japanskog (Li i sur., 2009). U engleskom se [s] i [ʃ] razlikuju s obzirom na prvi od četiriju momenata spektra – težište ili centar gravitacije, dok u japanskom to nije dovoljna mјera te je treba kombinirati s vrijednostima F2 na početku vokala. U japanskom [s] je difuzniji od [ɕ]. Istaknutost glavne amplitude niža je za [s] u japanskom nego za [ɕ] ili za [s] u engleskom jeziku, dok su vrijednosti raspršenja za [s] u japanskom više. Iz toga se zaključuje da se, u usporedbi s engleskim, glas [s] u japanskom izgovara dentalno i laminalno. Razvojno, engleski govornici ranije usvajaju [s], a japanski [ɕ]. U dječjem govoru kod engleskih ispitanika zanimljivo je i to da su djeca prilično rano, u dobi od dvije ili tri godine, savladala izgovor glasa [s] iako se smatra kasnim glasom, no čini se da odrasli prepoznaju i kategoriziraju taj glas u dječjem govoru neovisno o akustičkim vrijednostima. Dakle, tolerantniji su na raspršenja u spektru. Akustička analiza za oba jezika pokazuje da je za razlikovanje dvaju frikativa ključno težište ili centar gravitacije. Također, u oba

jezika je kod određenog broja ispitanika primijećena prikrivena sustavnost kao razvojna faza. Međutim, rezultati pokazuju da iako je centar gravitacije akustički element ključan za percepciju frikativa, djeca u izgovoru pokazuju sustavnost u ostalim momentima spektra, dakle, u sekundarnim akustičkim parametrima. Istraživanje koje je kao mjere koristilo trajanje frikativa i postotak preklapanja šuma sa zvučnim periodom kod odraslih govornika koji uče engleski pokazuje da potonja mjeru statistički značajno pokazuje razliku glasa [s] od glasa [z] koji je zvučniji od [s] u inicijalnoj poziciji ili unutar morfema, dok u medijalnoj poziciji ili u nizu s/zVK<sub>zvučni</sub> razlika nije vidljiva. Prikrivena sustavnost također ovisi o položaju glasa u riječi te se pokazala u inicijalnoj poziciji prije vokala kod dvoje ispitanika i unutar morfema kod troje ispitanika.

Za akustičku analizu likvida ili uže, rofonih glasova koriste se središnje frekvencije na početku F1, F2 i F3, tranzijenti prva tri formanta, promjene drugog formanta koji se brzo mijenja između konsonanta i mirnog stanja vokala, zatim trajanje glasova, trajanje sljedećeg vokala i relativna amplituda konsonanta u odnosu na pripadajući vokal.

Rezultati akustičke analize u istraživanju Hoffman i sur. (1983) pokazuju da nema značajne razlike između dva ostvarenja [w] s obzirom na trajanje i vrijednosti amplitude, ali su razlike u vrijednostima F2. U kontrolnoj skupini prosječna vrijednost za [r] iznosi 1 490 Hz, a u eksperimentalnoj 1 343 Hz. F2 pri izgovoru glasa [w] za [r] je bio značajno viši nego za [w], što pokazuje razlikovanje od ciljnog fonema. Dakle, mogli bismo reći da je akustički gledano izgovor ciljnoga glasa [r] kao [w] između perceptivno točnog ciljnog izgovora [r] i [w] i da jedan dio ispitanika s rotacizmom zaista pokazuje prikrivenu sustavnost. Drugo istraživanje koje provodi Chaney (1988) potvrđuje prisutnost prikrivene sustavnosti kod nekih ispitanika iz skupine s poremećajima izgovora glasnika koji su u trenutku ispitivanja bili u fazi intenzivnog fonološkog razvoja, što autorica potvrđuje podatkom da se razvijen izgovor glasa [l] javio između izbora ispitanika i testiranja. Slična metodologija korištena je u studiji slučaja s ispitanikom koji neutralizira razliku između [j] i [l] izgovarajući sve kao [l] (McLeod i Isaac, 1995). Rezultati pokazuju da su vrijednosti formanata za oba ciljna glasa podjednake ( $F1 = 640$  Hz,  $F2 = 2\ 720$  Hz). Ono što je zanimljivo jest da se sustavno razlikovanje izgovorenih glasova [l] javilo kroz intenzitet i trajanje te da su izgovoreni ciljni glasovi [j] ostvareni kao [l] bili duži i jačeg intenziteta. To potvrđuje da se prikrivena sustavnost ne mora ostvariti kroz najistaknutije akustičke karakteristike.

Akustička analiza konsonantskih skupina ovisi o njihovom glasovnom sastavu, a ako se radi o okluzivima i frikativima, preuzimaju se već spomenute mjere: VUG, moment spektra, ali i trajanje aspiracije, trajanje okluzije u izgovoru intervokalskog okluziva u nenaglašenom slogu, trajanje šuma, intenzitet te frekvencijski raspon šuma. Scobbie i sur. (2000) koriste i manje rasprostranjene akustičke mjere: spektralni nagib i istaknutost prvog formanta. Njihovi rezultati pokazuju da je VUG ponekad tek sekundarna vrijednost iz koje se može utvrditi prikrivena sustavnost, a istaknutost prvog harmonika, koja pokazuje razliku između zvučnih i bezvučnih okluziva, unapređuje akustičku matricu, budući da je pokazala prikrivenu sustavnost prije VUG-a. No ta nam vrijednost govori i o pokretima glasnica, tj. brzini otvaranja i zatvaranja. U istraživanju konsonantskih skupina #Or- preuzete su mjere za akustičku analizu glasa [r] uz zanimljiv dodatak – mjerjenje vrijednosti F2 vokala u dvije točke. Ti, kao i svi prethodni rezultati, pokazuju veliku varijabilnost, budući da se radi o dječjem govoru.

Pravilnosti u suprasegmentalnim elementima istraživači mjere ili mjerama trajanja ili promjenama u vrijednosti  $f_0$ . Iako o prikrivenoj sustavnosti u prozodiji govori znatno manji broj istraživanja, i ona potvrđuju da djeca najčešće u govoru ostavljaju vremenski trag, bilo da njime signaliziraju morfološki različite oblike ili ih koriste za segment koji nije razlikovan (ili izgovoren) i na taj način ostvaruju ritmičnost materinskog jezika.

### 3.3. Skupine ispitanika kod kojih se pokazala prikrivena sustavnost

Govoreći o ispitanicima u istraživanjima prikrivene sustavnosti najčešće se spominju djeca, bilo urednoga govorno-jezičnog razvoja ili s odstupanjima ili poremećajima u izgovoru glasnika. Uostalom, fenomen prikrivene sustavnosti je jedno od temeljnih istraživačkih pitanja dječje fonologije (Ferguson i Garnica, 1975). Osim kod djece urednoga govorno-jezičnog razvoja (Carter i Gerken, 2004; Chaney, 1988; Hoffman i sur., 1983; Kent, Miolo i Bloedel, 1994; Kornfeld, 1971; Li i sur., 2009; Macken i Barton, 1980; Tyler i Saxman, 1991), najčešći su ispitanici djeca s govorno-jezičnim poremećajima, tj. kako se u novijim izvorima nazivaju fonološkim poremećajima (Baum i McNutt, 1990; Chaney, 1988; Daniloff i sur., 1980; Forrest i Rockman, 1988; Forrest i sur., 1994, 1990; Gierut i Dinnsen, 1986; Hewlett, 1988; Hoffman i sur., 1983; Maxwell i Weismer, 1982; McLeod i Isaac, 1995; Scobbie i sur., 2000; Tyler, 1995; Tyler i sur., 1990, 1993; Tyler i McOmber, 1999; Tyler i Saxman, 1991), te djeca s umjetnom pužnicom (Todd, Edwards i Litovsky, 2011), iako je

prikrivena sustavnost zabilježena i kod ispitanika s rascjepom nepca (Gibbon i Crampin, 2001).

Prikrivena sustavnost kod urednoga govorno-jezičnog razvoja prvenstveno se prati longitudinalnim istraživanjima i u mlađoj dobi jer se u akustičkim mjerjenjima zapravo temelji na relativnim i individualnim mjerama, dakle pojavi pravilnosti, odnosno sustavnosti kod pojedinog ispitanika.

Kod ispitanika s odstupanjima od urednoga govorno-jezičnog razvoja pojava prikrivene sustavnosti govori o uspješnosti gorovne terapije (Tyler i sur., 1990, 1993; Tyler i Saxman, 1991). Već prva istraživanja prikrivene sustavnosti (Maxwell i Weismer, 1982) procjenjuju uspjeh terapije. Osam mjeseci kasnije, nakon intenzivne terapije, prikupljen je materijal od istog ispitanika te se pokazalo, slično kao i kod rezultata Macken i Barton (1980), da su rezultati sličniji rezultatima odraslih (faza 3A), čime se potvrđuje da odstupanja nisu nužno odstupanja, već se kod fonoloških poremećaja može govoriti o kašnjenju. Čini se da se danas više ne dokazuje postojanje samog fenomena (Munson i sur., 2010), iako se sustavnost ne mora javiti u svim kliničkim uzorcima. Tako, primjerice, studija slučaja u kantoneškom nije potvrdila postojanje prikrivene sustavnosti kod ispitanika koji je aspirirane okluzive mijenja sa [s], već se varijabilnost objašnjava nezrelošću motoričke kontrole supralaringalnih i laringalnih pokreta (Stokes i Ciocca, 1999).

Manji broj istraživanja bavi se pojavom prikrivene sustavnosti kod odraslih koji uče strani jezik. Do sada su istraživanja provedena kod japanskih i korejskih govornika koji uče engleski, govornika engleskog koji uče španjolski te arapski (Eckman i sur., 2015; Eckman, Iverson, Fox, Jacewicz i Lee, 2009; Eckman i sur., 2014). Smatra se da je pojava prikrivene sustavnosti u izgovoru glasova stranog jezika pozitivna jer proces nalikuje razvoju materinskog jezika te bi se trebala sustavnije koristiti u području poučavanja izgovora.

Ono što možemo zaključiti na temelju prethodnog pregleda jesu višestruka metodološka ograničenja: od načina testiranja mlađih ispitanika, oblikovanja instrumenta za skupine s poremećajima u izgovoru glasnika ovisno o dobi i poremećaju, klasifikacije samih poremećaja izgovora glasnika, dostupnosti broja ispitanika koji zadovoljavaju određeni istraživački kriterij itd. Zbog toga akustička analiza uključuje male uzorke, a instrumentalna istraživanja najčešće prikazuju rezultate kao studije slučaja. Neovisno o ograničenjima, sva spomenuta istraživanja pružaju nezanemariv znanstveni doprinos koji se najčešće očituje u kliničkoj praksi. Prikrivena sustavnost najčešće sugerira razlike između fonetskih i fonoloških

poremećaja što onda određuje i tijek rehabilitacije koja kod prvih treba biti usredotočena na razvoj motoričkih vještina, a kod drugih na konceptualne jezične sposobnosti.

#### 4. ZAKLJUČAK

Prikrivena sustavnost je pojava pravilnosti u izgovoru koje su finije od formiranih perceptivnih kategorija odraslih govornika. Ona odražava dinamičan odnos između jezika i govora, fonologije i fonetike, stoga je važno istraživačko pitanje kako čovjek iz dinamičkoga govornog kontinuma prepoznaće i razlikuje fonološke kategorije, ali i kako prilagođava svoju percepciju govora drugaćim zahtjevima. Perceptivne kategorije u djece razvijaju se tijekom cijelog djetinjstva te se moraju odraziti na kvalitetu izgovora. Stupnjevitost u izgovoru pokazuje i razvojni proces te se njezino poznavanje može primijeniti u istraživačkom i kliničkom kontekstu. Rezultati brojnih spomenutih istraživanja s uporabom različitih metoda potvrđuju pojavu prikrivene sustavnosti u razvoju različitih glasova ili konsonantskih skupina kod različitih skupina ispitanika. Unatoč istraživačkim ograničenjima koja se u radovima o prikrivenoj sustavnosti često spominju, sam fenomen je izrazito suvremeno istraživačko područje u fonetici.

#### REFERENCIJE

- Baum, S. R. i McNutt, J. C. (1990). An acoustic analysis of frontal misarticulation of /s/ in children. *Journal of Phonetics*, 18(1), 51–63.
- Carović, I. (2014). *Ultrazvučno istraživanje artikulacije i koartikulacije hrvatskoga vokalskog sustava* (Neobjavljena doktorska disertacija). Filozofski fakultet Sveučilišta u Zagrebu, Zagreb.
- Carter, A. i Gerken, L. (2004). Do children's omissions leave traces? *Journal of Child Language*, 31(3), 561–586. <https://doi.org/10.1017/S030500090400621X>
- Chaney, C. (1988). Acoustic analysis of correct and misarticulated semivowels. *Journal of Speech, Language and Hearing Research*, 31(2), 275–287.
- Crystal, D. (2008). *A dictionary of linguistics and phonetics* (6. izd.). Malden, MA; Oxford: Blackwell Pub.
- Daniloff, R. G., Wilcox, K. i Stephens, M. I. (1980). An acoustic-articulatory description of children's defective /s/ productions. *Journal of Communication Disorders*, 13(5), 347–363.

- Eckman, F. R., Iverson, G. K., Fox, R. A., Jacewicz, E. i Lee, S.** (2009). Perception and production in the acquisition of L2 phonemic contrast. U M. A. Watkins, A. S. Rauber i B. O. Baptista (ur.), *New sounds 2007* (str. 81–96). Newcastle upon Tyne: Cambridge Scholars Publishing.
- Eckman, F. R., Iverson, G. K. i Song, J. Y.** (2014). Covert contrast in the acquisition of second language phonology. U A. Farris-Tribble i J. A. Barlow (ur.), *Perspectives on phonological theory and development: In honor of Daniel A. Dinnsen* (str. 25–48). Amsterdam; Philadelphia: John Benjamins Publishing Company.
- Eckman, F. R., Iverson, G. K. i Song, J. Y.** (2015). Overt and covert contrast in L2 phonology. *Journal of Second Language Pronunciation*, 1(2), 254–278. <https://doi.org/10.1075/jslp.1.2.06eck>
- Ferguson, C. A. i Garnica, O. K.** (1975). Theories of phonological development. U E. H. Lenneberg i E. Lenneberg (ur.), *Foundations of language development*, vol. 1 (str. 153–180). N.Y.: Academic Press, Inc.
- Forrest, K., Weismer, G., Elbert, M. i Dinnsen, D. A.** (1994). Spectral analysis of target-appropriate /t/ and /k/ by phonologically disordered and normally articulating children. *Clinical Linguistics & Phonetics*, 8(4), 267–281.
- Forrest, K., Weismer, G., Hodge, M., Dinnsen, D. A. i Elbert, M.** (1990). Statistical analysis of word-initial /k/ and /t/ produced by normal and phonologically disordered children. *Clinical Linguistics & Phonetics*, 4(4), 327–340.
- Forrest, K. i Rockman, B. K.** (1988). Acoustic and perceptual analysis of word-initial stop consonants in phonologically disordered children. *Journal of Speech, Language and Hearing Research*, 31(3), 449–459.
- Friel, S.** (1998). When is a /k/ not a [k]? EPG as a diagnostic and therapeutic tool for abnormal velar stops. *International Journal of Language & Communication Disorders*, 33(S1), 439–444.
- Gibbon, F.** (1990). Lingual activity in two speech-disordered children's attempts to produce velar and alveolar stop consonants: Evidence from electropalatographic (EPG) data. *International Journal of Language & Communication Disorders*, 25(3), 329–340.
- Gibbon, F. E. i Crampin, B. L.** (2001). An electropalatographic investigation of middorsum palatal stops in an adult with repaired cleft palate. *The Cleft Palate-*

- Craniofacial Journal*, 38(2), 96–105. [https://doi.org/10.1597/1545-1569\(2001\)038<0096:AEIOMP>2.0.CO;2](https://doi.org/10.1597/1545-1569(2001)038<0096:AEIOMP>2.0.CO;2)
- Gibbon, F., Dent, H. i Hardcastle, W.** (1993). Diagnosis and therapy of abnormal alveolar stops in a speech-disordered child using electropalatography. *Clinical Linguistics & Phonetics*, 7(4), 247–267.
- Gibbon, F. E., Hardcastle, B. i Dent, H.** (1995). A study of obstruent sounds in school-age children with speech disorders using electropalatography. *International Journal of Language & Communication Disorders*, 30(2), 213–225.
- Gibbon, F. E. i Lee, A.** (2017a). Electropalatographic (EPG) evidence of covert contrasts in disordered speech. *Clinical Linguistics & Phonetics*, 31(1), 4–20. <https://doi.org/10.1080/02699206.2016.1174739>
- Gibbon, F. E. i Lee, A.** (2017b). Preface to the special issue on covert contrasts. *Clinical Linguistics & Phonetics*, 31(1), 1–3. <https://doi.org/10.1080/02699206.2016.1254684>
- Gierut, J. A. i Dinnsen, D. A.** (1986). On word-initial voicing: Converging sources of evidence in phonologically disordered speech. *Language and Speech*, 29(2), 97–114.
- Gulian, M. i Levelt, C.** (2009). An acoustic analysis of child language productions with reduced clusters. In *BUCLD 33*.
- Hardcastle, W. J. i Morgan, R. A.** (1982). An instrumental investigation of articulation disorders in children. *International Journal of Language & Communication Disorders*, 17(1), 47–65.
- Hewlett, N.** (1988). Acoustic properties of /k/ and /t/ in normal and phonologically disordered speech. *Clinical Linguistics & Phonetics*, 2(1), 29–45.
- Hewlett, N. i Waters, D.** (2004). Gradient change in the acquisition of phonology. *Clinical Linguistics & Phonetics*, 18(6–8), 523–533.
- Hoffman, P. R., Stager, S. i Daniloff, R. G.** (1983). Perception and production of misarticulated /r/. *Journal of Speech and Hearing Disorders*, 48(2), 210–215.
- Holliday, J. J., Reidy, P. F., Beckman, M. E. i Edwards, J.** (2015). Quantifying the robustness of the English sibilant fricative contrast in children. *Journal of Speech Language and Hearing Research*, 58(3), 622–637. [https://doi.org/10.1044/2015\\_JSLHR-S-14-0090](https://doi.org/10.1044/2015_JSLHR-S-14-0090)
- Julien, H. M. i Munson, B.** (2012). Modifying speech to children based on their perceived phonetic accuracy. *Journal of Speech Language and Hearing Research*, 55(6), 1836–1849. [https://doi.org/10.1044/1092-4388\(2012/11-0131\)](https://doi.org/10.1044/1092-4388(2012/11-0131))

- Kent, R. D., Miolo, G. i Bloedel, S.** (1994). The intelligibility of children's speech: A review of evaluation procedures. *Am J Speech Lang Pathol*, 3(2), 81–95.
- Kong, E. J. i Edwards, J.** (2011). Individual differences in speech perception: Evidence from visual analogue scaling and eye-tracking. U W. S. Lee i E. Zee (ur.), *Proceedings of the 17th International Congress of Phonetic Sciences* (str. 1126–1129). Hong Kong: City University of Hong Kong.
- Kornfeld, J. R.** (1971). Theoretical issues in child phonology. *Proceedings of the 7th Regional Meeting, Chicago Linguistic Society*, 7, 454–468.
- Li, F., Edwards, J. i Beckman, M. E.** (2009). Contrast and covert contrast: The phonetic development of voiceless sibilant fricatives in English and Japanese toddlers. *Journal of Phonetics*, 37(1), 111–124.
- Macken, M. A. i Barton, D.** (1980). The acquisition of the voicing contrast in English: Study of voice onset time in word-initial stop consonants. *Journal of Child Language*, 7(1), 41–74.
- Massaro, D. W. i Cohen, M. M.** (1983). Categorical or continuous speech perception: A new test. *Speech Communication*, 2(1), 15–35.
- Maxwell, E. M. i Weismer, G.** (1982). The contribution of phonological, acoustic, and perceptual techniques to the characterization of a misarticulating child's voice contrast for stops. *Applied Psycholinguistics*, 3(1), 29–43.
- McAllister Byun, T., Buchwald, A. i Mizoguchi, A.** (2016). Covert contrast in velar fronting: An acoustic and ultrasound study. *Clinical Linguistics & Phonetics*, 30(3–5), 249–276. <https://doi.org/10.3109/02699206.2015.1056884>
- McLeod, S. i Isaac, K.** (1995). Use of spectrographic analyses to evaluate the efficacy of phonological intervention. *Clinical Linguistics & Phonetics*, 9(3), 229–234.
- Munson, B., Edwards, J., Schellinger, S. K., Beckman, M. E. i Meyer, M. K.** (2010). Deconstructing phonetic transcription: Covert contrast, perceptual bias, and an extraterrestrial view of Vox Humana. *Clinical Linguistics & Phonetics*, 24(4–5), 245–260.
- Munson, B., Schellinger, S. K. i Carlson, K. U.** (2012). Measuring speech-sound learning using visual analog scaling. *Perspectives on Language Learning and Education*, 19(1), 19–30.
- Munson, B., Schellinger, S. K. i Edwards, J.** (2017). Bias in the perception of phonetic detail in children's speech: A comparison of categorical and continuous rating scales. *Clinical Linguistics & Phonetics*, 31(1), 56–79. <https://doi.org/10.1080/02699206.2016.1233292>

- Schellinger, S. K., Edwards, J., Munson, B. i Beckman, M. E.** (2008). Assessment of phonetic skills in children I: Transcription categories and listener expectations. Presented at the ASHA Convention, Chicago. Dostupno na [http://www.ling.ohio-state.edu/~edwards/ASHA08\\_SchellingerEtal.pdf](http://www.ling.ohio-state.edu/~edwards/ASHA08_SchellingerEtal.pdf)
- Schellinger, S. K., Munson, B. i Edwards, J.** (2017). Gradient perception of children's productions of /s/ and /θ/: A comparative study of rating methods. *Clinical Linguistics & Phonetics*, 31(1), 80–103. <https://doi.org/10.1080/02699206.2016.1205665>
- Scobbie, J. M.** (1998). Interactions between the acquisition of phonetics and phonology. U M. C. Gruber, D. Higgins, K. Olson i T. Wysocki (ur.), *Papers from the 34th Annual Regional Meeting of the Chicago Linguistic Society*, vol. 2 (str. 343–358). Chicago: Chicago Linguistics Society.
- Scobbie, J. M., Gibbon, F., Hardcastle, W. J. i Fletcher, P.** (2000). Covert contrast as a stage in the acquisition of phonetics and phonology. *Q;C Working Papers in Speech and Language Sciences*, 1, 43–62.
- Stokes, S. F. i Ciocca, V.** (1999). The substitution of [s] for aspirated targets: Perceptual and acoustic evidence from Cantonese. *Clinical Linguistics & Phonetics*, 13(3), 183–197.
- Todd, A. E., Edwards, J. R. i Litovsky, R. Y.** (2011). Production of contrast between sibilant fricatives by children with cochlear implants. *The Journal of the Acoustical Society of America*, 130(6), 3969–3979.
- Tyler, A. A.** (1995). Durational analysis of stridency errors in children with phonological impairment. *Clinical Linguistics & Phonetics*, 9(3), 211–228.
- Tyler, A. A., Edwards, M. L. i Saxman, J. H.** (1990). Acoustic validation of phonological knowledge and its relationship to treatment. *Journal of Speech and Hearing Disorders*, 55(2), 251–261.
- Tyler, A. A., Figurski, G. R. i Langsdale, T.** (1993). Relationships between acoustically determined knowledge of stop place and voicing contrasts and phonological treatment progress. *Journal of Speech, Language and Hearing Research*, 36(4), 746–759.
- Tyler, A. A. i McOmber, L. S.** (1999). Examining phonological-morphological interactions with converging sources of evidence. *Clinical Linguistics & Phonetics*, 13(2), 131–156.

- Tyler, A. A. i Saxman, J. H.** (1991). Initial voicing contrast acquisition in normal and phonologically disordered children. *Applied Psycholinguistics*, 12(4), 453–479.
- Urberg-Carlson, K., Munson, B. i Kaiser, E.** (2008). Continuous measures of children's speech production: Visual analog scale and equal appearing interval scale measures of fricative goodness.
- Vujasić, N.** (2014). Akustička analiza spektra šuma hrvatskih lingvalnih frikativa. *Govor*, 31(2), 109–131.
- Warner, N., Jongman, A., Sereno, J. i Kemps, R.** (2004). Incomplete neutralization and other sub-phonemic durational differences in production and perception: Evidence from Dutch. *Journal of Phonetics*, 32(2), 251–276.
- Zharkova, N.** (2013). A normative-speaker validation study of two indices developed to quantify tongue dorsum activity from midsagittal tongue shapes. *Clinical Linguistics & Phonetics*, 27(6–7), 484–496. <https://doi.org/10.3109/02699206.2013.778903>
- Zharkova, N., Gibbon, F. E. i Lee, A.** (2017). Using ultrasound tongue imaging to identify covert contrasts in children's speech. *Clinical Linguistics & Phonetics*, 31(1), 21–34. <https://doi.org/10.1080/02699206.2016.1180713>

**Diana Tomić**

*dtomic@ffzg.hr*

Faculty of Humanities and Social Sciences, University of Zagreb  
Croatia

## **Covert contrast**

### **Summary**

This paper gives a Croatian term for covert contrast (cro. *prikrivena sustavnost*) and a review of the studies in which cover contrast was found. The studies were analyzed according to the applied research methods, participants and speech sound categories. Research methods used in covert contrast studies can be divided in three groups: acoustic analysis, physiological methods (EPG and ultrasound) and auditory rating scales. Covert contrast was found in typically developing children's speech, children with speech and language disorders and cochlear implants and among adults' L2. Covert contrast is most frequently found in obstruents, consonant clusters and liquids.

**Key words:** covert contrast, acoustic analysis, instrumental methods, VAS

In memoriam  
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**Vesna Mildner**

*vmildner@ffzg.hr*

Filozofski fakultet Sveučilišta u Zagrebu  
Hrvatska

## In memoriam

### Marija Pozojević Trivanović (1932–2018)



Dr. sc. Marija Pozojević Trivanović (Radojevo, 19. listopada 1932. – Zagreb, 4. veljače 2018.) rođena je u Vojvodini, ali je u Zagrebu živjela od svojih gimnazijskih dana. Nakon završenog studija romanskih jezika (talijanskog i francuskog) na Filozofskom fakultetu Sveučilišta u Zagrebu, zaposlila se (1958) kao asistent na Institutu (kasnije Zavodu) za fonetiku, koji je 1968. godine prerastao u Odsjek za fonetiku. Magistrirala je 1965., a doktorirala 1969. godine te je 1970. godine izabrana u zvanje docenta. Nakon toga je u intervalima uobičajenim u akademskoj zajednici, napredovala do zvanja redovitog

profesora u trajnom zvanju. Već iz površnog pregleda šturih biografskih podataka može se odmah uočiti da je cijeli radni vijek profesorice Marije Pozojević Trivanović isprepleten s poviješću Odsjeka za fonetiku. Činila je onu jezgru nadarenih diplomiranih studenata romanistike, zajedno s profesorima Ivom Škarićem i Brankom Vučetićem, koji su zaslužni za postavljanje temelja studija fonetike prepoznavši u riječima idejnog začetnika, akademika Guberine, vizionarske misli koje će kasnije, tijekom svojih karijera svatko od njih na svoj način obogaćivati, osvježavati i unapređivati. Profesorica se od samih početaka usredotočila na slušanje i primjenu verbotonalne teorije i metode u učenju stranih jezika i rehabilitaciji slušnih i govornih poremećaja, pa je bilo i prirodno da postane predstojnicom Katedre za primijenjenu

fonetiku, jedne od triju katedara (uz Katedru za teorijsku fonetiku i Katedru za estetsku fonetiku i ortoepiju hrvatskog jezika) koje i danas, nakon 50 godina, čine osnovnu strukturu Odsjeka. Tu je dužnost obavljala sve do umirovljenja, 2003. godine, koje je dočekala nakon punih 45 godina rada.

Tih je 45 godina bilo ispunjeno brojnim istraživanjima u području isprva mlade, a kasnije etablirane discipline fonetike, naročito u raznim oblicima njezine primjene. Samo letimičan pogled na izbor radova iz najintenzivnijeg razdoblja, poput *Korištenje tjelesne vodljivosti u rehabilitaciji slušanja i govora* (1967), *Methode audio-visuelle structuro-globale dans l'enseignement des langues étrangères* (1971), *Razvoj glasa djeteta u predgovornoj fazi promatran u spektralnoj analizi* (1973), *Afektivnost u izrazu djeteta oštećena sluha* (1978), *Slušanje kao odraz općeg razvoja ličnosti* (1979), *Kontrastiranje kao postupak u procesu usvajanja stranog jezika* (1986), *Integration auditive de la parole: La Méthode Verbotonale comme un ensemble structurel* (1991), *Globalnost, važna značajka stjecanja govorne sposobnosti* (1992), *Diagnostic dynamique et polysensorialité* (1996), otkriva svu širinu njezinog znanstvenog i stručnog djelovanja. Ti radovi pokazuju suvereno snalaženje u mnogim područjima koja fonetiku čine tako čarobno interdisciplinarnom strukom.

Paralelno sa znanstveno-istraživačkim radom tekle su aktivnosti oko poučavanja budućih fonetičara, što se može vidjeti iz brojnih kolegija koje je profesorica Pozojević Trivanović predavala (među ostalim): Korekcija izgovora po verbotonalnom sustavu, Teorija verbotonalnog sustava, Razvoj govora djeteta, Metodske upute za razvoj govora, Fonetika i fonologija. Studenti je pamte kao toplu, decentnu i dostojanstvenu osobu, a njezina posvećenost njima i nastavi vidljiva je iz brojnih diplomskih, magistarskih i doktorskih radova kojima je bila mentoricom, kao i iz knjige *Slušanje i govor* (1984) koju je Sveučilišna naklada Liber izdala kao sveučilišni udžbenik, a koja još i danas čini nezaobilaznu literaturu na nekoliko kolegija na studiju fonetike. Usto, bila je članica najužeg uredništva časopisa *Govor* od prvog broja te recenzentica brojnih knjiga i članaka.

Možda upravo zbog smjera svojih znanstveno-istraživačkih i stručnih interesa, ostala je najdulje i najbliži suradnik akademika Guberine, proširivši svoje aktivnosti i izvan Fakulteta, prvenstveno na suradnju s Poliklinikom SUVAG, ali i na mnogobrojne institucije u svijetu koje su prepoznale vrijednost verbotonalne teorije i metode te je htjele primijeniti u svojoj praksi. U tome je profesorica Pozojević Trivanović dala velik doprinos svojim sudjelovanjem u mnogobrojnim tečajevima, predavanjima i radionicama, na kojima je, jednako uspješno predajući na hrvatskom

i francuskom, nesobično dijelila svoje znanje i iskustvo. Poliklinika SUVAG povodom 50. godišnjice osnutka (2011) dodijelila joj je priznanje za dugogodišnju kontinuiranu suradnju, a koliki je trag ostavila drugdje vidljivo je iz komentara kolega prilikom susreta na raznim konferencijama i sastancima. Koliko je cijenjena u nas naročito je došlo do izražaja na simpoziju koji je 2012. godine Odsjek za fonetiku organizirao u njezinu čast povodom 80. rođendana, kada smo sve radove kojima su je htjeli pozdraviti mnogi bivši studenti i suradnici jedva uspjeli 'ugurati' u predviđeno vrijeme.

Odlazak u mirovinu nije ujedno značio i oproštaj od fonetike i Odsjeka. Profesorica je i dalje bila istraživač na projektu Ministarstva znanosti, obrazovanja i sporta "Neurolingvistički aspekti bilingvizma", kao vanjski suradnik držala je studentima fonetike predavanja i ispite iz kolegija Fonetika i fonologija, a 2007. godine objavila je knjigu *Integritet govora*.

Nama koje smo s njom dijelile sobu B312 posebno je teško palo kada iz formalnih razloga više nije mogla predavati. Činilo se kao da ni ona ni mi to nismo shvaćale kao nešto ozbiljno i trajno, jer su u ormaru i dalje bile njezine knjige i materijali za nastavu, kutijica sa sapunom i papirnati ručnici, na stolu kutija za olovke i spajalice, a u ladici čaša sa sitnišem za kavu iz automata, koju smo pile zajedno u pauzama između predavanja. Za utjehu, povremeno smo se čule telefonom, čestitale prigode, razmjenjivale razglednice s ljetovanja i viđale se na raznim okupljanjima. Sve je bilo dobro. A onda više nije. Njezinim odlaskom izgubio je Odsjek za fonetiku, izgubili su verbotonalci, izgubili smo mi koji smo je zvali profesorica Pozojević ili samo Marija.



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Prikaz

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## Anita Runjić-Stoilova

*arunjic@ffst.hr*

Filozofski fakultet Sveučilišta u Splitu  
Hrvatska

### 4. međunarodna konferencija o retorici *Dani Ive Škarića*. Postira, Hrvatska, od 18. do 21. travnja 2018. godine

Međunarodna znanstvena konferencija o retorici *Dani Ive Škarića* četvrti je put održana u Postirima na otoku Braču, i ovaj put u organizaciji Odjela za fonetiku Hrvatskoga filološkog društva i Odsjeka za fonetiku Filozofskog fakulteta u Zagrebu. Rodno mjesto profesora Ive Škarića još je jednom okupilo hrvatske i međunarodne stručnjake za retoriku, teoriju argumentacije, stilistiku i druge srodne discipline. Na konferenciji je sudjelovalo 40-ak retoričara iz Hrvatske i drugih zemalja: Austrije, Belgije, Češke, Italije, Izraela, Kanade, Mađarske, Nizozemske, Norveške, Njemačke, Sjedinjenih Američkih Država, Slovenije, Ujedinjenog Kraljevstva i Ukrajine. Njihova su izlaganja pokrivala teme iz teorije argumentacije, argumentacije i prava, retorike političkog diskursa, vizualne i multimodalne retorike, retorike religijskog diskursa i retorike u obrazovanju.

Konferencija je održana u hotelu Pastura i svečano je otvorena 18. travnja 2018. Izlaganja su bila podijeljena u tematske sekcije i održavala su se tijekom tri dana u konferencijskoj dvorani hotela. Ukupno je održano 35 izlaganja, uglavnom na engleskom jeziku. Kao i na prethodnim konferencijama, održane su i sekcije na hrvatskom jeziku, s ukupno šest izlaganja.

Programski i Organizacijski odbor pozvao je dvoje uglednih inozemnih stručnjaka za plenarne izlagače: prof. dr. sc. Petru Aczél sa Sveučilišta u Budimpešti i dr. sc. Nicka Turnbulla sa Sveučilišta u Manchesteru. Petra Aczél izlagala je prvoga radnog dana. Izlaganje je naslovljeno *The potential of a new rhetoric / Mogućnosti nove retorike*. U svom je izlaganju sudionike podsjetila da se 2018. godine obilježava 60. godišnjica velikih retoričkih rasprava: *The new rhetoric* Chaïma Perelmana i Lucie Olbrechts-Tytece te Toulminove *The uses of argument*. Obje se rasprave fokusiraju na

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ponovno otkrivanje argumenta kao društvenog i praktičnog alata. U to se vrijeme postavljaju još mnoge druge revolucionarne retoričke teorije. Iako je od posljednje nove retorike prošlo četrdeset godina, u suvremenim retoričkim kretanjima ne nalazimo nove nove retorike. Stoga, postavlja pitanja i obrazlaže, je li suvremena nova retorika uopće moguća, je li potrebna i koje bi znanstvene postavke imala? Drugi plenarni izlagач Nick Turnbull izlagao je o temi *Problematology, rhetoric and the social sciences / Problematologija, retorika i društvene znanosti*. Smatra da je razumijevanje i korištenje retorike u današnjem globalnom društvu od iznimne važnosti za uspostavljanje veće ili manje udaljenosti među ljudima. Meyerova filozofija retorike, koja se temelji na problematologiji i konceptu udaljenosti, javlja se kao opća retorička teorija za globalno društvo. Problematoška filozofija temelji retoriku na metafizičkim principima, integrira dva glavna elementa retorike i argumenta, te uspostavlja osnovu za konstruktivnu suradnju retoričara s drugim znanstvenim disciplinama, primjerice društvenim znanostima. U 20. stoljeću retorika društvenih znanosti bila je zatomljena i to je posebno vidljivo u epistemiološkoj interpretaciji retoričkog termina 'paradigma' Thomasa Kuhna. Nedavna pojava perspektive odnosa u društvenoj znanosti, empirijskim proučavanjima društvene, ekonomске i političke udaljenosti u društvu, rezultira problematoškom retorikom.

Na kraju drugog dana održano je predstavljanje knjige *New insights into rhetoric and argumentation* (2017), urednica Anite Runjić-Stoilove i Gordane Varošanec-Škarić. Knjiga okuplja probrane radove s konferencije iz 2014. i donosi reprezentativan pregled recentnih doprinosa retorici i argumentaciji. Predstavljači su bili Anita Runjić-Stoilova, Keith Lloyd i Jean H. M. Wagemans.

Na 4. međunarodnoj konferenciji *Dani Ive Škarića* sudjelovalo je više istraživača s Odsjeka za fonetiku Filozofskog fakulteta u Zagrebu. Gabrijela Kišiček je u okviru panela o multimodalnoj retorici održala izlaganje na engleskom jeziku pod naslovom *Persuasive power of prosodic features in public discourse / Moć uvjerenanja prozodijskih oblika u javnom diskursu*. Gordana Varošanec-Škarić održala je izlaganje o retorici u znanstvenom diskursu pod naslovom *Retorički postupci u apendiksu Ruđera Boškovića – Ad metaphysicam pertinens de anima et Deo in Theoria philosophiae naturalis*. Damir Horga i Ana Vidović Zorić govorili su o poštalicama u hrvatskome javnom govoru, a Ines Carović s koautoricom Anom Mršić Zdilar održala je izlaganje pod naslovom *Rhetoric of questions in sports interviews and speech errors / Retorika pitanja u sportskim intervjuima i govorne pogreške*.

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Vrijednost je ove konferencije, osim u razmjeni znanja, iskustava i novih dostignuća u bavljenju retorikom, i u bogatom društvenom programu. Sudionici skupa ističu to kao posebnost konferencije. Organizacijski odbor s predsjednikom Davorom Stankovićem, prof. ovaj je put organizirao vođeno razgledavanje Postira i izlet po otoku Braču kako bi se gosti upoznali s poviješću, kulturom i gastronomijom otoka te, već tradicionalnu, svečanu večeru.

Konferencija je u svojih sedam godina postala mjesto susreta retoričara iz cijelog svijeta koji svojim argumentiranim izlaganjima i diskusijama doprinose razvoju retorike, pogotovo njezinoj široj primjeni u društvenom životu. Stoga sa zadovoljstvom iščekujemo iduću, 5. međunarodnu konferenciju o retorici *Dani Ive Škarića*, najavljenu za travanj 2020. godine.



Prikaz

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## Elenmari Pletikos Olof

*epletikos@ffzg.hr*

Filozofski fakultet Sveučilišta u Zagrebu  
Hrvatska

XXXII. međunarodni znanstveni skup HDPL-a *Jezik i um*. Rijeka,  
Hrvatska, od 3. do 5. svibnja 2018. godine

Na Filozofskom fakultetu u Rijeci od 3. do 5. svibnja 2018. godine održan je XXXII. međunarodni znanstveni skup Hrvatskog društva za primijenjenu lingvistiku pod nazivom *Jezik i um*. Kao što kazuje naziv skupa, glavna tema bila je suodnos jezika i uma na svim planovima i razinama lingvističkih istraživanja. Predsjednica Hrvatskog društva za primijenjenu lingvistiku Mihaela Matešić uspjela je temu čije se proučavanje uobičajeno vezuje uz kognitivnu lingvistiku proširiti na druga lingvistička područja i time otvoriti prostor novim istraživanjima i spoznajama o jeziku i njegovu funkcioniranju u društvu. Skup je obuhvatio sljedeće teme: jezik i um u interakciji, jezik i um sudionika u komunikaciji, jezik i um standardologa, jezik i um stručnjaka te jezik i um višejezičnoga govornika.

I ovogodišnjoj konferenciji HDPL-a prethodio je pretkonferencijski događaj, jednodnevni simpozij koji je održan 2. svibnja 2018. Bio je to već 3. simpozij SCIMETH, pod nazivom *Etička pitanja u suvremenim lingvističkim istraživanjima*. Simpozij je organizirao Regionalni aktiv HDPL-a Rijeka u suradnji s Centrom za jezična istraživanja (CJI) Filozofskog fakulteta u Rijeci, a glavna organizatorica tog događaja bila je doc. dr. sc. Anastazija Vlastelić. U sklopu simpozija održana su dva pozvana predavanja: doc. dr. sc. Kristina Cergol Kovačević sa Sveučilišta u Zagrebu održala je predavanje pod nazivom *Etika istraživanja u primjenjenoj lingvistici: što, zašto i kako?*, a doc. dr. sc. Zvjezdana Vrzić sa Sveučilišta u Rijeci i Sveučilišta u New Yorku predavanje pod nazivom *Pitanje etičnosti u jezičnim istraživanjima na terenu i nakon njega*.

Na ovogodišnjoj konferenciji HDPL-a *Jezik i um* bila su ukupno 144 sudionika. Većina njih bili su znanstvenici iz Hrvatske, a oko petina sudionika došla je s čak 22

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različita inozemna sveučilišta. Na skupu je održano pet plenarnih izlaganja, a još 93 rada prihvaćena su za izlaganje i nalaze se u programu skupa.

Pozvani plenarni izlagači na skupu bili su: prof. dr. sc. Ewa Dąbrowska sa Sveučilišta u Birminghamu, izv. prof. dr. sc. Willem B. Hollmann sa Sveučilišta u Lancasteru, prof. dr. sc. Ljiljana Šarić sa Sveučilišta u Oslu, prof. dr. sc. Maja Brala-Vukanović sa Sveučilišta u Rijeci i prof. dr. sc. Anita Peti-Stantić sa Sveučilišta u Zagrebu. Profesorica Dąbrowska održala je predavanje pod nazivom *Language learning as cooperative interaction between implicit and explicit processes / Učenje jezika – kooperativna interakcija implicitnih i eksplisitnih procesa*, u kojem dokazuje da mehanizmi koji se smatraju specifičnima samo za usvajanje L1 kod djece ili samo za učenje L2 kod odraslih postoje u oba tipa učenja jezika, tj. objašnjava temeljne kognitivne mehanizme koji su podloga u oba tipa učenja. Profesor Hollmann održao je predavanje pod nazivom *Cognitive sociolinguistics: From inspiration to innovation / Kognitivna sociolinguistika: od inspiracije do inovacije*, u kojem je prikazao kako se razvijala kognitivna sociolinguistika, tj. koji su njezini deskriptivni, metodološki i teorijski doprinosi i u kojem smjeru predviđa njezin daljnji razvoj. Profesorica Šarić održala je predavanje *Contrasting similar languages from a cognitive linguistics perspective: The case of prefixed verbs in Slavic / Kontrasti sličnih jezika iz kognitivnolingvističke perspektive: prefiksni glagoli u slavenskim jezicima*, u kojem je prikazala i protumačila različita značenja prefiksa u-, o(b)-, od- i do- u hrvatskom i bugarskom jeziku. Profesorica Brala-Vukanović održala je predavanje *Language and mind: The (in)extricable inextricability / Jezik i um: (ne)razrješiva nerazrješivost*, u kojem je dala pregled temeljnih postavki kognitivnolingvističke paradigmte te je na temelju analize pokaznih čestica pokušala protumačiti neke univerzalne strukturne elemente i načela koja jezik dijeli s drugim podsustavima ljudskog uma. Profesorica Peti-Stantić sa Sveučilišta u Zagrebu održala je predavanje *Languages in the mind: Systematic variability of agreement and word order interface options / Jezici u umu: sustavna varijabilnost mogućnosti slaganja i reda riječi*, u kojem je pokazala međudjelovanje semantičkih i sintaktičkih obilježja na primjerima sročnosti i reda riječi u brojnim morfosintaktičkim varijantama hrvatskoga. Sva plenarna predavanja održana su na engleskom jeziku i zajedno s pitanjima i raspravom trajala su po sat vremena. Četiri su plenarna predavanja snimana te se mogu pogledati i poslušati na sljedećim linkovima:

1. Ewa Dąbrowska: *Language learning as cooperative interaction between implicit and explicit processes*, <https://youtu.be/H1l8rQKN7qk>
2. Willem B. Hollmann: *Cognitive sociolinguistics: From inspiration to innovation*, <https://youtu.be/uqpk6LCBhls>
3. Maja Brala-Vukanović: *Language and mind: The (in)extricable inextricability*, <https://youtu.be/OLuqLtimz4M>
4. Anita Peti-Stantić: *Languages in the mind: Systematic variability of agreement and word order interface options*, <https://youtu.be/52vtymfRfRE>.

Uz pozvana predavanja u programu skupa bilo je planirano izlaganje još 93 rada (održano je devet izlaganja manje). Izlaganja su se odvijala u četiri paralelne sesije, a za svako je bilo predviđeno pola sata: 20 minuta za prezentaciju i deset minuta za raspravu. Radovi su većinom bili na hrvatskom jeziku (56 radova), iznimno velik broj radova u programu je na engleskom jeziku (33 rada), a manji broj održan je na talijanskom jeziku (4 rada).

Jedna sesija u subotu, 5. svibnja 2018., okupila je fonetske teme te je na skupu sudjelovalo sedam djelatnika Odsjeka za fonetiku Filozofskog fakulteta u Zagrebu (Damir Horga, Ines Carović, Marko Liker, Ana Vidović Zorić, Diana Tomić, Jelena Vlašić Duić i Elenmari Pletikos Olof) te troje studenata fonetike. Damir Horga i Vlasta Erdeljac održali su izlaganje pod nazivom *Odnos govorne disfluentnosti i govornih pogrešaka*; Ines Carović izložila je rad *Razlika u varijabilnosti hrvatskih vokala u značenjskim i beznačenjskim riječima: ultrazvučno istraživanje*; Marko Liker i Ana Vidović Zorić održali su izlaganje *Govorne pogreške i izgovorne geste: elektropalatografsko istraživanje*; Elizabeta Kantoci, Marija Marijić, Lucija Bukovčan i Marko Liker izložili su *Elektropalatografsko istraživanje asimilacija: kategorijalnost i stupnjevitost*; Diana Tomić i Renata Geld prezentirale su rad *Fonološki razvoj – interakcija kvalitete fonoloških reprezentacija i fonološkog procesiranja*, dok su Blaženka Martinović, Mihaela Matešić, Elenmari Pletikos Olof i Jelena Vlašić Duić prikazale rezultate istraživanja pod nazivom *U potrazi za standardnim izgovorom*.

Na XXXII. skupu HDPL-a knjiga sažetaka pod nazivom *Jezik i um / Language and mind* objavljena je u e-izdanju. Uredile su je Diana Stolac i Magdalena Nigoević, a dostupna je na mrežnoj stranici <http://www.hdpl.hr>. Radovi sa skupa bit će objavljeni u domaćem zborniku u izdanju HDPL-a i Srednje Europe i u međunarodnom zborniku u izdanju HDPL-a i njemačkog izdavača Petera Langa (radovi na engleskom i njemačkom jeziku). Domaći zbornik bit će objavljen

usporedno u tiskanom i elektroničkom obliku u slobodnom dostupu na mrežnim stranicama Društva.

Članovi Organizacijskog odbora XXXII. skupa HDPL-a, koji su iznimno kvalitetno pripremili skup te ga proveli prema najvišim standardima kakvi se danas primjenjuju u svijetu, bili su: Mihaela Matešić (Rijeka), Anita Memišević (Rijeka), Anastazija Vlastelić (Rijeka), Sanda Lucija Udier (Zagreb), Benedikt Perak (Rijeka), Borana Morić-Mohorovičić (Rijeka), Magdalena Nigoević (Split), Diana Stolac (Rijeka) i Jasna Bićanić (Rijeka). Programski odbor brojio je 46 članova, a njihova je uloga bila u recenzentskom postupku prijavljenih sažetaka koji se odvijao putem mrežnih stranica društva s potpunom zaštitom identiteta autora i recenzenta. Radni dan u četvrtak zaokružen je večernjim domjenkom, a u petak su organizatori omogućili sudionicima i druženje uz ručak. U okviru skupa u petak je organizirano vođeno razgledavanje grada, a nakon toga svečana večera koja se održala u restoranu *Na kantunu* u Rijeci. Velike pohvale organizatorima skupa i nadamo se da će i idući skupovi HDPL-a nastaviti s ovako dobrom praksom poticanja suradnje hrvatskih filologa te povezivanja hrvatskih znanstvenika sa svjetskim trendovima u lingvistici. S obzirom na činjenicu da su sva plenarna izlaganja i više od trećine ostalih radova održani na engleskom jeziku, možemo reći da je skup, čija je primarna uloga bila okupiti hrvatske lingviste i stručnjake iz raznih filoloških područja, u znatnoj mjeri poprimio međunarodni karakter i time stekao još veći ugled.

Idući, XXXIII. skup HDPL-a održat će se ponovno u Rijeci, od 16. do 18. svibnja 2019. godine pod nazivom *Značenje u jeziku – od individualnoga do kolektivnoga*.

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Prikaz

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**Ivančica Banković-Mandić**

*ibmandic@ffzg.hr*

Filozofski fakultet Sveučilišta u Zagrebu  
Hrvatska

Međunarodna jezikoslovna konferencija CLARC 2018. Rijeka,  
Hrvatska, od 8. do 10. lipnja 2018. godine

U organizaciji Centra za jezična istraživanja Filozofskog fakulteta Sveučilišta u Rijeci od 8. do 10. lipnja 2018. održana je Druga međunarodna jezikoslovna dvojezična konferencija *Perspektive jezične raznolikosti / Perspectives on linguistic diversity* (s izlaganjima na engleskom i hrvatskom jeziku). Dan ranije, u iznimno bogatom pretkonferencijskom danu, održana je radionica *Jezik i kognicija: dvojezičnost mijenja naše umove i mozgove* (Jason Rothman, sveučilišni profesor iz Norveške, Sveučilište u Readingu i Tromsu; Jennifer Cabrelli Amaro, docentica iz SAD-a, Sveučilište Illinois, Chicago), okrugli stol na temu *Izazovi očuvanja manjinskih jezika: pogled iz zajednice* (sudionice okruglog stola: Branka Drljača Margić, Tihana Kraš, Maša Plešković i Zvjezdana Vrzić, profesorce sa Sveučilišta u Rijeci), znanstveni kolokvij *Morfosintaktičke promjene pod utjecajem jezičnog dodira: ruski u Euroaziji* (Lenore Grenoble, profesorka iz SAD-a, Sveučilište u Chicagu) te predavanje *Sustavi drugog/stranog jezika: zašto su neka gramatička pravila teža od drugih?* (Shigenori Wakabayashi, sveučilišni profesor iz Japana, Sveučilište Chuo). Sudionici pretkonferencijskog događanja mogli su se upoznati i s glazbom i gastronomijom manjinskih kultura Rijeke i Istre.

U tri dana konferencije održano je pet plenarnih izlaganja. Izlaganja glavnog dijela skupa održavala su se u šest paralelnih sekcija tijekom tri dana. Izlaganja su bila grupirana u deset općih lingvističkih tema koje su pokrivale područja učenja i poučavanja jezika, jezične politike, ideologije, identiteta i jezičnog planiranja te teme iz kognitivne lingvistike, semantike i dijalektologije. Naslovi cjelina: *Language maintenance, identity, language attitudes / Čuvanje jezika, identitet, stavovi prema jeziku; Language learning and teaching / Učenje i poučavanje jezika; Dialectology, corpus*

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*linguistic, languages in contact / Dijalektologija, korpusna lingvistika i jezici u kontaktu; Language typology and linguistic structure / Jezična tipologija i lingvistička struktura; Language diversity, identity, language maintenance, language policy / Jezična raznolikost, identitet, čuvanje jezika, jezična politika; Language contact and change, language maintenance / Jezični kontakt i promjene, čuvanje jezika; Language revitalisation, language policy / Oživljavanje jezika, jezična politika; Cognitive linguistics and semantics / Kognitivna lingvistika i semantika; Language development / Razvoj jezika; Language ideology, language policy and planning / Jezična ideologija, jezična politika i planiranje.*

Specijalizirane teme poput sintaktičkih tema, akcenatskih raznolikosti, ugroženih jezika u jugoistočnoj Europi, jezikoslovne geografije općenito i sl., obrađene su u osam panela. Naslovi panela: *Linguistic diversity in language development / Jezična raznolikost u razvoju jezika; Accentual variation in Standard Croatian / Naglasne inačice standardnoga hrvatskog; Linguistic diversity, construal and conceptualization / Jezična raznolikost, konstrukcija i konceptualizacija; Syntactic diversity across time / Sintaktička raznolikost tijekom vremena; Linguistic endangerment in Southeast Europe / Ugroženost jezika jugoistočne Europe; Linguistic diversity and linguistic geography / Jezična raznolikost i jezična geografija; Linguistic diversity and corpus linguistics / Jezična raznolikost i korpusna lingvistika; Morphological doublets: From a diachronic to a synchronic perspective / Morfološke dvojnosti: iz dijakronijske i sinkronijske perspektive.* Iznimno veliku posjećenost ovog skupa potvrđuje broj od 150 izlagača.

Skup je započeo plenarnim predavanjem *The role of typological proximity in determining how previous linguistic knowledge affects/changes the process for the next language learned / Uloga tipološke bliskosti u određenju utjecaja/promjene prethodnog jezičnog znanja na jezik koji se sljedeći uči* profesora Jasona Rothmana sa Sveučilišta u Readingu i Sveučilišta u Tromsu o ulozi tipološke srodnosti jezika na učenje stranih jezika.

Četiri su plenarna izlaganja dostupna na YouTubeu: predavanje profesorice Lenore Grenoble iz SAD-a *Diminishing diversity: Language shift and loss / Umanjivanje raznolikosti: jezična promjena i nestanak*, predavanje profesora Theda Kahla sa Sveučilišta u Jeni *Endangered Romance and Slavonic varieties in Southeast Europe / Ugroženi varijeteti romanskih i slavenskih jezika u jugoistočnoj Europi*, predavanje profesora Dana Zemana iz Češke, s Karlova sveučilišta u Pragu *Uniformity versus diversity: Dependency grammar for all / Jezična uniformnost naspram raznolikosti: gramatika ovisnosti za sve* te predavanje profesora Ranka Matasovića, akademika i

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profesora sa Sveučilišta u Zagrebu *Linguistic diversity and economic prosperity: A historical approach / Jezična raznolikost i gospodarski napredak: povijesni pristup.*

Sesija o identitetima i stavovima bavila se identitetom Hrvata u Slovačkoj, stavovima o višekulturalnosti u Vojvodini, jezikom srpskih pisaca, reklamnim porukama u Maleziji, raznolikošću, asimilacijama i pitanjem identiteta u zajednici Chitty Melaka, identitetom zajednice ciparskih Grka u Londonu, višejezičnim zajednicama u višejezičnom okruženju općenito, jezicima u kontaktu u srednjem vijeku, tzv. asimetričnom višejezičnosti u renesansnoj Ragusi, jezičnim kontaktima u *Riječkoj kvesturi* i krčkim mletačkim idiomom.

O spremnosti komunikacije na engleskom jeziku u visokom školstvu, engleskom jeziku kao *lingua franca* u nastavi teorije jezika, revitalizaciji talijanskog u Istri, jezičnoj i kulturnoj raznolikosti, kulturnoj kompetenciji u ruskom kao stranom jeziku, kvalitativnoj analizi učenja i poučavanja, o stavovima mladih učenika u učenju stranog jezika te važnosti povratne informacije u učenju, govorilo se u sekciji o učenju i poučavanju jezika.

Raznolika naslovima bila je sesija sa sintaktičkim temama u sinkroniji i dijakroniji u pravnim tekstovima. Govorilo se o funkciji demonstrativa u odlomcima reformacijskog prijevoda evanđelja Novog testamenta iz 16. st. Obradene su i teme jezika moliških Hrvata, sintakse u Kraljevini Dalmaciji te enklitike u američkom hrvatskom jeziku.

Dijalektologija i jezici u kontaktu predstavljeni su izlaganjima o srpskom i hrvatskom na Twitteru, tuđicama u sičanskom govoru, o utjecaju talijanske ortografije na regionalni izgovor fonema, kontaktu novoštokavskih govora na Kordunu, stavljena je u odnos geolinguistika s antroponomastičkim istraživanjima, predstavljen je vokalizam u *Slovenskom lingvističkom atlasu*, predstavljen je i inventar rasprostranjenosti naziva za dijete u slavenskom svijetu i druge geolinguističke teme.

Jezična raznolikost u jezičnom razvoju obrađena je u nekoliko radova kao što su *Morfološko bogatstvo u hrvatskome kao podrška jezičnoj proizvodnji: odnosne rečenice u predškolskoj i ranoj školskoj dobi, Razvijanje diskursne fleksibilnosti i jezične sposobnosti u slovenskom kao J1 i dr.* Tema jezičnog razvoja obrađena je, između ostalih, i u radovima o negativnom prijenosu u učenju srodnih jezika, o jezičnim sustavima u učenju slovenskog kao inog, o radu u EMI-u (English Medium Instruction) te su obrađene i druge teme o usvajanju engleskog kao J2. Predstavljena su istraživanja o ulozi sugovornika u ranom dječjem govoru, o izražavanju uzročnosti prijedlozima u talijanskom kao J2, o razvoju i stavovima o jeziku na primjeru talijansko-hrvatskoga

dvojezičnog djeteta, o ritmu u talijanskom kao J2, o mehanizmima prefigiranja u mađarskom kao inome, o naglasku engleskog jezika u govornika iz Hong Konga, o specifičnim temama u usvajanju portugalskog kao J2, o usvajanju pisane produkcije na španjolskom i purepečanskem, o usvajanju trećeg jezika na primjeru njemačkog i španjolskog jezika itd.

O ugroženosti jezika u jugoistočnoj Europi govorilo se s aspekta hrvatskog identiteta u Mađarskoj, bajaškog romskog, srpskog kao manjinskog jezika, slavenskih manjina u Grčkoj, manjinskih jezika u Alpsko-jadranskog regiji, romanskih varijeteta u jugoistočnoj Srbiji, posebno u Knjaževcu, fiumanskog dijalekta, jezične zajednice Zaratino i Arbanasa u suvremenom kontekstu. Obrađena su i pitanja revitalizacije ciparskog arapskog i banatskog bugarskog jezika, iznesena su zapažanja o utjecaju rumunjskog na karaševske govore te podaci o osiromašivanju glasovnog inventara italofonih govornika u zapadnoj Slavoniji itd.

O jezičnoj raznolikosti, konstrukcijskoj gramatici i konceptualizaciji govorenog je u radovima o modelu leksikalizacijskih obrazaca te o gramatikalizaciji i idiomatizaciji u službi opojmljivanja. Predstavljen je mentalni leksikon hrvatskog jezika na primjeru od 20 leksema, prikazana je konceptualizacija pojma *poludjeti* u nekim govorima, metafore u pacijenata sa shizofrenijom, način prenošenja emocija u srednjovjekovnim tekstovima o Mongolima, tradicionalnoj glazbi kao izrazu manjine, retorici sebstva u pismenosti studenata u drugom jeziku itd.

Općelingvističke teme, kao što su revitalizacija jezika i jezična politika, obrađene su u radovima o jeziku u Papui Novoj Gvineji, o stavovima prema glagoljici, o smanjenju jezične raznolikosti u Singapuru i o francuskom u alžirskih studenata poslijediplomskih studija u Velikoj Britaniji.

Naglasne raznolikosti u hrvatskom jeziku predstavljene su radovima o normi i televizijskom govoru, o problematiziranju norme i opisu nekih mjesnih govora. Predstavljena je i akcenatska slika standarda u govorima štokavske osnovice u Bosni, promjene u percepciji identiteta i hrvatske naglasne norme, postavljeno je pitanje koji organski idiom dovodi do norme te su obrađene neke specifične teme poput proklize i zanaglasne dužine.

Kognitivna lingvistika i semantika predstavljene su radovima o figurativnosti nadimaka engleskih trkača i trkačica, metaforama u strojarstvu i opojmljivanju iskustva svetoga u hrvatskoj fantastičnoj prozi.

Problem morfoloških dubleta obrađen je kao problem u usvajanju jezika te ilustriran primjerima iz hrvatskog, češkog, talijanskog te općenito iz slavenskih jezika.

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Korpusna lingvistika predstavljena je uvodnim temama o toj disciplini u kontekstu jezične raznolikosti. Predstavljen je dijalekt iz sjeverozapadne Italije, klitike u bosanskom, hrvatskom i srpskom, elementi iz tirolsko-talijanskog korpusa, govorni korpus Konttati itd.

Općenite jezične teme dotaknule su se i korpusne lingvistike u prevodenju, tema izražavanja temporalnosti, plodnosti prefiksa pre- i poznavanja slavenskih jezika u hrvatskome kao J2.

Jezična ideologija, politika i planiranje predstavljeni su aktualiziranjem Brozovićeva jezika, temama o preskriptivnoj naglasnoj normi u hrvatskom i ruskom te problemima azilanata u Republici Hrvatskoj.

Iznimno bogat raspon općih jezikoslovnih tema te dobro posjećeni paneli potvrđuju velik interes inozemne i domaće javnosti za jezična istraživanja i različite jezikoslovne discipline. Izvrsna organizacija ovako velikog skupa iznimam je zadatak pa ovim putem organizatorima upućujemo čestitke i s veseljem čekamo poziv za novi CLARC 2020. godine.



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**Članak u zborniku radova**

**Blumstein, S.** (1995). On the neurobiology of the sound structure of language: Evidence from aphasia. U K. Elenius i P. Branderud (ur.), *Proceedings of the XIIIth International Congress of Phonetic Sciences*, vol. 2 (str. 180–185). Stockholm: KTH i Sveučilište u Stockholmu.

**Članak odnosno poglavlje u knjizi više autora**

**MacNeilage, P. F.** (1999). Acquisition of speech. U W. J. Hardcastle i J. Laver (ur.), *The Handbook of phonetic sciences* (str. 301–332). Oxford, UK; Malden, Mass.: Blackwell Publishers.

**Izvor na internetu s navedenim autorom**

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