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Assessment of Speech Impairment in Russian Children with SLI

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Introduction

Specific language impairment (SLI) is a developmental language disorder characterized by speech deficits in children with intact hearing, intellectual abilities and motor skills [4]. In Russia, for diagnosing SLI speech and language pathologists use several test batteries. However, most of these tests lack the quantitative component, which is essential for accurate diagnostics. Standardized test for speech assessment in children KORABLIK was developed by the Center for language and brain HSE as a response to that problem. In this study, we will use KORABLIK to assess speech impairments in Russian speaking children with SLI.

Method

A total of 9 pre-school children with SLI at the age of 4-5 years were tested. All SLI children were diagnosed by a speech-language pathologist and had several comorbid disorders (dysarthria, phonetic-phonemic underdevelopment, psychological delay, Attention Deficit Hyperactivity Disorder). Performance of the children with SLI was compared to control group (60 typically developing 4-5 years old children). KORABLIK consists of three blocks of tests that assess speech comprehension, speech production and repetition. These blocks include subtests, which allow to assess child's abilities in comprehension and production of sounds, words, sentences and text (thus phonological, lexical, syntactic, and discourse linguistic levels are evaluated). All tests are presented on a tablet. However, during present research only nouns and verbs comprehension, syntax comprehension, nouns and verbs production and non-words repetition subtests were analysed.

Results and Discussion

The average score of children with SLI is smaller in all subtests in both age groups (4 and 5 years old), with the biggest difference in nonword repetition; a relatively big difference in syntax comprehension and noun production for 4 year-olds and just noun production for 5 year-olds is also noticeable.

While comparing individual results of children with SLI to the score of the lowest 5th percentile, it was identified that practically all children with SLI have scores in nonword repetition that were below the 5th percentile (below the cut-off). Other subtests, namely, syntax comprehension and noun production proved to be difficult for around half of all children with SLI. Syntax comprehension results are in agreement with previous studies, which have shown that SLI children usually have relative difficulties with sentence comprehension due to poor linguistic knowledge or inferior general processing abilities [5].

Both aforementioned arguments about nonword repetition subtest speak in favour of it being one of the most discriminative subtests for identifying SLI, which is in alignment with much previous research [1, 2, 3].

Nouns and verbs comprehension subtests, apart from the target word, include three distractors: one is semantically similar to the target word, one phonologically and one is irrelevant, which allows us to look at the type of errors, which children make during single word comprehension. In

a group of 4 year olds, in noun comprehension, children with SLI have quite close percentage of phonological and semantic errors, while typically developing children make semantic errors more than twice as often, compared to phonological ones. Moreover, for control group semantic errors are the most frequent; for children with SLI phonological ones. For children with SLI, irrelevant errors are also much more frequent. In verb comprehension, distribution of errors is quite similar between the two groups but errors in children with SLI are more frequent. In a group of 5 year olds, for children with SLI, in nouns comprehension, semantic errors are the most frequent ones, similarly to the control group. Irrelevant errors are the second by frequency in SLI group, while in the group of typically developing children irrelevant errors are extremely low. Phonological errors have similar low percentage in both groups. In verbs comprehension subtest, children with SLI have relatively high error rate for both semantic and phonological errors, control group mostly made semantic errors, however, the frequency of semantic errors in both groups is about the same. Irrelevant errors are insignificant for both groups.

Judging by children's individual speech-language profile, we can say that KORABLIK can identify particular speech impairments. Combinations of problematic subtests vary from child to child, due to the diverse nature of SLI. Most frequent combination for now is cumulative impairments in nonword repetition and single word production subtests. However, to draw more profound conclusions, results of more children with SLI should be analysed.

References

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