Chapter 9

Comparison of the Results of Token Test and Sentence Comprehension Test in Pre-school Czech Children with Typical Language Development and with Speech-Language Disorders

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Additional information is available at the end of the chapter

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Abstract

27 pre-school (26 native Czech-speaking and 1 native Russian-speaking) children (age 4; 6–7; 9 and gender 18 m; 9 f); 17 children with speech and language disorders from speech and language kindergarten (SLK) and 10 children with typical language development (TLD) from a kindergarten of common type, received two tests of language comprehension, the Token Test (TT) and the subtest from the Heidelberg Language Development Test (H-S-E-T) called The Sentence Comprehension Test (SCT). The results of the TT (success rate of children with TLD was 77%; children from SLK scored 70%) surpassed the results of the SCT (children with TLD 59%; children from SLK 44%) in both groups. The most severe deficiencies have been observed in children with SLI and a boy with severe bilateral sensorineural hearing loss. The observed differences between the means in both groups (TLD, $N = 10$; SLD, $N = 17$) were not statistically significant, using Student's t-test (TT, $p = 0.28$; SCT, $p = 0.11$). There were not statistically significant differences between the means in children from three compared groups (TLD, $N = 10$; SLI, $N = 8$; articulation disorders, $N = 6$), using the ANOVA (TT, $p = 0.60$; SCT, $p = 0.23$).

Keywords: specific language impairment, comprehension, language disorders

1. Introduction

This paper focuses on understanding sentences communicated via oral speech in pre-school children. As reported by Smolík and Seidlová-Málková [1], only grammatical knowledge can help a child in recognizing different meanings of phrases, such as *"A cat chases a dog"* and

"A cat is chased by a dog." We decided to observe the issue of understanding oral speech in pre-school children because it far exceeds school education and offers new areas for research exploration. School work is imbued with permanently working with a given language in the area of reception (understanding) and expression (production)—in the speaking, reading and written forms. In some cases, pre-school children who face difficulties in understanding words, sentences and context will not correctly understand verbal information and may experience aggravated conditions of education in the school, although their problems may not be visible "at a glance."

2. Basic terminology

The concept of **comprehension** [2, 3] can be seen as a comprehension of relationship, respect, sense, and the substance of the problem; as a method of cognition, understanding is similar to intuition, and it is achieved directly. In speech therapy, the issue of understanding is closely related to the areas of language disorders. Language disorders pose difficulties in language encoding or decoding; they include difficulties in verbal communication, understanding, reading, writing, and problem-solving; in terms of processing language symbols, language disorders are divided into receptive and expressive. In case of a receptive language disorders (RLD), the understanding of words or sentences is disrupted. RLD affectees have difficulty in understanding the meaning of words and phrases when exposed to them, for example, they are asked to point at a named object or image, handling according to instructions is complicated, and demandingness increases with the length of sentences, variety of tasks, the use of a negation, etc. An important prerequisite for understanding the language is physiological and distinct speech (e.g., pronunciation, fluency, prosody) of the examiner. Expressive language disorder (ELD) causes difficulty with verbal expression, i.e., difficulty in formulating thoughts, difficulty in finding words, naming objects, in the lack of appropriate vocabulary, difficulty with semantics (linguistic branch of science, the science of meaning of words, phrases, and communications), difficulty with phonology (refers to speech sound, sound patterns, and rules of sound organization), difficulty with morphology (rules describing the form taken by individual words), and deficiencies in syntax (rules for building words in sentences) [2]. According to Prucha [4], the qualitative aspect of the process of learning the meanings of words, i.e., learning words as semantic categories, is illustrated much less than the quantitative aspect of learning vocabulary by children. According to Lerner and Johns [5], children with difficulties in understanding the language can understand separate simple words, such as "*to sit*," "*chair*," "*to eat*," and "*biscuit*," but they will have difficulty in understanding the sentence in which these words are used, such as: "*Sit in the chair only after eating the biscuit.*"

Developmental language disorders include **specific language impairment** (SLI). SLI is manifested by impaired ability or inability to learn to communicate verbally even if the conditions for the development of language (speech) are adequate [2]. According to Mikulajová [6], it is a neurobiological developmental disorder of speech; the children have impaired ability to understand speech and/or express themselves in speech compared to their peers. According to Shipley and McAfee [7], a seemingly pure language impairment with no obvious cause or

co-occurring condition. With SLI, the main symptoms of language nature include difficulty in producing speech and understanding words, sentences or context. According to Lorusso et al. [8], linguistic impairments in children with SLI disrupt abstract language processing more than visual-motor impairments in nonverbal learning disabilities.

Speech sound disorders include problems with articulation—**articulation disorder** (making sounds) and **phonological disorders** (sound patterns).The ability of humans to produce sounds is used to convey a message, and the act of producing such sounds is identified as **articulation**, and this activity is a major component of speech as distinguished from the term language [9, p. 6]. **Phonological disorders** form a group of language disorders that affect the ability of the child (usually around 3 to 4 years of age) to mimic the speech patterns of words in adults; they affect the ability to learn and organize sounds into words. It is reported that the children show auditory discrimination problems and acoustic feedback weakening; these problems occur at the linguistic level, and they are not related to the creation of sounds by vocal organs [2].

3. Research objectives

The author of the contribution collected the research data during June 2016. In children of the selected research sample, the research goals were set as follows:

- Investigate understanding of oral speech by two methods.
- Evaluate the results of understanding oral speech.
- Compare the success of children in understanding oral speech in terms of the type of kindergarten.

4. Research methods

Regarding the research methods of data collection, the oral speech understanding component was examined using the Token Test (TT) [10] and the Sentence Comprehension Subtest from the Heidelberg Language Development Test [11]. In all participating participants, with the consent of children's legal representatives, the examinations using the Token Test and Sentence Comprehension Subtest were recorded on a video camera. The video was taken with the intent to evaluate the children's reactions as precisely as possible. In all 27 children from the research sample, their oral speech understanding was examined by the author of this article. At the conclusion of the entire examination, the examiner briefly assessed the children's work: "You see, well you made it."

4.1. Token Test

Token Test (TT) assesses understanding of orally communicated sentences. It is a widely used diagnostic method utilized in the field of children's language, in neuropsychology and

cognitive investigations in general [1]. According to Ref. [10], all versions of the Token Test are based on the original work by Ennio De Renzi and Luigi Amadeus Vignola (1962 in Bolceková et al. [10]). For children, there is a Token Test for Children-Second Edition TTFC-2 (McGhee et al., 2007 in Paul and Norbury [12]). In our research, we used a shortened version of TT with 36 items divided into six parts. For examinations, we needed 20 tokens, varying in size (large and small), shape (round and square), and color (blue, green, yellow, white, and red). The proband's task was to handle the tokens according to instructions of the examiner. Demands on verbal working memory gradually increase in the first five parts, e.g., "*Touch the circle. Touch the blue shape. Touch the white square. Touch the large yellow circle. Touch the white square and the green circle. Touch the big white square and the small green circle.*" In the sixth part, the instructions are more complex and their proper fulfillment requires proper understanding of grammatical structures, e.g., "*Touch the blue circle with the red square. When it is a black circle, touch the red square. After touching the yellow circle, touch the blue circle.*" The demandingness of the instructions increases with the number of tokens involved in one handling and the number of characteristics (color, shape, and size), which must be considered for proper execution of the instruction. Correct and incorrect responses/reactions were evaluated by one or zero points, respectively. Each child could receive a maximum of 36 points. When assessing the level of understanding of oral speech, we used the following criteria: 29–36 points = no disorder, 25–28 points = minor disorder, 17–24 points = moderate disorder, 9–16 points = severe disorder, and 0–8 points = very severe disorder [10].

4.2. Sentence Comprehension Test

Twenty-seven children received a subtest from the Heidelberg Language Development Test H-S-E-T (Heidelberg speech evolution test, henceforth H-S-E-T) [11] called the Sentence Comprehension Test (SCT). The Heidelberg Language Development Test was originally created to the German language and was adapted from German to Slovak language by Mikulajová [11], translated to the Czech language by Smékalová [11]. The test is not standardized for the Czech language, and the orientation standards taken from Slovakia are applied. We do not have many options in the Czech Republic to diagnose language development in childhood, and the area of understanding the syntactic structures can be diagnosed by the Sentence Comprehension Subtest by a speech-language pathologist. H-S-E-T is intended for children from 4 to 9 years of age; it has 13 subtests and assesses the level of language skills. Individual subtests of the H-S-E-T, for example, focus on sentence comprehension, the ability to form plurals and singulars, on repeating phrases, the ability to form derived words, ability to form sentences, and other language areas. Subtest Sentence Comprehension Test (SCT) contains 10 instructions of varying grammar complexity; the task of a child is to handle objects according to instructions spoken by the examiner. Examples of instructions (for 5-year-old and older children) are the following sentences: "*The duck swam before the sheep lay down. The rabbit let the cat stroke the dog. A grass-hopper will jump before the dog runs.*" Grimmová et al. [11] indicate that the child will resolve these tasks incorrectly when insisting only on surface strategies without penetrating into the semantic depth of sentences. Children's reactions are evaluated as either correct or incorrect. Correct and incorrect responses are evaluated by one or zero points, respectively. In the subtest, children could receive a maximum of 10 points.

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5. Research sample

The research sample consisted of 27 children ranging in age from 4 years and 6 months to 7 years and 9 months. These children were from the pre-school section of two kindergartens in the Czech Republic. Ten children (37% of the monitored sample) attended a kindergarten of common type—this group included children (labeled P1-P10) with typical language development. Seventeen children (P11-P27), which means 63% of the monitored sample, attended a speech and language kindergarten due to communication difficulties. As shown in **Figure 1**, we worked with 14 boys and 3 girls in the speech and language kindergarten and with four boys and six girls in the kindergarten of common type.

We selected our specific participants in order to point out at difficulties in oral speech comprehension in children with speech-language disorders, especially with developmental language disorders. Their difficulties in sentence comprehension are not visible "at a glance."

Regarding the 17 children from the speech and language kindergarten, school attendance in eight of them (47%) was postponed by 1 year. The situation was different in children from the kindergarten of common type; none of the 10 examined children had deferred school attendance. The youngest child was participant P6 from the kindergarten of common type, aged 4 years and 6 months. The oldest child from the kindergarten of common type (P3) was aged 6 years and 9 months. At the time of examination, the oldest participant (P14)—a boy from the speech and language kindergarten—was aged 7 years and 9 months. The youngest participant (P25) from the speech and language kindergarten was aged 5 years and 9 months.

We were interested in the sample composition **for reason of inclusion in the speech and language kindergarten** (**Figure 2**). Children-participants were labeled P11 up to P27. One of them (P14) was diagnosed with delayed speech development and minor articulation disorder. Four children (P15, P16, P17 and P22) had severe articulation disorder, which

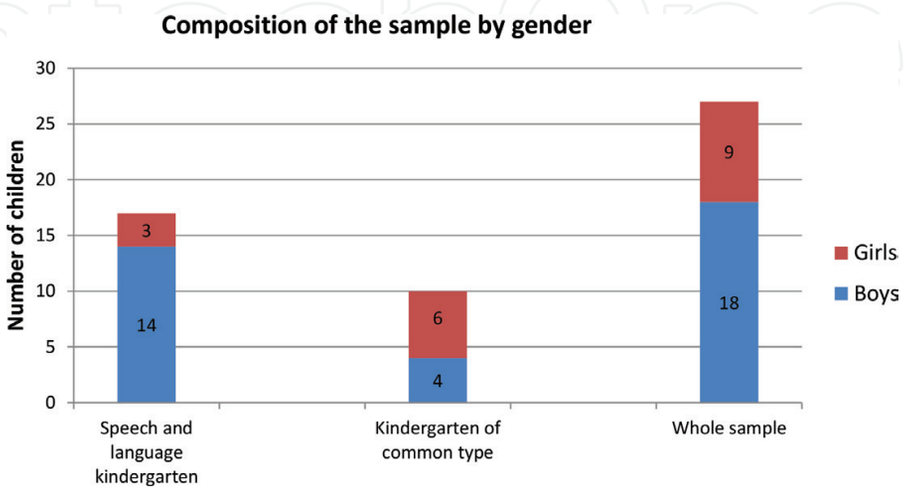

Figure 1. Composition of the sample by gender.

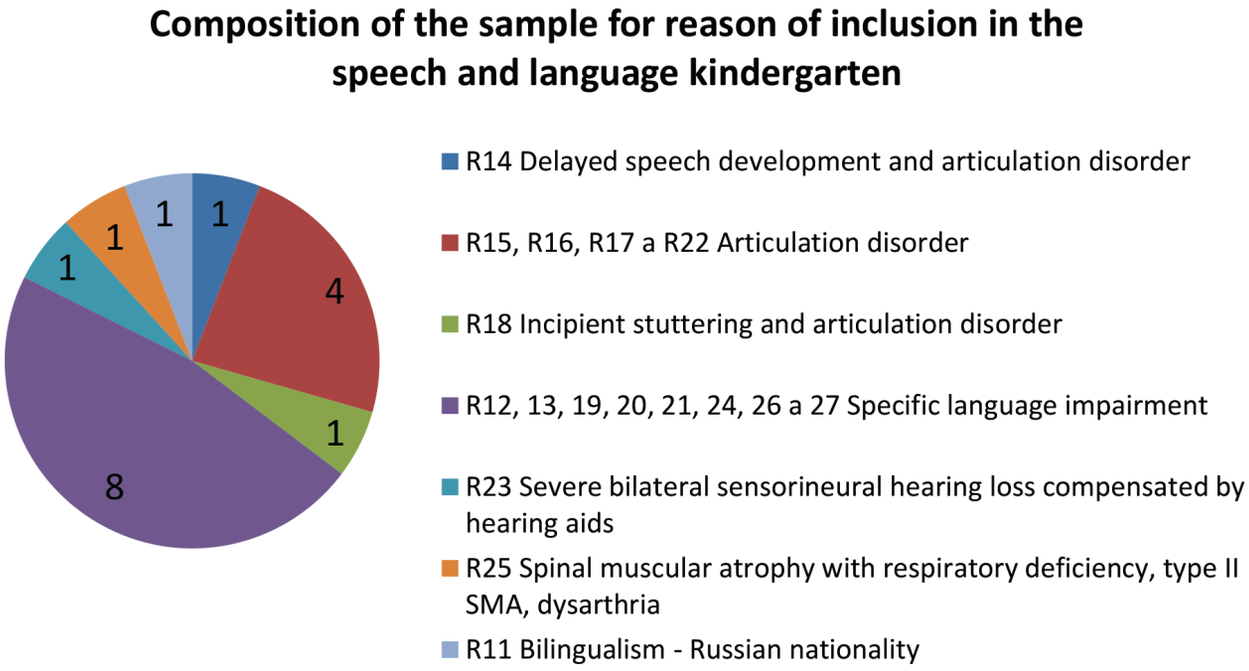

Figure 2. Composition of the sample for reason of inclusion in the speech and language kindergarten.

was accompanied by difficulties in graphomotorics, visual motor skills, oral motor skills, and auditory and visual perception in various combinations. Participant P18 struggled with incipient stuttering, impaired articulation, difficulty in graphomotorics, and visual perception. Eight children (P12, 13, 19, 20, 21, 24, 26, and 27) attended the speech and language kindergarten due to SLI, dysgrammatismus, difficulties in speech comprehension and production, difficulties in graphomotorics, oral motor skills, visual motor skills, and visual and auditory perception. One boy (P23) was diagnosed with severe bilateral sensorineural hearing loss compensated by hearing aids, difficulties in graphomotorics, and visual perception. Another boy (P25) struggled with symptomatic speech disorder in terms of dysarthria based on primary impaired mobility, spinal muscular atrophy with respiratory deficiency, and type II SMA. Examination of understanding of oral speech in this boy (P25) took place in the presence of an assistant teacher who cares for the boy in his kindergarten. Participant P11 came from a Russian-speaking environment and had slight difficulty in producing speech; his speech contained specific grammar errors and incorrect articulation.

6. Results

The success results of the children in the Token Test are shown in **Figure 3**. These results are expressed by the number of points—the absolute rate of successful responses. The risk of moderately severe comprehension disorder (17–24 achieved points of a total of 36 points) was observed in seven participants (P13, P14, P15, P17, P19, P20 and P27) from the speech and language kindergarten (**Tables 1** and **2**). In participants P13, P19, P20 and P27, the deficits

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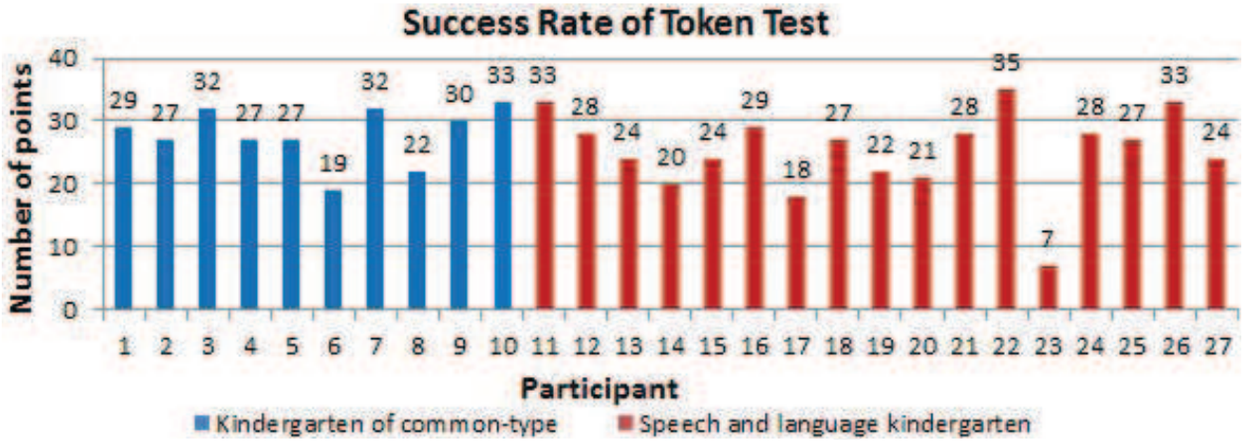

Figure 3. Success rate of Token Test.

Number of points	Degree of understanding of oral speech
29–36	No disorder
25–28	Minor disorder
17–24	Moderate disorder
9–16	Severe disorder
0–8	Very severe disorder

Table 1. Degree of understanding of oral speech (according to DeRenzi and Faglioni, 1978 in Bolceková et al. [10]).

Participant	Number of correct responses (n)	Relative number (in %)
P13	24	67
P14	20	56
P15	24	67
P17	18	50
P19	22	61
P20	21	58
P23	7	19
P27	24	67

Table 2. Results in Token Test at children with comprehension disorders.

were associated with SLI diagnosis. Participants P14, P15 and P17 attended the speech and language kindergarten due to impaired articulation and phonological disorder. The risk of very severe comprehension disorder (0–8 achieved points of a total of 36 points) was found in one boy (P23) with severe bilateral sensorineural hearing impairment compensated by

hearing aids. The two youngest participants (P6, 4 years and 6 months, and P8, 5 years and 4 months) achieved 19 and 22 points; these results, however, were predicted because of their age. A positive development of language functions was indicated in both of these boys, and it could be assumed that their oral speech comprehension would continue to develop positively.

The most difficult instruction of the Token Test was the 29th where the least number of children was able to follow it ($N = 6$, 22%): *"If there is a black circle, touch the red square."* Only seven children (26%) successfully reacted to the 25th instruction: *"Touch the blue circle with a red square."* Ten out of 27 (37%) successfully performed the 30th, 34th, and the 36th instruction: *"Put the green square next to a red circle. Touch the red circle, not the white square. After touching the yellow circle, touch the blue circle."*The instructions no. 5, 6, and 7: *"Touch a blue shape. Touch a green shape. Touch a white shape."* were all successfully completed by every child.

Figure 4 and **Table 3** show that the most pronounced difficulties with sentence comprehension (H-S-E-T) occurred in participants P13, P14, P17, P20, P23, and P25. Participants P19, P21, and P27 gave only four correct responses out of 10. Instruction processing was very difficult in participants with SLI (P13, P19, P20, P21 and P27) and also in participants P14 and P17 who struggled with impaired articulation and phonological disorder. We observed serious problems in the area of comprehension in P23, the boy with severe bilateral sensorineural hearing impairment compensated by hearing aids, and P25, the boy with dysarthria pursuant to spinal muscular atrophy with respiratory deficiency, type II SMA. Considerable difficulties were associated with the implementation of instructions containing time sequences expressed by prepositions *"before"* and *"after."* Children were the most successful in following the third instruction, which, as the only one, was expressed in a simple sentence of four words. Twenty-four children (89%) correctly followed the third instruction. The other nine sentences contained six or seven words, which demanded, apart from adequate language processing of the sentence, a high level of working verbal-acoustic memory.

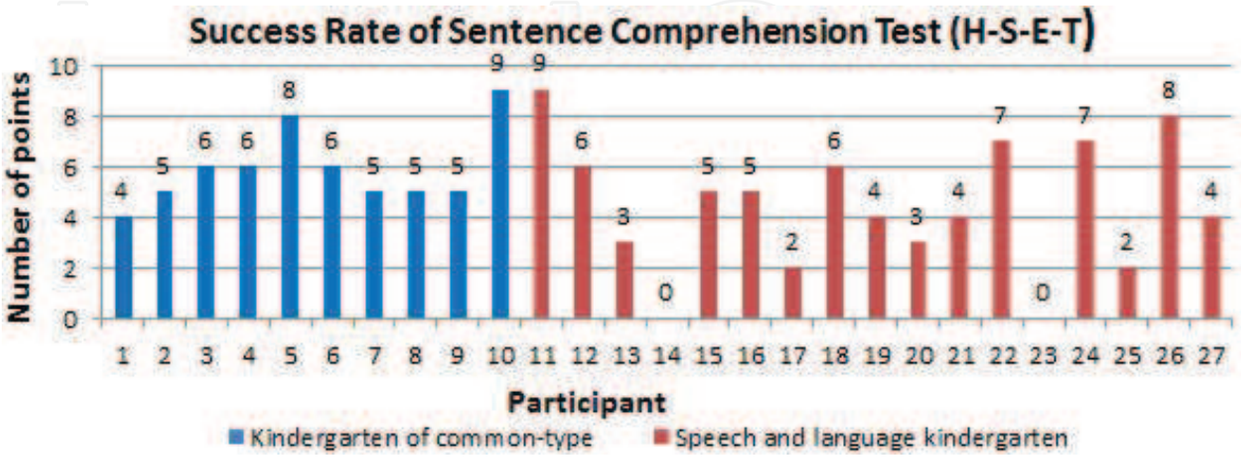

Figure 4. Success rate of Sentence Comprehension Test (H-S-E-T).

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Participant	Number of correct responses (n)	Relative number (in %)
P1	4	40
P13	3	30
P14	0	0
P17	2	20
P19	4	40
P20	3	30
P21	4	40
P23	0	0
P25	2	20
P27	4	40

Table 3. Results in Sentence Comprehension Test at children with comprehension disorders.

7. Conclusions

In the monitored groups, we noted differences in the results of the Token Test and Sentence Comprehension Test, in favor of children from the kindergarten of common type. **Figure 5** shows that children with typical speech development from the kindergarten of common type achieved an average success of 77% in the Token Test and 59% in the Sentence.

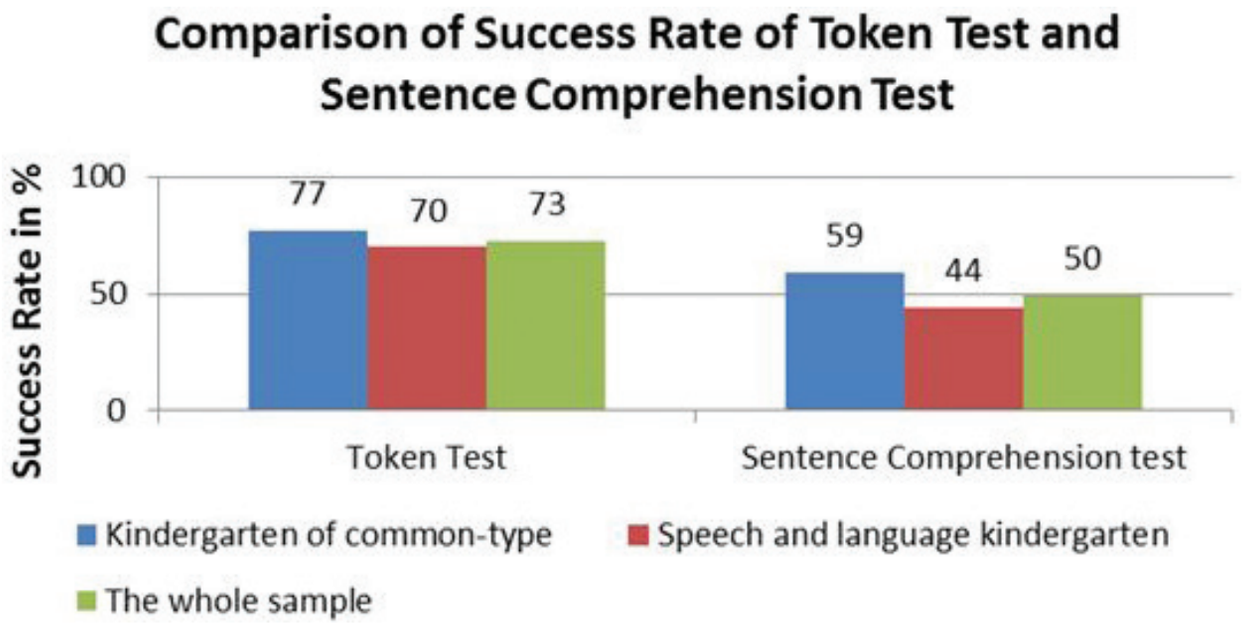

Figure 5. Comparison of success rates of Token Test and Sentence Comprehension Test.

Comprehension Test: children from the speech and language kindergarten achieved an average success of 70% in the Token Test and 44% in the Sentence Comprehension Test. **Figure 5** shows that children with TLD were more successful in the Token Test by 7% and by 15% in the Sentence Comprehension Test than children from SLK.

The results obtained with children with typical language development are within what should be expected due to their age, due to their intact language development in pragmatics, semantics, syntax, phonology as so as intact development in cognitive area.

The difference in achievements on the part of the children was wider in the Sentence Comprehension Subtest. This subtest was more difficult for both groups. In the Token Test, the resulting differences may appear to be small. However, it is necessary to consider differences in the age composition of the groups. The average age of children from the speech and language kindergarten was 6 years and 5 months, while the children from the kindergarten of common type were younger by 11 months–their age was 5 years and 6 months on average. It is, therefore, important to note that even a small difference between the results in favor of children from the kindergarten of common type had its predicative value. The weaker results of children from the speech and language kindergarten (**Table 4**) can be justified by shortcomings in the development of reception, language processing and expression. Higher error rate was observed in children with developmental language disorders (SLI) and associated deficits in cognitive abilities (P13, P19, P20 and P27). In one boy (P23), the difficulties in understanding were the consequence of severe hearing impairment. We believe that participants P14 and P17—enrolled in the speech and language kindergarten due to impaired articulation—should be differentially diagnosed in order to examine the level of sentence comprehension and other areas of communication skills since their difficulties in understanding could be primarily based on SLI. The boy with dysarthria based on spinal muscular atrophy (P25) had severe issues with the Sentence Comprehension Test.

The most severe deficiencies in oral speech comprehension have been observed in children with SLI and in a boy with severe bilateral sensorineural hearing loss. Deficits appeared in the understanding of six to nine-word instructions in the Token Test and in the Sentence Comprehension Test.

7.1. Statistical analysis of the results

The average score in the Token Test and in the Sentence Comprehension Test in children from kindergarten of common-type and children from speech and language kindergarten was compared using Student's *t*-test.

As can be seen in **Table 5**, there are not statistically significant differences between the mean results in the Token Test of children with TLD from kindergarten of common type and in children with speech-language disorders in speech and language kindergarten (calculated value of significance $p = 0.28$).

There are not statistically significant differences between the mean results of the Sentence Comprehension Test of children with TLD from kindergarten of common type and in children

Participant	Gender	Age (years; months)	Diagnosis	Token Test		Sentence Comprehension Test	
				n/36	%	n/10	%
P1	m	6;1	TLD	29	81	4	40
P2	f	5;9	TLD	27	75	5	50
P3	m	6;9	TLD	32	89	6	60
P4	f	5;9	TLD	27	75	6	60
P5	f	4;8	TLD	27	75	8	80
P6	m	4;6	TLD	19	53	6	60
P7	m	6;0	TLD	32	89	5	50
P8	f	5;4	TLD	22	61	5	50
P9	f	4;11	TLD	30	83	5	50
P10	f	6;8	TLD	33	92	9	90
P11	m	7;1	BLV	33	92	9	90
P12	m	5;10	SLI	28	78	6	60
P13	**f**	**5;10**	**SLI**	**24**	**67**	**3**	**30**
P14	*m*	*7;9*	*DSD, MAD*	*20*	*56*	*0*	*0*
P15	m	5;10	SAD	24	67	5	50
P16	m	6;3	SAD	29	81	5	50
P17	*m*	*6;0*	*SAD*	*18*	*50*	*2*	*20*
P18	m	6;3	Stutter, AD	27	75	6	60
P19	**m**	**7;6**	**SLI**	**22**	**61**	**4**	**40**
P20	**f**	**7;6**	**SLI**	**21**	**58**	**3**	**30**
P21	m	6;10	SLI	28	78	4	40
P22	m	6;10	SAD	35	97	7	70
P23	**m**	**6;8**	**HL**	**7**	**19**	**0**	**0**
P24	f	6;10	SLI	28	78	7	70
P25	m	5;9	Dysarthria	27	75	2	20
P26	m	7;2	SLI	33	92	8	80
P27	**m**	**6;7**	**SLI**	**24**	**67**	**4**	**40**

Notes: n/36, number of correct responses in Token Test; n/10, number of correct responses in Sentence Repetition Test; %, relative number, number of correct responses in %; TLD, typical language development; BLV, a boy from Russian-speaking family, specific errors in grammar and incorrect articulation; SLI, specific language impairment; DSD, delayed speech development; MAD, minor articulation disorder; SAD, severe articulation disorder; Stutter, incipient stuttering; AD, articulation disorder; HL, severe bilateral sensorineural hearing loss compensated by hearing aids; Dysarthria, dysarthria pursuant to spinal muscular atrophy with respiratory deficiency, type II SMA.

Table 4. Data about gender, age, diagnosis, and results in Token Test and Sentence Comprehension Test.

Variable	*t*-Tests; grouping: kindergarten (DATA) Group 1: kindergarten of common-type (KCT) Group 2: speech and language kindergarten (SLK)								
	Mean KCT	**Mean SLK**	***t*-value**	**df**	***p***	**Valid N KCT**	**Valid N SLK**	**Std. Dev. KCT**	**Std. Dev. SLK**
Token/36	27.80	25.18	1.11	25	0.28	10	17	4.49	6.64
SCT/10	5.90	4.41	1.64	25	0.11	10	17	1.52	2.60

Table 5. Means and standard deviations of results in TT and SCT.

with speech-language disorders in speech and language kindergarten (calculated value of significance $p = 0.11$) (**Table 5**).

The average mean in the Token Test and in the Sentence Comprehension Test in three compared groups (TLD, $N = 10$; SLI, $N = 8$; and articulation disorders AD, $N = 6$) was compared using the analysis of variance (ANOVA).

There are not statistically significant differences between the mean results in the Token Test in children from three compared groups (TLD, SLI, and AD) (calculated value of significance $p = 0.60$) (**Table 6**).

Cell No.	Group; LS means (DATA) Current effect: $F(2, 21) = 0.53084$, $p = 0.60$ Effective hypothesis decomposition					
	Group	**Token/36 Mean**	**Token/36 Std. Err.**	**Token/36 −95.00%**	**Token/36 +95.00%**	***N***
1	TLD	27.80	1.52	24.64	30.96	10
2	SLI	26.00	1.70	22.47	29.53	8
3	AD	25.50	1.96	21.42	29.58	6

Table 6. Analysis of variance (ANOVA) of Token Test.

Cell No.	Group; LS means (DATA) Current effect: $F(2, 21) = 1.5653$, $p = 0.23$ Effective hypothesis decomposition					
	Group	**SCT/10 Mean**	**SCT/10 Std. Err.**	**SCT/10 −95.00%**	**v**	***N***
1	TLD	5.90	0.62	4.61	7.19	10
2	SLI	4.88	0.69	3.43	6.32	8
3	AD	4.17	0.80	2.50	5.83	6

Table 7. Analysis of variance (ANOVA) of Sentence Comprehension Test.

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As can be seen in **Table 7**, there are not statistically significant differences between the mean results in the Sentence Comprehension Test in children from three compared groups (TLD, SLI, and AD) (calculated value of significance $p = 0.23$).

Although differences in the Sentence Comprehension Test are not statistically significant, we believe that when the sample is enlarged, the differences could already be significant.

7.2. Possibilities of further research

School work implies good understanding of the spoken language, as well as reading and writing. Speech comprehension is considered a significant predictor of successful reading, writing, and school work as such. In relation to understanding sentences, Paul and Norbury [12] state that it is necessary to realize that the syntax used in school texts is more complex than the syntax used in oral speech. Souto et al. [13] found out: although novel verb studies show a clear connection between how children with SLI hear new verbs and how they use them, we do not yet have evidence that this connection is tied to a poor understanding of the input sentences that house the verbs. In this study, we found poor understanding on the children's part, but no signs that this limited understanding was the actual source of auxiliary inconsistency.

We, therefore, conclude that the gaps in speech comprehension in children with developmental language disorders make their education even more challenging and that it is necessary to reveal these problems as soon as possible and work diligently on the development of speech comprehension. We suggest observing changes in the behavioral area; we have seen, for example, a change in pragmatics, specifics in eye contact, increased psychomotor restlessness, or questions posed by children after they were told the instructions ("*What? What did you say?*"). We do not know whether children have room for these questions in the ordinary school lessons. In our opinion, we currently do not have much information in the Czech specialized literature about the level of language understanding in early-school children with SLI and we consider it necessary to research this area more.

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References

[1] Smolík F. Seidlová-Málková G. Vývoj jazykových schopností v předškolním věku. 1st ed. Praha: Grada Publishing; 2014. 248 p

[2] Dvořák J. Logopedický slovník. 3rd ed. Ždár nad Sázavou: Logopedické centrum; 2007. 248 p

[3] Hartl P, Hartlová H. Velký psychologický slovník. 4th ed. Praha: Portál; 2010. 800 p

[4] Prucha J. Dětská řeč a komunikace. 1st ed. Praha: Grada; 2011. 199 p

[5] Lerner J, Johns B. Learning Disabilities and Related Mild Disabilities. 12th ed. Wadsworth: Cengage Learning; 2012. 484 p

[6] Mikulajová M, editor. Čítanie, písanie a dyslexia. 1st ed. Bratislava: Mabag; 2012. 296 p

[7] Shipley KG, McAfee JG. Assessment in Speech-Language Pathology. 4th ed. Clifton Park: Delmar; 2009. 647 p

[8] Lorusso ML, Burigo M, Borsa V, Molteni M. Processing Sentences with Literal versus Figurative Use of Verbs: An ERP Study of Children with Language Impairments, Nonverbal Impairments, and Typical Development [Internet]. 2015. Available from: http://dx.doi.org/10.1155/2015/475271

[9] Kent R. Normal aspects of articulation. In: Bernthal JE, Bankson NW, Flipsen P, editors. Articulation and Phonological Disorders Speech Sound Disorders in Children. 7th ed. New York: Pearson; 2013. pp. 6-57

[10] Bolceková E, Preiss M, Krejčová L. Token test pro děti a dospělé. 1st ed. Otrokovice: Propsyco, s.r.o.; 2015. 19 p

[11] Grimmová H, Schöler H, Mikulajová M. Heidelbergský test vývoje řeči H-S-E-T. 1st ed. Brno: Psychodiagnostika; 1997

[12] Paul R, Norbury CF. Language Disorders from Infancy through Adolescence, Listening, Speaking, Reading, Writing and Communicating. 4th ed. St. Louis: Elsevier; 2012. 756 p

[13] Souto SM, Leonard LB, Deevy P, Fey ME, Bredin-Oja SL. Subordinate clause comprehension and tense/agreement inconsistency in children with specific language impairment. Journal of Communication. 2016;**62**(July–August):45-53. DOI: https://doi.org/10.1016/j.jcomdis.2016.05.002