

Text comprehension in Czech fourth-grade children with dyslexia

Klára Špačková

Charles University in Prague, Czech Republic
klara.spackova@pedf.cuni.cz

Abstract

In the Czech Republic, the concept of dyslexia is used as a global term for various developmental deficiencies relating to reading skills. The criteria used for dyslexia are not clear and intervention is solely focused on word reading training. Not much is known about the pattern and level of reading comprehension abilities among Czech readers. The study examines reading comprehension and its component skills (decoding and listening comprehension abilities) in 32 Czech fourth-grade children with a formal diagnosis of dyslexia and their classmates (N=126). In decoding tests, the children with dyslexia surprisingly lagged behind most significantly in a task concerning speed and accuracy in context reading. Contrary to expectations, the children with dyslexia also showed inferiority in a listening comprehension task. In reading comprehension measures, in comparison to the typically developing readers, the children with dyslexia achieved the best results in an oral reading comprehension task. The results are discussed with respect to Czech counselling and educational practice and the need for changes in the current support system and terminology is stressed.

Key words: text comprehension, dyslexia, component skills, decoding test

INTRODUCTION

The effort to support children with dyslexia has a long tradition in the Czech Republic. The first mention of dyslexia can be found in an article describing the reading difficulties of a twelve-year-old girl, written by a physician, Antonín Heveroch, as early as in 1904. However, the first extensive studies of this topic began in the 1950s. These studies were connected to the topic of minimal brain dysfunction (MBD). In the 1960s, Czech learning difficulties specialists succeeded in applying their theoretical knowledge to practice. This resulted in the first special experimental classes for children with special learning difficulties (SLD) being established in Czech schools and also special schools for SLD children. The official acknowledgment of the topic of SLD came in the 1970s, when special educational counselling centres were set up. The goals of these centres were to diagnose

special educational needs, plan interventions, and instruct special educational teachers and parents on how to help children with SLD to develop reading and writing skills most effectively. Slowly, the issue of dyslexia moved to regular classes and the emphasis was mainly placed on training the teachers of regular classes but also raising the awareness of the lay public about SLD (see Kucharská, 2004; Matějček, 1995 for a review). In addition, the care for children with SLD and its legislative determination gradually expanded from primary schools to kindergartens, secondary schools, high schools, and universities.

In many ways this development is very similar to the development of SLD support systems abroad, especially in English-speaking countries. However, the Czech support system evolved rather separately, reflecting the specific features of the Czech education system and Czech language system. Among the original contributions of the Czech SLD counselling practice is, for example, a strong emphasis on close cooperation with parents but also an application of several special methods and procedures such as the use of the so-called “reading window” or the use of hard and soft spelling dice.

Even though the SLD support system has been well established in the Czech educational system for a while now, we have to admit that the effort to improve literacy in the population of Czech children has not been successful. According to various international literacy studies (e.g. PISA), Czech children lag behind the average in comparison with other OECD countries (Starý et al., 2013). What is especially alarming is the findings showing that the deficit of the literacy skills of almost 25% of Czech fifteen-year-olds is serious enough to have a negative impact on their ordinary life (Palečková, Tomášek, & Basl, 2010).

Besides the growing number of poor readers, it is the number of children with SLD, which is increasing year by year, that indicates the need for changes in our support system and it is clear that significant attention also has to be paid to the issue of the SLD diagnosis itself. Mertin, Kucharská, et al. (2007) summarize that there are numerous SLD criteria (psychological, educational, special educational, and medical); however, the criteria for SLD are not specified legislatively and it is up to each educational psychologist to decide which diagnosis to assign. As a reaction to the increasing number of SLD students and the considerable differences in the incidence of dyslexia in different Czech regions, a lively discussion has arisen about the subjectivity of the SLD diagnostics. It is believed that in some cases, the circumstances (e.g. lack of family support) led to an SLD diagnosis in order to provide the child with a more individual approach at school, which would give him or her a better chance of higher achievement. On the other side, in the light of the above-mentioned findings, it is obvious that many poor readers do not receive the proper diagnosis and so they remain outside the support system and do not receive an individualized approach. Actually, it has

been common praxis that it was the assignment of an SLD diagnosis (dyslexia, dysgraphia, dysorthographia) that determined if a child (who was a poor reader) received an intervention or not.

If we focus solely on the issue of *dyslexia*, the diagnostic process and criteria are not much clearer. In the Czech Republic dyslexia is generally understood as one type of SLD and it is defined as a global term for various developmental deficiencies of the reading skills of children, despite the fact that the child is receiving regular class reading instruction and has normal socio-cultural opportunities and at least average intelligence (e.g. Jucovičová, Žáčková, & Sovová, 2007; Matějček, 1995; Zelinková, 2009). Dyslexia is characterized by deficiencies in various aspects of reading performance, such as speed, accuracy, reading technique, and reading comprehension. Without defining the causes or differentiating between primary and secondary difficulties, it is stated that all these aspects might be disrupted in various combinations and with varying intensities. It is then widely accepted that the reading performance and pattern of difficulties of dyslexic children vary greatly. Vágnerová (2005) even writes about a heterogenic syndrome.

This does not correspond with the prevailing international approaches and theories about reading difficulties. International experts (e.g. Scarborough, 2005) point out that it is necessary to differentiate between word- and text-level components of reading and on the basis of this approach they recognize a more elaborate typology of poor readers. They abandon the classification of poor readers into dyslexic and generally poor readers (based on the discrepancy model of dyslexia – for more details see e.g. Stanovich, 1988, 2005) and they subgroup poor readers according to their ability level in two key component abilities: decoding and linguistic comprehension. In accordance with one of the most discussed theoretical models of reading, the Simple View of Reading (Gough & Tunmer, 1986), dyslexia is only one of the subgroups of poor readers.

The currently well-accepted definition of dyslexia characterizes dyslexia as difficulties in reading accuracy and/or reading fluency and poor spelling and decoding abilities (Lyon, Shaywitz, & Shaywitz, 2003). Unlike the Czech definition of dyslexia, it is stressed that poor reading comprehension is a possible secondary consequence. The other identified subgroup of poor readers is labelled as *poor comprehenders* or sometimes as *hyperlexia* (Hoover & Gough, 1990; Catts, Hogan, & Fey, 2003; Nation, 2005; Torppa et al., 2006). For poor comprehenders it is characteristic that they can decode words without any problems; however, they do not understand the meaning of the text. This subgrouping is not only about distinct and updated terminology in comparison to that used in the Czech Republic. A great deal of evidence exists (e.g. Nation & Snowling, 1998; Bishop & Snowling, 2004; Catts, Adlof, & Wiesmer, 2006) to show that the two types of reading

difficulties are caused by distinct dysfunctions – dyslexia by malfunctions in phonological processing, whereas reading comprehension difficulties are caused by higher language difficulties, including problems with semantics and grammar.

The findings also have an impact on the recommended way of helping poor readers. It is necessary to consider the application of different intervention approaches with respect to the causes and pattern of reading difficulties. In other words, we cannot perceive reading as a unitary process. As Snowing and Hulme (2012) summarize, when a child has a problem with decoding, it has been proven successful to base the interventions on practising phonological and decoding skills. On the other hand, systematic enrichment of vocabulary and the development of broader language skills were successful in interventions for reading comprehension difficulties.

However, we should not forget about another group of poor readers– children who have problems with both decoding and reading comprehension (known in the literature as *language learning disabilities* (Catts, Hogan, & Fey, 2003) or *garden variety poor readers* (Stanovich, 1988)). It is evident that these children will need systematic help in both areas. In the Czech school system, until now their low reading achievement has usually been attributed to low intelligence or low interest and motivation, and in those cases where support was put in place, there was systematic work on decoding skills in particular. People assumed that reading comprehension will occur automatically when the child is confident with reading words. Obviously, unlike children with isolated difficulty in decoding, this could not happen in the case of these children.

It would be misleading to claim that the question of reading comprehension has not been considered at all in the Czech educational praxis. Reading comprehension has always been declared to be one of the main goals of literacy instruction and it has also been mentioned in relation to reading difficulties. However, both the diagnostic process and intervention programmes in our country, similarly to abroad, have concentrated heavily on the decoding process (the mechanism of reading) for a long time. In the Czech Republic there was not even a standardized tool to measure reading comprehension until 2005 and today we are still lacking standardized tests of reading-related abilities such as listening comprehension and morpho-syntactic awareness. In addition, there is no Czech data about the development of the reading comprehension of the normal population or high-risk readers.

The current study is a part of the three-year research project *Reading Comprehension – Typical Development and its Risks*, the main goal of which was to collect Czech data about the reading comprehension ability of children with typical development and high-risk readers (dyslexic children, children with specific language impairment and children with autism spectrum disorders). In this article,

we will first present data analysis focusing on a comparison of children with dyslexia and their classmates. Apart from decoding skills, we are interested mainly in reading comprehension ability.

Reading comprehension and dyslexia

What do we know and what kinds of results can we expect in the case of the reading comprehension performance of children with dyslexia? In the Czech Republic the information about the level of reading comprehension in children with dyslexia is very austere. The most widely used battery for the measurement of reading skills, *Reading tests* (Matějček et al., 1989), allows the level of text comprehension to be evaluated, but, unlike in the case of other reading parameters such as speed and accuracy, the manual lacks any information about the performance in reading comprehension of children with dyslexia. The method of evaluation of reading comprehension in which the child is asked to "nicely tell us what he or she read" is considered by the authors themselves to complete the picture of the child's reading abilities rather than accurately assess comprehension. Not only does the evaluation of comprehension subtest lack clear criteria for assessing the performance, but the examiner also has to keep in mind that the performance is influenced by the child's language skills and his or her willingness to narrate.

In the classic publication *Dyslexia. Specific learning difficulties* (Matějček, 1995), we can find a short paragraph about the findings of a reading comprehension study realized by Jana Swierkozsová. She designed a task consisted of a text with missing words (a so-called "cloze format" type of test) and administered it in regular third-year classes and specialized classes for children with dyslexia. The results showed that the children with dyslexia made twice as many errors as the children from regular classes. Unfortunately, the research report from the study is not available and so we possess no detailed information (what kinds of errors the children made, if the exam time was limited, if it was administered individually, what the level of decoding abilities of the research groups was, etc.).

More detailed information about the expected performance regarding the reading comprehension of children with dyslexia can be found in the description of the *Reading Comprehension Test* (Caravolas & Volín, 2005) – the only standardized tool to assess reading comprehension available in the Czech Republic today. Caravolas and Volín (2005) provide a distinct picture of the performance of children with a mild and with a serious form of dyslexia. For children with a mild form, the total score is lower in comparison to the grade norms but the ratio between attempts and correct answers is quite high. For children with a serious form of dyslexia the total score and also the percentage of correct answers is significantly low. The same authors then highlight that it is always necessary to

analyse the poor comprehension performance in relation to the level of decoding skills (word and pseudoword reading score). Only then can it be clarified (in accordance with the Simple View of Reading) to what extent the poor reading comprehension performance is affected by poor decoding skills and to what extent by linguistic comprehension.

This approach is consistent with numerous studies (e.g. Hoover & Gough, 1990, Bishop et al., 2009, Torppa et al., 2006) showing that children with dyslexia (poor decoders) score significantly worse than their classmates in reading comprehension tasks. Although in higher grades the reading comprehension of poor decoders might improve significantly to catch up with average readers (Leach et al., 2003), in general, to sum up, it is accepted that the reading comprehension of children with dyslexia is lower in comparison to their classmates, but unlike in other poor readers, the reading comprehension score is higher than the decoding score (e.g. Frith & Snowling, 1983; Bishop et al., 2009).

To map this situation about the level of reading comprehension in the Czech Republic we decided to include a group of children with a formal diagnosis of dyslexia in our research sample and for the first data analysis we asked the following questions:

- *What is the level and pattern of decoding skills of the children with dyslexia in comparison with the typically developing children?*
- *What is the level of linguistic comprehension of the children with dyslexia in comparison with the typically developing children?*
- *What is the level of reading comprehension of the children with dyslexia in comparison with the typically developing children and how does the performance change when distinct tasks are used for assessing reading comprehension?*

METHODS

Participants

Dyslexia group (DX). The dyslexia sample consisted of 38 children with dyslexia in the fourth grade. All the children with dyslexia had formal diagnoses of dyslexia assigned on the basis of an examination in counselling centres. Because of the absence of a unified diagnostic procedure and criteria for dyslexia in the Czech Republic, we decided to apply a selective procedure to ensure that the children with dyslexia in our sample displayed persistent poor decoding skills. For a child to be retained in the study, the child had to score not lower than 2SD below the grade mean in the Block Design subtest of Wechsler intelligence scales for children (WISC III) and have at least two scores more than 1SD below the normative mean on three measures of decoding abilities and phonological awareness (One minute reading, Pseudoword reading, Spoonerism). 32 children met the criteria (mean age = 123.6 months old, range = 112-134).

Typically developing children (TD). The comparison sample of typically developing children included 134 fourth-graders. The participants were recruited from 17 public primary schools in Prague and the Central Bohemia region. To exclude readers who were not developing typically, children scoring lower than 2SD below the normative mean on the Reading Comprehension Test (Caravolas & Volín, 2005) and/or 2SD below the grade mean in the Block Design subtest of the Wechsler intelligence scales for children (WISC III) were not included in the TD group. 126 children met the criteria for the TD group (mean age = 117.6 months old, range = 105-130)

All the participants were monolingual native speakers of Czech with no report of sensory or neurological impairments. The parents of all the children included in our study signed a consent to their child's participation. Details of the participants are shown in Table 1.

Table 1: Participants' details

	TD	DX
N	126	32
gender M/F	70/56 (56/44%)	19/13 (59/41%)
age (months)	117.6 (4.8)	123.6 (5.3)

Materials

From a larger battery administered in the project *Reading Comprehension – Typical Development and its Risks*, a subset of measures was selected for analysis in this study. These included scores on three reading comprehension tasks, two measures of decoding abilities, and a listening comprehension task. Because of the lack of standardized tools, some of the tests were experimental tests designed for this study, as described below.

One-minute reading (OMR). The reading speed test from the *Set of diagnostic tests of literacy skills for students of the 2nd-5th grades* (Caravolas & Volín, 2005) was used to assess word recognition ability. It is a speed test comprising 140 high-frequency Czech words arranged in three columns in order of increasing phonological complexity. Children are asked to read the words aloud. One point is awarded for each word read correctly within 60 seconds.

Reading pseudowords. The pseudoword reading test from the *Set of diagnostic tests of literacy skills for students of the 2nd-5th grades* (Caravolas & Volín, 2005) was administered in order to assess word decoding ability. This test consists of a list of 24 pseudowords respecting the phonotactic rules of the Czech language.

Children are asked to read them aloud and the number of correctly read pseudowords is registered.

Reading comprehension test (RCT). It is the only standardized test of reading comprehension available in the Czech Republic. It is a part of the *Set of diagnostic tests of literacy skills for students of the 2nd-5th grades* (Caravolas & Volín, 2005). It consists of 20 short passages on various topics of increasing difficulty in terms of length, vocabulary, and world knowledge. In each text, two words are missing. Children are asked to fill in the gaps within the limit of seven minutes by choosing the right word from five possible choices. Two scores are calculated: Score 1 for the number of correct answers (maximum of 40), Score 2 for the ratio between correct answers and completed items (percentage score).

Comprehension tasks. For the purpose of the study three new comprehension tasks were designed (Kucharská & Mrázková, in prep.). All of them consist of a narrative text containing around 160 words and each is followed by 10 comprehension questions. All the tests have the same type and categories of questions (a mix of open-ended questions, multiple-choice questions, and yes/no sentence recognition) and ask for similar information (for example, the name of the main character). Five questions map literal comprehension, five inferential. Comprehension is evaluated through the total score (max. 2 points for each question) and two subscores: explicit and inferential. (For more details about the tasks see Kucharská, Seidlová Málková & Špačková, 2015.)

Listening comprehension task (LCT): Little star. Children listen to a story about a little star. Questions are asked orally by the examiner.

Oral reading comprehension task (ORCT): Rabbits. Children read the text aloud and when they have finished, the text is removed from view and the examiner asks questions. Besides comprehension scores, the number of correctly read words in per first, second and third minute is registered.

Silent reading comprehension task (SRCT): Going on a trip. Children read the text silently and answer questions in written form while the text is still in view. There is a time limit of 15 minutes.

Spoonerisms. To assess the phonemic awareness of children with a formal diagnosis of dyslexia the Spoonerisms test from the *Set of diagnostic tests of literacy skills for students of the 2nd-5th grades* (Caravolas & Volín, 2005) was administered. Children are required to listen to 10 pairs of nonwords and transpose the initial consonant phonemes for each pair.

WISC – III Block design. (Krejčířová, Boschek, & Dan, 2002). Block design was used to assess the nonverbal ability for the selection process. The scores are not part of the further analysis in the current study.

Procedure

All the materials were administered individually to each child during the morning and early afternoon school hours by research assistants, who had been trained in the administration procedures. The administration took place in a quiet and separate room.

RESULTS

Preliminary analyses were conducted to examine means, standard deviations and range. As assessed by means of Saphiro-Wilk's test, most of the scores were not normally distributed ($p < .05$), so non-parametric Mann-Whitney U tests were used to determine whether there was a statistically significant mean difference between the performance scores of typically developing children and the DX group.

Decoding skills

As expected, the children with dyslexia scored worse on all the tasks measuring decoding skills, whether scored for rate or accuracy and whether they involved reading real words or pseudowords. Contrary to the TD group, the DX group read faster when reading words in a list ($M = 72.3$, $SD = 18$) than in context ($M = 62.2$, $SD = 20.6$). In the case of reading words in context the children with dyslexia read approximately one-third fewer words per minute than their classmates. As shown in Table 2, the difference was statistically significant with large effect size ($r = .54$).

Table 2 Mean score and standard deviation (in parentheses) including results of between-group analysis in decoding measures

	TD (N=134)	DX (N=32)	U value	r
One-minute reading	90.8 (16.7)	70.7 (17.2)	$U = 3,243.5^{***}$	.42
ORCT Rabbits (story)	95.9 (25.8)	59.6 (17.0)	$U = 3,453.0^{***}$	.54
Reading pseudowords	20.3 (3.1)	16.1 (4.4)	$U = 3,175.0^{***}$	.42

*** $p < .001$

Linguistic comprehension

The score achievement results on the listening comprehension task show significant differences between the DX group and the group of TD children in the same grade. The scores of the DX group are lower in terms of the total score, as well as partial scores (explicit and inferential). As we can see in Table 3, the children with dyslexia fell behind especially on the items mapping explicit comprehension.

Table 3 Mean score and standard deviation (in parentheses) including results of between-group analysis in listening comprehension task

	TD (N=134)	DX (N=32)	U value	r
LC total	11.7 (3.2)	9.2 (3.1)	$U = 2,866.5^{***}$	.30
LC explicit	5.7 (1.9)	4.3 (2.1)	$U = 2,749.5^{**}$	.26
LC inferential	5.9 (2.0)	4.8 (1.6)	$U = 2,722.5^{**}$	.25

*** $p < .001$; ** $p < .01$

Reading comprehension

On the reading comprehension tasks significant differences between the DX and TD groups were found for all the total scores. As expected, the children with dyslexia scored lower (see Table 4) on all the tasks. The differences are not surprising, but the variability of the magnitude of the differences across assessments is noteworthy. In comparison to typically developing readers, the DX group showed greater difficulty with text comprehension in the case of RCT – a measure based on reading short passages ($U = 3,4975.5$, $p < .001$, $r = .51$), and SRCT ($U = 3,238.0$, $p < .001$, $r = .48$). In ORCT the difference was significant ($U = 2,522.5$, $p < .05$) but with a small size effect ($r = .21$). Moreover, the median inferential score was not statistically significantly different between TD and DX.

Table 4 Mean score and standard deviation (in parentheses) including results of between-group analysis in reading comprehension tasks

	TD (N=134)	DX (N=32)	U value	r
RCT (passage)	23.6 (6.1)	15.6 (4.8)	$U = 3,4975.5^{***}$	.51
RCT	87.3 (9.0)	76.6 (13.4)	$U = 3,015.5^{***}$	.34
Rabbits (ORC task)	12.6 (2.5)	11.3 (2.2)	$U = 2,522.5^*$	.21
explicit score	6.4 (1.7)	5.6 (1.6)	$U = 2,497.5^*$	.20
implicit score	6.2 (1.5)	5.8 (1.2)	n.s.	
Going on a trip (SRC task)	16.7 (2.1)	13.2 (2.9)	$U = 3,238.0^{***}$	.48
explicit score	8.1 (1.3)	5.9 (2.0)	$U = 3,215.5^{***}$	.47
implicit score	8.6 (1.3)	7.3 (1.5)	$U = 2,894.5^{***}$	.36

*** $p < .001$, ** $p < .01$, * $p < .05$

DISCUSSION

Decoding skills

As expected, according to our findings the decoding skills of fourth-grade children with dyslexia are remarkably worse than the skills of their classmates. The children with dyslexia have low test scores when reading pseudowords, as well as when reading real words. These findings go along with the theory that dyslexia is a difficulty of decoding (e.g. Lyon, Shaywitz, & Shaywitz, 2003).

Interestingly, our analysis further revealed that unlike their classmates the children with dyslexia read isolated words faster than words in context. We also observed this pattern in beginning readers in our study of typically developing children. Young children read isolated words faster until the third grade. It was in the fourth grade that reading words in context started prevailing (more details in Špačková, Kucharská, & Seidlová Málková, 2015). The data we collected about typically developing children and children with reading difficulties contradict many international studies (e.g. Nicholson, 1991; Jenkins et al., 2003; Ardoin et al., 2013). If we take into consideration the number of words read within the one-minute time limit, these studies mention higher test scores for reading words in context for both beginners and advanced readers (Nicholson, 1991; Jenkins et al., 2003).

When interpreting our results, we need to bear in mind a few facts. First, when comparing the results of the *One-minute reading test* and the *Oral Reading Comprehension Test: Rabbits*, the words that the children read were not the same. The OMRtest consists of high-frequency words ordered on the basis of their phonological structure. These words are mostly two-syllable words; however, at the beginning, the test also includes monosyllabic words with a vowel-consonant or consonant-vowel structure. The *ORCT: Rabbits* test contains a lot of tri-syllable words and a high number of words with a more complicated phonological structure. The *OMR* test places polysyllabic words at the end of the list and therefore, most children do not reach them within the time limit of one minute. It is possible that only more proficient readers can compensate for this disadvantage of the *Rabbits text* by using context. This presumption will need to be supported by further research. To sum up, similarly to Jenkins et al. (2003), we can state that no matter if the decoding is measured by reading isolated words or words in context, the deficiency of children with dyslexia is always visible.

Linguistic comprehension

In accordance with the current accepted conceptualization of dyslexia, children with dyslexia show good or at least adequate listening comprehension (Hoover & Gough, 1990; Catts, Hogan, & Fey, 2003; Torppa et al., 2006). In our research, when

compared to the TD children, the children with dyslexia achieved significantly worse test scores in listening comprehension with a medium size effect.

When trying to interpret this surprising finding, let us have a more detailed look at the data analysis. The DX group had bigger problems with explicit comprehension than with inferential comprehension. It means that the children with dyslexia failed especially in those items mapping the ability to recall facts that were explicitly mentioned in the text and that are difficult to guess or make up (for example, the name of the main character). The worse test scores can therefore be caused by the different construction of our new LCT: Little Star. It might be possible that in comparison to the tools used abroad our LCT places greater demands on the child's phonological skills and that the poor phonology of children with dyslexia has a more significant effect on the performance. Our test might consist of a higher number of items that depend on building a precise phonological representation of a word – the character's name, a choice between similar words that were or were not included in the text, etc.

In this context, it is also necessary to point out the differences in methodology of the previously mentioned studies and ours. These studies (Hoover & Gough, 1990; Catts, Hogan, & Fey, 2003; Torppa et al., 2006), research a subgroup of poor readers on the basis of their scores in reading comprehension tests, word reading tests, and listening comprehension tests and so the diagnosis was assigned after testing, but this was not the case in our study. Even if our DX group show significantly worse average result scores in reading comprehension than the TD group, the score range points out that not all children with dyslexia score below average in the listening comprehension task. On the basis of the listening comprehension scores, we could divide the DX group into two groups of poor readers. If we had followed the methodology of the previously mentioned studies, we would not have included the children with low listening comprehension scores in the DX group. We would have assigned them to the group usually called children with language learning disabilities (Catts, Hogan, & Fey, 2003) or garden variety poor readers (Stanovich, 1988).

We believe that this fact emphasizes the problem in terminology and diagnostic approaches to reading difficulties in the Czech Republic. The diagnosis of dyslexia focuses mainly on the mechanical aspects of reading. The diagnostic process assesses the child's ability to decode written text and submit a picture of his or her visual motor skills (visual and auditory perception, right-left orientation, graphomotor skills). Little attention is paid to language skills and reading comprehension skills. Standardized tests assessing these skills are even lacking for specific age groups. In other words, numerous Czech children with dyslexia may also suffer from linguistic comprehension deficits.

Reading comprehension

In accordance with our predictions, the research confirmed the worse result scores of the children with dyslexia in all the reading comprehension tests. This was true when we compared the percentages of correct answers, as well as the numbers of correctly answered questions. These findings support the expectations based on the Simple View of Reading and on findings about the reading skills of children with dyslexia (Hoover & Gough, 1989; Huemer & Mann, 2010). However, in our next analysis, we sought to find out the extent to which the reading comprehension performance is influenced by the use of different tools. On the basis of our first data analysis, we can summarize as follows.

The dyslexic group had significantly lower test scores in the sentence comprehension test and comprehension of short passages (RCT), and in the silent reading comprehension test (SRCT Going on a Trip). The findings revealing difficulty, especially in the task of completing missing words, are not surprising as various research studies (Cutting & Scarborough, 2006) prove that this particular kind of test is the one most influenced by the lack of decoding skills, but the results regarding the silent RC task are astonishing.

For both groups – TD and DX – the SRCT is the most successful comprehension test (the children from both groups achieved the highest scores in this test); despite this, the DX group showed significantly worse scores than the TD group, with a medium size effect ($r = .48$). In the case of the ORCT, the children with dyslexia also achieved lower scores; however, the size effect was small ($r = .21$). If we look at the inferential comprehension score, the results are not even statistically worse. One might think that this is because for inferential comprehension children's reading skills might not play a significant role as the child can answer questions only using their background knowledge and own experience. But in most items, even the inferential comprehension questions map the information mentioned in the text – though not explicitly but written “between the lines”.

So far we can only summarize thus: reading comprehension of a text that is read orally by fourth-graders followed by orally asked comprehension questions is more demanding than a silent reading comprehension task based on individual work with the text. However, the DX group does not differ in terms of its comprehension performance for the oral reading comprehension tasks as much as it does in the silent reading and listening comprehension tasks. As I will show later, I believe this finding is very important when considering the most efficient support for children with dyslexia.

Implications and future research

When considering our results, we have to keep in mind several limitations of our study. Our research sample consists only of children in the fourth grade. The results may vary for different age groups. Some of the testing tools used are pilot versions of the tests and their reliability does not reach the standards that are demanded (Kucharská & Špačková, 2016).

Although our study has several limitations I am persuaded that the collected data clearly shows the need to open a discussion about the literacy terminology and about the diagnostic process of SLD in the Czech Republic.

When we take into consideration international research and our findings, it is obvious that the concept of dyslexia as a learning difficulty manifesting itself in the process of learning to read is inaccurate and not very helpful. This concept of dyslexia does not distinguish between the causes and secondary consequences of primary disturbances that affect reading comprehension. As already mentioned, the DX group of our research sample scored significantly lower than the TD group, even on listening comprehension task. It should therefore be natural that the diagnosis process considers and evaluates not only decoding skills but also linguistic comprehension. It is true that to some extent language skills have usually been assessed during the process of intelligence scale testing (for example by subtest vocabulary) and so teachers and parents would obtain some information about the language skills of the child; however, the information has not been considered in relation to linguistic comprehension or reading comprehension.

It would also be a great benefit if the professionals in the Czech Republic were to acknowledge the existence of another group of poor readers. To distinguish between dyslexics and other poor reader groups is not just a matter of terminology. Research evidence (see Snowling & Hulme, 2011 for a review) shows that considering the level of linguistic comprehension of the child is fundamental for the effective setting of an intervention. Whilst children suffering from dyslexia will benefit from practising decoding and phoneme awareness training, children suffering from dyslexia accompanied by disrupted linguistic comprehension will also need help with the systematic development of their language comprehension (enriching vocabulary and morpho-syntactic awareness). Decoding practice will help them overcome barriers on the word reading level but we cannot expect that reading comprehension problems will disappear automatically with improvements in decoding skills. It is also important to pay attention to children whose reading difficulties are not as obvious as those of children who have problems with decoding – poor comprehenders (characterised by a low level of non-phonological language skills).

In the process of applying a new approach and conceptualization of reading difficulties, the development of standardized, reliable, and valid Czech tools for the

assessment of listening comprehension, morphosyntactic skills, and receptive vocabulary, as well as other different tools for the measurement of reading comprehension, is essential.

To be able to complete the picture about the reading skills of children with dyslexia we also need to analyze their reading performance in comparison to a reader who has the same level of word reading abilities.

Last but not least, the findings open a debate about recommended ways of supporting children with dyslexia.

First, it is a very common practice that teachers and parents are advised to rely especially on listening comprehension skills when transmitting information to (teaching) children with dyslexia. However, our data shows that how the diagnosis of dyslexia is assigned these days in the Czech Republic does not guarantee that learning through listening will be effective enough. It is important to inform teachers and parents that reading a text to a child with dyslexia does not ensure the child's adequate comprehension. Instead, we can assume that systematic training in working with texts in connection to their written form, based on the structuration of a text, looking up key information, and training in text reproduction, will help.

Second, in order to reduce the stress associated with poor performance, children with dyslexia are left out of oral reading activities in the classroom and they are advised to read silently (or to listen). Again, it is probably not a very helpful modification. When considering comprehension, research evidence (e.g. Fletcher & Pumfrey, 1988; Prior et al., 2011) indicates that the reading aloud is superior to silent reading in the case of young and less experienced readers. Our findings indicate that children with dyslexia comprehend better when reading silently than when reading aloud (the test scores were higher for silent reading); however, it again does not guarantee that their level of comprehension will reach the level of their classmates. The comprehension score for the silent reading task of the DX group was significantly worse than that of the TD group, with a large size effect. This shows us that neither listening comprehension nor silent reading is enough to compensate for the reading difficulties for children with dyslexia. Compared to their classmates, their comprehension is much poorer for both tasks. In other words, if a child has difficulty with decoding, reading the text for him or advising him to read the text silently does not solve his problem. It is necessary to evaluate the effectiveness of the intervention and underpin the intervention programme plans with a report about the child's language comprehension level, as well as the results from different types of exercises aimed at observing the comprehension level of the child.

The findings are in accordance with many foreign studies. Reading difficulties are not just about dyslexia. Within the changes that are happening in the Czech

special educational needs (SEN) support system (Kucharská, Mertin, et al., 2007), it is obvious that subgrouping poor readers should never be used as a determining factor to choose certain groups privileged for intervention – every poor reader needs support. Subgrouping, though, might help with the localization of the causes of reading difficulties and thus help in the design of an intervention tailored to the child. Development in the diagnostic process and terminology of learning difficulties is an indispensable part of the transition from a diagnostic-therapeutic model of intervention to a preventive intervention model for the SEN support system in the Czech Republic.

Acknowledgement

The publication was supported financially by the Czech Science Foundation. It is a constituent part of the outputs of the grant project for the Faculty of Education of Charles University, Prague – “Reading comprehension – typical development and its risks” P407/13-20678S.

References

- Ardoin, S. P., Eckert, T. L., Christ, T. J., White, M. J., Morena, L. S., January, S. A., & Hine, J. F. (2013). Examining variance in reading comprehension among developing readers: Words in context (curriculum-based measurement in reading) versus words out of context (word lists). *School Psychology Review, 42*(3), 243-261.
- Bishop, D. M., McDonald, D., Bird, S., & Hayiou-Thomas, M. E. (2009). Children who read words accurately despite language impairment: Who are they and how do they do it? *Child Development, 80*(2), 593-605. doi:10.1111/j.1467-8624.2009.01281.x
- Bishop D, Snowling M.J. (2004). "Developmental dyslexia and specific language impairment: same or different?". *Psychol Bull.* 130 (6): 858–86. doi:10.1037/0033-2909.130.6.858. PMID 15535741.
- Catts, H., Adlof, S., & Ellis Weismer, S. (2006). Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research, 49*, 278-293.
- Catts, H. W., Hogan, T. P., & Fey, M. E. (2003). Subgrouping poor readers on the basis of individual differences in reading-related abilities. *Journal Of Learning Disabilities, 36*(2), 151-164. doi:10.1177/002221940303600208
- Cutting, L. E., & Scarborough, H. S. (2006). Prediction of Reading Comprehension: Relative Contributions of Word Recognition, Language Proficiency, and Other Cognitive Skills Can Depend on How Comprehension Is Measured. *Scientific Studies Of Reading, 10*(3), 277-299. DOI:10.1207/s1532799xssr1003_5

- Fletcher, J., & Pumphrey, P. D. (1988). Differences in text comprehension amongst 7–8-year-old children. *School Psychology International*, 9(2), 133-145. doi:10.1177/0143034388092008
- Frith, U., Snowling, M. (1983) Reading for meaning and reading for sound in autistic and dyslexic children. *British Journal of Developmental Psychology*, (1), s. 329-342.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading and reading disability. *Remedial and Special Education*, 7, 6-10.
- Heveroch, A. (1904) O jednostranné neschopnosti naučiti se čísti při znamenité paměti. *Česká škola*, 1904/1905.
- Hoover, W. A., & Gough, P. B. (1990). The Simple View of Reading. *Reading and Writing: An Interdisciplinary Journal*, (2), 127-160.
- Huemer, S. V., & Mann, V. (2010). A comprehensive profile of decoding and comprehension in autism spectrum disorders. *Journal Of Autism And Developmental Disorders*, 40(4), 485-493. doi:10.1007/s10803-009-0892-3
- Jenkins, J. R., Fuchs, L. S., van den Broek, P., Espin, C., & Deno, S. L. (2003). Sources of Individual Differences in Reading Comprehension and Reading Fluency. *Journal Of Educational Psychology*, 95(4), 719-729. doi: 10.1037/0022-0663.95.4.719
- Krejčířová, D., Boschek, P., & Dan, J. (2002) *WISC-III/Wechslerova inteligenční škála pro děti*. Praha: Testcentrum. ISBN 80-86471-19-5
- Kucharská, A. (2004) Prevence, intervence a terapie specifických poruch učení. In Hadj Moussová, Z. et al. *Pedagogick- psychologické poradenství III*. Praha: Univerzita Karlova v Praze – Pedagogická fakulta. ISBN 80-7290-146-X.
- Kucharská, A., Seidlová Málková, G., & Špačková, K. Porozumění čtenému – vývojová dynamika a jeho předpoklady In Kucharská et al. *Porozumění čtenému III. Typický vývoj porozumění čtenému – metodologie, výsledky a interpretace výzkumu*. Praha: Univerzita Karlova v Praze - Pedagogická fakult. ISBN 978-80-7290-862-2.
- Kucharská, A. & Špačková, K. (2016) *Measures of comprehension for Czech first- to fourth-grade pupils*. Manuscript under review process.
- Jucovičková, D., Žáčková, H., & Sovová, H. (2007). *Specifické poruchy učení na 2. stupni základních škol (použitelné i pro střední školství)*. Praha: D+H.
- Lyon, G. R., Shaywitz, S. E., & Shaywitz, B. A. (2003). A definition of dyslexia. *Annals Of Dyslexia*, 531-14. doi:10.1007/s11881-003-0001-9
- Matějček, Z. (1995). *Dyslexie Specifické poruchy učení*. 2nd edition. Praha: H&H.
- Mertin, V., Kucharská, A., et al. (2007). *Integrace žáků se specifickými poruchami učení – od stanovení diagnostických kritérií k poskytování péče všem potřebným žákům*. Praha: IPPP ČR.

- Nation, K., & Snowling, M. J. (1998). Individual differences in contextual facilitation: Evidence from dyslexia and poor reading comprehension. *Child Development*, 69(4), 996-1011. doi:10.2307/1132359
- Nation, K. (2005). Connections between Language and Reading in Children With Poor Reading Comprehension. In H. G. Catts & A. K. Kamhi (Eds.) *The Connections Between Language and Reading Disabilities* (41-53). New York: Lawrence Erlbaum Associates. ISBN 0-8058-5002-3.
- Nicholson, T. (1991). Do children read words better in context or in lists? A classic study revisited. *Journal Of Educational Psychology*, 83(4), 444-450. doi:10.1037/0022-0663.83.4.444
- Palečková, J., Tomášek, V., & Basl, J. (2010). *Umíme ještě číst? Hlavní zjištění výzkumu PISA. Praha: ÚIV.*
- Prior, S. M., Fenwick, K. D., Saunders, K. S., Ouellette, R., O'Quinn, C., & Harvey, S. (2011). Comprehension after oral and silent reading: Does grade level matter? *Literacy Research And Instruction*, 50(3), 183-194. DOI:10.1080/19388071.2010.497202
- Scarborough, H. S. (2005). Developmental Relationship Between Language and Reading: Reconciling a Beautiful Hypothesis With Some Ugly Facts. In H. G. Catts & A. K. Kamhi (Eds.) *The Connections Between Language and Reading Disabilities* (3-24). New York: Lawrence Erlbaum Associates. ISBN 0-8058-5002-3
- Snowling, M. J., & Hulme, C. (2012). Interventions for children's language and literacy difficulties. *International Journal Of Language & Communication Disorders*, 47(1), 27-34. doi:10.1111/j.1460-6984.2011.00081
- Stanovich, K. E. (1988). Explaining the differences between the dyslexic and the garden-variety poor reader: The phonological-core variable-difference model. *Journal Of Learning Disabilities*, 21(10), 590-604. doi:10.1177/002221948802101003
- Stanovich, K. E. (2005). The Future of a Mistake: Will Discrepancy Measurement Continue to Make the Learning Disabilities Field a Pseudoscience? *Learning Disability Quarterly*, May 2005, 28:103-106, doi: 10.2307/1593604
- Starý, K. et al. (2013). Úlohy pro rozvoj čtenářské gramotnosti. Utváření kompetencí žáků na základě zjištění PISA 2009. Praha: Česká školní inspekce. ISBN 978-80-905370-2-6.
- Torppa, M., Tolvanen, A., Poikkeus, A., Eklund, K., Lerkkanen, M., Leskinen, E., & Lyytinen, H. (2007). Reading development subtypes and their early characteristics. *Annals Of Dyslexia*, 57(1), 3-52. DOI:10.1007/s11881-007-0003-0

-
- Vágnerová, M. (2005) *Školní poradenská psychologie pro pedagogy*. 1. vyd. Praha : Karolinum. ISBN 80-246-1074-4
- Zelinková, O. (2009). *Poruchy učení*. 11. vyd. Praha: Portál.

Contact

PhDr. Klára Špačková, Ph.D.
Department of psychology
Faculty of Education
Charles University
Myslíkova 7
110 00 Praha 1
Czech Republic
klara.spackova@pedf.cuni.cz