

DOI: <https://doi.org/10.26529/cepsj.1030>

## Participation in Intervention Programmes of Children with Poor Reading Skills in Hungary

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∞ In this century, the value of information has become more significant; reflecting this change, focus has shifted to preparing pupils for the functional use of reading. Therefore, the latest international assessments of reading literacy are set up to address this kind of knowledge. Significant numbers of individuals are performing below the minimum level in these assessments in Hungary, signalling lower capacity for participation in the community. When attempting to eliminate functional illiteracy, it is crucial to analyse the present support system, and the efficiency of recognising reading problems in the early stages, in order to improve the provision of education systematically. When examining the probable causes of the struggle to comprehend texts, one of the prerequisites of understanding written language is appropriate decoding. This research focuses on investigating the access to intervention programmes of 5th-grade children with poor reading skills. The speed and accuracy of the aloud reading of 957 pupils attending mainstream classrooms were measured and compared to the data regarding the participation in rehabilitation programmes. The most relevant finding of the research was that only less than half of the children with poor reading skills receive help to improve their performance; 55% of slow readers and 60% of non-accurate readers were left without support, even though their performance is significantly worse than that of their peers. This finding indicates the need to revise the screening system and necessitates more extensive and less diagnosis-based access to intervention programmes.

**Keywords:** reading fluency, reading accuracy, reading test, screening, intervention

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## Sodelovanje v programih pomoči, namenjenih otrokom s slabimi bralnimi zmožnostmi, na Madžarskem

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≈ V tem stoletju je vrednost informacij narastla; sprememba se odraža v pozornosti, ki se usmerja k pripravi učencev na funkcionalno rabo branja. Zato so najnovejša mednarodna ocenjevanja bralne pismenosti zasnovana tako, da obravnavajo tovrstno znanje. Na Madžarskem precejšnje število posameznikov pri teh preverjanjih dosega rezultate pod minimalno ravno, kar nakazuje na manjšo zmožnost sodelovanja v skupnosti. Ključnega pomena je, da pri odpravljanju funkcionalne nepismenosti preučimo obstoječi podporni sistem in učinkovitost prepoznavanja bralnih težav v zgodnjih fazah, predvsem za to, da bi sistematično izboljšali izobraževanje. Ob pregledovanju verjetnih vzrokov za otežkočeno razumevanje besedil je eden izmed predpogojev za razumevanje pisnega jezika ravno ustrezno dekodiranje. Ta raziskava se osredinja na preučevanje dostopa do programov pomoči za petošolce s šibkimi bralnimi sposobnostmi. Izmerili smo hitrost in natančnost glasnega branja pri 957 učencih, ki obiskujejo redni program osnovne šole, nazadnje pa to primerjali s podatki o sodelovanju v rehabilitacijskih programih. Najpomembnejša ugotovitev raziskave je bila, da je manj kot polovica otrok s šibkimi bralnimi sposobnostmi deležna pomoči, ki bi izboljšala njihovo zmogljivost; 55 % počasnih bralcev in 60 % nenatančnih bralcev je ostalo brez podpore, čeprav so njihove zmožnosti precej šibkejše od njihovih vrstnikov. Ugotovitev kaže na potrebo po reviziji sistema odkrivanja in zahteva obsežnejše programe pomoči, katerih dostop ne bi več tako močno temeljil na diagnozi.

**Ključne besede:** tekoče branje, natančnost branja, bralni test, odkrivanje, posredovanje

## Introduction

As the rationale behind the work presented in this study is the growing percentage of low-performing Hungarian pupils in international assessments of reading literacy, the concept of these surveys and the premisses of reading comprehension, especially fluent reading, needs to be examined first. After that, the current screening and diagnostic practice in Hungary for the detection of reading problems should be examined. The research highlights that numerous children remain without adequate provision under the current measurement system regardless of the severity of the reading difficulty, the type of settlement of the pupil, or the educational level of the parents. The assessment was performed with a test widely used in the Hungarian diagnostic protocol for measuring the technique of reading. It can be emphasised that systematically measuring reading fluency at different levels of schooling, especially in the early years of learning to read, would be the first step in providing a focused prevention of functional illiteracy.

The definition of reading and reading comprehension started to be transformed alongside the technological and industrial development in the second half of the 20<sup>th</sup> century. This change came from two directions: a theoretical direction appears due to the increasing interest of various scientific fields in reading, while the practical direction is a consequence of the attempts of international organisations to solve global social problems. Recognising the social dysfunctions of literacy and reading skills, in 1956 the United Nations Educational, Scientific and Cultural Organization (UNESCO) defined functional illiteracy as 'A person is functionally literate when he has acquired the knowledge and skills in reading and writing which enable him to engage effectively in all those activities in which literacy is normally assumed in his culture or group' (Gray, 1956, as cited in Wagner, 1990, p. 6.).

In the 1990s, a new approach appeared in the definition of reading. Growing problems with reading comprehension came to light worldwide, and many countries realised that the rate of people struggling with reading had never been so high considering the growing expectations in the field of communication using written language. This phenomenon cannot be separated from the expansion of digital literacy and the internet (Forzani & Leu, 2012; Leu et al., 2013).

Accordingly, by the year 2000, the new definitions of reading went far beyond the simple decoding of graphic signs. Most essential definitions of reading, comprehension and reading literacy were set as a result of a wide international professional cooperation and consensus, leaning on practical experiences, primarily on the results, findings and specifications of international

assessments. The broadest survey examining reading literacy is the Programme for International Student Assessment (PISA).

PISA is designed to measure the performance of 15-year-old students in science, mathematics, and reading comprehension; in 2003, thinking skills were added. The last two assessments were in 2018 and 2021. Before the first measurement in 2000, the preparation of the framework had begun in 1997. Every three years, the theoretical background is evaluated and revised prior to the upcoming assessment, including the definitions of the key terms of the survey. The testing method has been adjusted to the growing importance of digital literacy; therefore, children have been answering questions on computers since 2018.

In the PISA 2018 Framework (PISA, 2018), the term ‘reading’ was replaced by the term ‘reading literacy’ to differentiate between the observed phenomenon and the idiomatic term used by non-experts referring to simple decoding. The new term includes cognitive and linguistic competencies, integration of the knowledge about the world and metacognitive competencies. ‘The term “reading literacy” is intended to express in this framework: the active, purposeful and functional application of reading in a range of situations and for various purposes’ (PISA, 2018, p. 12).

Considering the changes of the last few years, one can observe that the definition, the bases, and the features of reading and reading literacy, as well as their role in society, have been transformed significantly (Fox & Alexander, 2011). To fulfil new requirements, children first need to acquire the basic skills that are (according to the studies of the conditions of reading comprehension (Cromley & Azevedo, 2007; Price et al., 2016)) sufficient for understanding texts. One of the bases on which higher, more complex skills, such as reading comprehension, are built is fluent reading (Fuchs et al., 2001; Kim et al., 2010; Perfetti & Hogaboam, 1975), which is the technique of reading itself. It includes speed, accuracy and prosody of pronunciation (i.e., translating written text to spoken language at a conversational rate) (Hudson et al., 2005). Pupils with non-fluent reading need to use most of their cognitive capacities for decoding, which pulls their attention away from understanding meaning (Fuchs et al., 2001; LaBerge & Samuels, 1975). Therefore, in many countries, regular screenings are interpreted for the sake of early detection of problems in reading fluency (e.g., The No Child Left Behind Act in the United States (Shepard et al., 2017) or the National Reading Plan in Portugal (da Costa et al., 2013).

PISA results in 2015 and 2018 showed that the trends of the academic performance of Hungarian pupils of the previous decade presented a realistic picture emphasising that without crucial changes in our curriculum, the frame

of schooling (inclusive versus segregated schools, the number of pupils in a classroom, the use of various teaching methods, etc.), addressing learning difficulties and improving the system of teacher training, it is impossible to halt the decline (Csapó, 2015; Csapó et al., 2014). In 2015, 27.5%, in 2018, 25.3% of 15-year-old children performed below the minimum level, which means that a quarter of Hungarian pupils is functionally illiterate (OECD, 2016, 2019; Ostoric et al., 2016). Moreover, there were large differences based on socioeconomic factors among the pupils. The first step of planning the strategy to solve this problem is to examine the current status to find the main areas of intervention. However, the most important question is how these children could be recognised during primary schooling in order to help them in the process of learning to read.

The Inchon Declaration and Action Plan of UNESCO (UNESCO, 2015) stated a goal of abolishing functional illiteracy by 2030 to ensure a prerequisite for lifelong learning for sustainable development. It promotes relying on the results of the international and national assessments in education policy decisions and the introduction of continuous monitoring and controlled intervention programmes supporting the learning of reading of at-risk children. The regular monitoring should focus on basic skills, reading and numeracy performance. Early recognition and intervention prevent or alleviate the lagging behind in the learning process, where, in the case of reading, the instruction first focuses on decoding, after that on the comprehension of not only lengthened but also more and more complex texts, finally requiring the ability to use reading as an instrument for gaining information and learning from texts.

In Hungarian preschools, children are assessed through standardised screening methods twice: first at the age of 3 and then at the age of 5 by speech-language therapists; there is no other screening test later to prevent or detect learning disabilities. In elementary school, the first generalised, obligatory assessment is at 6<sup>th</sup> grade, focusing on children's competencies in mathematics and reading comprehension. Between these two measurement points, pupils are assessed within the subject content areas of the national curriculum with tests constructed by their teachers.

There is no screening for detecting difficulties in fluent reading in Hungary. Reading skills are examined by norm-referenced tests only if the teachers or parents notice a problem in the process of learning to read, although numerous studies in this field show that problem perception without formalised testing is contingent, influenced by external and internal factors (Snowling et al., 2011, Südkamp et al., 2012; Virinkoski et al., 2018).

There are three stages of the diagnostic procedure in Hungary. First, when a reading problem is assumed by teachers or parents, educational

therapists or speech-language therapists (if available at the school) examine the child's performance within the institution. They also aid in deciding whether the child needs a more detailed diagnostic assessment or if it is sufficient for them to advise the teacher and the parent without further measures if the problem is not severe. In practice, due to the low capacity of these professionals, almost every child with poor reading skills is sent to the second level of the diagnostic process, because only pupils with official diagnoses have the opportunity to benefit from positive discrimination (exemption from grading, extra time in exams, oral exams instead of written exams, etc.) and to participate in intervention programmes.

From this stage (second level) onward, the diagnostic process and the consequences of the assessments are strictly regulated by the Act on Public Education and in the Edict on Pedagogical Professional Services, and the participants of the educational system are obliged to establish the intervention declared in the pedagogical report of the professional services.

At the second level, the child is directed to the local pedagogical counselling service of the county, where psychologists, special education teachers and speech-language therapists examine not only the academic skills of the child but also some basic skills that are essential in the successful acquisition of the problematic field (reading, writing or arithmetic). The outcome at this level can be:

- in case of mild problems: the child cannot be diagnosed with a specific educational difficulty or disorder, so only advice is given to teachers and the family,
- the child is diagnosed with 'assimilation, learning or behavioural difficulty' (also referred to as a 'struggling learner' in the international terminology), which requires the school to establish and plan an intervention by a special education teacher and the differentiation in the classroom, as well as to provide opportunities for positive discrimination (by law, the last such opportunity was available only until 2018),
- the child is sent to a counselling committee for further examination, which is the third level of the diagnostic process.

Psychologists and special education teachers in counselling committees are equipped to provide a diagnosis of 'special educational needs', which, on the one hand, means that the child has to receive therapy from a special education teacher, and on the other hand, the school receives more financial support to ensure that the inclusion needs of the child are met. Special committees are set up for sensory impairments, motor, language, mental or learning disabilities. If

some criteria are met, the possibility of obtaining a diagnosis of learning disability (Dékány & Mohai, 2012) is excluded; such criteria include inadequate teaching methods, problems in teacher-pupil rapport, insufficient instruction, changing schools or teachers, low learning motivation, insufficient linguistic experience, bilingual environment, temporal factors (lack of practice, little time to stabilise new knowledge), and socioeconomic disadvantages. Until 2018, in those cases in which most of these criteria were met, while the child had severe learning problems, the committee diagnosed 'assimilation, learning or behavioural difficulty' to ensure the intervention and the special attention for the child. After 2018, only the diagnosis of 'disability', which means the 'special educational needs', ensures the possibility for positive discrimination.

In the Hungarian diagnostic practice, the Meixner Reading Sheets are traditionally used for reading assessment at every level of the process. Ildikó Meixner (1928–2000) was a Hungarian psychologist and special education teacher who established the basis of prevention and re-education of dyslexia in Hungary in the early 1980s. She invented reading sheets to measure accuracy, fluency, and comprehension at every grade level of the primary school. The instruments can detect the problems of the reading technique with formalised values, indicating the need for further examination, as inadequate reading performance is a possible symptom of various developmental diversities. In the taxonomy of McKenna and Dougherty (2015), the tests of Ildiko Meixner are individual, formalised, norm-oriented tests used for screening and in diagnostics, since they are widely used in schools by educational therapists for planning the intervention, in pedagogical counselling services for the first diagnosis, and also in counselling committees (Torda, 2015). The original norm values for these tests were set in 1985 (Meixner, 2000); therefore, new criteria have been long overdue. A representative, large-sample research study was designed to update these values for each reading sheet.

In addition to measuring reading performance, a questionnaire was constructed to obtain information about the circumstances of written language learning. One of the questions was the participation of a child in an intervention program and the reason behind it. The aim was to determine if the children with severe reading fluency problems were enrolled in the intervention system.

Our hypotheses were:

1. The Meixner Reading Sheet is suitable for screening reading techniques; it can identify pupils with significantly lower performance in reading speed and accuracy.
2. At least 30% of children with poor reading fluency do not participate in intervention programmes in the educational system.

3. Due to the limited capacity of professionals, the participation relates to the depth of the problem. Only children with severe reading problems have the opportunity to receive interventions.
4. There will be differences in the participation in intervention programmes due to the socio-economical background, especially based on the settlement type. Parents with a higher educational level are more likely to notice if their child struggles with reading. Additionally, in the capital city and county seats, a wider range of interventions is accessible; therefore, struggling readers have better access to educational provision.

## Method

### Participants

Our representative sample included 1,200 5<sup>th</sup> grade pupils from 59 classes. The classes were selected randomly from the national database of schools. The sample was stratified for the capital and the country. Participation was voluntary for the selected schools and the parents of the children. The willingness for participation was significant from the side of the institutions (90%). In case of a refusal to participate, another school was randomly selected as a substitute. The reading performance of the children whose parents did not give their consent for their child to participate was not measured. The data of children with hearing-, visual-, motoric-impairment or intellectual disability were excluded. Furthermore, responding to the questionnaire was voluntary.

Finally, 957 pupils were assessed from 58 randomly selected classes: 53% to 47% was the ratio of boys and girls, and the age range was between 10;5 and 14;4 years ( $M = 11;9$  years,  $SD = 0;6$  years). The questionnaires had data about the type of settlement where each school was located and where each child lived. As for the highest educational level of the parents, these data were not registered in schools due to personal data protection. Teachers asked about this information, and the parents had the right to refuse to answer the question. Therefore, nearly a third of the data were missing: in the case of the highest educational level of the mother, 30% ( $n = 286$ ), in the case of the highest educational level of the father, 32% ( $n = 308$ ). The pattern of the missing data showed relevant differences between settlement types: parents were more likely to refuse to give any information about their educational level in the capital and the county seats (*Table 1*).



**Table 1**

*Missing Data of the Highest Educational Level of the Parents in Different Types of Settlements*

Pattern of Missing Data	Number of Cases	Settlement Type of the School				
		Village	Municipality	Town	County Seat	Capital
No missing data	641	101	243	220	33	44
Missing Data about Father's Educational Level	308	29	35	82	32	130
Missing Data about Mother's Educational Level	286	27	26	78	27	128

Considering the above-described circumstances, the highest educational level of the mother was used in further analysis. As for the evaluation of the results, the discrepancy between settlement types will be taken into account.

### Materials and Procedure

The reading test of Ildikó Meixner (2000) is a read-aloud test, which is a traditionally used instrument in the Hungarian diagnostic process for identifying pupils with problems in the technique of reading. In the case of low performance, further investigation is needed to specify the cause of slow or non-accurate reading. It contains five subtests at four levels: letters, syllables, words, and text. 5<sup>th</sup> grade children need to read (1) 50 vowels; (2) 50 consonants; (3a) 50 two-letter syllables; (3b) 50 three-letter syllables; (4) 50 words; (5) a 100-word long text. The reading material includes questions for superficial assessment of comprehension. The word list starts with frequent three-letter words with a simple syllable structure (CVC) and becomes more complex towards the end of the subtest. The last word is an 11-letter foreign term. The measured variables are the reading time in seconds, the number of misspelt items in each subtest, and the number of wrongly answered questions are taken into account. Three text variations were used to provide new texts for testing at different phases of the diagnostic process. The examiners were special education teachers with practice in diagnostics from the pedagogical counselling services allocated near the schools. However, a detailed guide was developed to ensure objectivity in testing and scoring.

Background data, including date of birth, gender, settlement type of the child, the highest educational level of parents, participation in an intervention programme and the reason for it, were collected via a questionnaire from the

headteachers of the classes. The questionnaire format was a table in which every row represented one child's data. The teachers gave the code of the category, in the case of settlement types these were: village, municipality, town, county seat and capital, in the case of the highest educational level of the parent the categories were: less than 8 grades (which is primary school in Hungary), 8 grades, vocational school, graduation, college, university. As for the participation in intervention programmes, the first cell was a single dichotomic question ('yes' or 'no'), referring to whether the child received special provision; the second question in this part investigated the reason behind it in three categories: 1) special educational needs with ICD code, 2) 'assimilation, learning or behavioural difficulty', 3) other.

## Results

The criteria of poor reading skills were set based on the performance of 957 children in reading speed, accuracy (number of items spelt incorrectly) and comprehension of a text (number of questions answered incorrectly) in three text variants. All texts were scientific texts of 100 words, the first and the second from natural science and the third from social science. (Table 2.). In the current study, the test variant with text A is used for further examination.

**Table 2**

*New Norm Values at 5th Grade Measured with 3 Alterations of the Text*

		Minimum	Maximum	Mean	Standard deviation	New limiting value
Text A (N=957)	Speed (sec)	193	1619	349.91	103.52	460
	Number of items spelt incorrectly	0	99	18.63	14.38	34
	Number of comprehension mistakes (6 questions)	0	6	3.38	1.50	5
Text B (N=480)	Speed (sec)	183	746	325.35	72.39	410
	Number of items spelt incorrectly	0	148	16.93	15.13	33
	Number of comprehension mistakes (6 questions)	0	6	3.44	1.53	5
Text C (N=477)	Speed (sec)	194	1448	335.83	111.23	450
	Number of items spelt incorrectly	0	91	16.45	12.74	30
	Number of comprehension mistakes (9 questions)	0	9	4.21	2.04	6

Note. Adapted from Sipos, 2017.

In the case of the test with text A, the estimated Cronbach's Alpha was 0.82 in reading speed and 0.84 in accuracy, which showed high subtest reliability.

The sample was divided into four groups using the mean and one standard deviation in each measured variable. The new limiting value for the total time of reading counted with Text A: 1) fast readers (total time less than 243 s,  $M = 231.36$ ,  $SD = 22.17$ ,  $n = 59$ ); 2) faster-than-average readers (244-350 s,  $M = 300.16$ ,  $SD = 28.45$ ,  $n = 516$ ); 3) slower-than-average readers (351-458 s,  $M = 389.79$ ,  $SD = 29.34$ ,  $n = 287$ ); and 4) children who have severe problems with the speed of reading (more than 459 s,  $M = 578.23$ ,  $SD = 154.626$ ,  $n = 93$ ). Upon examining the subtests' results, it became obvious that the most advanced readers read the text three times faster than the children above the diagnostic criterion (Table 3).

**Table 3**  
*Reading Speed in Subtests in Different Categories*

Reading speed (s)	Total	Vowels	Consonants	Two-letter syllables	Three-letter syllables	Words	Text A./2
Fast readers	less than 243 s	29.24	28.32	32.07	36.05	46.22	29.73
Faster-than-average r.	244-350 s	34.56	34.25	40.24	47.74	65.22	39.30
Slower-than-average r.	351-458 s	39.07	40.48	49.65	61.39	90.51	54.35
Slow readers	more than 459 s	45.34	46.17	64.52	89.89	144.27	94.02

A one-way ANOVA was conducted to compare the fluency of the four groups in each subtest. There was a significant difference between the groups at the  $p < .01$  level at each subtest vowels:  $F(3, 948) = 89.97$ ,  $p < .01$ ; consonants:  $F(3, 948) = 141.05$ ,  $p < .01$ ; two-letter syllables:  $F(3, 948) = 409.15$ ,  $p < .01$ ; three-letter syllables:  $F(3, 948) = 613.08$ ,  $p < .01$ ; words:  $F(3, 948) = 618.77$ ,  $p < .01$ ; text:  $F(3, 948) = 424.95$ ,  $p < .01$ . Post hoc comparisons using the Games-Howell test indicated that the mean performance of the groups was significantly different in every subtest. These results suggest that slow readers subjectively and statistically read slower than their peers.

The same categorisation was conducted based on the total number of misspelt items: 1) accurate readers (less than 5 mistakes,  $M = 2.88$ ,  $SD = 1.18$ ,  $n = 76$ ); 2) almost-accurate readers (5-19 mistakes,  $M = 11.25$ ,  $SD = 4.01$ ,  $n = 518$ ); 3) less-than-average accurate-readers than average (20-33 mistakes,  $M = 24.40$ ,  $SD = 4.36$ ,  $n = 234$ ); 4) children, who have severe problems with accuracy (more

than 33 mistakes,  $M = 18.63$ ,  $SD = 13.55$ ,  $n = 167$ ). Comparison of the four groups shows the same pattern in the subtests (Table 4.).

**Table 4**

*The Number of Items Spelt Incorrectly at Different Categories*

Accuracy (number of mistakes)	Total Number of Mistakes	Vowels	Consonants	Two-letter syllables	Three-letter syllables	Words	Text A./2.
Accurate readers	5th grade	.22	.05	.39	.46	.83	.46
Almost accurate readers	5th grade	.95	.57	1.37	2.15	3.28	1.47
Less than average accurate readers	5th grade	1.97	1.26	3.20	5.06	6.86	3.03
Non-accurate readers	5th grade	3.34	2.25	6.57	10.18	13.61	5.80

A one-way ANOVA was conducted to compare the accuracy of the four groups in each subtest. There was a significant difference between the groups at the  $p < .01$  level at each subtest (vowels:  $F(3, 951) = 130.34$ ,  $p < .01$ ; consonants:  $F(3, 951) = 117.93$ ,  $p < .01$ ; two-letter syllables:  $F(3, 951) = 401.12$ ,  $p < .01$ ; three-letter syllables:  $F(3, 951) = 514.25$ ,  $p < .01$ ; words:  $F(3, 951) = 455.22$ ,  $p < .01$ ; text:  $F(3, 951) = 529.19$ ,  $p < .01$ ). Post hoc comparisons using the Games-Howell test indicated that the mean performance of the groups was significantly different in every subtest. The results show a significant and highly noticeable fall-back in the number of mistakes in the case of children with poor reading skills.

In our representative sample, 17% ( $n = 161$ ) of the children took part in intervention programmes. The reason of intervention was special educational needs ( $n = 59$ , 6%), assimilation, learning or behavioural difficulty ( $n = 83$ , 9%) or other reasons ( $n = 19$ , 2%). Focusing on the children with poor reading skills, the data of the questionnaires showed that in case of low performance in reading speed ( $n = 92$ ), only 45% of them received help ( $n = 41$ ); in cases of a high mistake rate ( $n = 127$ ), this rate is 40% ( $n = 51$ ). An independent sample t-test was conducted to compare children's reading performance with fluency (speed or accuracy) difficulties participating in intervention programmes and children who are not. There was no significant difference in the reading speed, which is total time measured in seconds, between participants ( $M = 596.99$ ,  $SD = 186.83$ ) and non-participants ( $M = 563.48$ ,  $SD = 124.08$ );  $t(89) = -1.01$ ,  $p = .31$ . Different results appeared in the case of accuracy; significant difference was found in the total number of reading mistakes between children who participated in intervention programmes ( $M = 50.82$ ,  $SD = 13.76$ ) and non-participants ( $M = 45.49$ ,  $SD = 13.08$ );  $t(124) = -2.20$ ,  $p = .03$ . On the basis of the data, the severity

of slow reading speed does not influence access to intervention programmes, while spelling mistakes are more noticeable.

A Chi-square test of independence was performed to find connections between access to programmes and observed socio-economic factors. There was no significant connection between the types of the settlement (slow readers:  $\chi^2(5) = 3.39, p = .64$ ; non-accurate readers:  $\chi^2(4) = 2.54, p = .64$ ), the highest educational level of the mother (slow readers:  $\chi^2(5) = 1.72, p = .89$ ; non-accurate readers:  $\chi^2(5) = 1.59, p = .90$ ) or the highest educational level of the father (slow readers:  $\chi^2(6) = 3.91, p = .69$ ; non-accurate readers:  $\chi^2(5) = 2.43, p = .79$ ). This means that pupils have access (or no access) to intervention programmes irrespective of the observed socio-economic factors.

## Discussion

The PISA results implicate educational reforms, different approaches, and changing attitudes in the participating countries (Babić & Baucał, 2011; Sahlberg, 2011). The introduction of an intervention system based on the screening of reading speed and accuracy has proven to be beneficial in many states (Shepard et al., 2017; da Costa et al., 2013). The large sample reading fluency assessment showed that pupils with significantly lower performance can be identified using the Meixner Reading Sheet, which is traditionally applied during the diagnostic process in schools and educational counselling committees. It is an individual test, and the testing time is short; the main fields of intervention can be planned based on the results.

The general finding of this study is that half of the 5<sup>th</sup>-grade pupils who have severe problems with reading speed or accuracy do not participate in programmes designed to improve their reading technique in Hungary, despite the significant differences in each aspect (speed and accuracy of reading) between the children with poor reading skills and their peers. These results supported our second hypothesis, which was formed based on the former results of international reading literacy assessments.

The participation in intervention programmes depends on the level of severity when a child has problems with accurate reading, hence the random appearance of slow readers in these programmes. Therefore, our third hypothesis is partly proved, demonstrating the need for informing and training teachers about the importance of fluent reading.

This finding corresponds with the unreliability of teachers' subjective ratings on their pupils reading achievement presented in the introduction (Snowling et al., 2011; Südkamp et al., 2012; Virinkoski et al., 2018), suggesting

a more formalised evaluation to identify pupils at-risk, therefore, as this is the first step in receiving targeted educational intervention.

However, the last hypothesis has not been confirmed, since limited access to intervention does not depend on the socioeconomic background factors researched in this study, so the problems are more general. Similarly, neither the type of settlement nor the parents' highest educational level significantly affects access to the provisions for children who struggle with the speed or accuracy of reading. This finding indicates the need for changes in detecting struggling readers, with the clause that this research also supported the results of international and national assessments (OECD, 2016, 2019; Ostorics et al., 2016), as there are significant differences in performance based on socioeconomic background (settlement type and the highest educational level of the parents). The significantly higher percentage of pupils with low performance in reading fluency in villages, municipalities, especially with parents with lower educational levels, indicates a higher requirement for test-based interventions.

In conclusion, the model used by the Hungarian educational system, as described above, implements a thoroughly organised and documented diagnostic system regarding reading difficulties but only in those instances in which the struggling reader is identified by teachers or parents. However, early detection of reading problems is lacking in half of the cases. According to research, this necessitates a key role of formalised screening due to the subjective, less reliable perceptions of reading performance (Jahnukainen & Itkonen, 2016; O'Connor et al., 2013).

## Conclusion

The Declaration and Action Plan adopted by UNESCO on 22 May 2015 in Incheon (UNESCO, 2015) was signed by representatives of 160 countries with the declared goal of eradicating functional illiteracy, providing inclusive and equitable education, thus creating a basis for lifelong learning for sustainable development by 2030. The declaration represents a significant step forward in synthesising the previous social and education policy approaches in defining goals, areas for development, and indicators at both the global and national levels. It highlights the importance of continuous monitoring and the introduction of measurements that do not measure in a 'literate/illiterate' dichotomy but are able to provide a picture of individuals' reading and numeracy performance along a continuum, specifying skill levels in different contexts. The international and national assessments of reading literacy create a basis for national educational policies to analyse and evaluate their efficiency in providing equal

access to the learning of reading. In other words, the results can help educational policies to promote changes, provided a deficiency occurs in any of the fields.

Regarding reading, this study encourages major changes to ensure better provision for reading difficulties: 1) regular screening of reading fluency, 2) a wide range of intervention programmes based on the results of screening, 3) positive discrimination in case of dysfluency in reading, and 4) Introducing SEN pedagogy to teacher training, providing opportunities for personal development and training in this field.

The first step in helping children with poor reading skills is to introduce a screening system in primary school to identify those pupils who need intervention in the early stages of their education (Johnson et al., n.d.; Vaughn et al., 2008). Broad national programmes for improving literacy in the society are required, such as No Child Left Behind (NCLB) in 2001, and Every Student Succeeds Act (ESSA) in 2015 in the United States (Shepard et al., 2017), or the National Reading Plan in Portugal (da Costa et al., 2013), all of which included systematic monitoring of the success of reading acquisition. This system should be formalised and evidence-based, preventing educational participants from making subjective decisions about their pupils' skills, which increases the risk of ignoring problems in relevant aspects of reading.

The disappearance of the diagnosis of 'assimilation, learning or behavioural difficulty', and the introduction of a bipolar (typical or atypical) categorisation of development is very dangerous, the result of which special education teachers and educational therapists can only attend to half of the children with poor reading skills, who mostly are pupils with an official diagnosis. The limited capacity is a persisting problem, so there is a fear that pupils without 'special educational needs' will have even less access to intervention programmes. From another perspective, many children with severe problems in reading will not have opportunities for positive discrimination, so they will suffer a disadvantage in every subject, in every exam, due to their difficulties with written language.

This improvement of poor academic knowledge could have a positive legacy: if starting an intervention programme was not connected to official diagnosis, with the interaction of general pedagogy and special education, practice and science, evidence-based intervention programmes could be developed and tested. With the dissemination of knowledge and experience, the Response to Intervention Model would be adaptable, leading to more confidence in diagnostics and therapy planning for children with special educational needs (Jahnukainen & Itkonen, 2016; O'Connor et al., 2013).

Finally, this research has also highlighted the importance of training professionals involved, spreading knowledge about identifying, managing, and

treating learning difficulties. Although learning up-to-date approaches and methods is the responsibility of teachers, providing opportunities to learn is an obligation of the educational system.

### Acknowledgements

We would like to thank, for their broad support and work, every participant in the research and assessment, including special education teachers, class teachers, pupils, and the parents of the children.

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## Appendix A: Games-Howell Post Hoc Analysis on Reading Speed in Subtests in Different Categories

**Table 5**

*Results of Games-Howell Post Hoc Test on Reading Speed in Subtests in Different Categories*

Subtest	(I) Category based on reading speed (s)	(J) Category based on reading speed (s)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Vowels	<= 243	244-350	-5.325 <sup>*</sup>	.587	.000	-6.86	-3.79
		351-458	-9.836 <sup>*</sup>	.674	.000	-11.59	-8.08
		459+	-16.100 <sup>*</sup>	1.592	.000	-20.25	-11.95
	244-350	351-458	-4.512 <sup>*</sup>	.480	.000	-5.75	-3.27
		459+	-10.775 <sup>*</sup>	1.519	.000	-14.75	-6.80
		351-458	459+	-6.263 <sup>*</sup>	1.555	.001	-10.32
Consonants	<= 243	244-350	-5.926 <sup>*</sup>	.587	.000	-7.46	-4.39
		351-458	-12.155 <sup>*</sup>	.689	.000	-13.94	-10.37
		459+	-17.852 <sup>*</sup>	1.019	.000	-20.50	-15.20
	244-350	351-458	-6.229 <sup>*</sup>	.529	.000	-7.59	-4.87
		459+	-11.926 <sup>*</sup>	.919	.000	-14.32	-9.53
		351-458	459+	-5.697 <sup>*</sup>	.987	.000	-8.26
Two-letter syllables	<= 243	244-350	-8.171 <sup>*</sup>	.594	.000	-9.73	-6.61
		351-458	-17.630 <sup>*</sup>	.670	.000	-19.38	-15.89
		459+	-32.454 <sup>*</sup>	1.598	.000	-36.62	-28.29
	244-350	351-458	-9.460 <sup>*</sup>	.466	.000	-10.66	-8.26
		459+	-24.283 <sup>*</sup>	1.524	.000	-28.27	-20.30
		351-458	459+	-14.823 <sup>*</sup>	1.555	.000	-18.88
Three-letter syllables	<= 243	244-350	-11.693 <sup>*</sup>	.590	.000	-13.24	-10.15
		351-458	-25.335 <sup>*</sup>	.705	.000	-27.16	-23.51
		459+	-53.840 <sup>*</sup>	2.430	.000	-60.19	-47.49
	244-350	351-458	-13.642 <sup>*</sup>	.559	.000	-15.08	-12.20
		459+	-42.147 <sup>*</sup>	2.392	.000	-48.40	-35.89
		351-458	459+	-28.505 <sup>*</sup>	2.422	.000	-34.84
Words	<= 243	244-350	-19.004 <sup>*</sup>	.919	.000	-21.41	-16.60
		351-458	-44.281 <sup>*</sup>	1.165	.000	-47.30	-41.26
		459+	-98.051 <sup>*</sup>	4.834	.000	-110.69	-85.41
	244-350	351-458	-25.277 <sup>*</sup>	.951	.000	-27.73	-22.82
		459+	-79.047 <sup>*</sup>	4.787	.000	-91.57	-66.52
		351-458	459+	-53.770 <sup>*</sup>	4.840	.000	-66.42

Subtest	(I) Category based on reading speed (s)	(J) Category based on reading speed (s)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Text A	<= 243	244-350	-19.133 <sup>*</sup>	1.213	.000	-22.30	-15.96
		351-458	-49.195 <sup>*</sup>	1.551	.000	-53.21	-45.18
		459+	-128.575 <sup>*</sup>	8.448	.000	-150.67	-106.48
	244-350	351-458	-30.062 <sup>*</sup>	1.275	.000	-33.35	-26.77
		459+	-109.442 <sup>*</sup>	8.402	.000	-131.43	-87.46
		351-458	-79.380 <sup>*</sup>	8.457	.000	-101.50	-57.26

Note. \*. The mean difference is significant at the .05 level.

## Appendix B: Games-Howell Post Hoc Analysis on the Number of Items Spelt Incorrectly in Different Categories

**Table 6**

*Results of Games-Howell Post Hoc Test on the Number of Items Spelt Incorrectly at Different Categories*

Subtest	(I) Category based on the accuracy of reading (mistakes)	(J) Category based on the accuracy of reading (mistakes)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
						Lower Bound	Upper Bound	
Vowels	<= 4	5-19	-.726 <sup>*</sup>	.068	.000	-.90	-.55	
		20-33	-1.742 <sup>*</sup>	.114	.000	-2.04	-1.45	
		34+	-3.115 <sup>*</sup>	.219	.000	-3.68	-2.55	
	5-19	20-33	-1.016 <sup>*</sup>	.111	.000	-1.30	-.73	
		34+	-2.389 <sup>*</sup>	.217	.000	-2.95	-1.82	
		20-33	34+	-1.373 <sup>*</sup>	.236	.000	-1.98	-.76
Consonants	<= 4	5-19	-.515 <sup>*</sup>	.045	.000	-.63	-.40	
		20-33	-1.204 <sup>*</sup>	.080	.000	-1.41	-1.00	
		34+	-2.199 <sup>*</sup>	.145	.000	-2.58	-1.82	
	5-19	20-33	34+	-1.689 <sup>*</sup>	.084	.000	-.91	-.47
		34+	-1.684 <sup>*</sup>	.148	.000	-2.07	-1.30	
		20-33	34+	-.996 <sup>*</sup>	.162	.000	-1.42	-.58
Two-letter syllables	<= 4	5-19	-.972 <sup>*</sup>	.098	.000	-1.23	-.72	
		20-33	-2.802 <sup>*</sup>	.133	.000	-3.15	-2.46	
		34+	-6.180 <sup>*</sup>	.278	.000	-6.90	-5.46	
	5-19	20-33	34+	-1.830 <sup>*</sup>	.118	.000	-2.13	-1.53
		34+	-5.208 <sup>*</sup>	.271	.000	-5.91	-4.50	
		20-33	34+	-3.378 <sup>*</sup>	.286	.000	-4.12	-2.64
Three-letter syllables	<= 4	5-19	-1.692 <sup>*</sup>	.095	.000	-1.94	-1.45	
		20-33	-4.599 <sup>*</sup>	.151	.000	-4.99	-4.21	
		34+	-9.721 <sup>*</sup>	.396	.000	-10.75	-8.69	
	5-19	20-33	34+	-2.907 <sup>*</sup>	.154	.000	-3.30	-2.51
		34+	-8.029 <sup>*</sup>	.397	.000	-9.06	-7.00	
		20-33	34+	-5.121 <sup>*</sup>	.414	.000	-6.20	-4.05
Words	<= 4	5-19	-2.451 <sup>*</sup>	.126	.000	-2.78	-2.12	
		20-33	-6.034 <sup>*</sup>	.185	.000	-6.51	-5.56	
		34+	-12.777 <sup>*</sup>	.622	.000	-14.40	-11.16	
	5-19	20-33	34+	-3.583 <sup>*</sup>	.174	.000	-4.03	-3.13
		34+	-10.326 <sup>*</sup>	.619	.000	-11.94	-8.72	
		20-33	34+	-6.743 <sup>*</sup>	.634	.000	-8.39	-5.10

Subtest	(I) Category based on the accuracy of reading (mistakes)	(J) Category based on the accuracy of reading (mistakes)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Text A	<= 4	5-19	-2.008*	.135	.000	-2.36	-1.66
		20-33	-5.135*	.182	.000	-5.60	-4.66
		34+	-10.693*	.418	.000	-11.78	-9.61
	5-19	20-33	-3.127*	.166	.000	-3.56	-2.70
		34+	-8.686*	.411	.000	-9.76	-7.62
		20-33	-5.559*	.429	.000	-6.67	-4.44

Note. \*. The mean difference is significant at the .05 level.