

THE STABILITY OF GENDER-RELATED DIFFERENCES IN EARLY READING DEVELOPMENT IN POLISH CHILDREN

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Abstract

The role of gender in early reading development in Polish children was investigated. The longitudinal study was conducted from the middle of preparatory pre-school year to the middle of first grade. The rate and accuracy of reading words and pseudo-words of different length and degree of difficulty were measured in five successive measures. The same children 64 (40 girls and 24 boys) took part in each assessment. The aim was to analyse the stability of gender-related differences. The studies showed that gender significantly differentiates children in the early development of reading skills in favour of girls. Differences in the rate of reading between children appeared to be stable in the period covered by the study. Whereas differences in the accuracy of reading diminished considerably in the last, fifth measure falling in the middle of first grade.

Keywords: gender differences, early reading development

1. INTRODUCTION

The research of the last 40 years shows that the achievements in the development of reading skills depend to some extent on gender. Many times researchers pointed out that girls make faster progress in learning to read (e.g. Elley, 1992) than boys and less often have difficulties in reading (Rutter & Yule, 1975; Prior, 1996). Although most studies came from the United States and concerned achievements in reading among English-speaking children, nowadays more and more often differences in favour of girls are confirmed in many national studies in Europe as well as in international studies. Researchers show that the differences in favour of girls

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occur regardless of the specificity of the writing system and are found both in orthographic (transparent or opaque) and ideographic systems (Mullis, Martin, Foy & Drucker, 2012; Logan & Johnston, 2010; OECD, 2010). Most studies revealed bigger or smaller differences between girls and boys, in some studies the differences appeared to be irrelevant or were not found at all. However, there was no study in which the advantage of boys in reading was observed (Klinger, Shulha, Wade-Woolley, 2009).

Researchers' interest in the role of gender in the development of reading skills is not declining. On the contrary, their interest is being enhanced by the fact that the advantage of girls in reading has persisted for years, while the previously noticed advantage of boys in mathematics and natural sciences is consistently diminishing and in some countries no significant differences have been found yet (Klinger et al., 2009). Researchers frequently share the opinion that boys prevail in the group of children whose reading is the poorest (Logan & Johnston, 2010; Catsambis, Mulkey, Buttaro, Steelman & Koch, 2012; Stoet & Geary (2013). Stoet and Geary (2013) found an interesting regularity proving that gender differences in mathematics and reading are inversely related. On the basis of data pertaining to 10-year-olds obtained by the Programme for International Student Assessment (PISA) they showed that among schoolchildren worse at mathematics there were no differences, while among schoolchildren gifted at mathematics there were significant differences in favour of boys. Conversely in reading: there were no differences among schoolchildren who read well, while among schoolchildren who read badly there was a clear difference in favour of girls.

1.1 Reasons for differences in reading

Reasons for faster progress of girls in reading remain unclear. Different biological and socio-cultural factors are considered. Some researchers emphasize the pace of biological and cognitive development. Girls develop earlier than boys. In speech development they outperform boys as early as in the first two years of life (Klinger et al., 2009). Speech and reading are two different ways of using language. As language development of boys is slower and assessment criteria are the same regardless of gender, that is why boys' performance is poorer in reading skills tests.

Findings of research conducted on twins (Harlaar, Spinath, Dale & Plomin, 2005) provide evidence that the differences are caused by genetic factors to a greater degree than environmental factors. They also imply that the etiology of individual differences and deficits in the initial years of learning to read depends on gender: the role of heredity is of greater importance in boys while in girls it is the role of environment.

Others (e.g. Below, Skinne, Fearington & Sorrell, 2011) emphasize differences in the way of processing information. Sequential processing is the ability to process successive pieces of information but simultaneous processing is the ability to integrate information in one coherent whole. The increased level of testosterone in the

foetal period inhibits the development of the left cerebral hemisphere (Geschwind, 1983), that is why boys do better at simultaneous (visual) processing but worse at tasks requiring sequential (auditory) processing of data. The deficit in sequential processing hinders the process of phonological decoding which is particularly important in the early period of reading development.

Camarata and Woodcock (2006) prove that the difference is determined by the rate of information processing. In the tasks of limited time girls obtained higher scores already in the pre-school period. The gap increased at further levels of education, which does not mean that boys have a slower time of reaction but they do worse at keeping attention and concentration while performing simple tasks under time pressure. The slower rate of processing information in boys has a negative influence on many school activities, causing poorer scores in reading fluency.

McGeown, Goodwin, Henderson & Wright (2012) shift the stress from biological differences (sex differences) to the feeling of being a member of gender (gender differences) and the degree of identification with features commonly recognized as feminine or masculine. Reading is perceived as a rather feminine activity. In the household environment, it is usually the mother who reads more than the father and more often teaches children to read. The authors did research on children aged 8-11 and showed that the degree of identification with features commonly attributed to the male or female role allows a better prediction of internal motivation to read than biological differences, although does not allow a prediction of only the achievements in reading. The lack of motivation and engagement among boys in the activities connected with reading can indirectly contribute to the slower development of reading skills (Lynn & Mikke, 2009). In general, girls have a more positive attitude to reading and read more.

Many factors in the school environment contribute to differences in favour of girls. Researchers highlight, among other things, the predominance of women among teachers, different gender-related expectations of teachers towards children or stereotyped and frequently stricter assessment of boys than girls (Catsambis et al., 2012). Teaching methods can also affect children's performance in reading. The phonic method of learning to read, by which children learn correspondences between sounds and letters is more beneficial for boys (Johnston & Watson, 2005; Logan & Johnston, 2010). The method facilitates concentration, is less dependent on earlier acquired skills, fosters integration of phonological and visual information, and trains phonological reading strategies. In consequence, the advantage of girls diminishes or disappears.

Researchers more often observed phonological strategies in boys and orthographic strategies in girls, suggesting that the preferences of strategies were naturally related to gender (Logan & Johnston, 2010). The study of the development of reading strategies showed that the phonological strategy is earlier in the development than the orthographic strategy in children learning to read in Polish (Sochacka, 2004). Girls outperform boys in reading development so they use more mature strategies.

The attempts aimed at explaining differences between girls and boys in the process of the reading development indicate many aspects of the diversity.

1.2 The stability of differences in reading

Gender-related differences in the development of reading skills occur from the beginning of school education. As early as at the pre-school age children differ in terms of the level of basic skills, which are considered essential for the development of reading skills such as recognizing the initial and final sound in words, dividing words into sounds, which determine the level of phonemic awareness, or recognizing letters which measures orthographic processing. As far as further stages of education are concerned, researchers investigated the skills of recognizing words, decoding pseudo-words, the rate and accuracy of loud reading or reading fluency were also taken into account (Camarata & Woodcock, 2006; Chatterji, 2006; Bellow et al., 2010).

It is often acknowledged that the differences between girls and boys persist at the same level and even increase as years go on, although there is no consensus among researchers in this matter. Chatterji (2006) showed in her longitudinal study of children between pre-school and the first grade that the differences in favour of girls exist already in the pre-school period and increase in the first grade. Other researchers prove that the differences between girls and boys persist throughout the whole school period and the level of reading fluency becomes equal only at the time of early adulthood (Camarata & Woodcock, 2006).

On the other hand, Below et al. (2010) measured differences between boys and girls in the development of reading skills in the period from pre-school to the fifth grade. They found out that in the pre-school period girls' scores were substantially higher than boys' scores in all investigated skills determining success in learning to read. They confirmed that girls start school education with a higher level of skills connected with reading and writing. In the first grade the differences between girls and boys were not significant, so were they in the second and third grade. Small but significant differences appeared in the fourth grade. In the fifth grade the differences were again insignificant. In the fifth grade boys made a considerable progress, so they nearly caught up with girls. The results concerning the stability of differences in the successive years of education obtained by the above mentioned authors differ from those quoted earlier.

Poland belongs to those rather few countries where research findings concerning differences between boys and girls in reading skills are inconsistent. Włodek-Chronowska (1985) investigating the rate and accuracy of reading in children of 1 – 3 grades found that girls obtained much higher scores in the first assessment, which indicated that they had a more favourable start in the first grade. A year later the girls still obtained higher scores than boys in faster and accurate reading. The author found that the relationship between girls' and boys' scores tended to

change from the end of the second grade. Boys had a faster growth of reading skills than girls.

In a number of later studies significant differences in reading skills development were not found in zero grade or 1-3 grades. Bogdanowicz (1997), Szczerbiński (2001) and Wrońska (2005) found no relationship between reading skills and gender. Krasowicz-Kupis (1999) found minor and irregular influence of gender on reading achievement. However, Sochacka (2004) in her study found significant differences in favour of girls in pre-school grade, the so-called zero grade and the first grade. International research conducted by OECD/IEA¹ within PISA/PIRLS² programmes which included children aged 10-15 showed that girls obtain higher scores in reading in comparison with boys also among Polish participants (OECD, 2010; Mullis et al., 2012).

An inconsistent picture of reading achievements in girls and boys emerges from the quoted studies. Some researchers show that the differences persist and even increase in the successive years (Chatterji, 2006; Camarata & Woodcock, 2006). Some data support early differences in favour of girls, which disappear in the first grade and recur in the later grades of primary school (Below et al., 2010). The data seem to be more interesting because similar conclusions can be drawn when Polish data are taken into consideration. Earlier studies revealed that differences appeared at the beginning of learning and tended to disappear in the initial grades (Włodek-Chronowska, 1985). Further studies showed no differences (Krasowicz-Kupis, 1999; Szczerbiński, 2001) supposedly because there is a time in children's development when the differences even out. They appear again after some time as it was confirmed in the data of international research (OECD, 2010; Mullis et al., 2012) in which participated Polish children. Differences which appear in the pre-school period can be caused by biological factors, whereas the differences seen after some years can appear as a result of socio-cultural factors. It seemed to be interesting to analyse differences between girls and boys in terms of earlier reading achievements, which were obtained in the study of children between zero and first grade owing to their stability.

2. THE FEATURES OF THE POLISH LANGUAGE AND THEIR CONSEQUENCES FOR LEARNING TO READ

The Polish language is an alphabetic orthography system. Taking into account the features of orthographic systems such as transparency, regularity and consistency, Polish orthography belongs to shallow rather than deep orthographies. Transparency means that one letter represents one phoneme. Regularity means that it can

¹OECD - the Organisation for Economic Co-operation and Development; IEA - International Association for the Evaluation of Educational Achievement.

²PISA - the Program for International Student Assessment; PIRLS - the Progress in International Reading Literacy Study.

be predicted how to read a given word. Consistency is when a certain group of letters is always pronounced in the same way or a given phonological particle in a certain position has always the same orthographic representation. Full transparency is a feature of 14 out of 32 single Polish letters (Awramiuk, 2006). Although Polish orthography is not fully transparent, it is considerably regular and consistent. It is relatively more similar to the spoken language than the English orthography. In Polish the grapheme – phoneme relation is more logical than the phoneme – grapheme relation, which means that the knowledge of basic rules makes it easier to read a word than to write it. Polish language speakers do not have problems with reading the word which they can see, but with writing the word which they can hear (Awramiuk, 2006).

Learning to read consists in identifying individual orthographic and phonological particles and assigning them to each other because it enables reading a large number of words. The particles vary in different kinds of languages. The awareness of individual phonemes is of fundamental importance in the development of reading skills in Polish children (Krasowicz-Kupis, 1999; Szczerbiński, 2001; Sochacka, 2004; Awramiuk, 2006). In early reading in Polish children as in other shallow orthographies, phonological strategies are more effective. The greater changeability of word forms and length of words, which make it difficult to remember their graphic image is not in favour of applying global strategies. That is why phonetic methods are prevailing in learning to read (Awramiuk, 2002, 2006; Jaszczyszyn, 2010).

The ability of decoding is necessary for the successful development of reading skills. Decoding consists in recognizing subsequent letters in the word, associating each letter with the right sound and performing a synthesis of the sounds in order to read the whole word correctly. The progress in early development of reading skills is tested most often by the rate and accuracy of decoding words and pseudo-words. It is acknowledged that the ability of decoding words allows for prediction of reading comprehension (Araujo, Morais & Costa, 20013). Although in regular orthographies phonological strategy enables effective decoding without comprehension (Jukes, Vagh & Kim, 2006). Pseudo-words enable the assessment of learning the reading technique, which enables reading unfamiliar words. The rate of reading words is determined by the number of words read in one minute, and the accuracy of reading by the number or percentage of errors. In case of early stages in the development of reading skills and children with learning difficulties in reading, the rate of reading is usually expressed by the number of words read correctly in one minute, while the accuracy by the proportion of words read correctly to all words read during a determined time (Krasowicz-Kupis, 1999).

2.1 Rationale for the study

Researchers often found differences between girls and boys already in the pre-school period, before children started learning to read and write. This can mean that in the beginning biological differences determine the diversity. Consequently,

boys start school education with a lower level of skills which determine success in learning to read and write, therefore they obtain lower scores in the initial years of schooling. According to some researchers, boys quickly even out the scores. However, according to other researchers, the scores do not even out, which causes that the advantage of girls persists and even increases in the further school years. The inconsistent reports concerning the persistence or elimination of the observed differences gave an impulse to the analysis of the stability of scores in early learning to read in children.

2.2 Purpose

The aim of the research was to analyze the stability of scores obtained by children in the early reading development through measuring decoding skills which are expressed by the rate and accuracy of reading words and pseudo-words. The analysis was performed on the scores obtained by children between preparatory pre-school year, the so-called zero grade and first grade. An answer to the following question was sought: Do the differences between girls and boys in reading words and pseudo-words remain stable in the period covered by the study?

3. METHOD

3.1 Measures and materials

The rate and accuracy of decoding words and pseudo-words of different length and degree of difficulty were measured. In the rate of reading the number of items read correctly in one minute was taken into account. Accuracy was measured by the proportion of words and pseudo-words read correctly to all words/pseudo-words read in one minute. Children read aloud one-, two- and three-syllable words and pseudo-words arranged in columns, each kind on a separate piece of paper. The words were familiar to children because they were chosen from the textbooks used in the classroom. Each time words were chosen from the part of the textbook the children had already done. Words of simple correspondence between sounds and letters were used in the study. Pseudo-words were derived from real words by changing letter order. Examples are shown in Table 1.

3.2 Participants

The same children took part in each assessment, in all 64 (40 girls and 24 boys). They all attended the same school in Białystok, a city in the north-east part of Poland. They were from four pre-school forms located in the school and continued education in the first grade. Children's chronological age at the onset of the study varied between 6,1 and 7,1 (median 6,5).

*Table 1. Examples of words and pseudo-words from assessment II.
W – words; P – pseudo-words*

One-syllable		Two-syllable		Three-syllable	
W	P	W	P	W	P
<i>las</i>	<i>sal</i>	<i>lody</i>	<i>dylo</i>	<i>cebula</i>	<i>bulace</i>
<i>noc</i>	<i>con</i>	<i>nuty</i>	<i>tuny</i>	<i>łakomy</i>	<i>małyko</i>
<i>pas</i>	<i>sap</i>	<i>lubi</i>	<i>ubil</i>	<i>kolano</i>	<i>nakalo</i>

Different items of increased difficulty were used at each consecutive assessment.

3.3 Procedure

The longitudinal study started in the middle of zero grade and continued in the first grade. Five successive measures were considered in the analysis of the rate and accuracy of decoding. Three measures with two-month intervals (February, April and June) in the first year of schooling and two with four-month intervals (October and February) in the second year. The study was conducted individually with each child and the reading was recorded on the audio tape.

Statistical calculations were made using STATISTICA 10 program. Repeated measures designs ANOVA were used to assess the influence of gender and time on the rate and accuracy of reading one-, two- and three-syllable words and pseudo-words separately. The significance of the influence of both factors and interaction between them was assessed. Results are shown in figures 1 – 4

4. RESULTS

4.1 The rate of Reading

Figure 1 shows the average scores of girls and boys in the rate of reading words and Figure 2 shows the average scores in the rate of reading pseudo-words obtained in five measures lasting between the middle of zero grade and the middle of the first grade.

Figures 1 A-C. Gender differences in rate of reading: 1-syllable (A), 2-syllable (B) and 3-syllable (C) words.

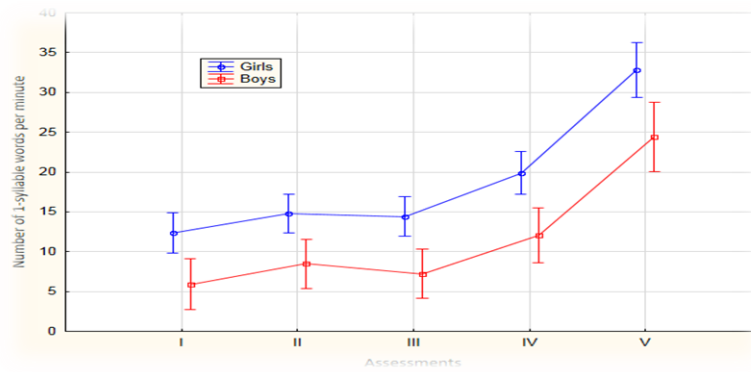


Figure 1A: Gender: $P=0,000$; Time: $P=0,0000$, Gender-Time interaction: $P= 0,6168$

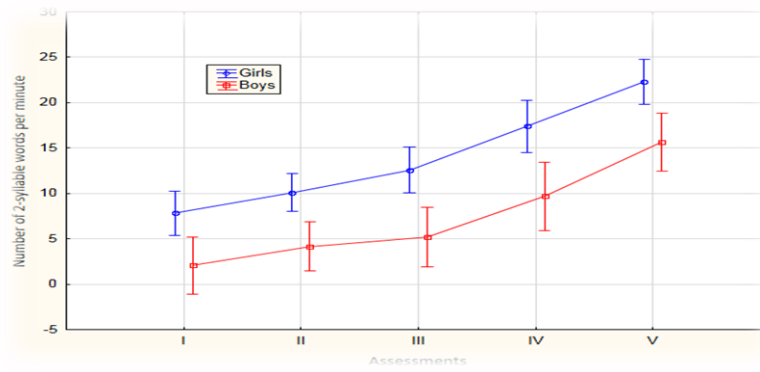


Figure 1B: Gender: $P=0,006$; Time: $P=0,0000$; Gender-Time interaction: $P= 0,5109$

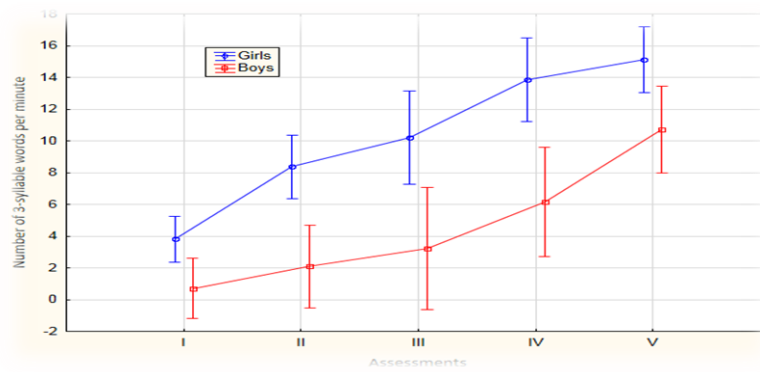


Figure 1C: Gender: $P=0,0015$; Time: $P=0,0000$; Gender-Time interaction: $P= 0,0009$

Figures 2A-C. Gender differences in rate of reading: 1-syllable (A), 2-syllable (B) and 3-syllable (C) pseudo-words.

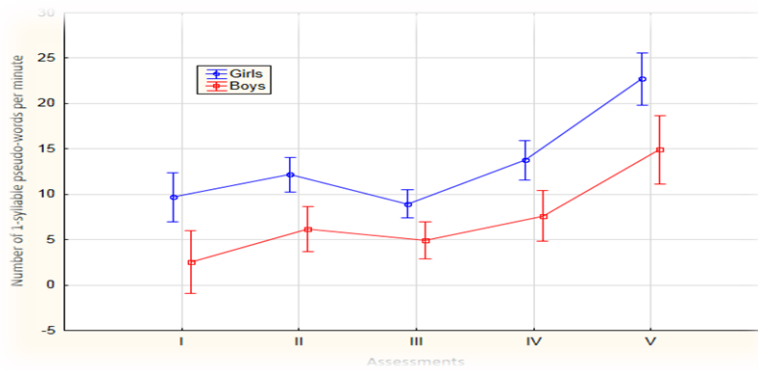


Figure 2A: Gender: $P=0,0002$; Time: $P=0,0000$; Gender-Time interaction: $P= 0,2052$

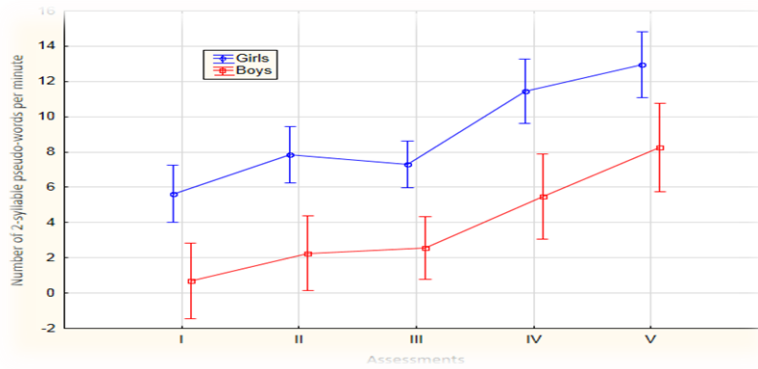


Figure 2B: Gender: $P=0,0002$; Time: $P=0,0000$; Gender-Time interaction: $P= 0,7370$.

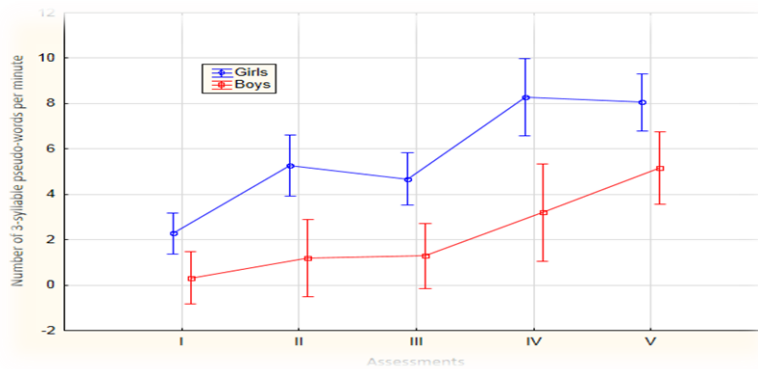


Figure 2C: Gender: $P=0,0003$; Time: $P=0,0000$; Gender-Time interaction: $P= 0,0054$

The influence of gender on the rate of reading appeared to be significant in all successive measures regardless of the kind of reading material. Girls obtained consid-

erably better scores than boys. The scores prove that gender substantially differentiated children in the rate of reading words throughout the whole period covered by the assessment. Time influence also appeared to be significant. The growth in the reading rate, observed in each successive measure, was slower in the first three measures falling in the zero grade and increased in the two successive measures falling in the first grade.

Gender-time interaction was not significant in case of one- and two-syllable words and pseudo-words, where the curve of the growth in reading rate in boys and girls ran in parallel both in the pre-school grade and the first grade. It proves that the size of differences between girls' and boys' performance was similar from the middle of zero grade to the middle of first grade. In decoding three-syllable words and pseudo-words, gender-time interaction was significant. The degree of difficulty in decoding increased with the length of words. Decoding three-syllable words was the most difficult for both girls and boys in the initial measure therefore the size of difference between children was smaller in the first measure than in further measures, until the fourth measure. In the fifth and last measure the difference between children diminished as a result of a bigger growth in the rate of reading in boys in comparison with a smaller growth in girls. The curves illustrating the growth in the rate of reading words as well as three-syllable pseudo-words are similar.

The rate of reading words was higher than the rate of reading pseudo-words, which indicates that decoding words which have meaning, familiar to children is easier than decoding those artificially formed, meaningless words of analogous length.

4.2 The accuracy of reading

Figure 3 shows the average scores of girls and boys in the accuracy of reading words of different length, and Figure 4 shows scores in accuracy of reading pseudo-words obtained in five measures lasting between the middle of zero grade and the middle of first grade.

The influence of gender on the accuracy of reading appeared to be also significant in all successive measures regardless of the kind of reading material. This shows that the level of reading accuracy is varied in terms of gender. In the course of all measures girls read more accurately than boys. Similarly, the influence of time on reading accuracy is significant. In each successive assessment the level of accuracy increased substantially.

Figures 3A-C. Gender-related differences in reading accuracy 1-syllable (A), 2-syllable (B) and 3-syllable (C) words. Vertical lines indicate 0,95 confidence interval.

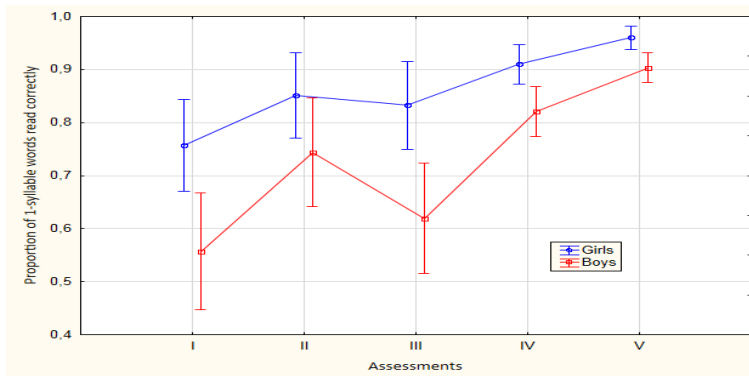


Figure 3A. Gender: $P=0,0020$; Time: $P=0,0000$; Gender-Time interaction: $P=0,0170$

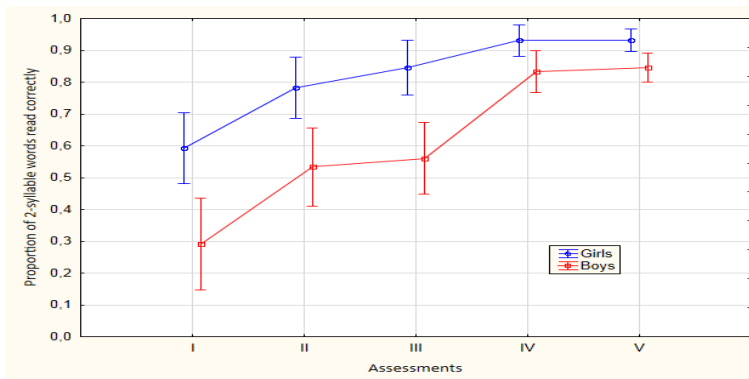


Figure 3B: Gender: $P=0,0002$; Time: $P=0,0000$; Gender-Time interaction: $P=0,0017$.

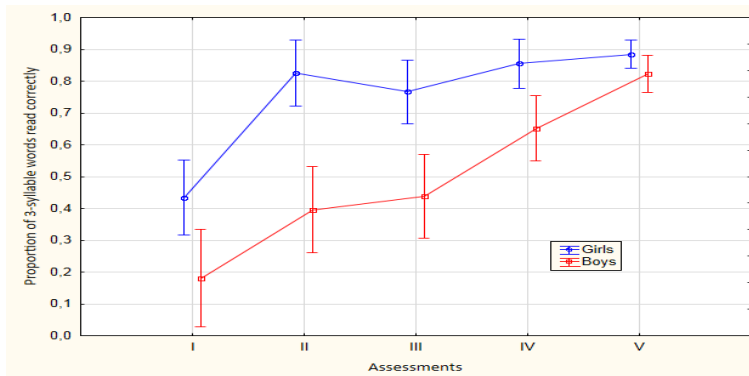


Figure 3C: Gender: $P=0,0000$; Time: $P=0,0000$; Gender-Time interaction: $P=0,0000$

Figures 4. Gender-related differences in reading accuracy 1-syllable (A), 2-syllable (B) and 3-syllable (C) pseudo-words.

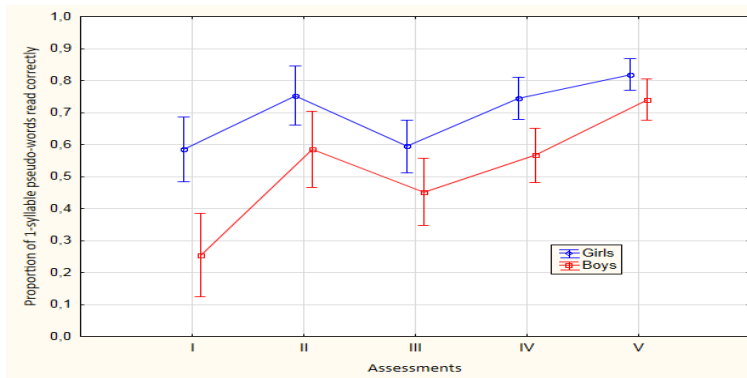


Figure 4A: Gender: $P=0,0009$; Time: $P=0,0000$; Gender-Time interaction: $P=0,0026$.

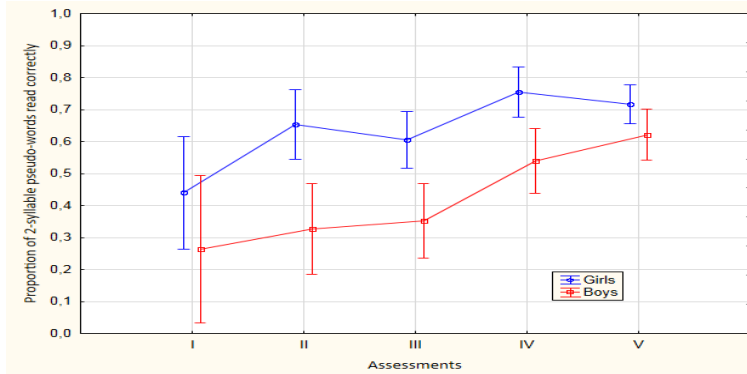


Figure 4B: Gender: $P=0,0023$; Time: $P=0,0000$; Gender-Time interaction: $P=0,1699$

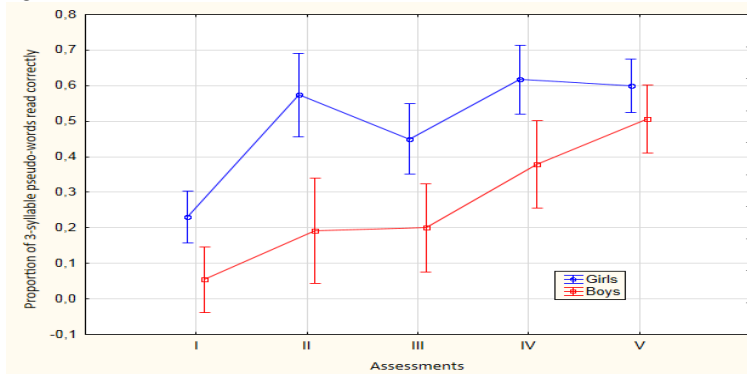


Figure 4C: Gender: $P=0,0004$; Time: $P=0,000$; Gender-Time interaction: $P=0,0013$

Gender-time interaction in reading accuracy appeared to be significant. The advantage of girls significant in the pre-school period diminished in the first grade.

The level of decoding accuracy in girls in the pre-school period considerably higher than in boys, diminished in the first grade. Conversely in boys, the lower level of accuracy, which persisted till the end of pre-school period, increased faster than in girls in the first grade. This caused a significant decrease in the differences between girls and boys in the middle of first grade. As in case of reading rate, children obtained higher scores in the accuracy of decoding words and pseudo-words of analogous length, which shows that decoding words with a meaning and familiar to children is easier for them.

The curves illustrating the scores obtained by children in reading accuracy are different from the curves illustrating the rate of reading. The curves approach each other in the middle of the first grade., which indicates a decrease of differences between girls and boys in reading accuracy of every kind of material used in the study.

5. CONCLUSIONS

The presented studies showed that gender significantly differentiates children in the early development of reading skills. Differences between girls and boys were observed between the middle of zero grade and the middle of first grade. In that period, girls obtained higher scores than boys in the rate and accuracy of reading word and pseudo-words of different length and thus of different degree of difficulty. The assessments are in accordance with reports presented by many authors (Camarata & Woodcock, 2006; Chatterji, 2006; Below, Skينة, Rearington & Sorrell, 2010). However, they do not confirm the reports by Polish researchers (Bodganowicz, 1997; Krasowicz-Kupis, 1999; Szczerbiński, 2001; Wrońska, 2005) with the exception of Włodek-Chronowska (1985), whose assessments are in accordance with the presented studies in terms of the advantage of girls on the onset of education as well as the observed tendency to even out differences between children.

The analysis of stability differences between girls' and boys' achievements in reading rate and accuracy measured five times in the period covered by the study revealed its inconsistent picture, dependent on the applied kind of measure and material used in the study. Differences in the rate of reading between children appeared to be stable in most cases. Whereas differences in the accuracy of reading remained at the similar level in the course of four successive measures and diminished considerably in the last, fifth measure falling in the middle of first grade. The differences in reading accuracy diminished as a result of the slower rate of growth in accuracy among girls and at the same time the increased growth of accuracy among boys in comparison with earlier measures.

This kind of result supports the reports by researchers (Camarata & Woodcock, 2006) who prove that gender-related differences are determined by the rate of information processing. As revealed the present study, in tasks of limited time girls obtained significantly higher scores than boys. Moreover, the significant differences between children persisted in decoding relatively simple material that is one-

and two-syllable words and pseudo-words. The observation confirms that boys do worse in simple tasks, in which performance time is taken into account.

Reading one-syllable words in the middle of first grade was so easy for children that the ceiling effect was observed, while that was not the case with difficult material. Gender differences in the rate of reading three-syllable words and pseudo-words which were the longest, so the most difficult, diminished in the middle of first grade. Increasing abilities of boys in reading accuracy contributed to the improvement of their scores in the rate of reading difficult words. The rate of reading did not influence the level of accuracy indicator, because accuracy was understood as the proportion of words and pseudo-words read correctly to all words and pseudo-words read in a given time. While in the rate of reading, only words read correctly in one minute were counted, thus considering not only the rate but also the accuracy of reading. Thereby, the faster increasing ability to read correctly in boys had a favorable influence on the scores obtained by them in the rate of reading. So there is a chance that with this kind of counting, scores in the rate of reading among children in the successive years of education will also even out that is why some studies of first - third grade children did not reveal significant differences.

There might be many causes. The presented study showed that the scores concerning the stability of differences between boys and girls might be different because they depend on the kind of measure used in early reading achievement. Taking into account the time factor in tasks given to children contributes to indicating bigger differences in favor of girls. The rate and accuracy of reading can be understood and measured differently, so it can affect children's scores. The kind of material used in the tasks and the degree of its difficulty may also differentiate scores.

Children obtained higher scores in reading words than pseudo-words which can indicate that firstly they used not only phonological strategies but also global strategies and secondly that the meaning of words had a definitely favorable influence on children's achievements in reading. Regardless of this, curves illustrating average scores obtained by children in the accuracy and rate of reading are similar irrespective of whether they refer to words or pseudo-words. The kind of material in contrast with the degree of its difficulty did not have an influence on the stability of differences in the rate and accuracy of reading among boys and girls.

The results obtained in the present study are in accordance with results obtained by researchers (e.g. Below et al., 2010) who showed equalizing of gender-related differences observed in the pre-school period. However, this study contradicts those showing that in comparison with the pre-school, differences between girls and boys at further levels of education increase or persist at similar level (Camarata & Woodcock, 2006; Chatterji, 2006).

Significant differences of scores in favor of girls in pre-school achievements in reading support the theories proving that at the early stages of development, the differences between girls and boys are conditioned by biological factors. On the onset of formal learning to read girls are in more favourable position than boys which contributes to their better scores in reading as it was revealed in many stud-

ies. In the first grade differences between children diminish, probably as a result of development which slows down in girls but starts to speed up in boys which clearly reflected in reading accuracy in the middle of the first grade. Other factors, such as the phonics approach in learning to read, which in the view of Johnston & Watson (2005) is particularly beneficial for boys, can contribute to equalizing differences between boys and girls. That is why, significant differences might not have been found in Polish children in initial grades of primary school.

Studies of children in further grades show a clear advantage of girls. It can be thought that the initial differences caused biological factors in the successive years of education are modified by overlapping socio-cultural factors, which as concerns reading, work in favor of girls to a considerable degree, similarly to biological factors at earlier stages. Inconsistent reports on gender-related differences in the early period of learning to read and their stability in the course of education arise from the complex character of the problem. Therefore, it is important to continue research of the issue considering all stages of education as well as different ways of skills assessment connected with efficient reading. This will enable undertaking activities aimed at giving equal opportunities to boys in learning to read effectively.

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