The relationship of gender with reading performance, reading enjoyment, perceived ability and perceived difficulty in a sample of Romanian students

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Abstract

Difficulties in reading comprehension and gender differences are increasing concerns for the educational systems. The purpose of this study is to investigate gender differences concerning reading enjoyment, perceived competence, perceived reading difficulty and performance in reading. Using a secondary data analysis of the 2018 PISA survey, this research paper assessed the differences between boys and girls in reading literacy on a sample of Romanian students. Difficulties in reading comprehension were found to be an issue for most of the Romanian students while gender differences were present for all the analysed dimensions, girls outperforming boys in the reading performance, reading enjoyment and perceived competencies in reading but scoring lower levels of the perceived difficulty in reading. Further research is needed to develop intervention programmes.

Keywords: reading ability; reading comprehension; reading difficulty; reading enjoyment; reading gender differences; reading performance; reading skills.

1. Introduction

Gender has been the focus of research in various domains like education, sociology, anthropology and psychology. Many researchers have highlighted the gender differences in domains such as mathematics, science and reading. Particular attention has been given to the gender differences in reading ability, which have been the topic of much research. Reading skills are fundamental nowadays, both in and out-of-school contexts, for both personal and professional development. Reading does not include only reading fluency, but also comprehension and construction of meaning and mental representation from a text. The Programme for International Students Assessment (PISA) considers reading literacy as the competencies that allow a student to work with the written text to fulfil a specific goal. In order to achieve a specific goal and to develop knowledge, a student has to understand, use, assess, reflect and engage with texts (OECD, 2019a).

The reports of the Organisation for Economic Co-operation and Development (OECD) (2009, 2019a, 2019b) indicate that generally, girls outperform boys in reading. Moreover, there is research showing that there are gender differences in general school achievement in university students (Tulbure & Gavilă, 2019), indicating that these differences between boys and girls in school performance increase along with students age. There is also further research indicating the same results as those revealed in the PISA reports (Reilly, Neumann & Andrews, 2019;

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Lynn & Mikk, 2009; Mol & Jolles, 2014). Many studies show that reading differences in boys and girls are statistically significant, although there seems to be a general agreement among researchers that these differences have insignificant practical value. Otherwise said it looks like the differences in reading between boys and girls are quite small to be taken into consideration in practice. If most studies indicate that these differences have insignificant practical application in the educational field, why continue with the research in this direction? Although there may be a small number of studies that show a significant empirical difference in reading between boys and girls, these should be considered for a number of reasons. First, these studies may facilitate our understanding of how students learn and may also allow us to develop educational programmes to improve students' performance, generating also valuable knowledge about educational inequalities (OECD, 2019a). Second, male students may need specific educational intervention programmes to improve their reading skills and to diminish the difficulties they might encounter in professional and everyday life because of low reading literacy. Taking into account the interest shown in this subject within the educational system, the present study enriches the knowledge of gender differences in reading skills in a sample of Romanian students, using the 2018 PISA database. In addition to gender differences in reading performance, it is also important to emphasize gender differences in both self-concept of reading and enjoyment of reading, since these two variables might explain some of the variation in the reading performance of girls and boys.

Interesting research results can be found on gender differences in reading in the field literature. The study conducted by Reilly, Neumann and Andrews (2019) indicates that reading differences do exist between boys and girls, particularly when differentiating between poor and good readers, with girls outperforming boys. Furthermore, these differences seem to increase along with age, larger effect sizes being found in high school students as compared to primary school students. In line with the results of Reilly, Neumann and Andrews's study are those attained by Lynn and Mikk (2009) who have analysed the sex differences in reading skills using the PISA and PIRLS data. Their research indicates that girls have higher scores in reading comprehension compared to boys. Moreover, as emphasized in Mol and Jolles' study (2014), it seems that reading for leisure also have an impact on school achievement in secondary school children, with boys being the most affected.

A valuable theory developed by Hyde on gender differences in psychological abilities has been published in 2005. According to his theory, which is known as 'the gender similarities hypothesis', there are some psychological differences between girls and boys, but these differences are generally very small to be considered significant, the effect sizes ranging between 0 and 0.35 (78% of the 124 effect sizes included in the meta-analysis). Hyde's meta-analysis indicates that differences in reading comprehension, vocabulary and speech production between girls and boys are insignificant, the effect sizes being -0.02, -0.03 and -0.33 respectively. In line with Hyde's research, Halpern (2008) presents a series of studies showing differences in verbal abilities between girls and boys, among which reading skills as well, with girls outperforming boys. However, most of these differences were insignificant, Halpern arguing that the gender gap in reading might actually be explained by other variables.

According to the last PISA assessment, gender differences in reading comprehension are generally significant in all participant countries, with girls outperforming boys with an average score of 30 points (OECD, 2019a). At the last PISA assessment, the mean score for reading comprehension of the Romanian students was 411 for boys and 445 for girls. Romanian students scored below the OECD average in terms of reading comprehension, but the gender gap in reading was above the OECD average and seems to remain unchanged during the last two PISA assessments (2009 and 2018). In addition to the important role of gender differences in reading comprehension, PISA recognizes the role that students' attitudes play in reading. This study focuses on two of these attitudes, namely on the enjoyment of reading and on the perceived competence and difficulty in reading. Both variables have an important role in reading comprehension, as emphasized in previous research. For instance, Reynolds, Arnone and Marshall (2009) have shown that a high level of

reading enjoyment and perceived competence in reading is related to higher performance in knowledge tests.

Reading enjoyment can be considered, along with self-perceived ability, a dimension of the reading motivation and involves the pleasure with which a student read. Enjoyment of reading has frequently been studied in association with reading performance, research indicating a strong correlation between these two variables (Rogiers, Van Keer & Merchie, 2020; Tavsancil & Yildirim, 2019). Although the nature of this relationship is yet debatable in the terms of causations, research clearly indicates that there are significant differences between girls and boys in reading enjoyment (Rogiers, Van Keer & Merchie, 2020; Smith, Smith, Gilmore & Jameson, 2012). The broad study conducted by Smith, Smith, Gilmore & Jameson (2012) with 960 students from New Zealand shows a significant gender gap in reading enjoyment for students in 4th and 8th grades, with girls reporting higher levels of enjoyment. In 4th grade, the effect sizes for enjoyment on reading were 0.57 while in the 8th grade decreased to 0.47. Hochweber and Vieluf (2016) have found similar results in a sample of 9th grade students, with gender differences increasing along with the age in the favour of girls. Sclafani and Wickes (2017) have concluded that the differences between girls and boys in reading comprehension might be explained through the gender differences in school enjoyment in general, arguing that girls generally enjoy school to a higher degree than boys.

In addition to reading literacy, PISA measures the degree to which the students enjoy reading and the results indicate that girls enjoy reading more than boys and get higher scores compared to boys (OECD, 2019). However, in most countries, the reading score has dropped significantly in recent years. The results of the Romanian students in reading enjoyment were close to average, while those in reading literacy were below the OECD mean. If the level of reading enjoyment in the Romanian students is average and research indicate a strong and positive relationship between reading enjoyment and reading performance, why do they get scores below the OECD average in reading comprehension? To offer an answer to this question we consider that is essential to explore the relationship between these two variables, and another important one is gender since this last variable can influence the relationship between reading enjoyment and reading performance. In Romania, students' attitudes toward learning and school have been strongly influenced by the many changes in the educational reform, research indicating that students' attitudes toward school have a strong influence on their out-of-school attitudes and values (Oprîș, 2020).

Just as the reading enjoyment, the perceived competence and difficulty in reading are factors that play an important role in reading. Research indicates that beliefs in one's competence influence academic achievement and the levels of anxiety related to school tasks (Marchiș & Ciascai, 2017). Beliefs in one's capability to succeed in reading, to be a good reader and to understand and manage the difficulties encountered in reading are strongly related to the reading performance (Smith, Smith, Gilmore & Jameson, 2012; Cheema, 2018; Flowers, 2003; Gordon & Lu, 2008). Although the qualitative research indicates that it might be difficult for those students in the lower grades to assess their self-confidence in reading (Guthrie, Hoa, Wigfield, Tonks, Humenick & Littles, 2007) there is a consensus that the 1st-grade children can reliably assess their self-perceptions in reading (Eccles, Wigfield, Harold & Blumenfeld, 1993). Perceived competence seems to be essential even for those students who struggle with reading. Cho, Lee and Toste (2018) show that students who struggle with reading but have a high reading perceived competence, get higher scores in reading tests compared to those who struggle with reading but have a low reading perceived competence. The perceived difficulty of a text has an essential impact on reading performance, also influencing students' interest and affect in reading. The study conducted by Fulmer and Tulis (2013) has shown that as the perceived difficulty of a text increases, both interest and affect decrease, in the case of a reading text with moderate difficulty. There is research (Smith, Smith, Gilmore & Jameson, 2012) indicating that girls have a higher degree of perceived competence as compared to boys, although the differences might be considered insignificant in practice (0.19 in the 4th grade students and 0.11 in the 8th grade students).

Nevertheless, there is also research that indicates boys have a higher self-concept in reading compared to girls (Katzir, Kim & Dotan, 2018).

2. Methodology

2.1. Objectives

In the case of the Romanian students, data analysis revealed that the gender gap in both perceived competence and perceived difficulty in reading is statistically significant and is higher than the OECD average (OECD, 2019). Considering the essential role that gender seems to have in reading enjoyment, perceived competence and perceived difficulty in reading, within the context of the PISA 2018 assessments in Romania, this study aims to answer the following three questions:

1. Do girls enjoy reading more compared to boys?
2. Do girls have a higher level of perceived competence than boys?
3. Do girls have a lower level of perceived reading difficulty compared to boys?
4. Do girls get higher performance in reading compared to boys?

2.2. Procedure

In this study, we performed a secondary analysis of the data gathered through the Programme of International Student Assessment (PISA) in 2018. PISA, which is a triennial survey, is concerned with the way in which students can use their knowledge and skills to face the difficulties and challenges they encounter in everyday life. Hence, the focus is not on the curricula content and information reproduction but on how knowledge and skills can be applied in real-life and unfamiliar contexts. In 2018 a number of 79 countries have participated in the assessment, each with a sample of students aged between 15 years 3 months old and 16 years 2 months old, regardless of the type of school they were enrolled in (public, private, academic, vocational, full-time or part-time). PISA measures the literacy of the students in three main domains: reading, mathematics and science, each of these three domains being assessed every three years, each of them as the main domain in one year. Reading literacy, the main subject of the 2018 PISA assessment, can be defined as the ability of a student to understand texts for reaching one's goals (OECD, 2019).

2.3. Hypothesis

- H1: Girls have a higher level of reading enjoyment compared to boys.
- H2: Girls have a higher level of perceived competence in reading than boys.
- H3: Girls have a lower level of perceived difficulty in reading compared to boys.
- H4: There are differences between boys and girls in reading comprehension, with girls outperforming boys.

2.4. Measures

During the last PISA survey, reading comprehension has been assessed in Romania through a two-hour paper-and-pencil test, unlike most countries where computer-based tests have been applied.

The questions used in 2018 are the same as the ones used in the 2009 assessment in the paper-and-pencil tests, changes being made only for the computer-based tests used in the majority of the participating countries in the last PISA survey. It is important to emphasize that PISA assesses reading literacy, which has been conceptualized as those competencies that allow students to use the written information from a text in order to achieve a specific goal. For achieving a specific reading goal, students have to understand the information they read and to be able to use their prior knowledge for developing an in-depth knowledge base. Students have to read different types of texts (descriptions, narratives, expositions, argumentations, instructions and transactions) and to resolve tasks with various levels of difficulty (OECD, 2019). To identify the

level of the reading literacy of the Romanian students, participants had to answer questions from six types of texts (descriptions, narrations, expositions, argumentations, instructions and transactions) and to use at least one of the following three cognitive processes: finding information, understanding and evaluating and reflecting. The answers of the students were classified into six proficiency levels, from 1 (1c, 1b and 1a) to 6, the latter level involving more difficult tasks as compared to the first one with each level of proficiency involving specific knowledge and skills to successfully complete the tasks (OECD, 2019).

The enjoyment of reading was assessed through five statements: "I read only if I have to"; "Reading is one of my favourite hobbies"; "I like talking about books with other people"; "For me, reading is a waste of time"; and "I read only to get information that I need". Answers were measured on a 4-point Likert scale, from "strongly agree", "agree", "disagree" to "strongly disagree" (OECD, 2019).

The perceived competence and perceived difficulty of reading were assessed through the following statements: "I am a good reader"; "I am able to understand difficulty tests"; "I read fluently" (perceived competence); "I have always had difficulty with reading"; "I have to read a text several times before completely understanding it" and "I find it difficult to answer questions about a text" (OECD, 2019). The answers were assessed on a 4-point Likert scale: "not at all", "very little", "to some extent" and "a lot". Two indexes were computed: one index for the perception of competence in reading and one for perceived difficulty in reading, with higher positive values indicating a greater perception of competence and difficulty (OECD, 2019).

2.5. Sampling

A stratified sampling procedure was used by PISA researchers: in the first stage at least 150 schools were chosen from each country, with each school being replaced in the case they refused the invitation to participate in the 2018 PISA assessment. In the second stage of the sampling procedure, 42 students were randomly chosen from each school, as long as they met the age criterion.

3. Results

3.1. Descriptive statistics

Reading scores are distributed on six levels of performance: level 1 (from 0 to 407.47), level 2 (from 407.47 to less than 480.18 score points), level 3 (from 480.18 to less than 552.89 score points), level 4 (from 552.89 to less than 625.61 score points), level 5 (from 625.61 to less than 698.32 score points) and level 6 (above 698.32 score points). Level one discriminates between 4 types of scores of reading performance: below level 1c (less than 189.33 score points), level 1c (from 189.33 to less than 262.04 score points), level 1b (from 262.04 to less than 334.75 score points) and level 1a (from 334.75 to less than 407.47 score points). Table 1 illustrates the percentages of the Romanian students for each of the levels presented above, first for all students who participated in the 2018 PISA testing and then for two important categories of participants: boys and girls (OECD, 2019).

Table 1. Percentage of students at each proficiency level in reading (adapted after <https://gpseducation.oecd.org/CountryProfile?primaryCountry=ROU&treshold=10&topic=PI>)

Reading levels	Below level 1c	Level 1c	Level 1b	Level 1a	Level 2	Level 3	Level 4	Level 5	Level 6
All students	0.8	4.3	12.9	22.8	28.1	20.9	8.7	1.3	0.1
Boys	1.1	5.9	16.0	24.8	26.9	17.5	6.8	1.0	0.1
Girls	0.6	2.6	9.6	20.7	29.4	24.6	10.7	1.7	0.1

As can be observed from Table 1, up to 40.8 per cent of the Romanian students have scored on the lowest level (Level 1), with boys having higher scores at this level compared to girls. Since about half of the students scored on the lowest level of the reading performance, the percentages of the students who got high scores at the next levels of reading are quite low, being almost insignificant at the highest level. Girls seem to outperform boys in roughly all levels of the reading scores, except the lowest one, where we can find higher percentages for boys.

Table 2 illustrates, individually for boys and girls, the percentages of the students who agreed and strongly agreed with the statements that assessed the reading enjoyment, the perceived competence and the perceived difficulty in reading.

Table 2. Percentages of boys and girls who agreed or strongly agreed with the statements assessing enjoyment of reading in PISA 2018 (adapted after <https://gpseducation.oecd.org/CountryProfile?primaryCountry=ROU&treshold=10&topic=PI>)

	I read only if I have to	Reading is one of my favourite hobbies	I like talking about books with other people	For me, reading is a waste of time	I read only to get information that I need
Boys	66.1	28.7	29.6	39	74.2
Girls	39.5	58.5	59.6	15.4	47.1

Table 2 illustrates the percentages of boys and girls who agreed and strongly agreed with the statements assessing enjoyment of reading. A high percentage of boys (66.10%) agreed and strongly agreed that they read only if they have to, unlike girls, where the percentage is almost half compared to the one of boys (39.5%). It seems that reading is a less pleasurable activity for boys than for girls since a high percentage of boys agreed and strongly agreed that they read only to get the needed information (74.2%) and that reading is a waste of time (39%). Reading seems to be one of the favourite hobbies of girls and books seem to be a pleasant topic of conversation among them.

Table 3. Percentages of students who agreed or strongly agreed with the statements assessing perceived competence in reading, by gender, in PISA 2018 (adapted after <https://gpseducation.oecd.org/CountryProfile?primaryCountry=ROU&treshold=10&topic=PI>)

	I am a good reader	I am able to understand difficult texts	I read fluently
Boys	63.6	70.2	76
Girls	80.4	77.6	83.6

Interestingly though, there are no huge differences in the percentage of boys and girls neither in the perceived competence in reading nor in the perceived difficulty in reading (Table 3 and Table 4). A high percentage of girls (80.4) consider themselves to be good readers, and a moderate percentage of boys rate themselves as good readers (63.6%). Neither girls nor boys have problems with the fluency of reading and with understanding difficult texts. It seems that perceived competence in reading is positively assessed by both girls and boys.

Table 4. Percentages of students who agreed or strongly agreed with the statements assessing perceived difficulty in reading, by gender, in PISA 2018 (adapted after <https://gpseducation.oecd.org/CountryProfile?primaryCountry=ROU&treshold=10&topic=PI>)

	I have always had difficulty with reading	I have to read a text several times before completely understanding it	I find it difficult to answer questions about a text
Boys	16.3	46.6	20.7
Girls	10.9	45.1	13.3

Concerning the perceived difficulty in reading texts, a higher percentage of boys agreed that they always had difficulty with reading (16.3%) and that they find it difficult to answer questions about a text (20.7%), compared to girls for which the percentage is lower. Both girls and boys have to read a text several times before completely understanding it.

3.2. Correlations

Data were analysed using the SPSS software. The relationship between reading performance, reading enjoyment, perceived competence in reading and perceived difficulties in reading is illustrated in Table 5. The Pearson coefficient indicates significant relationships between these variables, some of them being stronger than others, some having positive values and other negative ones.

Table 5. Correlations

1. Joy/ Like reading (WLE)	2. Self- concept of reading: Percep- tion of compe- tence (WLE)	3. Self- concept of reading: Percep- tion of diffi- culty (WLE)	Ave- rage of the 5 PV statis- tics	4. Plausi- ble Value 1 in Reading	5. Plausi- ble Value 2 in Reading	6. Plausi- ble Value 3 in Reading	7. Plausi- ble Value 4 in Reading	8. Plausi- ble Value 5 in Reading
1	1	.418**	-.206**	.266**	.266**	.259**	.272**	.271**
2	.418**	1	-.302**	.309**	.305**	.305**	.314**	.314**
3	-.206**	-.302**	1	-.296**	-.296**	-.300**	-.290**	-.297**
4	.266**	.309**	-.299**	1	.915**	.916**	.914**	.916**
5	.266**	.305**	-.296**	.931**	1	.913**	.913**	.916**
6	.259**	.305**	-.300**	.931**	.916**	1	.913**	.915**
7	.272**	.314**	-.290**	.931**	.914**	.913**	1	.915**
8	.271**	.314**	-.297**	.932**	.916**	.915**	.915**	1

****.** Correlation is significant at the 0.01 level (2-tailed)

A few mentions have to be done regarding the use of plausible data in statistical analysis. In PISA analysis plausible values are used to estimate the reading performance of students, with 10 plausible variables being generated for each student. This means that instead of having a raw score for each student we have 10 plausible scores. The 2018 OECD technical report (OECD, 2009b) suggests introducing 5 plausible values in each statistical analysis. It is essential to understand that we have to introduce at least 5 plausible values in the tests run in the statistical software, and then to compute the average of these statistical results for each value, and don't compute the mean of these plausible values before running the tests. Each plausible value has to be introduced in the statistical analysis and after this find the average of those 5 plausible values statistics.

Results presented in Table 5 clearly indicate that reading enjoyment is positively and significantly correlated to reading performance ($r=0.266$, $p=0.01$) and perceived competence in reading ($r=0.418$, $p=0.01$) but negatively to the perceived difficulty in reading ($r=-0.206$, $p=0.01$). In other words, those students who enjoy reading more have higher scores in reading tests and consider themselves more competent in reading, compared to those who enjoy less reading and who rated themselves as having poor reading competence. Reading performance is positively correlated with both reading enjoyment ($r=0.266$, $p=0.01$) and perceived competence in reading ($r=0.309$, $p=0.01$), and negatively with perceived difficulty in reading ($r=-0.296$, $p=0.01$). Those students who believe they have difficulties in reading get lower scores

in reading performance. As expected, the variable "perceived difficulties in reading" is significantly but negatively correlated to reading enjoyment ($r=-0.266$, $p=0.01$), perceived competence in reading ($r=-0.302$, $p=0.01$) and reading performance ($r=-0.309$, $p=0.01$). Students who have a high level of perceived difficulty in reading and believe it is hard to read various texts have lower scores in reading performance, do not engage with joy in reading and have reduced levels of perceived competence in reading.

3.3. Gender differences in reading literacy, enjoyment of reading and perceived competence and difficulty in reading. Size effects

PISA reports indicate significant gender differences in reading performance, enjoyment of reading and perceived competence and perceived difficulties in reading, with girls having better reading skills. Table 6 and Table 7 illustrates the gender differences in reading enjoyment and perceived difficulty and perceived competence identified for the Romanian students who participated in the 2018 PISA programme.

Table 6. Means and standard deviations

Variables	Gender	N	Mean	Std. Deviation	Std. Error Mean
Joy/Like reading (WLE)	Girls	2420	.392	1.022	.020
	Boys	2568	-.369	.822	.016
Self-concept of reading: Perception of competence (WLE)	Girls	2338	.174	.961	.019
	Boys	2481	-.164	1.007	.020
Self-concept of reading: Perception of difficulty (WLE)	Girls	2385	-.082	.970	.019
	Boys	2501	.078	1.021	.020

Table 7. Independent t-Test for gender and reading enjoyment, perceived competence and perceived difficulty in reading

		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Joy/Like reading (WLE)	Equal variances not assumed	28.89	4640.86	0	0.76	0.03	0.71	0.81
Perception of competence (WLE)	Equal variances not assumed	11.94	4816,28	0	0.34	0.03	0.28	0.39
Perception of difficulty (WLE)	Equal variances assumed	-5.64	4884	0	-0.16	0,03	-0.22	-0.1

Girls enjoy reading more than boys ($M=0.39$, $SD=1.02$) and have a higher perceived competence in reading ($M=-0.17$ $SD=0.96$). Although girls got smaller scores on the perceived difficulty in reading, since this item is a reversed one, the smaller score of girls indicates that they do believe that reading various texts is not a difficult task ($M=-0.82$ $SD=0.97$). The mean difference between girls and boys in the reading enjoyment is 0.761 and the 95% confidence interval of the estimated population mean difference is between 0.710 and 0.813. The F-value for the reading enjoyment and perceived competence is significant ($F=151,26$ $p < 0.001$) and this

means that our variances cannot be assumed to be equal and we have to report the results for the equal variances not assumed (Elliot & Woodward, 2007). The independent t-test revealed that gender affects reading enjoyment and girls scored higher at this variable compared to boys, supporting our hypothesis ($t_{4640,86}=28.89$; $p<0.001$). The same results have been obtained for both perceived competence and perceived difficulty in reading, with $t_{4816,28}=11.943$; $p<0.001$ and respectively $t_{4884}=5.64$; $p<0.001$. Gender affects both perceived competence and perceived difficulty in reading, with girls having higher levels of perceived competence in reading and lower levels of perceived difficulties in reading, supporting our hypotheses. The Cohen's size effect of the significant differences presented above differs quite a lot, the lowest effect being for gender and perception of difficulty in reading ($d=0.16$) and the highest for gender and the reading enjoyment ($d=0.82$). Gender differences in the perception of competence in reading have a medium effect size with $d=0.34$. The literature emphasizes various interpretations of Cohen's effect size value (Salkind, 2016; Page, Braver & MacKinnon, 2003; Muijs, 2004; Dancey & Reidy, 2007). However, there is a consensus that a value smaller than 0.20 represents a small effect size, a value between 0.25 and 0.80 represents a medium and moderate effect size and one higher than 0.80 represents a large effect size.

Table 8. Means and standard deviations

	Gender	N	Mean	Std. Deviation	Std. Error Mean	Error
Plausible Value 1 in Reading	Girls	2444	0.18	0.96	0.02	
	Boys	2631	-0.16	1.01	0.02	
Plausible Value 2 in Reading	Girls	2444	0.17	0.96	0.02	
	Boys	2631	-0.16	1.01	0.02	
Plausible Value 3 in Reading	Girls	2444	0.17	0.97	0.02	
	Boys	2631	-0.16	1	0.02	
Plausible Value 4 in Reading	Girls	2444	0.18	0.96	0.02	
	Boys	2631	-0.17	1	0.02	
Plausible Value 5 in Reading	Girls	2444	0.18	0.96	0.02	
	Boys	2631	-0.17	1.01	0.02	
Average of the 5 PV statistics	Girls	2444	0.18	0.96	0.19	
	Boys	2631	-0.163	1.007	0.19	

Table 9. Independent t-Test for gender and reading performance

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Interval Difference	Confidence of the Difference
						Lower	Upper
Equal variances not assumed	12.33	5070.92	0	0.34	0.03	0.29	0.39
Equal variances not assumed	11.98	5069.54	0	0.33	0.03	0.28	0.39
Equal variances not assumed	12.02	5065.81	0	0.33	0.03	0.28	0.39
Equal variances not assumed	12.42	5067.59	0	0.34	0.03	0.29	0.4
Equal variances not assumed	12.55	5071.5	0	0.35	0.03	0.29	0.4
Average of the 5 PV statistics	12.26	5069.07	0	0.34	0.03	0.28	0.39

As indicated in the PISA Data Analysis Manual (2009b) statistical analysis has to be performed with at least 5 plausible values and results should be aggregated to get the final estimates of the statistics. Following these recommendations, our results

indicated that girls have a higher performance compared to boys ($M=0.18$, $SD=0.19$), with a mean difference of 0.34 in performance and a 95% confidence interval (with estimations between 0.28 and 0.39). The independent t-test shows that gender influences performance and girls got higher scores on the reading performance than boys ($t_{5069,07}=12.26$; $p<0.001$). The size effect of the significant difference in reading performance between girls and boys is 0.25 which represents a small effect size.

4. Discussions

Almost half of the Romanian students (40,8%) who participated at PISA in 2018 got a score below or at first level of the reading literacy. In other words, what these students can do in reading is to identify the main theme and the purpose of a text with a familiar topic, make connections with different information from a text or with their prior knowledge, identify information within short texts and reflect on the purpose of a text, but only if they are offered explicit cues (OECD, 2019). A percentage of 28.10% of the students who reached the second level of reading literacy seem to be able to identify the main theme in a text of moderate length, to make basic inferences and comparisons based on single features of the text. A fairly high percentage of students (20.9%) obtained scores at the third level of the reading literacy test and have better reading skills as compared to the majority of students who got scores at the first and second levels (OECD, 2019).

The results of the present study showed that Romanian students have difficulties with reading comprehension, most of the students getting scores within the lowest levels of the reading performance tests. Moreover, gender differences have been identified in all of the dimensions included in the study: reading performance, perceived competence in reading, perceived difficulty in reading and reading enjoyment. Data analysis indicates that girls outperform boys in reading performance and have higher levels of reading enjoyment and perceived competencies in reading but lower levels of perceived difficulty in reading. Although the statistical gender differences are all significant, further analysis indicates that only the gender difference in reading enjoyment has a high effect size and should be definitely taken into account in the educational practice. The other gender differences, specifically differences in perceived difficulty in reading and reading performance have the lowest effect sizes and their practical value is debatable. Gender differences in perceived reading competence have a moderate effect size, although it is rather close to a small effect size.

Analysing the results of this study, one could ask 'What can be done for those students who poorly perform in reading?'. Furthermore, we should ask if low-achieving students really hate to read and if they really avoid reading. Most of the research has focused on reading within the school context (Zimmerman, 2000; Wigfield, Eccles & Rodriguez, 1998). Future research should be focused on reading in the out-of-school context and should offer answers to questions such as: what are the interests, behaviours and attitudes of low-achieving students in reading? Why? Because students who struggle with reading in the academic context might have an increased interest in reading alternative books, as indicated in a study conducted by Gordon & Lou (2008). The results of such studies might bring essential contributions to the way in which out-of-school reading practices might improve the students' reading skills in the school context.

Students' performance at various international assessments and their attitudes toward learning in general could be strongly correlated with teachers' competencies and experience (Bîrzea et al., 2006), this being an important direction of potential research. Furthermore, identifying reading difficulties at an early age and adapting the Language and Communication curriculum, in general, and for students with reading difficulties in particular, as suggested by Hațegan and colleagues (2020), might be an essential step for improving reading comprehension in Romanian students.

All authors contributed to this paper equally.

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