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THE RELATIONSHIP OF READING AND MATHEMATICS IN THIRD-GRADE ELEMENTARY SCHOOL STUDENTS IN CANTON SARAJEVO

Abstract: *The attainment of reading and basic mathematical skills is one of the most important academic goals in early grades of elementary school. A plethora of studies has shown the importance of these skills to future academic achievements and professional career. The goal of this study was to determine the correlation of reading and mathematics in third-grade elementary school students in Canton Sarajevo. An additional goal was to determine if there are differences in the proportion of academic underachievement in relation to the student's gender. The sample for this study consisted of 70 third-grade students (33 girls, 37 boys, mean age- 103,1 months, SD- 5,6 months) attending two elementary schools in Canton Sarajevo. Results of this study indicated that reading and mathematics share 25% of the variance in the scores. The correlation between reading and mathematics was r = 0,50, p<0,01. There were more boys in the category of academic underachievement in both, reading and mathematics. However, statistically significant differences in the distribution of students were present only for reading and not for mathematics. Identification of cognitive factors that contribute to reading attainment and mathematical skills will help teachers create better intervention programs. The article ends with some recommendations for teachers on how to improve these academic skills in their students.*

Keywords: *academic achievement, correlational analysis, gender effects*

INTRODUCTION

Academic attainment is of crucial importance for future life outcomes. Two of the most important academic skills are reading and mathematics. The attainment of reading ability and basic mathematical skills are two of the most crucial academic goals in early grades of elementary school. Numerous studies have shown the importance of these skills for future academic achievement and professional career (Cappella & Weinstein, 2001; Fisher et al., 2012; Jordan et al., 2009). Studies have long shown that higher levels of earlier learning of reading is related to higher earnings and improved well-being (Evans & Yuan, 2017). Unfortunately, although these are highly valued skills, many children have difficulties in achieving reading and mathematical proficiency. For example, the prevalence of reading difficulties ranges from 4% (Lewis et al., 1994) to 11% (Cecilia et al., 2014), while the prevalence of mathematical difficulties is somewhat lower and ranges from 2,3% (Lewis et al., 1994) to 8,8% (Abu-Hamour & Al-Hmouz, 2016). It is important to note that skills needed for the attainment of both, reading skills and mathematical concepts are overly complex skills and depend on higher cognitive processes. Paradoxically, one of the most important theory of reading is named the *Simple View of Reading*, according to which reading is composed of only two components: decoding and linguistic comprehension (Hoover & Gough, 1990). Of course, the name of theory can be misleading as there is nothing simple about the *Simple View of Reading* apart from the fact it is composed of two components only. Each of the components however is dependent on numerous cognitive factors and each component contributes equally to overall reading. Decoding can be defined as efficient word recognition, while the linguistic comprehension is the ability to take lexical information and derive sentence interpretations. The essence of comprehension is the ability to mentally link various information and to create coherent representation about its meaning. Thus, according to the *Simple View of Reading*, reading comprehension scores can be predicted by decoding skills and language comprehension abilities. The theory created by Hoover and Gough (1990) represented a kind of paradigm shift as it clarified the role and importance of decoding in reading as many educators up to that time believed that strong decoding abilities were not important for reading comprehension.

Scientific interest in reading research has skyrocketed in the last decades. One of the indicators of this scientific interest is the number of scientific publications that have reading as its main subject. In addition to this, there are several journals that almost exclusively publish articles on reading. For example, in *Web of Scienc*e database there are several journals indexed that contain the word reading in its title such as *Reading Research Quarterly*, *Reading and Writing*, *Scientific Studies of Reading*, *Journal of Research in Reading*, *Reading and Writing Quarterly*, *Reading Teacher*, and *Reading Psychology*. Add to this

list journals on educational psychology and neuropsychology that often publish articles on reading and clearer picture on scientific interest for reading will emerge. This is, however, not surprising given the importance that reading has in everyday life. Reading is a crucial skill in elementary school as students gain knowledge through the textbooks and student's performance is often assessed through written material (Bigozzi et al., 2017).

One of the main tasks that reading researchers deal with is determining how factors such as cognitive, linguistic, perceptual, motivational and many other affect the reading attainment. Identification of factors that might be predictive of future reading problems is of crucial importance and will, in turn, help teachers in creating better intervention models (Catts et al., 2001). Here we provide a short literature review regarding the various predictors of reading. It is widely accepted that lower level cognitive processes are more strongly correlated with word recognition skill and reading fluency, while the higher level linguistic and reasoning abilities are strongly correlated with reading comprehension (Wendling & Mather, 2008). One of the most important factors that has almost universally been linked to reading is the phonological awareness (PA). There are many definitions of PA, and they all agree that PA is a complex set of skills consisting of tasks such as blending sounds together, separating words into their constituent sounds, combining and recombining sounds of words, determining what sounds constitute a word, finding rimes etc. (Antony & Francis, 2005). There is a wide scientific debate on what PA components play the most important part in reading and should thus be the subject of more intensive early intervention. For example, for younger children the most important predictor of future reading proficiency is rhyme detection (Kirtley et al., 1989). As children grow older, the role of riming abilities is reducing and the phoneme awareness tasks, such as phoneme deletion tasks, become the most important predictors of reading (Memisevic et al., 2020). The importance of PA has been established for many languages, with various orthographies, from Chinese (Song et al., 2016), English (Swanson et al., 2003), Spanish (Denton, 2000), to Bosnian (Memisevic et al., 2020) and Croatian language (Kolić-Vehovec, 2003). Besides PA, research has shown that rapid automatized naming (RAN) has significant independent influence on reading (Landerl et al., 2019). Although RAN has earlier been conceptualized as part of PA processing, many authors view RAN as a separate construct that independently contributes to reading proficiency (Wolf & Bowers, 1999). The explanation on why RAN is one of the most important predictors of reading is that sequential naming reflects the timely integration of visual and verbal skills necessary for efficient word recognition (Kirby et al., 2010). There are a number of other cognitive factors that have an impact on reading proficiency such as speed of processing (Kail & Hall, 1994), working memory (Seigneuric & Ehrlich, 2005), and selective attention (Memisevic et al., 2019). As children develop their speed of processing improves. This, in

turn, is associated with more rapid articulation and greater memory span, both of which are related to reading ability (Kail & Hall, 1994). Numerous studies have linked working memory with academic achievement (Giofre et al., 2017; Rohde & Thompson, 2007). A study by Gathercole et al. (2006) showed a significant effect of working memory on reading and mathematics.

It is important to note that other factors, besides cognitive and linguistic, also influence the attainment of reading. Here we refer to some demographic variables (socio-economic status, parental education level, number of books at home) that are related to reading ability (Artelt et al., 2001). An interesting finding regarding the predictors of reading in Croatian first grade students found that reading fluency and reading comprehension were best predicted by pre-school sound-letter correspondence knowledge, while the contribution of phonological and cognitive skills was in most cases non-significant (Čudina-Obradović, 1999). The findings in Čudina-Obradović study strongly supported the notion postulated in the classical book entitled *Beginning to read* by Adams (1994), in which the single best predictor of student's end of year reading achievement was their ability at the beginning of the year to recognize and name upper and lower case letters. In addition, this was the most important factor regardless of the instructional approach used to teach beginning reading. This short overview of the research on the predictors of reading tells us that many skills might be more or less important predictors of reading proficiency.

With regard to gender differences between boys and girls, most of studies have found a girl's advantage for reading (Nalipay et al., 2020). Some of the potential explanations for these differences might be in motivational and behavioral factors, differences in cognitive abilities, differences in brain activation during reading tasks, and differences in reading strategies and learning styles (Logan & Johnston, 2010). However, these findings are not universal, and it is important to note there are studies that found no girls' advantage for reading proficiency (White, 2007).

Research in attainment of early mathematic concepts is not as widespread as those regarding reading. Mathematical achievement is not a unidimensional construct and is dependent on many cognitive processes (Männamaa et al., 2012). The attainment of basic mathematical abilities is also one of the main educational goals in early grades of elementary school. Early math skills are related with future academic success and interventions aimed at learning basic math concepts should start at preschool age (Sheridan et al., 2020). Children's number competencies at preschool age are related to mathematics achievement at Grade 3 (Jordan et al., 2009). Therefore, it is evident that early identification of cognitive processes affecting mathematical abilities at an early age can help teachers create more effective educational interventions and thus reduce the number of children with mathematical difficulties.

Similarly to reading, mathematical abilities are complex set of skills that are dependent on integration of wide spectrum of simple numerical abilities and concepts (Kelley et al., 2008). Research has shown that many factors that contribute to reading skills also contribute to math skills. For example, it has been shown that speed of processing and working memory are among the best predictors of math abilities (Passolunghi & Lanfranchi, 2012). Fluid reasoning, as a general intellectual ability is also related to mathematical abilities (Zippert et al., 2019). Research has shown that fluid reasoning and mathematical thinking are related throughout the school years (Green et al., 2017). Fluid reasoning is viewed as a cornerstone of human cognition and can be defined as the capacity to think logically and solve problems in novel situations (Ferrer et al., 2009). Additional factors related to mathematical abilities include selective attention, semantic fluency, inhibitory control and visual-motor integration (Memisevic et al., 2018). Many of these skills belong to the construct of executive functions. Although, one of the most researched topics in the area of psychology, neuropsychology, education, and neuroscience, executive function remain a concept that is hard to define. Executive functions include abilities such as goal formation, planning, goal-directed behavior and effective performance (Jurado & Rosselli, 2007). There is a plethora of research examining relationship between executive functions and mathematics and the results seem to be inconclusive (Van der Ven et al., 2012). Given that executive functions are an umbrella term encompassing many cognitive functions such as inhibition, updating, emotional control planning etc., it is not surprising that some of these functions are more strongly related to mathematical abilities. For example, research by Van der Ven et al. (2012) has shown that updating skills play a key role in math learning process. Other authors have also confirmed the role of updating as one of the main predictors of mathematical achievement (Bull & Lee, 2014), while the role of inhibition and switching is less conclusive. Again, as in the case of reading, numerous noncognitive factors contribute to mathematical achievement, such as socio-economic status (Jordan et al., 2009). As for the effects of gender on mathematical abilities, there are no straightforward answers, as some studies have found boys advantage for math (Penner & Paret, 2008), while other studies found no advantage for boys in math skills (Georgiou et al., 2007; Hargreaves et al., 2008). We still do not have definitive answers on the effects of gender on math skills.

After this short literature review regarding predictors of reading and mathematics, and gender effects, it is time to ask what is the relationship between reading and mathematics? Difficulties in reading domain frequently occur with difficulties in mathematical domain, however the exact nature and causes of this comorbitities remain unknown (Light & DeFries, 1995). Existing studies have shown significant overlap of difficulties in reading and mathematics. For example 50% of children with low academic achievement in one domain also

have low academic achievement in the other academic domain (Koponen et al., 2018). These findings indicate the presence of common factor(s) that affects both abilities. However, although sharing many commonalities, these two skills still have different developmental trajectories in elementary school (Little et al., 2020).

Thus, the goal of present paper is to determine how much of common variance is shared between reading and math skills. An additional goal is to determine the frequency of academic underachievement in relation to student's gender.

Research questions in this study are:

1. To determine the correlation between reading and mathematical skills;
2. To determine the frequency of students who have both, underachievement in reading and underachievement in mathematics;
3. To determine the frequency of academic underachievement in relation to student's gender.

METHOD

PARTICIPANTS

The sample for this study consisted of 70 third-grade students (33 girls, 37 boys, mean age 103,1 months, SD - 5,6 months) attending two elementary schools in Canton Sarajevo. This sample is a subsample drawn from a larger study that examined predictors of reading fluency and math skills in early-grade elementary school students (Memisevic et al., 2018; Memisevic et al., 2019). Students, according to the teachers' reports were free of developmental disabilities, neurological or psychiatric illnesses.

INSTRUMENTS

a) *Reading test*

For the assessment of reading, we designed an appropriate text that reflected the language curriculum. Content validity was confirmed by students' teachers. The methodology, originally created by Deno (1985) required the students to read the previously unseen text and the number of correctly read words in one minute was used as a proxy for reading proficiency. The text had 300 words overall, so none of the children read all the words in one minute. This testing paradigm has been widely used in research on reading as it is relatively simple to perform, is not time consuming and is appropriate for differentiating between good and poor readers (Fuchs et al., 2001).

b) *Mathematics test*

Test for assessment of mathematical abilities was constructed to measure numeracy skills and basic math concepts. The test reflected the curriculum, and its content validity was confirmed by student's teachers. The test had 15 tasks and maximum score was 45 points and none of the children achieved the maximum score. The test consisted mostly of the calculus scores and number line estimation. Children were told to do the tasks and to try to answer all the questions. This approach allowed a good discrimination between the children in math skills.

PROCEDURE

After obtaining approval from Ministry of Education of Canton Sarajevo, we conveniently chose two schools in the city of Sarajevo and were granted permission to conduct the study from the schools' principals. We then had meeting with third-grade teachers (four teachers, two from each school) and teachers distributed consent forms to the parents attending their classes. We tested 70 children. All children were individually tested, in the morning hours, in available classrooms at the schools. The whole testing protocol lasted around 30 minutes per child. The study was approved by the Ethical Committee of the Faculty of Educational Sciences at the University of Sarajevo. We only tested students with written parental consent forms were tested. Some results from this research regarding the predictors of reading and predictors of mathematics skills have been published earlier in journals *Acta Neuropsychologica* and *Studia Psychologica* (Memisevic et al., 2018; Memisevic et al., 2019).

STATISTICAL ANALYSIS

To answer the first research question, we calculated the Pearson's coefficient of correlation between reading scores and mathematics scores. We then divided reading scores in two categories: underachievers (scores below 50th Percentile) and average/above average (above 50th Percentile). We did the same for the mathematics scores, we divided the mathematics scores in two categories: underachievers (scores below 50th Percentile) and average/above average (above 50th Percentile). After we divided the results into these categories, we performed cross-tabulation to see the distribution of scores. Finally, we performed a Chi square test to examine the differences in the categories of underachievers in relation to student's gender. An alpha level of 0,05 was set for all tests. The statistical analysis was performed with the computer program SPSS v.27 for Windows (IBM, 2020).

RESULTS

Figure 1 shows the correlation of reading scores and math scores in third-grade elementary school students.

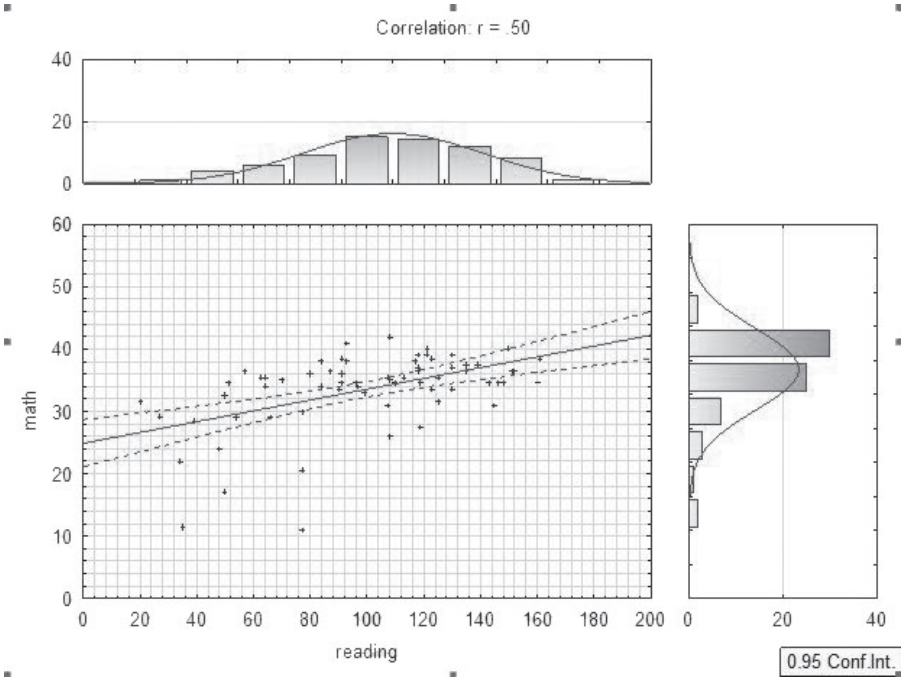

Figure 1 Correlation of reading scores and math scores

Figure 1 clearly shows significant correlation of reading scores and math scores (r=0,50, p<0,05). The results show that reading and math share 25% of common variance in scores.

The second research question was to determine how many students are underachieving in reading (below 50. percentile) and in math (below 50. percentile). These results are shown in Table 1.

Table 1 Cross-tabulation of reading scores and math scores

		Reading			
		Below 50th percentile		Above 50th percentile	
		N	%	N	%
Math	Below 50th percentile	25	35,7	10	14.3
	Above 50th percentile	10	14,3	25	35,7

Table 1 shows that 25 students (35,7%) achieved results that are below 50th percentile for both, reading scores and math scores. There are 20 students (28,6) who achieved below 50th percentile in one of academic domains but not in the

other. Finally, 25 students (35,7%) achieved results that are above 50th percentile in both domains. These results need to be interpreted cautiously as there were only two categories created (above 50th percentile and below 50th percentile). It is possible, as in all categorical divisions, that differences between students on 49th percentile and 51st percentile are minimal or even essentially non-existing and students still belong to two different categories. However, these data can offer us a valuable insight into the relationship of reading and math abilities. It is interesting to interpret data form Table 1 in relation to student's gender. In the group of students who achieved scores below 50th percentile in both domains, there were 7 girls and 18 boys, while in the group that achieved above 50th percentile in both domains there were 15 girls and 10 boys. These results are indicative of better academic achievement of girls in this sample of students. We next performed a Chi-squared test to statistically examine the distribution of boys and girls in categories of those below and above 50th percentile. The results regarding reading are shown in Table 2.

Table 2 Distribution of academic achievement in reading in relation to student's gender

		Reading			
		Below 50th percentile		Above 50th percentile	
		N	%	N	%
Gender	Boys	23	62,2	14	37,8
	Girls	12	36,4	21	63,6

Table 2 clearly shows there are more boys in the category of underachievers than girls. According to the Chi square test, this distribution is significantly different in relation to student's gender (X^2 (1, N = 70) = 4,7; p=0,03). Therefore, we can conclude there were statistically significant differences in distribution of academic achievement in the domain of reading in relation to student's gender. Table 3 shows the results in relation to achievement in mathematics.

Table 3 Distribution of academic achievement in reading in relation to student's gender

		Mathematics			
		Below 50th percentile		Above 50th percentile	
		N	%	N	%
Gender	Boys	22	59,5	15	40,5
	Girls	13	39,4	20	60,6

Table 3 shows that again more boys are in the category of students who achieved math scores below 50th percentile. However according to the results

of Chi square test there are no statistically significant differences in the distribution of scores in relation to students' gender (X^2 (1, N = 70) = 2,8; p=0,09).

DISCUSSION

The goal of this paper was to examine the relationship between reading and mathematics in a sample of third-grade elementary school students. An additional goal was to examine whether there were differences in academic achievement in relation to students' gender. The results of this study revealed a significant correlation between reading and math scores. The amount of shared variance in scores was 25%. Along with this, it is worth mentioning that 35,7% of students had underachievement in both academic domains. This is similar to findings in other studies (Koponen et al., 2018). The impact of language, as a wider construct than reading, has been investigated in relation to math scores and these findings reveal high correlation of general language competency and math abilities, with the shared variance of almost 50% (Henry et al., 2014). Although sharing significant amount of common variance, these two academic domains have different trajectories that are evident in third grade and probably appear even earlier. Results from some other studies have indicated that reading and mathematics difficulties might be distinct, however it depends mostly on what cut-off percentile is used for determining whether a child does have or does not have reading or mathematics disability (Compton et al., 2012). A study by Compton et al. (2012) pointed to the so-called specificity hypothesis, according to which children with reading and mathematical difficulties have distinctive patterns of cognitive strengths and weaknesses.

In this study we were also interested in the gender effects on academic attainment. As described in the introduction of this paper, literature on gender advantage for certain academic domain is ambiguous and does not provide firm answers. The results of this study showed that boys have more academic underachievement than girls and that difference was statistically significant for the domain of reading, while it did not reach statistical significance for the domain of mathematics. To answer whether there are gender effects evident in academic skills, scientists are increasingly turning to genetic studies (Karipidis & Hong, 2020). Another line of inquiry is through examining the role of potential mediators, such as spatial skills, on relationship between academic abilities and gender (Casey et al., 1997). The assumption here is that spatial skills are related to math skills and that boys are better at spatial skills than girls. This is partly true as number of studies have found males advantage in spatial skills (Lachance & Mazzocco, 2006). This advantage has been explained through biological, environmental, and interactionist models. Biological theories postulate that sex hormones (testosterone) have positive effect on spatial memory. Environmental theories are pointing to experience and learning as a source of

gender differences in spatial skills. Lastly, interactionalist theories explain differences in light of both, biological and environmental factors. Given the importance of spatial skills for math achievement, some researchers are proposing active training of these skills in order to facilitate the improvement in math abilities (Sorby & Panther, 2020). There are, of course, other factors related to academic achievement. In the first place there are demographic variables such as socio-economic status, parental educational level, attitudes towards learning that all have significant impact on academic attainment (Papanastasiou, 2002). Several studies have even explained the girls' advantage in reading with the more favorable attitudes girls have towards reading (Logan & Johnston, 2009, 2010).

Frequently asked question in the literature is to what extent academic skills such as reading and math depend on internal cognitive processes and to what extent they are malleable to the academic intervention (Fletcher, 2005). The question on how to teach beginning reading and elementary mathematical concepts has been a topic of much scientific research given the importance of these skills in everyday life. Familiarity with scientific studies in the area of academic skills and predictors of academic success can, to a large extent, help teachers in finding efficacious interventions to overcome academic difficulties. Many educators are seeking scientific confirmation as the basis for their decision on how they will teach reading (Ehri, 2005). On a system level, curricula should be modified to allow for more time being dedicated to basic academic skills. This is already evident in USA, where more time is being allocated to these subjects within the curriculum (Dillon, 2006). In line with this, we feel that curricular reforms are needed in Bosnia and Herzegovina so more time could be devoted to learning basic academic skills, especially reading. Teachers can also be generators of positive change. They should use strategies that will increase motivation of students towards attaining academic goals. It has been shown that attitudes towards learning significantly affect academic achievement and the role of teachers is very important (Chen et al., 2018). Teachers have at their disposal numerous strategies aimed at increasing students' motivation and improving their attitudes towards learning. Some of these strategies are reading aloud interesting texts, conversations on the importance of reading, providing rewards for independent reading etc. (De Naeghel et al., 2014). It has been shown that short-term interventions that aim at students' psycho-social beliefs regarding intelligence and social belonging have significant effect on school achievement that is sustained over time (Blackwell et al., 2007). Besides aiming at those noncognitive factors, teachers can also work in improving cognitive processes of children that are related to academic success. In the context of reading, the focus should mainly be on improvement of phonological skills (Bus & van Ijzendoorn, 1999). Next cognitive ability that can be trained and have a positive impact on reading is working memory. Research

has shown that working memory is one of the crucial elements of proficient reading and interventions aimed at working memory will also improve reading skills (Dahlin, 2011). Next cognitive domain susceptible to training is selective attention (Casco et al., 1998) and teachers have many ways to improve selective attention in their students through various games and exercises (Ma et al., 2014). Verbal fluency is another skill strongly related to academic success and is also very susceptible to training effects (Aksamovic et al., 2019). Similar to reading, improving instruction and raising achievement in early mathematical skills is a matter of national importance (Outhwaite et al., 2019). Regarding mathematics, we have already mentioned that spatial skills training will lead to improvement in math skills. Similar to reading, working memory training has a positive effect on math achievements (Söderqvist & Bergman Nutley, 2015). Almost all other executive functions, besides working memory, have a positive effect on math skills (Mazzocco & Kover, 2007). One of those executive functions is self-regulation, that is also related to academic outcomes (Mägi et al., 2016). Self-regulation is the ability to control and manage emotions, behaviors and internal processes and is also susceptible to training (de Bruin & van Gog, 2012). It is also important to mention some motivational factors within the child that can improve attitudes towards reading. Although children view reading as a valuable activity, they also think that school reading assignments are not very interesting (Stanić & Jelača, 2017). Thus, it is vital that teachers assign reading texts that are interesting and age-appropriate, that will further motivate children to spend more time in reading activities. From this short overview of the factors that can be trained in order to improve academic skills, it is evident that teachers have numerous strategies and methods at their disposal to prevent academic failure and improve learning. Thus, it is of crucial importance that results obtained in scientific studies are shared with teachers so they can translate these findings into their everyday practice.

LIMITATIONS

This study is not without limitations. The first limitation is the relatively small and convenient sample of third-grade students so we cannot be certain that results can be generalized beyond this sample. Secondly, we did not collect data on some important variables that could have an impact on the scores such as socio-economic status and parental level of education. Next, only one test/task was used as a measure of academic domain. For example, our reading test measured only part of reading fluency, but not reading comprehension. Lastly, let us mention the construct of intrinsic motivation towards learning, that can play a significant role for academic achievement (Gottfried, 1990), and which we did not consider in this study. Future studies should aim to eliminate these particular limitations and include a larger, more diverse sample of students.

CONCLUSIONS

Reading and mathematics shared 25% of common variance in this sample of third-grade elementary school students. This finding suggests that, although having different trajectories, these two academic skills also have some shared elements. Finding which cognitive processes affect both skills will significantly improve the quality of the educational instructions provided at early grades of elementary school. More boys than girls have academic underachievement in both, reading and mathematics. However, statistically significant difference in academic achievement was present for reading scores but not for math scores. The issue of gender differences in reading and mathematics domains is still open and cross-cultural studies with much larger sample sizes are needed to resolve this question. It is imperative for the teachers to use validated, evidence based instructions to help their students achieve better academic outcomes. To this end, teachers have numerous strategies at their disposal to improve academic achievements of all students.

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POVEZANOST ČITANJA I MATEMATIČKIH VJEŠTINA UČENIKA TREĆIH RAZREDA OSNOVNIH ŠKOLA U KANTONU SARAJEVO

Sažetak: *Usvajanje čitanja i osnovnih matematičkih pojmova najvažniji su akademski ciljevi u nižim razredima osnovne škole. Brojna istraživanja pokazala su veliku važnost ovih dviju akademskih vještina za buduća akademska postignuća i profesionalnu karijeru. Cilj je ovog rada ispitati koliko zajedničkih varijanca dijele čitanje i matematičke sposobnosti učenika trećih razreda osnovnih škola u Kantonu Sarajevu (KS). Pored ovog, ispitano je postoje li razlike u jačini korelacije čitanja i matematičkih sposobnosti u odnosu na spol učenika. Uzorak je činilo 70 učenika (33 djevojčice i 37 dječaka; srednja dob 103,1 mjesec, SD 5,6 mjeseci) trećih razreda dviju osnovnih škola u KS. Rezultati ovog istraživanja pokazali su to da čitanje i matematičke sposobnosti dijele oko 25 % zajedničke varijance. Korelacija između čitanja i matamatičkih vještina iznosila je* $r = 0{,}50$, $p < 0.01$. *Dječaci su bili zastupljeniji u kategoriji akademskog ispodprosječnog rezultata i u čitanju i u matematici. Međutim, statistički značajna razlika u distribuciji rezultata bila je prisutna samo za čitanje, ali ne i za matematiku. Identifikacija kognitivnih čimbenika koji doprinose akademskom uspjehu u čitanju i matematici pomoći će nastavnicima u kreiranju boljih intervencijskih programa. Članak završava preporukama nastavnicima kako poboljšati akademske vještine svojih učenika.*

Ključne riječi: *akademska postignuća, korelacijska analiza, utjecaj spola*