

DISSERTATION SUMMARY

THE INFLUENCE OF FAMILY WEALTH AND PARENT EDUCATION LEVEL ON STUDENTS' READING LITERACY

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Abstract

This study aims to examine the influence of family background factors in terms of family wealth and parent education levels on students' reading performance in Indonesia. The study utilises secondary data from the OECD's Programme for International Student Assessment (PISA) 2015 for Indonesia, in which 6513 students participated. Moreover, this specifically highlights the analysis of family wealth and parent education levels in possibly predicting the students reading literacy in Indonesia. In analysing the data, a quantitative approach was employed which utilised statistically different analysis namely t-test, one-way ANOVA, two-way ANOVA, correlation and multiple linear regression analysis using WesVar version 5.1 software. The result found there were significant different reading scores between students from different family wealth and parent education levels. The students from high family wealth performed better than they with middle and low wealthy. Likewise, the children with highly educated mother and father had high scores than students whose parents had low and did not complete primary school. Moreover, the result of correlation and regression analysis revealed that all predictor variables, WEALTH, MISCED and FISCED, significantly associate and predict better reading literacy performance of 15-year-old students in Indonesia for PISA 2015 survey. Therefore, the implications of the study highlight opportunities to reform educational policies through data and evidence.

Keywords: family wealth, parent education, reading literacy

Abstrak

Penelitian ini bertujuan untuk menguji pengaruh faktor latar belakang keluarga dalam hal kekayaan keluarga dan tingkat pendidikan orang tua terhadap kinerja membaca siswa di Indonesia. Studi ini menggunakan data sekunder dari Program OECD untuk Penilaian Siswa Internasional (PISA) 2015 untuk Indonesia, di mana 6513 siswa berpartisipasi. Selain itu, ini secara khusus menyoroti analisis kekayaan keluarga dan tingkat pendidikan orang tua dalam memprediksi siswa yang membaca literasi di Indonesia. Dalam menganalisis data, pendekatan kuantitatif digunakan yang menggunakan analisis yang berbeda secara statistik yaitu uji-t, ANOVA satu arah, ANOVA dua arah, korelasi dan analisis regresi linier berganda menggunakan perangkat lunak WesVar versi 5.1. Hasilnya menunjukkan ada perbedaan nilai membaca yang signifikan antara siswa dari kekayaan keluarga yang berbeda dan tingkat pendidikan orang tua. Para siswa dari keluarga kaya memiliki kinerja yang lebih baik daripada mereka yang kaya dan menengah. Demikian juga, anak-anak dengan ibu dan ayah berpendidikan tinggi memiliki skor tinggi daripada siswa yang orang tuanya rendah dan tidak menyelesaikan sekolah dasar. Selain itu, hasil analisis korelasi dan regresi mengungkapkan bahwa semua variabel prediktor, WEALTH, MISCED dan FISCED, secara signifikan mengasosiasikan dan memprediksi kinerja literasi membaca yang lebih baik dari siswa berusia 15 tahun di Indonesia untuk survei PISA 2015. Oleh karena itu, implikasi dari penelitian ini menyoroti peluang untuk mereformasi kebijakan pendidikan melalui data dan bukti.

Kata kunci: kekayaan keluarga, pendidikan orang tua, literasi membaca

INTRODUCTION

Reading literacy has recently emerged as one of the essential skills promoting quality education for students across the countries. Hanemann (2015) clearly defined reading literacy as a foundation skill which stimulates lifelong learning and relates to successful academic achievement. Imam (2016) also deeply highlighted the benefit of reading skill in helping children develop their numeracy, science and literacy skills. With reading skill, the children can then effortlessly acquire language skills such as listening, writing and speaking (Kennedy et al., 2012). In the same way, Palani (2012) likewise agreed that students with good reading skill further improve their critical thinking which is needed in education. Bojovic (2010) and Woolley (2011) concluded that reading skill can significantly develop their cognitive and knowledge capacity from the text.

Furthermore, the importance of reading literacy not only improves students' education needs, but it is required in other domains. Experts clearly highlighted reading literacy skill as a required proficiency in the workplace (Hodge & Lear, 2011; Mohamed, Radzuan, Kassim, & Ali, 2014). People with good literacy ability can be innovative, communicative, a critical thinker and have social skills that are pivotal in working life. The PISA study also revealed that people with good reading literacy are more likely to have win different jobs, and those with poor literacy possibly risk losing their jobs (OECD, 2013). Palani (2012) likely added that those who have a better reading ability likewise can have a good personality, ideas, thought, and attitude changing to participate in society. Therefore, reading literacy is a very important skill for people today in education, for work needs and in society.

With the benefits of reading literacy well established, many countries place a greater emphasis on student literacy skills development. The trend was evident when the number of countries participating in the Programme for International Students Assessment (PISA) had increased until today. The latest PISA reported that there were 35 OECD countries and 37 partner countries and economies participated

in 2015. Furthermore, the report noted that some countries such as Finland, Hong Kong and Singapore have shown significant improvement in reading performance. However, others including Indonesia still performed below OECD's average score (OECD, 2010, 2014, 2018). This was further argued by the Ministry of Education and Culture (MoEC) of Indonesia which stated that Indonesian students learning performance in the PISA study has improved significantly since except reading (MoEC, 2016). It, therefore, has become the main problem of the educational domain in Indonesia today.

To address the issue, a number of studies found that the complexities of students' reading literacy development in Indonesia are caused by some factors. The implementation of curriculum, shortage of educational facilities (Sukasni & Efendy, 2017) and teacher's quality (Rosser, 2018) became the issues affecting the children reading achievement differently. Moreover, Johari, Tom, Morni, and Sahari (2013) and Aditomo and Hasugian (2018) added that the role of home background and environment further significantly influence on reading literacy development and achievement in different ways. Similarly, the findings from Johari et al. (2013) and Aditomo and Hasugian (2018) were also corroborated by other studies (Hemmerechts, Agirdag, & Kavadias, 2016; Petrova & Alexandrov, 2015; Ransdell, 2012) that claim family background and environment factors measured by economic, social and cultural status and parental involvement (Dawkins, 2017) considerably affected on students' literacy skills and predicted better reading achievement.

Specifically, various research revealed that home-level factors in terms of family wealth (Cheng & Kaplowitz, 2016; Duncan & Murnane, 2011; Reardon, 2011) and parent education levels (Ardila, Rosselli, Matute, & Guajardo, 2005) can further cause the different learning performance of children at school including reading literacy. Family wealth is defined as "long-term consumption, either directly by dissaving, or indirectly via the income stream of investment returns to assets" (Torche & Costa, 2012, p. 79). In education, family wealth is expressed as household assets owned by children in their

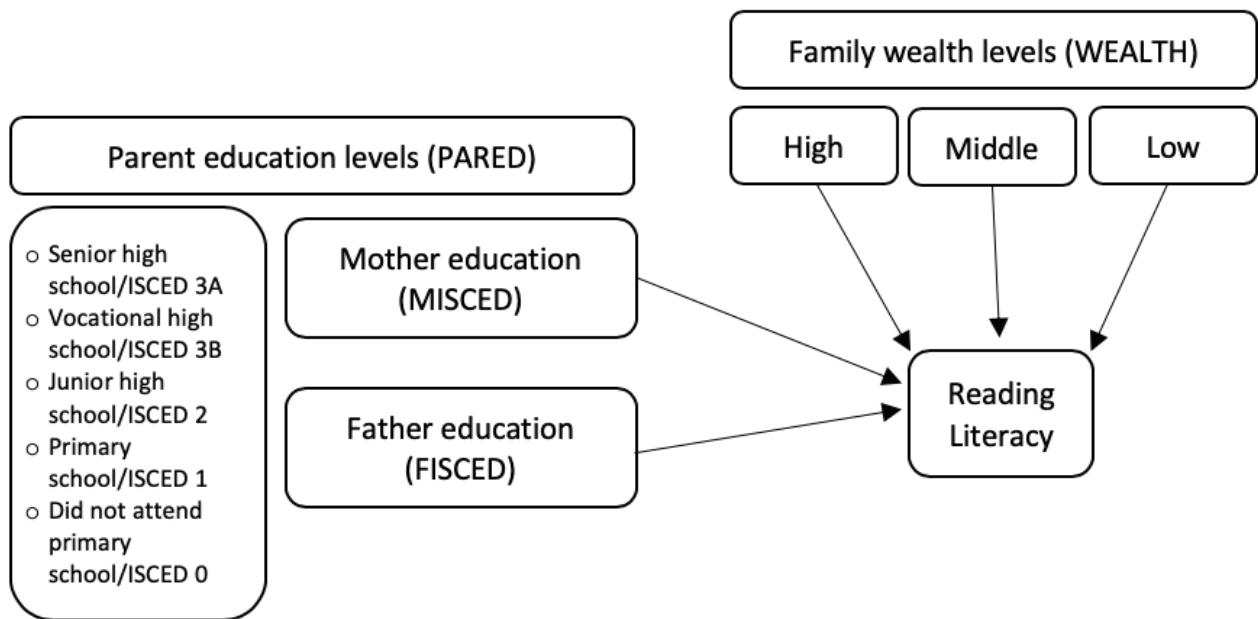
home and support their learning (Cheng & Kaplowitz, 2016; OECD, 2017b). Moreover, a study conducted by Torche and Costa (2012) found that students with high wealthy family tend to perform better in reading achievement than children in poverty. Wealthy parents will usually provide learning resources at home for their children to support their children’s learning, reading activity and literacy achievement (Weigel, Martin, & Bennett, 2010). Hence, they with low wealth tend to have learning disability experience with less performance at school due to economic factors and lack of resources.

Similar to the level of family wealth, parent education level further considerably affects the students’ reading achievement. Ardila et al. (2005) argued that parents with different education levels have different ways of promoting their children’s learning. High educated parents are usually aware of the advantages and disadvantages of education and focus more on the factors that can develop their child’s learning and literacy (Drajea, 2015). Parents with good education are more likely

to enhance children’s learning and cognitive development through advanced language and communication skills. They pay more attention to their children’s reading development (Aramide, 2015). Educated mothers usually create literacy activities and converse with their children during a shared reading at home (Chiu & Ko, 2008). Another study further claimed that educated fathers actively supported their children’s literacy development by accompanying them to their library, spelling words and motivating their reading (Nicholas, Fletcher, & Parkhill, 2013). Thus, the levels of parental education significantly influenced students’ reading habits, interests as well as their reading achievement.

Furthermore, to address the issue above, this study explored how family background factors classified into wealthy and educated parent contribute to children’s reading performance at school as figured in the conceptual framework (Figure 1).

Figure 1. Conceptual framework



The variables were derived from PISA 2015

METHOD

Research Design

This study utilised quantitative research, that is, “evidence for a theory through measurement of variables that produce numeric outcomes” (Field, 2013, p. 1032). It is specifically also referred to as an approach for analysing objective theories by investigating the relationship between variables, and numerical data can be explored using statistical techniques (Creswell, 2014).

Instrumentation and data

Indonesia’s large-scale dataset for PISA 2015 obtained from <http://www.oecd.org/pisa/data/2015database/> was used in this study. There were 6,513 Indonesian students participated in PISA 2015. These 15-year-old students amounted to 3,170 male students and 3,343 female students. The participants were selected randomly in two stages. The first stage involved selecting individual schools with 15-year-old students and the possibility of having time for assessment. The second stage involved selecting students based on the list of all sample schools (OECD (2017a). To assess the students’ reading performance in Indonesia, PISA 2015 used a paper-based test because several schools in Indonesia had no access to computer-based tests. The test was a combination of multiple-choice items and questions aligned with a real-life situation that required constructing students’ responses. Students completed the questionnaire about them, their family, their school and their learning experience in 30 minutes (OECD (2017a).

a. Variables

Variable is an element that can be analysed or examined, vary among subjects being researched and classified into dependent and independent variables (Creswell, 2014). Dependent variables represent the outcome associated with or affected by independent variables, and independent variables are predictor variables which influence and change dependent variables (Field, 2013). Moreover, in this study, ten plausible values (PVs) were classified as dependent variables which represented

the students’ reading literacy performance designed to estimate population parameters and to increase the accuracy and validity of measurement (Von Davier, Gonzalez, & Mislevy, 2009). On the other hand, the predictor variables were family wealth (WEALTH) and parent education (PARED). Particularly, the variable ‘family wealth’ is measured with WLE scale and categorized into level 1/low, 2/middle and 3/high. The categorisation was measured by adapting the Mean \pm SD’ categorisation method (Röling, 2016, p. 209). Furthermore, PARED variable was categorised into mother’s education (MISCED) and father’s education (FISCED). The classification was based on the International Standard Classification of Education (ISCED) which were categorised into none/ISCED 0, primary education/ISCED 1, lower secondary/ISCED 2, vocational upper secondary/ISCED 3B, 3C, general upper secondary (ISCED 3A).

b. WesVar and analytical framework

WesVar version 5.1 is the chosen statistical software to analyse the dataset. WesVar is applicable software for analysing large scale sample design with multistage, stratified and unequal possibility samples (Choudhry & Valliant, 2002). This software calculates the estimates and replication variance which reflect the complex sampling and estimation procedures (Westat, 2007). Furthermore, this study constructed an analytical framework to explain some data analysis used for investigating research problems based on the conceptual framework. Independent sample t-test, one-way ANOVA, two-way ANOVA, correlation and regression analysis constitute the statistical analysis used to answer the eight research questions.

Technically, independent sample t-test is used to compare the mean score for two different sample groups (Pallant, 2013). One-way and two-way analysis of variance (ANOVA) were also conducted in this study to compare the variance between different groups. One-way

ANOVA was used to discover the different mean among the sample which has several different groups. Moreover, two-way ANOVA was carried out to compare two independent variables with more than two different groups of each independent variable (Pallant, 2013). Additionally, correlation and multiple regression analysis were conducted to measure the association and possible contribution of all independent variables to students' reading performance. Thus, the best predictors for students' reading performance were identified and appeared in the regression equation to show the relationship between the variables.

RESULT AND DISCUSSION

a. Family Wealth

One-way ANOVA and independent sample t-test analysis were conducted to examine the impact of family wealth levels on students' reading performance in Indonesia.

Table 1. Reading Performance of Students based on Family WEALTH Levels

Family Wealth	PV-estimate (SE)	CV (%)	N
Low	359.14 (4.01)	1.12	748
Middle	395.28 (1.56)	0.40	4779
High	452.06 (3.09)	0.68	949
Average	397.26 (1.64)	0.41	6476

Table 1 shows that family wealth impacts students' reading scores. Students from high wealth families performed better ($M=452.06$, $SE= 3.09$) than students with middle family wealth ($M=395.28$, $SE=1.56$) and low family wealth ($M=359.14$, $SE=4.01$).

Table 2. Mean Difference of Students' Reading Score based on WEALTH Levels

Family Wealth	PV-estimate (SE)	CV (%)	t-Value	Prob> T
High – Middle	56.77 (3.37)	5.93	16.87	0.00
Middle – Low	36.14 (3.82)	10.56	9.47	0.00
Low – High	-92.91 (5.30)	5.71	-17.52	0.00

Moreover, Table 2 shows a significant difference in students' reading achievement among the groups. It can be seen that there was a higher different score between low and high groups ($M=-92.91$, $SE=5.30$; $t(80)= -17.52$, $p<0.05$). The higher mean difference can be seen in the different scores of high and middle groups ($M=56.77$, $SE=3.37$; $t(80)= 16.87$, $p<0.05$). While the score for the middle-low group was $M=36.14$ ($SE=3.82$; $t(80)=9.47$, $p<0.05$).

Based on the finding above, it can be concluded that family wealth levels significantly influenced students' reading achievement. There were significantly different scores for students from different family wealth levels. The children with high wealth performed higher than those with middle and low wealth levels. Similarly, students from middle family wealth levels outperformed those from low family wealth levels. Thus, these results indicated that higher wealth contributed to higher reading achievement. Therefore, these are consistent with those of previous studies conducted by (Weigel et al., 2010) and Torche and Costa (2012), who all claimed that family wealth levels contribute to students' reading achievement differently.

b. Parent Education

To analyse this question, two-way ANOVA was carried out to compare the influence of parental education levels on students' reading achievement. Table 3 clearly indicates that parental education levels significantly influence students' reading performance. Students whose mother or father with higher education levels performed better than those with parents who had low education levels.

Table 3. Student Reading Performance based on PARED Levels

Education Levels	Mother Education			Father Education		
	PV-estimate (SE)	CV (%)	N	PV-estimate (SE)	CV (%)	N
Senior High School	424.20 (2.17)	0.51	1932	420.45 (2.06)	0.49	2182
Vocational High School	416.34 (4.48)	1.08	231	414.21 (4.11)	0.99	428
Junior High School	392.69 (2.56)	0.65	1343	384.83 (2.40)	0.62	1205
Primary School	382.54 (2.82)	0.74	2105	381.35 (2.09)	0.55	1897
Did not complete Primary School	366.16 (3.51)	0.96	682	366.70 (3.89)	1.06	552
Average	395.95 (1.75)	0.44	6293	395.53 (1.77)	0.45	6264

Table 4. Mean difference of students' reading score based on PARED levels

GROUP	FISCED	MISCED	ESTIMATE	SE	t VALUE	CV (%)	N	PROB> T *	
1	1	1	431.13	2.68	160.98	0.62	1376	0.00	
		2	437.52	7.58	57.71	1.73	87	0.00	
		3	401.50	2.62	153.07	0.65	357	0.00	
		4	400.20	4.56	87.82	1.14	250	0.00	
		5	378.64	6.54	57.85	1.73	66	0.00	
		Average		420.70	2.03	207.43	0.48	2136	0.00
2	2	1	415.42	5.18	80.27	1.25	152	0.00	
		2	410.00	6.5	63.06	1.59	94	0.00	
		3	425.43	8.83	48.17	2.08	88	0.00	
		4	402.86	5.4	74.62	1.34	73	0.00	
		5	388.51	19.68	19.74	5.07	13	0.00	
		Average		413.16	4.08	101.3	0.99	420	0.00
3	3	1	400.79	4.02	99.79	1	166	0.00	
		2	386.17	13.45	28.72	3.48	24	0.00	
		3	382.06	3.38	112.91	0.89	507	0.00	
		4	386.74	3.42	113.23	0.88	418	0.00	
		5	365.24	5.76	63.36	1.58	81	0.00	
		Average		385.07	2.34	164.42	0.61	1196	0.00
4	4	1	395.92	5.04	78.53	1.27	148	0.00	
		2	408.45	14.23	28.71	3.48	18	0.00	
		3	393.31	3.11	126.31	0.79	323	0.00	
		4	377.21	3.08	122.29	0.82	1210	0.00	
		5	374.32	4.47	83.82	1.19	195	0.00	
		Average		381.3	1.99	191.9	0.52	1894	0.00
5	5	1	401.77	10.96	36.67	2.73	35	0.00	
		2	368.6	32.4	11.38	8.79	5	0.00	
		3	379.82	8.1	46.9	2.13	51	0.00	
		4	372.64	5.7	65.39	1.53	140	0.00	
		5	359.24	4.41	81.39	1.23	319	0.00	
		Average		367.07	3.85	95.29	1.05	550	0.00
	Marginal	1	423.47	2.13	198.93	0.5	1877	0.00	
		2	416.27	4.54	91.71	1.09	228	0.00	
		3	392.51	2.51	156.25	0.64	1326	0.00	
		4	382.28	2.76	138.68	0.72	2091	0.00	
		5	366.29	3.48	105.16	0.95	674	0.00	
	Average		395.49	1.61	245.3	0.41	6196	0.00	

Remarks: (1) Senior high school/ISCED 3A, (2) Vocational high school/ISCED 3B, (3) Junior high school/ISCED 2, (4) Primary school/ISCED 1, (5) Did not complete Primary school/ISCED 0

*Statistical significance at the 0.05 level ($p < 0.05$)

Furthermore, Table 4 also obviously describes the mean comparison of students' reading performance based on father's and mother's education. Students with higher parental education levels have better performance than those with low parental education levels. Students whose father completed level 1 and mother completed all levels performed higher in reading achievement ($M=420.7$, $SE=2.03$; $t(80)=207.43$, $p<=0.05$). Moreover, students whose father completed level 2 and mother completed all levels significantly performed better in reading achievement ($M=413.16$, $SE=4.08$; $t(80)=101.3$, $p<=0.05$). Those students whose father completed level 3 and mother completed all levels achieved 385.07 ($SE=2.34$; $t(80)=164.42$, $p<=0.05$). While students in groups 4 and 5 had lower scores in reading ($M=381.13$, $SE=1.99$; $t(80)=191.9$, $p<0.05$ / $M=367.07$, $SE=3.85$; $t(80)=95.29$, $p<0.05$). Therefore, based on the data above, it can be concluded that students whose father or mother with higher education levels (levels 1 and 2) significantly influence better reading scores. However, students whose parents with low educational levels (levels 4 and 5) have low reading performance.

Furthermore, the findings were consistent with a previous study which had claimed that higher parental education levels can develop their children's leaning achievement (Draja, 2015). Specifically, the result found that students whose mother completed all education levels had a higher score than those whose father accomplished all education levels. However, if their mother did not complete primary school, they had a similar score to students whose father did not complete primary school. The results aligned with the findings from previous studies: that educated mothers and fathers improve their children's reading achievement (Lynch, Anderson, Anderson, & Shapiro, 2006; Nicholas et al., 2013).

c. Relationship and Contribution of Variables
Correlation and multiple regression

analysis were carried out to explore the relationship and possible contribution of independent to dependent variables. Three independent/predictor variables, family wealth/WEALTH, mother's education/MISCED and father's education/FISCED, could possibly contribute to improve the students' reading performance.

Table 5. Correlation of Estimates

	INTERCEPT	WEALTH	MISCED	FISCED
INTERCEPT	1.00			
Sig. (2-tailed)				
N				
WEALTH	-0.93	1.00		
Sig. (2-tailed)	0.00			
N	6190			
MISCED	0.46	0.29	1.00	
Sig. (2-tailed)	0.00	0.00		
N	6190	6190		
FISCED	-0.15	-0.02	-0.32	1.00
Sig. (2-tailed)	0.00	0.00	0.00	
N	6190	6190	6190	

*Statistical significance at the 0.05 level ($p<0.05$)

Table 6. Final Estimated Full Sample Regression Coefficients

PARAMETER	PARAMETER ESTIMATE	STANDARD ERROR OF ESTIMATE	Prob> T
INTERCEPT	377.08	6.86	0.00
WEALTH	28.53	2.75	0.00
MISCED	-7.01	0.82	0.00
FISCED	-6.17	0.65	0.00

*Statistical significance at the 0.05 level ($p<0.05$)

The R^2 value of this model is 0.12. Regression coefficient using *WesVar 5.1* with *t Value = 1.99*

Table 5, on the previous page, and Table 6, above, show a correlation of estimates and estimated full sample regression coefficients. Correlation analysis was conducted to measure the linear association between variables and to describe strength between two variables. Table 5 also explains that all variables show the significant association between analysed variables with p -value <0.05 . Each variable has a positive or negative magnitude and direction (r). Magnitude is used for describing the association of strength in both variables. The magnitude

values in the correlation coefficient range from -1 to 0 to +1. The *r* value which is closer to +1 means there was a stronger association between the variables. The magnitude value which is closer to -1 means there was a weak association. Zero value means there was no correlation between the measured variables.

Moreover, a final multiple linear regression was conducted to measure the best predictors in developing students' achievement in reading literacy (Table 6). The selected predictors family wealth (WEALTH), mother's education (MISCED) and father's education (FISCED). These were assumed to be the best predictors in developing students' reading literacy performance in Indonesia with a *p*-value < 0.05. It also shows that the *R*² value of the summary of multiple regression analysis was 0.12, which means 12 per cent of the variances explained by the model. As a result, the following regression equation was generated to represent the association among variables;

$$\text{Reading literacy} = 377.08 + 28.53(\text{WEALTH}) - 7.01(\text{MISCED}) - 6.17(\text{FISCED}) + \text{error}$$

The equation describes that the constant value was 377.08. It means when all independent variables or predictors were 0, students' reading performance was 377.08. Moreover, if one predictor increases by 1 per cent and the other predictors with the same values, so the students reading achievement increases or decreases depending on the predictor value. For example, if WEALTH increases by 1 per cent and the other independent variables with the same values, students' reading achievement increased 28.53 (positive value). On the other hand, if MISCED increases by 1 per cent and other predictors with same values, students' performance decreased 7.01 (negative value). In the same way, if FISCED increases by 1 per cent and other predictors with same values, students' performance decreased 6.17 (negative value).

Additionally, the positive value means there was a positive relationship between predictor and reading performance, which indicates an increase in positive predictive value increased students' reading performance. Otherwise, the negative coefficient value from

the equation indicates there was a negative relationship between predictor and reading performance, which means an increase of negative predictive value decreased students' reading performance. The equation also shows that positive or negative coefficient values between predictors indicate there were positive or negative relationships between predictors. Therefore, it can be concluded that there was a negative relationship between WEALTH and MISCED, and MISCED and FISCED. However, it is important to note that all predictors, family wealth and parent education levels significantly correlate and predict to better reading literacy, which was aligned with the previous studies conducted by Duncan and Murnane (2011), Reardon (2011), Cheng and Kaplowitz (2016) and Ardila et al. (2005).

CONCLUSION

The results indicate that home background factors measured by family wealth and parent education levels significantly influenced students' reading performance in Indonesia. There were significantly different reading scores for students from different family wealth and parent education levels. They with high wealth achieved higher than those with middle and low wealth levels. Furthermore, the children whose mother completed all education levels had a higher score than those whose father accomplished all education levels. Similarly, they with mother or father had higher education levels performed higher than those with parents who had not completed the basic education level. Importantly, some studies concluded that parents with high wealth and education tend to support and involve their children's reading activity at home such as providing home resources and time for literacy practice. Therefore, it can be claimed that the levels of family wealth and parental education can considerably contribute to their children's reading performance if the parents are involved in their children's reading literacy activity.

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