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Teacher Support and Academic Resilience in Vietnam: A Psychological Analysis of Low SES Students in Pisa 2018

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ABSTRACT

This study aims to look at the relationship between teacher support and academic toughness in a developing nation. The study showed that teacher support had a substantial influence on reading literacy among "15-year-old students" from low "socioeconomic status (SES)" homes in Vietnam using data from the PISA 2018 Student Questionnaire and Cognitive Tests. A sample of 1765 underprivileged pupils was chosen from a total of 5773 Vietnamese participants from all socioeconomic levels for examination. Thus, 32% of the group with low SES were determined to be resilient. Children are divided into three subgroups based on how frequently they reported receiving support from teachers in their responses to PISA items: "High Support (74.6%), Fair Support (21.6%), and Low Support (3.8%)". The group with the most support indicated that their pupils were the most resilient. The low support group, on the other hand, performed poorly on the reading test and had the lowest resilience levels. Additionally, as the level of support increased, there was a decreasing slope and size of the link between reading achievement and socioeconomic status. According to the results of logistic regression, the likelihood that a pupil will develop resilience will rise by 29.1 percent for every unit more of standardised teacher support. The study emphasises the importance of encouraging teachers in fostering resilience and reducing overall educational disparity.

Keywords: "academic resilience, disadvantaged students, teacher support, inequity, PISA"

INTRODUCTION

1. Background

Inequity within an education system is reflected by the high correlation between students' socio-economic background and their academic achievement (Rumberger, 2010). Unfortunately, this is the case in the majority of the economies, where students from more disadvantaged background face shortage of financial, social and other learning resources to thrive academically (Hair, Hanson, Wolfe, & Pollak, 2015), leading to likelihood of having lower income and life quality in the future (Restuccia & Urrutia, 2004). However, there is a portion of students who succeed in overcoming these hardships and gaining favorable outcomes in academic assessments, compared to their more advantaged peers. This phenomenon is called academic resilience. According to the "Organisation for Economic Co-operation and Development (OECD)," academically resilient students are underprivileged students who rank in the top quarter for academic achievement in their own country or economy but are in the bottom quarter for the "economic, social, and cultural status (ESCS)" index in that country or economy. ESCS index is a continuous scale to measure students' learning resources, standardized based on their parents' education and occupations, and home possessions. The topic of resilience had gained attention among Western scholars in the past few decades, and has recently become prevalent in Eastern economies (Cheung K. , 2016). Closing the gap between disadvantaged and advantaged students, and promoting academic resilience is one of the most important tasks of modern educators. When students' achievement is less dependent on their socio-economic background, more equity in learning opportunities is offered by the education system they are in (Cordero & Mateos-Romero, 2021). Programme for International Student Assessment (PISA) 2012 was the first time that Vietnam, the interest of this study, took part in such a large-scale assessment as a non-OECD participant. In this cycle, despite recording the lowest ESCS index among the total of 65 countries, Vietnam ranked at 17th, 19th, and 8th in Mathematics, Science, and Reading Literacies respectively (OECD, 2013). In 2015, only 14 out of 72 economies reported at least 30% of disadvantaged students scoring at Level 3 or above

in all PISA subjects, in which Vietnam was the only representative from developing countries (Avvisati, 2018). These optimistic outcomes are results of Vietnam's policies striking for more equitable education, especially for students facing extremely poverty, such as those from rural areas and ethnic minorities (Richardson, 2019).

Children are not likely to develop academic resilience all by themselves, in fact, it is the result of their interaction with families, schools and communities (Choi & Calero, 2013). Among these factors, teachers have been proved to crucially contribute to students' academic success and overall well-being (Rivkin, Hanushek, & Kain, 2005; Akiba, LeTendre, & Scribner, 2007; Ryan & Patrick, 2001). Besides teacher characteristics and qualifications, teaching practices and strategies are also considered as equivalently essential for promoting resilience among students (Hattie, 2009). Padron (1999) provides evidence of higher interaction of resilient students with teachers compared to the non-resilient peers in the context of North American education system. While teacher quality measures such as experience and pedagogical background are not plausible to modify in short time, effective teaching practices can be conducted and improved. Nowadays, teachers' influence has exceeded the classroom scope. Other than mere curriculum instructors, teachers set the classroom climate, determine goals and motivation, and create bonds with the students (Cornelius-White, 2007). A supportive teacher is essential for developing students' interest, confidence and engagement in classroom, thus enhance their achievement (Furrer & Skinner, 2003; Roorda, Koomen, Spilt, & Oort, 2011). Pitzer & Skinner (2017) discovered the role of teachers in boosting motivational resilience, which had significant reciprocal relationship with academic achievement in two continuous semesters. They conducted an experiment in a sample of 3 to 6-grade students in two sesmesters. It was found out that students who started at-risk but received high level of support ended the school year as low-risk. In contrast, students who started as resilient but experience little support became at-risk at the end. Expectancy-value theory in a study of Wigfield and Eccles (2000) provided evidence of the link between student-perceived teacher support and students' enjoyment and confidence in learning as well as academic performance.

Though there is no standardized scale to measure teacher support, international assessments like "Trends in International Mathematics and Science Study (TIMSS)" and PISA provide the construct of teacher support reported by students, which has been used as a reliable scale and proved to have positive impact on student achievement in many studies. Across OECD countries, students who perceive more support from teachers achieved higher reading scores in PISA 2018 cycle (OECD, 2019). Despite an equivalent section in teacher questionnaire regarding self-reported support, there is evidence that teacher answers might exaggerate performance in order to improve their impression to meet certain expectation (Kapuza & Tyumeneva, 2017). Using the Chinese sample of PISA 2018, Ma, Luo & Xiao (2021) identified the significant effect of student-perceived teacher support on reading literacy through the mediator's reading self-concept and reading enjoyment in both student and school levels. Özberk, Findik, & Özberk, (2018) found a high correlation between teacher support and math achievement among resilient Turkish students in the PISA 2012 cycle. To our best knowledge, there is no existing study dedicated to student-reported teacher support and its effect on academic resilience in Vietnam. This study provides an in-depth quantitative analysis to the concern mentioned above using data from PISA 2018 results, which is so far the most recent cycle of Vietnam participation in an international assessment.

2. Objectives

This study aims at classifying significantly different levels of teacher support perceived by 15-year-old Vietnamese students based on their responses to the PISA 2018 questionnaire. Furthermore, reading achievement as well as resilience proportion in the classes are compared to examine the effect of different levels of support. Also, the gap in boys' and girls' performance in reading resilience is also highlighted. Finally, the correlation between reading resilience and socio-economic index within each class is compared in both magnitude and significant level. In addition, meaningful suggestions for educators are expected to be made based on the analysis results.

METHODOLOGY

1. Measurement instruments and variables

Participants

The OECD data provides information of 15-year-old students from Vietnam who took part in the PISA 2018. After the selection for low ESCS students from the total of 5773 participants, there are 1765 students (53.4% female and 46.6% male) whose achievement is collected for further analysis. The full student sampling weight variable is taken into account to increase the representative accuracy for the population, and the total number of the low ESCS weighted cases is 304372.

Academic resilience

There are several approaches to the determination of resilient students, as shown in Appendix 1. In order to acquire the largest possible data size, in this study, bottom 33 percent of Vietnamese students' ESCS index is retrieved and regarded as low socio-economic status, or disadvantaged. Since the focus of PISA 2018 questionnaire is reading, the first plausible value for Reading Literacy is used to measure student achievement. Similar to ESCS, there are different thresholds of selecting top achievers, such as top quartile or tertile of the scores in the country (Cordero & Mateos-Romero, 2021; García-Crespo, Fernández-Alonso, & Muñiz, 2021). In this study, the linear regression between ESCS index and PV1 Reading across the country is executed. Next, the participant's observed score residual is compared to the predicted score based on this regression. If a student's observed score is equal to or higher than the 67th percentile of predicted score distribution, he/she is considered academically resilient. The result of this selection is a new dichotomous variable called Resilience with two possible values 1 (resilient) and 0 (non-resilient).

Teacher Support

Students are classified into different groups of perceived teacher support based on their responses to the four questions in the ST100 section in PISA 2018 Student Questionnaire mentioned above. There are 4 options to each of the questions in the section regarding the frequency of different supporting activities of teacher reported by students: Every Lesson, Most Lessons, Some Lessons and Never or hardly ever, denoted by the four-point Likert scale. PISA also provides a standardized scale of teacher support, represented by the continuous variable TEACHSUP, ranging between -3 and 3 in a distribution with a mean of 0 and standard deviation of 1. This variable would be used for regression analysis. Table 1 provides summary of Vietnamese students' response to the items regarding their perception on teacher support. Since reading is the focus of PISA 2018, the majority of student and teacher questionnaire, including the teacher support construct, is dedicated to reading literacy and practices in reading classes. Therefore, student achievement in Reading cognitive tests will be used to determine resilience.

Table 1: Summary of Vietnamese Students' Responses to Teacher Support Questions

	Every lesson	*Most lessons*	*Some lessons*	*Never/hardly ever*
The teacher shows an interest in every student's learning.	54.5%	33.8%	9.1%	2.6%
The teacher gives extra help when students need it.	51.5%	34.8%	12.05%	1.6%
The teacher helps students with their learning.	55.0%	32.5%	10.5%	2.0%
The teacher continues teaching until the students understands.	53.2%	33.2%	11.2%	2.4%

2. Data Analysis

The process adopts SPSS in order to filter the cases and variables within interest and to identify missing data. Next, Mplus 8.6 is employed to perform Latent Class Analysis (LCA) in purpose of classifying the groups of students with distinctive perception of teacher support, based on their response to the PISA 2018 questionnaire. To execute LCA, the 4 levels of responses need to be dichotomized: the answers leaning towards high frequency, including *Every Lesson* and *Most Lessons*, are denoted by the digit 1, in contrast to 0 for the rest of the options. The goodness of fit indicators for the models are "Akaike's information criterion (AIC)", the "Bayesian information criterion (BIC)", and the "sample-size-adjusted BIC (a-BIC)", in which the smaller value refers to better fit. The "Vuong Lo - Mendell - Rubin (VLMR) test" (Lo, Mendell, & Rubin, 2001) is also conducted to assess the improvement each model makes. A *p-value* lower than .05 indicates a significantly more accurate classification that model k makes compared to model k-1. Next, the classification result of Vietnam data will be applied exclusively to the sample of disadvantaged (low ESCS) students for resilience analysis. Descriptive statistics and reading achievement of each profile is compared in order to determine the association between teacher support and academic resilience. Correlation analysis is also conducted with Teacher support in test language lessons (TEACHSUP) as an independent variable and the achievement represented by PV1 in the results of Reading Literacy as the dependent variable.

RESULTS

1. Reading resilience

Table 1 provides descriptive statistics of the before - weighted sample size and PV1 scores achieved by low ESCS participants. Resilient group accounts for closely 32 percent of the low ESCS students, and scores significantly higher than average non-resilient students (independent t-test of PV1 means results in *p-value* <.01). The box plot in figure 1 presents the comparison of reading achievement of boys and girls in these two groups. Generally, there is no significant difference in PV1 means between boys and girls either in resilient or non – resilient groups.

Table 2: Reading Achievement of Resilient and Non - resilient Students

Resilience	N	Minimum	Maximum	Mean	Std. Deviation
Non - resilient	1202	237,321	522,254	442,71392	50,714088
Resilient	563	493,150	702,357	554,94098	32,658962

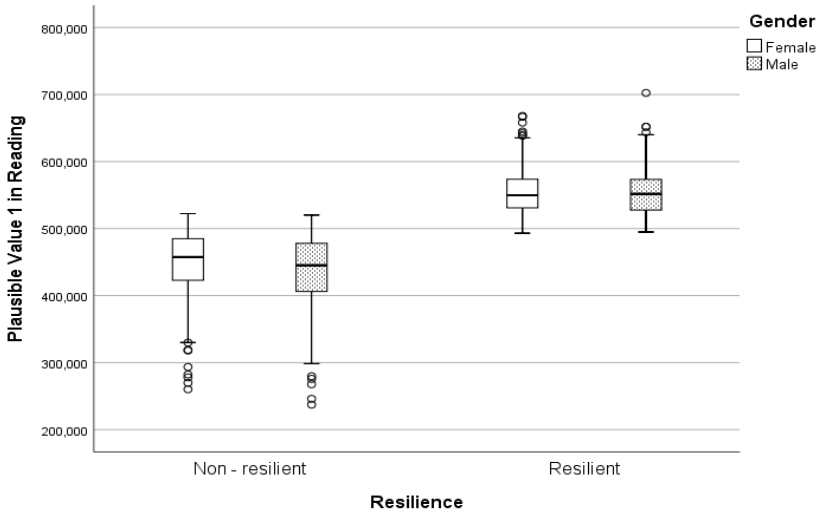

Figure 1: Reading Achievement by Gender and Resilience Groups

2. Disparities in teacher support reported by students

From the result of latent class analysis (summarized in Table 2), the 3-class model stands out to be the most plausible application to students' teacher support for the following reasons. The AIC, BIC and aBIC indicators are consistently lower than the other two models. Although not having the highest entropy (0.732), meaning 10% lower accuracy of classification compared to the 2-class model, the VLMR test result shows a significantly better fit (*p-value* < 0.05).

Table 3: Latent Class Analysis Result Summary

	AIC	BIC	aBIC	VLMR(LRT)	*p*	Entropy
2 class	14,297.943	14,357.203	14,328.604	2,119.082	0.000	0.833
3 class	14,211.966	14,304.149	14,259.661	93.791	0.000	0.732
4 class	14,221.368	14,346.473	14,286.097	0.585	0.745	0.657

Table 3 presents each of the three classes' probability scale for each of the questions in the section. The first class reports low interest from teachers, rarely receives help when they are in need, and teachers don't often continue teaching based on students' understanding. This group represents the ones who experience low support, and accounts for a minority of 3.8 percent of the sample size (203 students). In contrast, the third class feels strong interest from teachers in their learning, get helped frequently in both in and out-of-class circumstances, and are being taught to the point of comprehension. This class covers the majority of the sample size (74.6 percent) and is named High Support group. Hence, the remaining 16.91 percent, whose probability of responding *Every Lesson* or *Most Lessons* to the questions ranges from 58 to 75 percent, is called Fair Support.

Table 4: Results in Probability Scale for Student-Reported Teacher Support in 3-class Model

	Question		Class 1	Class 2	Class 3
Q1	The teacher shows an interest in every student's learning.		0.11	0.75	0.97
Q2	The teacher gives extra help when students need it.		0.00	0.60	0.99
Q3	The teacher helps students with their learning.		0.06	0.71	0.98
Q4	The teacher continues teaching until the students understands.		0.17	0.58	0.97
	FINAL CLASS COUNTS	Quantity	203	1153	3992
	AND PROPORTIONS	Percentage	3.8%	21.6%	74.6%

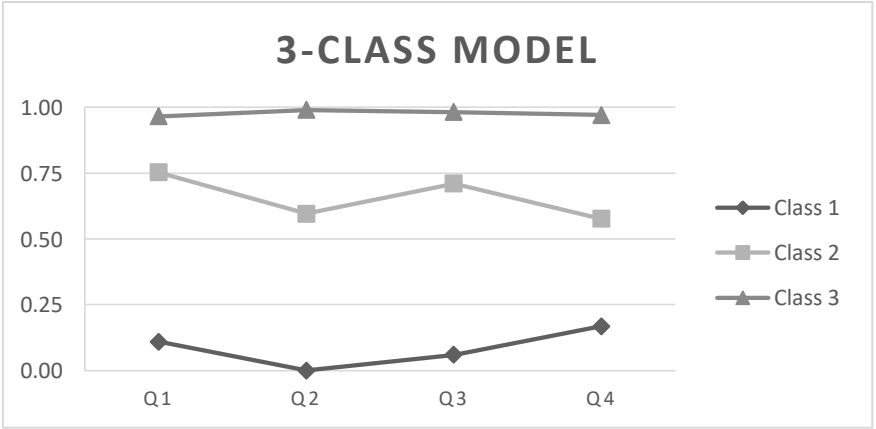

Figure 2: Results in Probability Scale for Student-Reported Teacher Support in 3-class Model

3. Analysis of reading literacy in different groups

Table 5: Reading Literacy of the Teacher Support Classes

Reading Literacy	Low Support	Fair Support	High Support
Mean	456.51	466.50	483.34
Standard deviation	78.83	67.90	71.51
Total number (weighted)	10702	63854	229815

From now on, the result of LCA is applied on the sample of disadvantaged students only. To increase representative power, we use the weighted sample size. One-way ANOVA test is adopted to compare the reading achievement of the three groups and the result indicates that the difference is significant with $F(2,304369)$ = 2064.36. Taking into consideration that there is no homogeneity of variances among the groups (Levene's test results in *p-value* < 0.01), the Games-Howell post-hoc test reveals that all of the means are significantly different from each other, as in Table A2.

4. Analysis of reading resilience in different groups

To emphasize the effect of teacher support on resilience, we create more achievement levels in addition to the resilient group mentioned above. The non-resilient students were divided into low achievers, whose reading literacy lies in the bottom third of the residual distribution, and medium achievers. Figure 2 shows the proportion of these achievement levels within each teacher support class. The high-support class reports the most of resilient students (34.4 percent), as well as the smallest portion of disadvantaged - low achievers (29.2 percent). In contrast, nearly a half of the participants in low support class are low achievers, compared to only 22.7 percent as resilient students.

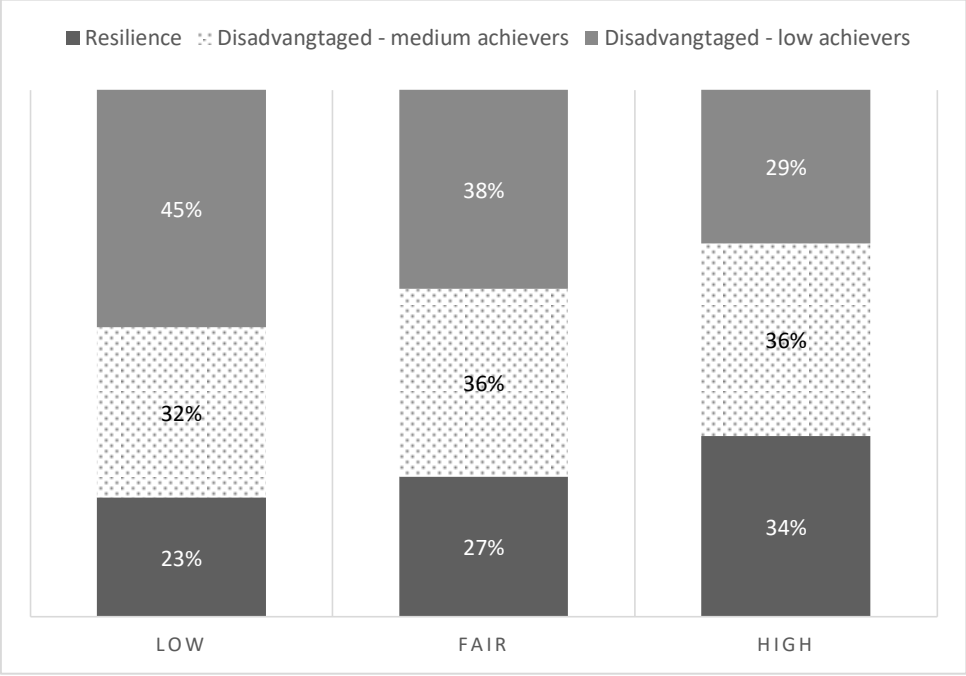

Figure 3: Different Achievement Levels in Teacher Support Classes

A chi-squared analysis was conducted to examine the equality of those portions in the three teacher support classes. The result indicates significantly different distribution of resilient and medium/low achievers in each class, $\chi 2(4,n=304373)$ = 3416.57. Therefore, the effect of teacher support in resilience is worth-noting. However, the effect size is relatively small (Cramer's V = .075). Next, logistic regression using the standardized teacher support scale (TEACHSUP) as a predictor of Resilience suggests significant relationship between these two variables, although teacher support only accounts for 0.9 percent variation of Resilience (r = .093, *p-value*

< .01). As shown in Table 6, a 1 unit increase in teacher support, the odd of a student becoming resilient would increase by 29.1 percent (95% CI [1.279, 1.304]).

Table 6: Logistic Regression between Resilience and Teacher Support

	B	S.E.	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
						Lower	Upper
Teacher support in test language lessons	.256	.005	1	.000	1.291	1.279	1.304
Intercept	-.846	.004	1	.000	.429		

Figure 4 provides a visualization of the interaction effect between teacher support classes and ESCS on reading score. The relationship between ESCS and academic achievement, which is an indicator of education inequity, decreases in magnitude as greater level of support is perceived by students. The correlation r-squared of the linear regression in low, fair and high support groups are .19, .115 and .039 respectively. There is a downward trend in the slopes of these fitting lines as well, suggesting that reading scores would fluctuate less drastically in more supported groups. Correlation coefficients and significant levels are presented in Table A4.

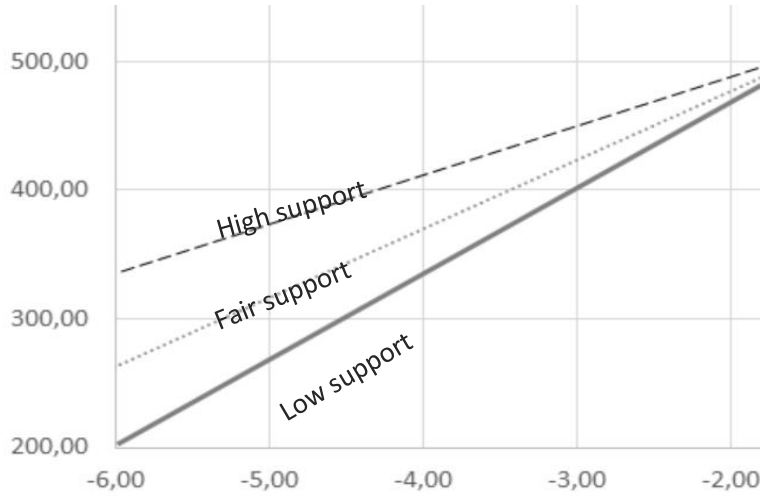

Figure 4: Linear Regression between ESCS and Reading Achievement in Different Groups

DISCUSSION

The construct of student-perceived teacher support has significant effect on reading literacy and academic resilience of socio-economically disadvantaged students. Using the sample 15-year-olds in Vietnam, the study provides evidence of the effect of different intensity levels in teacher support. The subgroup receiving high level of support accounts for the majority of all Vietnamese participants (74.6 percent) and disadvantaged students (75.1 percent). In the sample of students from disadvantaged homes, the high support group acquires the highest rate of resilient students (34 percent) and scores the highest mean in reading achievement. On the contrary, the low support group reports the smallest rate of resilience and lowest mean reading score. Fortunately, this group only accounts for less than 4 percent in both population and low ESCS sample. Logistic regression reveals that teacher support only explains a modest 0.9 percent of resilience variation. However, their relationship is significant with odd ratio .291, *p-value* <.01. This result is consistent with previous studies indicating that teacher support can help enhance academic performance, hence promote resilience among students from disadvantaged background (Chi, Liu, Wang, & Won Han, 2018; Özberk, Findik, & Özberk, 2018; Ma, Luo & Xiao, 2021). Teacher support also affects the correlation between social-economic status and reading literacy. The higher level of support, the weaker this correlation is. In other words, student achievement becomes less dependent on their background as greater support are perceived. As the correlation is an indicator of inequity, the result suggests teachers can play a role in building a more equitable educational environment.

References

1. Agasisti, T., & Longobardi. (2014). Inequality in education: Can Italian disadvantaged students close the gap? *Journal of Behavioral and Experimental Economics, 52*, 8-20.
2. Agasisti, T., Avvisati, F., Borgonovi, F., & Longobardi, S. (n.d.). What school factors are associated with the success of socio-economically disadvantaged students? An empirical investigation using PISA data. *Social Indicators Research*. Retrieved from https://doi.org/10.1007/s11205-021-02668-w
3. Agasisti, T., Longobardi, S., & & Regoli, A. (2017). A cross-country panel approach to exploring the determinants of educational equity through PISA data. *Quality and Quantity, 51*(3), 1243–1260.
4. Akiba, M., LeTendre, G. K., & Scribner, J. P. (2007). Teacher quality, opportunity gap, and national achievement in 46 countries. *Educational Researcher, 36 (7)*, 369-387.
5. Avvisati, F. (2018). In which countries and schools do disadvantaged students succeed? *PISA in Focus*(80).
6. Cordero, J. M., & Mateos-Romero, L. (2021). Exploring factors related with resilience in primary education: Evidence from European countries. *Studies in Educational Evaluation, 70*.
7. Cordero, J. M., Cristobal, V., & Santín, D. (2018). Causal inference on education policies: A survey of empirical studies using PISA, TIMSS and PIRLS. *Journal of Economic Surveys, 32*(3), 878–915.
8. Cornelius-White, J. (2007). Learner-Centered teacher-student relationships are effective: A meta-analysis. *Review of Educational Research, 77*, 113–143.
9. Cheung, K. C., Sit, P. S., Soh, K. C., Ieong, M. K., & Mak, S. K. (2014). Predicting academic resilience with reading engagement and demographic variables: Comparing Shanghai, Hong Kong, Korea, and Singapore from the PISA perspective. *Asia–Pacific Education Researcher, 23*(4), 895–909.
10. Cheung, K.-c. (2016). The effects of resilience in learning variables on mathematical literacy performance: a study of learning characteristics of the academic resilient and advantaged low achievers in Shanghai, Singapore, Hong Kong, Taiwan and Korea. *Educational Psychology*, 965-982.
11. Chi, S., Liu, X., Wang, Z., & Won Han, S. (2018). Moderation of the effects of scientific inquiry activities on low SES students' PISA 2015 science achievement by school teacher support and disciplinary climate in science classroom across genders. *International Journal of Science Education*, 1-21.
12. Choi, A., & Calero, J. (2013). Determinants of the risk of school failure in Spain in PISA-2009 and proposals for reform. *Revista de Educacion*, 562–593.
13. Erberer, E., Stephens, M., Mamedova, S., Ferguson, S., & & Kroeger, T. (2015). *Socioeconomically disadvantaged students who are academically successful: Examining academic resilience cross-nationally. Policy brief No. 5.* International Association for the Evaluation of Educational Achievement.
14. Furrer, C., & Skinner, E. (2003). Sense of Relatedness as a Factor in Children's Academic Engagement and Performance. *Journal of Educational Psychology, 95*, 148–162.
15. García-Crespo, F., Fernández-Alonso, R., & Muñiz, J. (2021). Academic resilience in European countries: The role of teachers, families, and student profiles. *PLoS ONE, 16*(7).
16. Hair, N. L., Hanson, J. L., Wolfe, B. L., & Pollak, S. D. (2015). Association of child poverty, brain development, and academic achievement. *JAMA Pediatrics, 169(9)*, 822–829.
17. Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London: Routledge.
18. Kapuza, A., & Tyumeneva, Y. (2017). Reliability and structure of the TALIS social sesirability scale: An asssessment based on item response theory. *Russian Education & Society, 59*, 174-194.
19. Lo, V., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika, 88*, 767–778.
20. Ma, L., Luo, H., & Xiao, L. (2021). Perceived teacher support, self-concept, enjoyment and achievement in reading: A multilevel mediation model based on PISA 2018. *Learning and Individual Differences, 85*.
21. OECD. (2010). *PISA 2009 results: Overcoming social background equity in learning.* Paris: OECD Publishing.

22. OECD. (2013). *PISA 2012 results in focus: What 15-year-olds know and what they can do with what they know.* Paris: OECD Publishing.
23. OECD. (2019). *PISA 2018 Results (Volume II): Where All Students Can Succeed.* Paris: OECD Publishing.
24. OECD. (2019). *PISA 2018 Results (Volume III) : What School Life Means for Students' Lives.* Paris: OECD Publishing.
25. Padron, Y. N. (1999). Classroom and instructional learning environment differences between resilient and non-resilient elementary school students. *Journal of Education for Students Placed at Risk of Failure, 4*(1), 63-81.
26. Pitzer, J., & Skinner, E. (2016). Predictors of changes in students' motivational resilience over the school year: The roles of teacher support, self-appraisals, and emotional reactivity. *International Journal of Behavioral Development*. doi:0165025416642051
27. Restuccia, D., & Urrutia, C. (2004). Intergenerational persistence of earnings: The role of early and college education. *American Economic Review, 81(4)*, 1354–1378.
28. Richardson, T. (2019). Addressing multi-cultural education and education for ethic minority groups through value-adding to the learning of Vietnamese students. *Journal of Ethnic Minority Research, 8*(2).
29. Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica, 73 (2)*, 417-458.
30. Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher−student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*.
31. Rumberger, R. W. (2010). Education and the reproduction of economic inequality in the United States: An empirical investigation. *Economics of Education Review, 29(2)*, 246-254.
32. Ryan, R. M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*, 437-460.
33. Sandoval-Hernández, A., & Cortes, D. (2012). Factors and conditions that promote academic resilience: A cross-country perspective. *Comparative and International Education Society.* San Juan.
34. Unsal Ozberk, E., Yılmaz Fındık, L., & Ozberk, E. (2018). Investigation of the variables affecting the math achievement of resilient students at school and student level. *Eğitim ve Bilim, 43*(194), 111-129.
35. Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology, 25*(1), 68–81.

APPENDIX A

Table A1: Definitions of resilience in previous literature

Authors	Database	Disadvantage	Resilience
OECD (2010)	PISA 2009	p25 ESCS	Greater than p75 achievement
Cheung et al. (2014)	PISA 2015		$y = \alpha + \beta_1 ESCS + \beta_2 ESCS^2 + \varepsilon$ top quarter ε
Agasisti & Longobardi (2014)	PISA 2009	p33 school level ESCS	$y = \alpha + \beta_1 ESCS^2 + \varepsilon$, top third ε
Cordero et al. (2015)	PISA 2012	p33 school level ESCS	Greater than p75 achievement

Erberer et al. (2015)	TIMSS 2011	Under 25 books, do not have own room or internet access and neither of parents have higher education	Above average score in mathematics (475 points).
Sandoval-Hernandez & Bialowolski (2016)	TIMSS 2011	Under 25 books, do not have own room or internet access and neither of parents have higher education	Above mean of disadvantage students achievement within each education system
Cheung (2016)	PISA 2012	p25 ESCS	$y = \alpha + \beta_1 ESCS + \varepsilon$, top quarter ε
Agasisti et al. (2017)	PISA 2010 - 2012	p33 school level ESCS	$y = \alpha + \beta_1 ESCS + \varepsilon$, top third ε
Agasisti et al. (2021)	PISA 2015	p25 ESCS	Level 3 or higher for all three competencies (reading, math and science)
Cordero & Mateos-Romero (2021)	TIMSS (2015) PIRLS (2016)	p33 Home Learning Resouce (HLR) index	$y = \alpha + \beta_1 HRL + \beta_2 HRL2 + \varepsilon$, greater than p75 ε $y = \alpha + \beta_1 HRL + \beta_2 HRL2 + \varepsilon$, greater than p67 ε $y = \alpha + \beta_1 HRL + \varepsilon$, greater than p75 ε $y = \alpha + \beta_1 HRL + \varepsilon$, greater than p67 ε Greater than p75 in the achievement distribution

Table A2: Post-hoc Test on Difference in Reading Achievement of the Teacher Support Classes

Dependent Variable: Plausible Value 1 in Reading

		Mean Difference			95% Confidence Interval	
(I) Class	(J) Class	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Low	High	-26.825*	.775	.00	-28.642	-25.008
	Fair	-9.989*	.812	.00	-11.895	-8.084
High	Low	26.825*	.775	.00	25.008	28.642
	Fair	16.835*	.316	.00	16.093	17.577
Fair	Low	9.989*	.812	.00	8.084	11.895
	High	-16.835*	.316	.00	-17.577	-16.094

*. The mean difference is significant at the 0.05 level.

Table A3: Resilience versus Teacher Support Class Crosstabulation

		Class			
		Low	Fair	High	Total
Resilient students	Count	2428[a]	17023[b]	78947[c]	98398
	% within Class	22.7%	26.7%	34.4%	32.3%

Disadvantaged – medium achievers	Count	3458[a]	22722[b]	83841[c]	110021
	% within Class	32.3%	35.6%	36.5%	36.1%
Disadvantaged – low achievers	Count	4817[a]	24110[b]	67027[c]	95954
	% within Class	45%	37.8%	29.2%	31.5%
TotalCount		10703	63855	229815	304373

Table A4: Correlation Coefficients between ESCS and Reading Achievement in Different Classes

Group	Coefficient	r	Sig.
Low	629.930	0.436	0.000
Fair	593.318	0.339	0.000
High	554.706	0.198	0.000