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Empirical Research on the Relationship between Family Economic, Social and Cultural Status and Students' Exposure to School Bullying: Mediating Effects of Parental Support and Teacher Support

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Abstract. Using survey data collected by the Organization for the Economic Cooperation and Development (OECD) in its 2015 Program for International Student Assessment (PISA2015), this study explores the relationship between family economic, social and cultural status (ESCS) and students' exposure to school bullying for students in Beijing-Shanghai-Jiangsu-Guangdong (China). Additionally, the study examines the mediating effects of parental support and teacher support on the relationship between family ESCS and students' exposure to school bullying. Lower family ESCS led to significantly increased exposure to school bullying. Parental support and teacher support mediated the relationship between family ESCS and students' exposure to school bullying, with slightly different magnitudes. The results suggest that China should continue to improve its system for school bullying prevention and treatment, and should especially focus on reducing bullying victimization among students from disadvantaged backgrounds. Further, parents in disadvantaged families should provide support and care to their children to enhance their abilities to tackle bullying victimization, and teachers should treat students fairly and guide students in socializing with their peers appropriately.

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A RELATIVELY high prevalence of school bullying in China, with events of bullying and school violence being reported, has been observed recently (Wang, 2016). Bullying is widely recognized as a specific form of aggressive behavior that is repetitive, intentional, and based on a power imbalance (Smith et al., 1999). School bullying experienced by adolescent students, who are in a period of transition, has negative effects on their physical and mental health, on their academic capability and social adaptability, and can be irreversibly detrimental to the students' long-term wellbeing (Woods et al., 2004). Research reveals that bullying victimization severely hampers students' educational attainment and personality development. Students frequently exposed to school bullying have lower educational performance and are more likely to suffer from various psychological symptoms, such as anxiety, depression, loneliness, and suicidal tendencies, compared to their counterparts (Delprato et al., 2017; Kaltiala-Heino et al., 2000). In fact, the high prevalence of school bullying and its severe impacts has become a major policy concern in China. In 2016, a national anti-bullying policy, *Guidance on the Prevention and Treatment of Bullying and School Violence*, that required schools' active participation in counteracting school bullying and protecting students' rights, was promulgated by the Ministry of Education and eight other central ministries. Consequently, it is imperative for researchers and practitioners to identify the factors associated with school bullying and to help design effective policies that support and protect at-risk students (Olweus, 1994).

Of the risk factors for bullying victimization, family socioeconomic background is recognized as an important but still under-researched predictor. Prior research by scholars in other countries has shown connections between students' exposure to school bullying and their family socioeconomic backgrounds. In many cases, students with disadvantaged family backgrounds tend to suffer peer victimization at a higher rate than students from advantaged families. For example, Due et al. (2009), using data from the international 'Health Behavior in School-aged Children' study involving 35 countries, examined the socioeconomic inequality in students' exposure to school bullying and found that students from families of low affluence were more likely to be bullied. Consistent with this, Analitis et al. (2009) explored the factors associated with bullying victimization in children and adolescents aged 8 to 18 and found that students whose parents had a lower educational level reported more peer victimization. Empirical findings suggest that the inequality in students' exposure to bullying that exists in various cultural contexts may prevent some students from equally healthy development. As a result, this has become a concern for policy-makers, researchers, and practitioners worldwide.

Nonetheless, empirical research on the mechanisms underlying the inequality of

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students' exposure to bullying is limited, specifically the ways in which variances in family economic, social and cultural status (ESCS) affect the likelihood of a student being bullied. An emerging line of empirical evidence suggests social support is important in protecting students from being bullied. Students from families with lower ESCS may be more likely to be bullied because they receive less social support compared with other students (Jansen et al., 2011). As parents and teachers are the most important sources of social support for students facing possible bullying, we hypothesize that inequality in family ESCS among students may result in an inequality of parental support and teacher support and that this may further lead to inequalities in students' exposure to school bullying. Specifically, two questions guided this research:

1. What are the effects of family ESCS on students' exposure to school bullying?
2. Do parental support and teacher support mediate the effects of family ESCS on students' exposure to school bullying?

Data from students in China's four provinces of Beijing, Shanghai, Jiangsu, and Guangdong were used in this study. The findings of this study can inform the design of effective anti-school bullying policies to put into practice.

Methods

Sample

The Organization for Economic Cooperation and Development (OECD) collects data on students' abilities from countries worldwide through its Program for International Student Assessment (PISA). In the 2015 assessment round (hereafter, PISA2015), PISA for the first time included questions to evaluate bullying in schools of participating countries and economies (OECD, 2016). The school bullying variable, together with other variables in the PISA2015 database reflecting students' individual characteristics, family backgrounds and school characteristics, provided the data needed for this study. Listwise deletion was employed to exclude those cases with missing data; 8,671 15-year-old students from the PISA2015 Beijing-Shanghai-Jiangsu-Guangdong (China) database were identified as the sample of this study.

Variables

Students' Exposure to School Bullying

PISA2015 measured students' exposure to school bullying from the perspective of the victims (OECD, 2017). Students were asked to report their experiences during the past one year with six forms of school bullying actions: 1) "Others spread rumors about me"; 2) "Being left out of things by others intentionally"; 3) "Being made fun of by others"; 4) "Being threatened by others"; 5) "Others took away or destroyed my things"; and 6) "Being hit or pushed by others" (OECD, 2017). The frequency of students experiencing any one of the six forms of school bullying was classified into four categories: 1) "never or almost never"; 2) "a few times a year"; 3) "a few times a month"; and 4) "once a

week or more" (OECD, 2017). Based on Maynard et al. (2016), students with responses of "a few times a month" or "once a week or more" were defined as being exposed to that specific form of school bullying action. Students exposed to least one form of school bullying were defined as being exposed to school bullying and assigned a value of 1 for the bullying variable; other students were assigned a value of 0. In this study, 21.74% of students reported being exposed to school bullying during the past one year.

Family ESCS

PISA computed an index of family ESCS using family background information, such as parents' highest education level, parents' highest occupation status, and home possessions (OECD, 2017). The family ESCS was transformed with 0 representing the average family ESCS of OECD students and 1 representing the standard deviation (SD) of the OECD students' family ESCS. In the subset of data used for this study, student family ESCS had a mean of -0.84 and a SD of 1.12.

Parental Support

PISA2015 asked students to report the extent to which their parents support them in their daily living, school learning and other activities (e.g., "My parents are interested in my school activities," and "My parents support me when I am facing difficulties at school," and "My parents encourage me to be confident") (OECD, 2017). From the responses, PISA computed an index of parental support, which was transformed with 0 representing the average parental support of OECD students and 1 representing the SD of the OECD students' parental support. In this study, the sample students' parental support had a mean of -0.16 and a SD of 0.88.

Teacher Support

PISA2015 asked students to report the frequency of the help, care and support they got from their science teachers in classroom learning (e.g., "The teachers give extra help when students need it," and "The teachers help students with their learning," and "The teachers give students an opportunity to express their opinions") (OECD, 2017) and used this to compute an index of teacher support. Once again, the index of teacher support was transformed with 0 representing the average teacher support of OECD students and 1 representing the SD of the OECD students' teacher support. For the sample subset used here, the students' teacher support index had a mean of 0.28 and a SD of 0.92.

Control variables

Included control variables related to individual students were gender (52% males, 48% females) and study program (56% lower secondary school students, 35% upper secondary school students, and 8% vocational school students). Also included were control variables related to school characteristics: school location (37% urban schools, 63%

rural schools), school type (90% public schools, 10% private schools), school size (in hundreds of students, mean = 19.70, SD = 19.18), class size (number of students, mean = 41.66 , SD = 9.37), student-teacher ratio (mean = 12.62, SD = 8.55), proportion of all teachers fully certified (mean = 0.97, SD = 0.07), school educational material shortage (mean = 0.07, SD = 1.22), and school educational staff shortage (mean = 0.77, SD = 1.28).

Data Analysis

Data analysis involved three phases. In phase one, descriptive statistics were used to preliminarily examine whether exposure to school bullying differed among students with different family ESCS. In phase two, a binary logit model was constructed to analyze the predictive effects of family ESCS on students' exposure to school bullying. The binary logit model took the following form,

$$Y_i = \alpha_0 + \sum_{j=1}^{n} \beta_j x_{ij} + \gamma_1 ESCS_i + u_{i1} \quad (1)$$

where Y_i refers to students' exposure to school bullying, α_0 is a constant, x_{ij} is a vector of control variables, $ESCS_i$ is the student's family ESCS, and u_{i1} is the error term.

In phase three of the data analysis, a path analysis model was constructed to examine the mediating roles of parent support and teacher support on the relationship between family ESCS and students' exposure to school bullying. The path analysis model has the advantage that it can be used to simultaneously estimate casual relationships among multiple variables (Wang, 2014). The path analysis model had the following form,

$$M_{ti} = \alpha_1 + \sum_{j=1}^{n} \beta_j X_{ij} + \gamma_2 ESCS_i + u_{i2} \quad (2)$$

$$Y_i = \alpha_2 + \sum_{j=1}^{n} \beta_j X_{ij} + \gamma_3 ESCS_i + \gamma_4 M_{ti} + u_{i3} \quad (3)$$

where Y_i refers to students' being exposed to school bullying, α_1 and α_2 are constants, X_{ij} is a vector of control variables, M_{ti} are the mediating variables between family ESCS and students' exposure to school bullying, including the parental support variable (M1) and the teacher support variable (M2), and u_{i2} and u_{i3} are error terms. As parental support and teacher support are correlated, the path coefficient between the two mediating variables in the model was set to be freely estimated.

Since PISA2015 employed two-stage sampling methods to select sample students[1], for phases two and three of the data analysis, the standard errors of parameter estimates were estimated using both the final student weighting and Fay's balanced repeated replication (BRR) method with a 0.5 coefficient (OECD, 2009). Moreover, in phase three data analysis, a bias-corrected bootstrap method was employed for analysis of mediating variables. The bootstrap method as a resampling estimation method produces more accurate interval estimates (Hayes, 2009). In this study, resampling was set to 2,000

times. The software SPSS 23.0 was used to conduct descriptive statistics (phase one) and Mplus 7.0 was used to conduct data analysis (phases two and three).

Results

Descriptive Statistics

To initially explore whether students' exposure to school bullying was affected by family ESCS background, we grouped students into three categories based on their family's ECSC: (1) advantaged family backgrounds – student's family ESCS was in the top quarter of the index of the sample students' family ESCS; (2) average family backgrounds – student's family ESCS was between the 25th to 75th percentile of the index of the sample students' family ESCS; and (3) disadvantaged family backgrounds – student's family ESCS was in the bottom quarter of the index of the sample students' family ESCS. We then used descriptive statistics for each group to look for differences among groups in students' exposure to school bullying behavior. **Table 1** shows the results of the descriptive statistics. In general, students' exposure to any form of school bullying was less for students from advantaged family backgrounds (18.96%) than for students from average family ESCS backgrounds (21.55%), which, in turn, was less than that for students from disadvantaged backgrounds (24.91%). Students' exposure to school bullying differed significantly among the three types of family backgrounds ($\chi^2 = 22.75$, $p < 0.001$).

The percentage of students exposed to each specific form of school bullying similarly decreased when going from disadvantaged family backgrounds to average family backgrounds to advantaged family backgrounds. The percentage of students who reported "Being left out of things by others intentionally," or "Being made fun of by others," or "Others took away or destroyed my things," or "Being threatened by others" differed significantly among the three types of family backgrounds (Chi-squared p-value ≤ 0.01 in all tests). This further verified that differences exist in students' exposure to school bullying under different family backgrounds.

Binary Logit Model: Effects of Family ESCS on Students' Exposure to School Bullying

Given the differences observed above in students' exposure to school bullying based on different family backgrounds, we next analyzed the predictive effects of family ESCS on students' exposure to school bullying by employing a binary logit model (equation (1) above) to the data. **Table 2** displays these results. Without controlling for other variables, family ESCS had a significant negative effect on students' exposure to school bullying ($\gamma = -0.055$, $p < 0.001$). The predictive effects of family ESCS on students' exposure to school bullying remained significant after controlling for variables related to individual students ($\gamma = -0.052$, $p < 0.01$) or variables related to school characteristics ($\gamma = -0.040$, $p < 0.05$). The results of the binary logit model are consistent with the re-

Table 1. Students' Exposure to School Bullying under Different Family Backgrounds (%).

Exposure To School Bullying Actions	All Students	Disadvantaged Family Backgrounds	Average Family Backgrounds	Advantaged Family Backgrounds	x^2
Exposure to any form of school bullying	21.74	24.91	21.55	18.96	22.75***
Others spread rumors about me	6.30	6.50	6.34	6.00	0.51
Being left out of things by others intentionally	7.57	9.87	7.24	5.90	25.68***
Being made fun of by others	11.50	13.93	11.35	9.36	22.40***
Being threatened by others	3.29	4.11	3.37	2.31	11.21**
Others took away or destroy my things	12.57	14.30	12.57	10.84	11.80**
Being hit or pushed by others	4.29	4.57	4.41	3.78	1.90

*P<0.05，**P<0.01，***P<0.001

sults of the descriptive statistics and both show that students with higher family ESCS are less likely to be bullied.

Path Analysis: Mechanisms Underlying Effect of Family ESCS on Students' Exposure to School Bullying

To further explore the mechanisms underlying effect of family ESCS on students' exposure to school bullying, we conducted path analysis using path analysis equations (2) and (3) (see Methods). The weighted root mean-square residual (WRMR), an indicator of the path model fit, was 0.002, indicating a good model fit.[2]

Table 3 shows the results of the path analysis model. Results reveal that the direct predictive effects of family ESCS on students' exposure to school bullying was -0.019 ($p > 0.05$). Family ESCS affected students' exposure to school bullying indirectly through its influence on parental support and teacher support of students. The predictive effects of family ESCS on parental support was 0.138 and the predictive effects of parental support on students' exposure to school bullying was -0.086; both these path coefficients reached at least a 0.01 level of significance. The predictive effects of family ESCS on teacher support was 0.070 and the predictive effects of teacher support on students' exposure to school bullying was -0.142; both path coefficients had $p < 0.001$.

Table 2. The Predictive Effects of Family ESCS on Students' Being Exposed to School Bullying.

	Students' Exposure to School Bullying					
	Coefficient	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Family ESCS	-0.055***	0.016	-0.052**	0.019	-0.040*	0.020
Male (Reference group: Female)			0.423***	0.046	0.422***	0.046
Lower secondary school students (Reference group: Vocational school students)			-0.030	0.079	-0.114	0.122
Upper secondary school students (Reference group: Vocational school students)			-0.105	0.087	-0.166	0.108
Urban school (Reference group: Rural school)					-0.025	0.067
Public school (Reference group: Private school)					-0.108	0.113
School size					-0.002	0.002
Class size					0.007	0.005
Student-teacher ratio					0.003	0.003
Proportion of all teachers fully certified					0.027	0.317
School educational material shortage					0.008	0.029
School educational staff shortage					0.012	0.036
Threshold	0.833***	0.033	1.018***	0.076	1.148**	0.375
*P<0.05, **P<0.01, ***P<0.001						

Analysis of mediating variables was conducted using the bias-corrected bootstrap method. **Table 4** shows the results. The 95% bootstrap confidence interval (CI) of both the indirect effects of family ESCS on students' exposure to school bullying through parental support and the indirect effects of family ESCS on students' exposure to school bullying through teacher support did not include zero, indicating significant mediating effects. The magnitude of the mediating effects of parental support and teacher support on the relationship between family ESCS and students' exposure to school bullying were slightly different.

Thus, the mechanism underlying family ESCS effects on students' exposure to school bullying has been elucidated: students with a higher family ESCS get more parental support and teacher support, and students with more parental support and teacher support have a lower risk of being bullied. Conversely, students with lower family ESCS get less parental support and teacher support, and students with less parental support and teacher support have a higher risk of being bullied.

Table 3. Results of the Path Analysis Model. [3]

	Parental support (M1)		Teacher support (M2)		Students' Exposure to School Bullying	
	Coefficient	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Family ESCS	0.138***	0.013	0.070***	0.015	-0.019	0.020
Parental support					-0.086**	0.028
Teacher support					-0.142***	0.022
Male (Reference group: Female)	-0.078***	0.023	-0.090***	0.026	0.402***	0.047
Lower secondary school students (Reference group: Vocational school students)	0.026	0.094	0.113	0.071	-0.095	0.118
Upper secondary school students (Reference group: Vocational school students)	0.109	0.094	-0.024	0.064	-0.161	0.103
Urban school (Reference group: Rural school)	-0.045	0.034	0.011	0.040	-0.028	0.067
Public school (Reference group: Private school)	-0.100	0.067	-0.086	0.081	-0.129	0.109
School size	0.000	0.001	-0.001	0.001	-0.002	0.002
Class size	0.002	0.002	-0.007*	0.003	0.006	0.005
Student-teacher ratio	-0.004*	0.002	-0.008	0.005	0.001	0.003
Proportion of all teachers fully certified	0.850***	0.221	0.698	0.385	0.194	0.284
School educational material shortage	-0.017	0.016	-0.054*	0.027	-0.001	0.029
School educational staff shortage	-0.027	0.015	-0.011	0.024	0.008	0.035
Intercept	-0.816***	0.208	0.101	0.397		
Threshold					1.207***	0.386
*P<0.05, **P<0.01, ***P<0.001						

Discussion and Implications

Discussion

In this study, we found that students' exposure to school bullying differed depending on family ESCS background. Students from advantaged family backgrounds had decreased exposure to bullying (18.96%) compared to those from disadvantaged family backgrounds (24.91%). We also verified that the inequality of family ESCS is a key factor affecting the likelihood of students being bullied in the four China provinces of Beijing, Shanghai, Jiangsu, and Guangdong. Bullying victimization can hinder students' physical and mental development, their educational attainment, and undermine their social

Table 4. Mediation Analysis Using Bias-Corrected Bootstrap Method.

Influence Path	Estimate		95% Bootstrap CI	
	Coefficient	SE	Lower	Upper
Family ESCS → parental support → students' exposure to school bullying	-0.012**	0.004	-0.015	-0.008
Family ESCS → teacher support → students' exposure to school bullying	-0.010***	0.003	-0.012	-0.008
Total indirect effects	-0.022***	0.005	-0.027	-0.017
*P<0.05, **P<0.01, **P<0.001				

and economic welfare in adulthood (Brown et al., 2008). As a result, students from disadvantaged families in the four provinces of China may not enjoy equal opportunities to flourish due to an increased exposure to school bullying.

We identify the mechanism by which family ESCS influences students' exposure to school bullying: family ESCS indirectly impacted students' exposure to school bullying through its effect on parental and teacher support available to students. Specifically, family ESCS inequality leads to inequality in levels of parental support and teacher support, which further created inequality of students' being bullied. In terms of the mediating role of parental support, parents from families with higher ESCS tend to have higher educational levels. This may mean they make more conscious efforts to get involved in their children's education and development and are more willing to communicate with their children to help solve the learning and living problems their children confront (Lereya et al., 2013). Caring and supportive ties between parents and children are conducive to the development of students' academic adaptability and social skills and thus can protect students from being bullied (Rivara et al., 2016). In contrast, parents from families with lower ESCS have limited resources, capabilities, and time and thus may be less able to provide their children with timely and effective help when their children face difficulties, making these students more likely to be bullied. In terms of the mediating role of parental support, parents from families with higher ESCS can mobilize more social and cultural resources to become better involved in their child's school educational activities and can actively build cooperative relations with teachers, which will help their children get more support from teachers (McNeal et al., 1999). Support from teachers helps students gain peer acceptance and enhance their social competency, which can reduce students' exposure to school bullying (Troop-Gordon et al., 2011). In contrast, parents from families with lower ESCS lack the relevant resources and capabilities to create a favorable external developmental environment for their children, making these students more likely to be bullied.

Implications

In light of the discussion above, the following recommendations are offered.

First, China should continue to improve its system of school bullying prevention and treatment to reduce bullying victimization among students from disadvantaged backgrounds. School bullying prevention and treatment has become a major concern for the country's policy-makers. To promote the implementation of effective school bullying prevention and treatment initiatives, China should continue to improve its system of school bullying prevention and treatment to comprehensively tackle all forms of school bullying and to guarantee that all students have equal and sufficient opportunities for healthy physical and mental development. For students in schools within Beijing, Shanghai, Jiangsu, and Guangdong provinces, family ESCS inequality resulted in students from disadvantaged families experiencing disproportionately more bullying. Therefore, while formulating the school bullying prevention and treatment policy, the country should give more policy support to students from disadvantaged ESCS families. Likewise, educational authorities should invest more resources and professional support in rural schools, disadvantaged schools, and migrant schools that have higher proportions of students from disadvantaged family backgrounds and should help these schools build up their bullying prevention and treatment system to reduce the risk of school bullying in disadvantaged students.

Second, parents in disadvantaged families should give more support and care to their children to enhance their abilities to resist bullying victimization. The role of parents in helping students counteract school bullying is critically important (Liao et al., 2017). However, parents from families with lower ESCS often cannot offer such help, care, and support to their children, leaving their children exposed to bullying victimization. In this study, we propose that even though parents of disadvantaged families may lack the corresponding resources and capabilities to provide their children with a better developmental environment, they can still be actively involved in their children's education, pay more attention to their children's mental and behavioral development, and improve the parent-child relationship through increased close communication and interaction to help their offspring cope with difficulties in learning, living and peer interaction and to protect them from the harmful effects of being bullied. We suggest that parents make a conscious effort to learn how to prevent and treat school bullying and to help their children recognize school bullying and make appropriate responses. In addition, parents who find that their children have been exposed to school bullying should seek the support of communities and schools to help these students overcome bullying victimization.

Third, teachers should treat students fairly and guide students to socialize with their peers appropriately. Teachers are a valuable resource that students can rely on for help with school bullying. The help and care teachers give to students is conducive to broadening student-teacher communication channels and building positive student-teacher relations. This enables students to actively seek their teachers' support when in need and helps student get the acceptance and recognition of peers. In this study, we found that the teacher support that students receive varied for students from different

family backgrounds, such that students with higher family ESCS have a lower risk of being bullied and students with lower family ESCS have a higher risk of being bullied. To reduce exposure to school bullying for all students, we suggest that teachers treat students fairly, analyze the behavioral and mental progress of their students, and provide timely help and support to students facing learning, living and socializing difficulties. Additionally, teachers can help students cultivate good conduct, such as being friendly and helpful, and respecting others, and can guide students to socialize with their peers appropriately so that students from disadvantaged family backgrounds better integrate themselves into their peer group.

Notes

1. *In the first stage of sampling, PISA employed probability proportional to size (PPS) to select sample schools. In the second stage of sampling, PISA randomly selected students from sample schools.*
2. *For a path analysis model with continuous and categorical variables, model fit is acceptable if the weighted root mean-square residual (WRMR) is less than 0.9. For more detail, please refer to Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: a review. The Journal of Educational Research, 99(6), 323-338.*
3. *Results of the path analysis model estimate the correlation coefficient between parental support and teacher support as 0.150 ($P < 0.001$). This result was not included in Table 3.*

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