***Parental Support, Cooperative Learning, and Peer Awareness in Students' Exposure to
School Bullying: Predicting Bullying in China***

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Abstract
School bullying negatively affects adolescents at both cognitive and psychological levels. In China, a relatively high prevalence of school bullying has been observed with researchers and educators beginning to identify bullying-related factors in order to foster a healthy school environment. However, parental support, cooperative learning, and peer awareness as forms of intervention support, are still under-researched predictors when portrayed holistically for bullying prevention and control. This study aims to explore how the three forementioned forms of intervention support affect Chinese students' indirect, psychological, and physical exposure to and their overall experience with school bullying using data from the 2018 Program for International Student Assessment (PISA). Utilizing binary logistic regression analyses while controlling for demographics, this research confirms previous literature that boys are nearly twice more likely to be exposed to bullying than girls while students repeating grades experience bullying at a relatively high rate. The study also indicates that both parental support and cooperative learning are effective intervention factors for lowering bullying frequency. Simultaneously, peer awareness augments students' reporting of bullying involvement. The integration of different mediating factors in this study depicts a clear picture for Chinese educational practitioners to take action to minimize bullying involvement in the pre-pandemic era, providing patterns of intervention measures to achieve equity and inclusivity for all schoolchildren during and after COVID-19.

Keywords: School Bullying, Parental Support, Cooperative Learning, Peer Awareness

Introduction

Bullying has long been identified as a serious form of school violence and is closely associated with aggressive behaviors that are really intentional, highly repetitive, and based on imbalanced power (Olweus, 2013; Smith, Morita, Junger-Tas, Olweus, Catalano, & Slee, 1999). Statistics from the United Nations Educational, Scientific and Cultural Organization (UNESCO) have revealed a growing prevalence of self-reported bullying cases across the globe (UNESCO, 2017, 2019). School bullying, in particular, negatively affects children and adolescents at both cognitive and psychological levels, including academic incapability and social inadaptability (Woods & Wolke, 2004), depression and anxiety (Kaltiala-heino, Rimpel, Rantanen, & Rimpel, 2000), as well as loneliness and suicidal tendencies (Delprato, Akyeampong, & Dunne, 2017). However, school bullying comes in different forms and categories. Olweus (1991) divided the term into direct and indirect bullying: the former refers to open, obvious attacks against a person in public places while the latter is characterized by social isolation and deliberate exclusion from a group. Direct bullying can further be interpreted both physically (involving violent behaviors) and psychologically (concerning harm to one's emotions and social standing).

China is no exception to the common occurrence of bullying incidents and school violence with 2,600 cases heard by people's courts at all levels from 2015 to 2017 (Global Times, 2021). Given the high incidence of school bullying and its severe social impacts, *Guidance on the Prevention and Treatment of Bullying and School Violence*, a nationwide anti-bullying policy, was adopted by Chinese Ministry of Education in 2016, calling on schools across the country to take an active part in bullying control and prevention efforts. Hence, it is of vital importance for Chinese researchers and educational practitioners to identify the intervention factors pertaining to school bullying and introduce regulations that support and protect at-risk students (Huang & Zhao, 2018).

Of the influencing factors for bullying intervention in China, parental support (PS) and peer awareness (PA) are recognized as important predictors in the reduction of bullying behaviors (Huang & Zhao, 2018; Zhang, 2020). Prior empirical studies in the west have also pointed to cooperative learning (CL) as a significant contributor to anti-bullying measures (Ryzin & Roseth, 2019) while grade repetition, or the practice of having students remain in the same grade without promoting them to the next grade, is more likely to press students for exposure to physical and verbal bullying (Crothers, Schreiber, Schmitt, Bell, Blasik, Comstock, Greisler, Keener, King, & Lipinski, 2010; Lian, Yu, Tu, Deng, Wang, Su, & Zuo, 2021; Ozada Nazim & Duyan, 2019). However, when jointly added, the bullying predictors of PS, PA, and CL are still under-researched. Thus, it is essential to integrate the three factors in one single research to portray a more thorough anti-bullying landscape and further assist schools to work out plans in bullying control and prevention.

Based on the above consideration, this empirical study aims to explore the association between three forementioned forms of intervention support and frequencies of experiencing physical, psychological, or indirect bullying (Olweus, 1991) mediated by such demographics as gender, age, and grade repetition. Two overarching research questions have guided this exploration: (a) what intervention factors predict the likelihood that students would indirectly, physically, or psychologically experience high or low frequencies of school bullying? And (b) what mediating factors predict the likelihood of students' exposure to high or low levels of bullying in these three bullying categories?

The social-ecological framework (CDC, 2004) has guided us in addressing the complex interplay between individual, family, school, and societal factors in relation to school bullying and violence as well as facilitated our understanding of bullying prevention efforts over time and beyond human-level impact. As Figure 1 shows, at the individual level, prevention strategies may involve personal attitudes, beliefs, or behaviors that prevent or stop violence. At relationship and community levels, a person's close connection to family members and active interaction with schools/workplaces/neighborhoods may provide a pathway for risk reduction and violence prevention, including parent-child communication, positive peer relations, and reliable school/work environments. The final level (societal factors) features social and cultural norms that encourage or hamper violence. The overlapping circles in the model indicate how one level of factors influences another and how different levels of factors coexist to work on the entire model. In linking the social-ecological framework for prevention and anti-bullying efforts on campus, we hypothesize that (H_1) PS (at the relationship level) as an intervention factor can lower the frequencies of being indirectly, physically, or psychologically bullied, (H_2) CL (at the community level) as an intervention factor can lower exposure to indirect, physical, or psychological bullying, and (H_3) PA (at the relationship level) as an anti-bullying predictor helps to reduce indirect, physical, or psychological bullying.
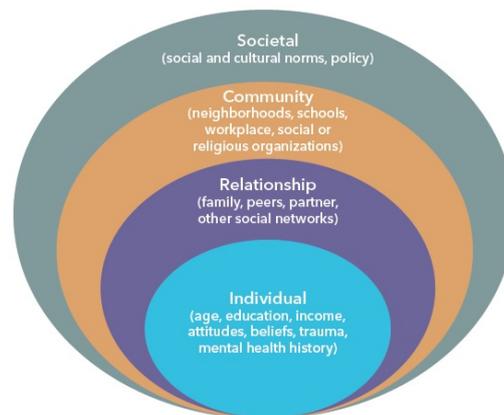

Figure 1: Social-ecological model—a framework for prevention
(Adapted from Centers for Disease Control and Prevention, 2004, p. 5)

Methods

The quantitative study employed the available data from the 2018 Program for International Student Assessment (PISA 2018) conducted by the Organization for Economic Cooperation and Development (OECD). A two-stage stratified sampling method was adopted to assess adolescents' knowledge and skills essential for real-world challenges. In the end, 12,058 15-year-olds from 362 schools in Beijing, Shanghai, Jiangsu, and Zhejiang provinces in China were selected. Meanwhile, informed consent forms were prepared and required from schools, teachers, and students.

Dependent Variables

The four dependent variables (revealing the frequency of students' exposure to school bullying) in the PISA data were depicted from the perspective of the victims (OECD, 2019) and measured with one total bullying scale and three sub-categories including indirect, psychological, and physical bullying. In PISA 2018, participants were invited to rate their

exposure to school bullying in the past 12 months on a 4-point Likert-type scale ranging from *1 = never or almost never, 2 = a few times a year, 3 = a few times a month,* to *4 = once a week or more*. For the total bullying scale, all six types of bullying items evaluated participants' overall experiences with bullying at school. For indirect, psychological, and physical bullying scales, there were respectively two, three and one items to measure each of them. Specifically, we adopted Item 1 ("Other students left me out of things on purpose.") and Item 4 ("Other students took away or destroyed the things that belonged to me.") to represent the indirect bullying scale; we used Item 2 ("Other students made fun of me."), Item 3 ("I was threatened by other students."), and Item 6 ("Other students spread nasty rumors about me.") to describe the psychological bullying scale. The only item to measure the physical bullying scale was listed as "I got hit or pushed around by other students." The detailed information of bullying scales and categories is presented in Table 1. In addition, in order to calculate the score of each bullying scale, we added up the answers for each item and split them into dummy variables to check high or low frequencies of being bullied in response to the research questions. Low frequency indicated that participants were never or almost never exposed to all or some of the bullying forms while high frequency reflected students' experiences with the bullying events on the basis of a few times a year or more. Prior to that procedure, the internal consistency or reliability for each scale was tested. However, Cronbach's Alpha for the two items in the indirect bullying scale did not exceed .70 and the only item in the category of physical bullying was not considered as a scale. Hence, the dependent variables of indirect and physical bullying were excluded from our analysis.

Table 1: Bullying scales and categories

Scales/ Categories	Bullying items
Total bullying	Other students left me out of things on purpose. Other students made fun of me. I was threatened by other students. Other students took away or destroyed things that belonged to me. I got hit or pushed around by other students. Other students spread nasty rumors about me.
Indirect bullying	Other students left me out of things on purpose. Other students took away or destroyed things that belonged to me.
Psychological bullying	Other students made fun of me. I was threatened by other students. Other students spread nasty rumors about me.
Physical bullying	I got hit or pushed around by other students.

Independent Variables

The independent variables utilized in this study include PS scale, CL scale, and PA scale. PS points to any "parental behaviors toward the child, such as praising, encouraging and giving physical affection, which indicate to the child that he or she is accepted and loved" (Barnes, Reifman, Farrell, & Dintcheff, 2000, p. 179). In this study, PS scale was assessed by three items in PISA 2018 ("My parents support my educational efforts and achievements.", "My parents support me when I am facing difficulties at school.", and "My parents encourage me to be confident."). A four-point Likert scale was applied to the items ranging from *1 = strongly disagree* to *4 = strongly agree*. As for CL scale and PA scale in the dataset, the

former refers to a small group of students working together to accomplish shared learning goals (four items, e.g., "It seems that students are cooperating with each other.") while the latter can be peer presence at or peer consciousness of bullying scenes (five items, e.g., "It irritates me when nobody defends bullied students."). Students were asked to respond to CL-related items on a four-point Likert scale ranging from *1 = not at all true* to *4 = extremely true* and to answer PA-related questions again on a four-point Likert scale ranging from *1 = strongly disagree* to *4 = strongly agree*. We added up the items for each of the three scales with internal consistency respectively tested (all Cronbach's alphas > .86) and divided them into high or low degrees to represent intervention factors at different levels.

Control Variables

Previous studies have revealed the impacts of demographic information upon students' exposure to bullying (e.g., Ba, Han, Gong, Li, Zhang, & Zhang, 2019; Smith et al., 1999). Applying the social-ecological framework to find out potential confounders, we selected such basic demographics (gender and age) as control variables. Age was viewed as a continuous variable while gender was used as a dummy variable with 1 for boys and 0 for girls. Also added to the control variables, grade repetition was obtained from students' responses to the questions "Have you ever repeated a grade (at ISECD l/2/3)?" The International Standard Classification of Education (ISCED) is a framework for collecting participants' statistics of education organized by UNESCO. Students were asked to respond on a three-point Likert scale ranging from *1 = no, never* and *2 = yes, once* to *3 = yes, twice or more*.

Data analysis

A binary logit model was constructed (Pallant, 2017) using SPSS software Version 26 after we identified the variables and realized the abnormal distribution of the remaining three dependent variables (excluding the indirect bullying model). However, preliminary assumption tests indicated that for psychological and physical bullying scales, the Hosmer and Lemeshow Goodness of Fit Tests were not passed (significance values all below .05), thus suggesting no support for these two models. Therefore, this study only concentrated on the total bullying model.

We conducted the research in two steps: (a) the descriptive statistics for the dependent, independent, and control variables were first produced, and (b) binary logistic regression was then performed to explore the likelihood that Chinese students were exposed to high or low frequencies of being bullied in general. All six predictors (i.e., PS, CL, PA, age, gender, grade repetition) were included in the total bullying model. Table 2 shows the descriptive statistics (including means and standard deviations) for the total bullying model and Table 3 reveals the results of logistic regression for the model.

Table 2: Descriptive statistics for variables

		Variables	Frequency	%		
Categorical dependent variable(s)	Total Bullying Scale	Low	6,463	47.9		
		High	5,390	52.1		
Continuous independent variable(s)		Minimum	Maximum	Mean	SD	N
	Age (years)	15.33	16.25	15.77	.29	12,058
		Variables	Frequency	%		
Categorical independent variables	Gender	Female	5775	47.9		
		Male	6283	52.1		
	Grade Repetition	No	11237	93.2		
		Yes	753	6.2		
	Parental Support (PS)	Low	6864	57.4		
		High	5088	42.6		
	Cooperative Learning (CL)	Low	8810	73.1		
		High	3088	25.6		
	Peer Awareness (PA)	Low	7289	64.1		
		High	4576	38.6		

The statistical significance of the total bullying model (χ^2 (6, N = 11690) = 474.266, p < .001) implied that the model was able to distinguish between respondents' high or low exposure to school bullying. Besides, the model as a whole explained 4.0% (Cox & Snell R square) and 5.3% (Nagelkerke R square) of the variance in total bullying groups, and correctly classified 58.8% of the cases with a small improvement of 4.2% in predictions. As presented in Table 2, five of the six independent variables made unique statistically significant contributions to the total bullying model except for age (p > .05). The strongest predictor of being in the high-level bullying groups was gender, recording an odds ratio of 1.704 (p < .001). Likewise, the odds of being in the high-level bullying groups was positively associated with grade repetition and peers' anti-bullying awareness (p < .01). For each additional increase in repeating a grade or anti-bullying awareness, there were respectively 1.315 and 1.284 likelihood increases to be found in the high-level bullying groups. Conversely, students with more parental support and skills of cooperation were .751 and .545 times less likely to be found in the high-level bullying groups as negative associations were found between the PS predictor and exposure to bullying   as well as between the CL factor and overall experiences with bullying (p < .001).

Conclusion

Aimed at investigating multiple intervention factors influencing students' exposure to bullying, this research has added to the empirical experience by applying binary logit regression analyses. Consistent with some previous literature (e.g., Ba et al., 2019; Scheithauer, Hayer, & Petermann, 2006; Smith, López-Castro, Robinson, & Görzig, 2019), the study has confirmed that boys are nearly twice more likely to be victims of bullying than girls. Second, students repeating grades, regardless of their genders, are generally exposed to bullying at a relatively high rate. This adds further to the extant literature in pointing to the increased risks of school bullying brought to grade repeaters compared with their promoted peers (Crothers et al., 2010; Lian et al., 2021; Ozada Nazim & Duyan, 2019). Third, since negative correlations were observed between the PS predictor and bullying involvement as

well as between the CL predictor and bullying experiences, this means supportive ties between parents and children as well as skills of cooperation in school settings are conducive to students' well-being, anti-bullying efforts, and the building of a harmonious, sustainable school culture. Hence, the first two hypotheses were supported (H_1: PS as an intervention factor can lower the frequencies of being indirectly, physically, or psychologically bullied; H_2: CL as an intervention factor can lower exposure to indirect, physical, or psychological bullying.) Fourth, contrary to what we have hypothesized (H_3: PA as an anti-bullying predictor helps to reduce indirect, physical, or psychological bullying.), the positive relationship between PA and high-level exposure to bullying implies that PA as an intervention factor can make a statistically significant contribution to students' reporting of bullying involvement ($p < .001$), or more precisely, augment students' overall experiences with it. Thus, Hypothesis 3 was not fully supported.

Table 3: Logistic regression analysis of total bullying model

Variables	Total Bullying Model		
	B	*S.E.*	*Exp(B)*
Age	-.034	.065	.966
Gender	.533***	.038	1.704
Grade Repetition	.274**	.079	1.315
Parental Support	-.287***	.042	.751
Cooperative Learning	-.607***	.049	.545
Peer Awareness	.250***	.043	1.284

Notes. ** $p < .01$, *** $p < .001$

However, a slight improvement of 4.2% in predictions for the total bullying model suggests that it is feasible but not ideal enough to predict high or low frequencies of bullying experiences. Besides, failure in the assumption tests of physical and psychological bullying models may probably prevent us from approaching and analyzing the interaction of intervention predictors and specific bullying categories. Third, although we could intuitively attribute PA's reverse effects upon anti-bullying endeavors to students' proactive behaviors towards more self-report cases that are not necessarily in great numbers, this is an area that still lacks both theoretical and empirical support and hence deserves researcher's attention for further studies. Fourth, we have not yet taken into account cyberbullying, a form of bullying that has risen to prominence with some overlaps in and differences from traditional bullying. Future studies can be realized in introducing more predictors at individual, relationship, community, and societal levels (e.g., ethnicity diversity, teacher support, neighborhood influences, and cultural norms in China) to see their combined impacts acting on school bullying involvement as well as in considering predictors of both traditional bullying and cyberbullying that will be integrated into detailed planning of China's anti-bullying programs (Ba et al., 2019).

Despite the above limitations, this study provides a route to the understanding of correlation between multiple intervention predictors and anti-bullying consciousness guided by the social-ecological framework for violence prevention: parents' encouragement and emotional support as well as skills of learning to collaborate with peers avoid high-level bullying exposure while male students and grade repeaters are reduced to bullying victims. The integration of these mediating factors in this study depicts a clear picture for Chinese educational practitioners to take action to minimize bullying involvement in the pre-pandemic era, providing patterns of intervention measures to achieve equity and inclusivity for all schoolchildren during and after COVID-19. In particular, the transition

from the pre-pandemic to the pandemic periods in addressing the issue of bullying requires all of those at various levels of the social system—policymakers, principals, teachers, parents, neighborhoods (or communities), and students themselves—to jointly take proactive measures to ensure safe learning environments for all in both online and in-person classes (Vaillancourt, Brittain, Krygsman, Farrell, Landon, & Pepler, 2021). If generalizable to other age groups (not only 15-year-old adolescents at school), this study may contribute to the wellbeing of schoolchildren in China and adolescents worldwide and induce workable solutions to the bullying problem that increasingly favor evidence-based interventions (UNICEF, 2020).

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