

School Psychology

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Online First Publication, December 20, 2021. <http://dx.doi.org/10.1037/spq0000492>

CITATION

Zhu, Q., Cheong, Y., Wang, C., & Sun, C. (2021, December 20). The Roles of Resilience, Peer Relationship, Teacher-Student Relationship on Student Mental Health Difficulties During COVID-19. *School Psychology*. Advance online publication. <http://dx.doi.org/10.1037/spq0000492>

The Roles of Resilience, Peer Relationship, Teacher–Student Relationship on Student Mental Health Difficulties During COVID-19

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The present cross-sectional study aimed to (a) expand our understanding of the role of risk and resilience factors for adolescent adjustment during coronavirus disease (COVID-19) and (b) examine personal resilience, peer and teacher–student relationships as protective factors against mental health difficulties. A total of 3,662 students from 4th to 11th grades in Urumchi, China completed a survey in June 2020. Urumchi is an ethnically diverse city, with nearly 40% of the population in this school district being ethnic minority students. The schools of Urumchi closed in February 2020 and reopened in April 2020. The results of latent moderated structural equation modeling suggested that peer victimization was associated with greater mental health difficulties in students. Personal resilience and teacher–student relationships were promotive factors for better mental health and also served as a buffer from the negative effect of peer victimization on mental health. The results also showed divergent patterns for elementary versus secondary school students as well as gender differences. Implications for how schools can support students during COVID-19 were discussed.

Impact and Implications

Findings highlight the protective roles of personal resilience and teacher–student relationships in students' mental health during COVID-19 and emphasize the importance of monitoring peer victimization and mental health when reopening schools.

Keywords: peer victimization, personal resilience, peer relationships, teacher-student relationships, COVID-19

Supplemental materials: <https://doi.org/10.1037/spq000492.supp>


As a global health threat, the coronavirus disease (COVID-19) pandemic suspended typical activities for the majority of the world population. Online learning took place in the spring of 2020 in many countries around the world, which resulted in children and teachers struggling to adjust to distance learning. Research showed that many children and adolescents were worried about the COVID-19, schooling, and peer relationships (Ellis et al., 2020). As the COVID-19 pandemic unfolded in early 2020, China was at the forefront of mitigation and containment efforts, and Chinese students were among the first to be impacted. For example, Chinese 4th to 8th graders reported more depressive symptoms and suicide ideation during COVID-19 (May 2020) than before (November 2019; Zhang et al., 2020). About 24% of adolescents reported


worsening relationships with peers during COVID-19, possibly due to social distancing (Cohen et al., 2020). Additionally, research revealed some potential protective factors for mental health difficulties during COVID-19, including media entertainment, reading, and physical exercise (Jiao et al., 2020), authoritative parenting (Ye et al., 2021), as well as problem-focused coping (instead of emotion-focused coping; Duan et al., 2020). As schools gradually reopen, it is essential to examine the risk and protective factors for student adjustment, especially the roles of school contextual factors (e.g., peer and teacher–student relationships) during the pandemic. The goal of this study is to enhance our understanding of the role of risk and resilience factors for adolescent adjustment during COVID-19.

Theoretical Framework: Risk and Resilience

The processes by which some individuals fare well despite experiencing stressful life events and being vulnerable to mental health difficulties are examined in the framework of risk and resilience (Masten & Narayan, 2012; Zhou et al., 2017). Resilience has been defined in terms of the intrapersonal capabilities of coping (Raskauskas & Huynh, 2015), ability to garner social resources, or a dynamic process of adaptation in response to adversity (Cicchetti, 2006; Masten, 2001). Prominent literature suggests that resilience is conceptualized best as a *process* in which individuals adapt

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successfully despite the experience of adversity (e.g., the current pandemic), and researchers emphasized the importance of clear operational definitions of both adversity and positive adaptation in research (Masten, 2001; Yates et al., 2015). In resilience research, risk factors (such as peer victimization) place individuals to be more vulnerable to maladjustment, whereas resource factors (such as social support) promote positive development and well-being. While some studies have looked at predictors of mental health difficulties and the underlying mechanisms, providing insight into differential pathways that lead to health difficulties (e.g., Lin et al., 2020; Philippe et al., 2011), more studies are needed to identify multiple individual and systemic capacities that promote positive adaptation.

In ecological perspectives, the concept of resilience also emphasizes the importance of broader social and cultural contexts that influence adaptive processes (Masten, 2014; Ungar et al., 2013). Such a perspective emphasizes one's ability to garner social resources and suggests the importance of supportive relationships with friends and teachers in school for mitigating the negative impact on an individual's mental health (Johnson, 2008; Masten, 2001). Masten (2001) suggested that resilience should not be mistaken for an inborn, extraordinary trait but as the capability to adapt through the impact of ordinary resources in youth's social context, including families, friends, teachers, communities, and cultures. Therefore, the present study aimed to examine personal resilience, peer relationships, and teacher–student relationships as potential moderators that might buffer the negative impacts of peer victimization on youth's mental health in the context of COVID-19.

Peer Victimization and Stress During COVID-19

Peer victimization is a multidimensional construct, including physical, verbal, relational, and cyber peer victimization, and is related to mental health difficulties (Bear et al., 2014). Before COVID-19, some studies suggested that the prevalence of peer victimization in China was comparable to the United States and varied based on the specific types of measures used. For example, 16.7%–31.53% of adolescents experienced face-to-face peer victimization, and 4.3%–9% of adolescents experienced cyber victimization at least “sometimes” (Peng et al., 2019; Xie et al., 2019).

Studies showed that peer victimization tends to increase when the society, family, or individual is experiencing stress or adversity (Hong et al., 2021). During COVID-19, as children are going through turmoil (e.g., witness family members' hospitalization or death, disruption in social relationships, family financial stress), they may be more likely to be involved in peer victimization at school. In addition, online learning and the increased use of Internet may make students vulnerable to cyber victimization (Drane et al., 2020; Ye et al., 2021). However, few studies have explored peer victimization during COVID-19. We identified three empirical studies on cyber peer victimization during the pandemic. Two studies found low prevalence of cyber victimization: 15% among middle school students in Beijing, China in May 2020 (Ye et al., 2021), and 12.9% among Chinese online users (ages 16 and older) in February 2020 (Yang, 2021) during COVID-19. In contrast, another study found almost 80% of older adolescents (17–18 years old) in India experienced cyber peer victimization in June 2020 (Jain & Agrawal, 2020). These different findings may relate to varying severity level of the virus transmission and different age groups at the time of data

collection. In addition, one recent study analyzed conversations on Twitter and Reddit and showed a notable increase in cyber peer victimization (e.g., violence-related posts) on social media since the beginning of the pandemic (March 2020) in both the United States and globally (Babvey et al., 2020), warning the risk for cyber peer victimization and online violence. In general, we still know little about the prevalence of peer victimization (both face-to-face and cyberbullying) during the pandemic. As schools reopen, it is essential to examine peer victimization in the context of COVID-19 because peer victimization predicted greater mental health difficulties (including emotional difficulties and behavioral difficulties) in Western samples (Geoffroy et al., 2018; Holt et al., 2015; Reijntjes et al., 2010) as well as in Chinese samples (Peng et al., 2019; Sullivan et al., 2021; Wang et al., 2018; Zhou et al., 2017).

Prior studies also examined possible protective factors for mental health difficulties in the context of peer victimization, including parental involvement (Wang et al., 2019), positive school climate (such as positive student–teacher relationships, positive peer relationships, Yang et al., 2018), and personal coping skills (Kochenderfer-Ladd & Skinner, 2002). However, very limited research was conducted among Chinese students. We sought to examine resilience and positive relationships as protective factors for victimization among Chinese students during COVID-19.

Intrapersonal Resilience

Studies also showed that resilience served as a protective factor in mitigating the impact of negative life events, such as peer victimization, on mental health difficulties. For example, studies on coping showed that peer victims could use a more adaptive, problem-focused coping strategy if they were able to appraise the peer victimization situation with a sense of control (for a review, see Hansen et al., 2012; Raskauskas & Huynh, 2015). A study found that internal capacity to tolerate stressors mitigated the impact of peer victimization on their learning at school (Hinduja & Patchin, 2017). Another study, with rural-to-urban migrant elementary students (4th–6th grade) in China, showed that children's internal resilience protected against victimization and mitigated the negative effect of peer victimization on their depression (Ye et al., 2016). Yet, no study has examined the potential role of personal resilience in mitigating the impact of peer victimization on youth mental health in the context of the current pandemic.

Positive Relationships

Social resources are another source of resilience. Positive peer relationships may serve as a buffer for youth who experience victimization because adolescents are more likely to confide in peers regarding victimization (Holfeld & Baitz, 2020), and peers may be able to better understand victims' struggles and support them in comparison to parents and teachers. For example, youth reported less depression and delinquency despite being bullied when they reported having more close friends (Sapouna & Wolke, 2013). On the other hand, a recent, pre-COVID-19-pandemic study with Asian American early adolescents ($M_{\text{age}} = 12.96$) found that peer support intensified the relation between victimization and depression, possibly due to corumination (Arora et al., 2020).

A few recent COVID-19-related studies showed that supports provided from teachers, peers, and family protected children from COVID-related stress and mental health difficulties (Ellis et al., 2020; Magson et al., 2021; Yao et al., 2020). However, social supports may function differently during COVID-19 as students have to change how they access social support while in quarantine. For example, one recent study found that more time spent with friends predicted more depression in Canadian youth. This surprising finding highlighted the importance of understanding peer relationships during the pandemic (Ellis et al., 2020).

Gender Identity and Grade Level Differences

Prior research suggested that the relation among peer victimization, social support, and adjustment may be different for boys versus girls, and for older students versus younger students. For example, a study with predominantly white American students found that support from teachers and peers only moderated the relation between peer victimization and internalizing symptoms among boys, but not girls (Davidson & Demaray, 2007). Furthermore, one study showed that support from classmates (not a close friend) was a protective factor for girls' depression, whereas support from a close friend was a protective factor for boys' depression (Tanigawa et al., 2011). However, another study among Asian American youth did not suggest that gender moderated the relation between victimization, peer support, and depressive symptoms (Arora et al., 2020). Regarding age differences, early adolescents in the United States and Finland were more likely to experience peer victimization than older adolescents (Sentse et al., 2015; Yang et al., 2018). Older adolescents tended to rely more on peer support than younger children (Wentzel, 2017). The quality of teacher–student relationships decreased overtime among Chinese adolescents possibly due to an increase in students' need for autonomy (Chang et al., 2004). However, these gender and age differences have not been examined with ethnically diverse Chinese students, and investigation of these relations in the context of current pandemic is needed.

Present Study

The present cross-sectional study aimed to expand our understanding of the role of risk and resilience factors for adolescent adjustment during COVID-19, and protective factors against victimization among a sample of 3,662 Chinese students (4th–11th graders). We also sought to examine gender and grade-level differences in these relations. We hypothesized that (a) personal resilience, peer relationships, and teacher–student relationships would be protective factors, and that peer victimization would be a risk factor for mental health difficulties; (b) personal resilience, peer relationships, and teacher–student relationships would buffer the relation between peer victimization and mental health difficulties; (c) the relations would be different for students who identify as boys compared to girls, and for elementary school students compared to secondary school students. Data were collected from a diverse sample of Chinese students in Xinjiang (a diverse autonomous territory in northwest China) to advance our understanding of these relations among ethnic minority students in China.

Method

Procedure

Data were collected by a public school district in Urumchi, Xinjiang, China as part of their annual screening, and no identifying information was collected. We then received University of Maryland Institutional Review Board (IRB) approval to use this secondary data for research. Urumchi is an ethnically diverse city, and ethnic minority students (i.e., Uyghur, Hui, and Kazakhs) comprise nearly 40% of the population in this school district. Students from 4th to 8th grade, 10th grade, and 11th grade from four elementary schools, five middle schools, and two high schools completed an online survey to share their experiences during COVID-19. Schools of Urumchi offered online learning between February and March 2020 and reopened in April 2020. All teachers and students were required to wear a mask and maintain social distance at school throughout the day, and body temperature was checked for everyone upon their arrival at school every morning. As a result, students' school experiences were seriously impacted by the pandemic even though schools reopened. For example, teachers had to use a loudspeaker during the class, and students could not engage in small group discussions. Additionally, students could not have any physical interactions and indoor sports at school. They also could not have lunch with peers. Due to the resurgence of COVID-19 cases, schools were closed again in June.

Teachers encouraged students to participate in an online survey between June 1st and June 9th, 2020 in order to understand their adjustment during COVID-19. Students were asked to respond to the survey based on their experiences since schools reopened in April. Participation was voluntary. The 9th grade and 12th grade students who would take the Senior High School Entrance Examination or the National College Entrance Examination in July did not participate in the survey. Students took approximately 20 min to complete the survey. A total of 3,991 students participated in the survey. Incomplete responses ($n = 329$) with less than 20% completion were excluded from the analysis. No identifying information was collected.

Participants

A total of 3,662 students (46.78% boys; $M_{\text{age}} = 12.98$, $SD_{\text{age}} = 2.32$) were included in the present study. The sample included 21.98% ($n = 805$) 4th graders, 23.29% ($n = 853$) 5th graders, 19.17% ($n = 702$) 6th graders, 10.10% ($n = 370$) 7th graders, 7.32% ($n = 268$) 8th graders, 10.43% ($n = 382$) 10th graders, and 7.65% ($n = 280$) 11th graders. Students did not report their ethnicity in this secondary data. Fourth to 6th graders (age range 10–13, $M_{\text{age}} = 11.22$, $SD_{\text{age}} = 1.16$) were in the elementary schools, 7th and 8th graders (age range 12–15, $M_{\text{age}} = 13.55$, $SD_{\text{age}} = 0.87$) were in the middle schools, and 10th and 11th (age range 15–18, $M_{\text{age}} = 16.45$, $SD_{\text{age}} = 0.88$) graders were in the high schools. Students reported parents' education levels. For fathers, 44.68% had middle school or less education, 21.96% had a high school degree, 29.22% had a Bachelor's, and 2.89% held a Master's. For mothers, 42.87% had middle school or less education, 21.00% had a high school degree, 32.55% had a Bachelor's, and 2.57% held a Master's. Additionally, students reported that 70.37% of fathers and 65.76% of mothers had a stable job

(see Table 1 of the electronic Supplemental Material for participants' information details).

Measures

Peer Victimization

We used the *Delaware Bullying Victimization Scale-Student Chinese version* (DBVS-S; Bear et al., 2014; Xie et al., 2015) to measure students' experience of peer victimization. The measure includes four dimensions: Physical victimization, verbal victimization, relational victimization, and cyber peer victimization (four items per subscale). The measure demonstrated good internal consistency and second-order model fit in previous studies (Cronbach's $\alpha = .93-.95$, Wang et al., 2018; Comparative fit index; CFI = 0.911, root mean square error of approximation; RMSEA = 0.044, Xie et al., 2018). Students responded to items on a 6-point scale (1 = *never*, 2 = *less than once a month*, 3 = *once or twice a month*, 4 = *once a week*, 5 = *several times a week*, and 6 = *everyday*). In the present study, the internal consistency (Cronbach's α) of the four subscales among elementary and secondary students ranged from .733 to .875 in the present study. Additionally, confirmatory factor analysis (CFA) suggested that the four factor, second-order factor model fit adequately among elementary and secondary students, $\chi^2(96/93) = 1142.420/646.293$, CFI = .943/.904, RMSEA = .068/.072, standardized root mean squared residual; SRMR = .052/.044. To simplify the model, we used item parceling technique and used the means of the four subscale scores as indicators to build the latent factor of peer victimization.

Resilience

We used the Personal Resilience subscale of the *Chinese Resilience Scale for Chinese Adolescents* (Hu & Gan, 2008) to evaluate students' internal capacity to cope with stress and adversity. The measure was widely used in research on resilience among Chinese children and adolescents (Wang et al., 2014; Ye et al., 2016). The personal resilience subscale included three factors and 15 items to measure *perseverance with goals* (e.g., "I have a clear goal in my life," five items), *emotional regulation* (e.g., "I feel hard to regulate my negative emotions," six items), and *positive thinking/optimism* (e.g., "The experience of frustration made me more mature," four items). Students responded to items on a 7-point scale (1 = *not like me at all*, 7 = *like me very much*). In prior research, the measurement demonstrated good internal consistency and second-order model fit (Cronbach's $\alpha = .86$, CFI = .92, RMSEA = .07; Hu & Gan, 2008). In the present study, Cronbach's α of the three subscales among elementary and secondary school students ranged from .702 to .817. The three factor second-order model fits well in both elementary and secondary school data, $\chi^2(83/83) = 935.299/1175.896$, CFI = .927/.920, RMSEA = .066/.068, SRMR = .071/.075. To simplify the model, we used the means of the three subscales as indicators to build the latent factor of resilience.

The Quality of Relationships

We measured the quality of peer and teacher-student relationships using the *Questionnaire of Interpersonal Quality* scale for Chinese students, which included positive and negative aspects of the quality of peer, parent-child, and teacher-student relationships (Liu, 2010). The measure was developed based on the *Network*

of Relationship Inventory (Furman & Buhrmester, 1992). The questionnaire was validated among Chinese children and had demonstrated adequate reliability and structural validity (Cronbach's $\alpha = .782$; goodness of fit index; GFI = .93, CFI = .90, RMSEA = .051; Liu, 2010). The quality of peer relationships subscale included two factors: Positive (e.g., "My friends and I often encourage each other," four items) and negative (e.g., "I often argue with my friends," three items) aspects. The quality of teacher-student relationships subscale also included two factors: Positive (e.g., "I often share my thoughts or experience with my teachers," five items) and negative (e.g., "Because of my mistakes, the teacher often gets angry at me," three items) aspects. Students responded to items on a 7-point scale (1 = *not like me at all*, 7 = *like me very much*). We reverse-coded the negative items in the present study. Cronbach's α of positive and negative peer and teacher-student relationships among elementary and middle school students ranged from .704 to .823, respectively. For elementary school students, the two-factor second-order model fits of peer relationships and teacher-student relationships were $\chi^2(13/16) = 50.25/311.350$, CFI = .994/.947, RMSEA = .035/.088, and SRMR = .022/.057. For secondary school students, the two-factor second-order model fits of peer relationships and teacher-student relationships were $\chi^2(10/15) = 54.825/124.076$, CFI = .982/.962, RMSEA = .063/.080, and SRMR = .021/.042. To simplify the model, we used the means of the subscales as indicators to build the latent factor of peer relationships and teacher-student relationships.

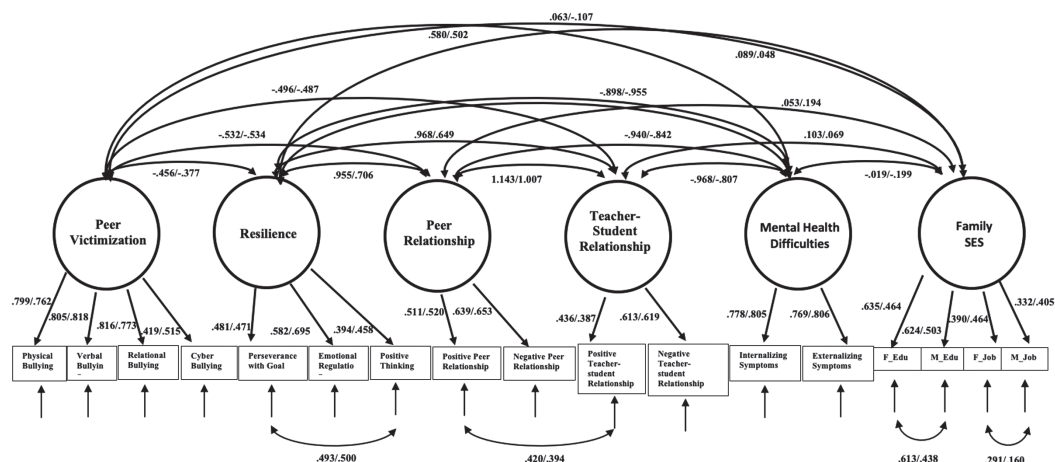
Mental Health Difficulties

To measure students' mental health difficulties, we used the *Me and My School Questionnaire* (Patalay et al., 2014; Wang et al., 2018). The measure included two factors: Emotional difficulties (e.g., "I feel lonely," 10 items) and behavioral difficulties (e.g., "I hit others when I am angry," six items). Students responded to items on a 7-point scale (1 = *not like me at all*, 7 = *like me very much*). This measure was validated among Chinese students and demonstrated good model fit in CFA ($\alpha = .89$, CFI = 0.95, RMSEA = 0.03; Wang et al., 2018). In the present study, Cronbach's α of the subscales among elementary and secondary school students ranged from .821 to .928. The two-factor second-order models' fit among elementary and secondary school were $\chi^2(83/83) = 1160.869/527.240$, CFI = .951/.951, RMSEA = .074/.068, and SRMR = .037/.039. To simplify the model, we used the means of the subscales as indicators to build the latent factor of mental health difficulties. We used fathers' and mothers' educational level and job stability as a proxy for family socioeconomic status (SES; see Figure 1). Additionally, Table 2 of the electronic Supplemental Material presents each subscale's internal consistency.

Data Analyses

We used the latent moderated structural equations (LMS) method to explore the relation among peer victimization, personal resilience, peer and teacher-student relationships, and mental health difficulties. We applied two steps estimation procedure for estimating LMS (Klein & Moosbrugger, 2000) using the XWITH command in *Mplus* 7.4. Missing data were examined first. A small number of students (2.53%) skipped one to three items, and the nonsignificant result of Little's missing completely at random test (MCAR; $p = .177$;

Figure 1
Measurement Model



Note. F_Edu = Father's educational level; M_Edu = Mother's educational level; F_Job = Father's job stability; M_Job = Mother's job stability. The measurement loadings of elementary/secondary school data were presented separately. CFA: $\chi^2(100/100) = 821.301/626.609$, CFI = .945/.928, RMSEA = .056/.065, and SRMR = .041/.048. All estimates are standardized.

Myers, 2011) indicated that the data were missing completely at random. The XWITH procedure assumes that variables are normally distributed, and extreme skewness of indicators can generate convergence problems and biased parameter estimates (Cham et al., 2012; Maslowsky et al., 2015). Therefore, we checked the normality assumption and used leverage values and Cook's *D* (leverage cutoff point: $3 \times (k + 1)/n$; Cook's *D* cutoff point: $4/(n - k - 1)$, *k* = the number of predictors and *n* = sample size) to detect outliers and influential observations (Fox, 2015), which could improve overall model fit (Pek & MacCallum, 2011). A total of 4.21% of 3,662 cases (*n* = 154) were removed from further analysis. LMS analysis included 3,508 students (46.95% boys; 22.12% 4th graders, 23.32% 5th graders, 18.98% 6th graders, 9.89% 7th graders, 7.33% 8th graders, 10.55% 10th graders, and 7.75% 11th graders; see Table 1 of the electronic Supplemental Material for details). Cross-tabulation analysis for the sample composition (i.e., gender and seven grade levels) revealed that there were no differences between the original and final samples, $\chi^2(7) = .186$, $p = 1.000$.

We analyzed the data separately for elementary versus secondary school students. When we estimated a measurement model (see Figure 1), we used mean scores of the subscales to create the latent factors. The measurement model fit indices of elementary and secondary school data were good, $\chi^2(100/100) = 821.301/626.609$, CFI = .945/.928, RMSEA = .056/.065, and SRMR = .041/.048, controlling for family SES. After testing the fit of the measurement model, structural models were estimated in two steps (Klein & Moosbrugger, 2000; Maslowsky et al., 2015; Muthén, 2012). The first step was to estimate the structural model without the latent interaction terms. This model was referred to as Model 0 (Figure 2A). Model 0 supplied model fit indices (see below). Then, the latent interaction term was estimated by using the XWITH command. The second step was to estimate the structural model with the latent interactions. This model henceforth was referred to as Model 1 (Figure 2B, 2C, or 2D). The output of Model 1 provided the

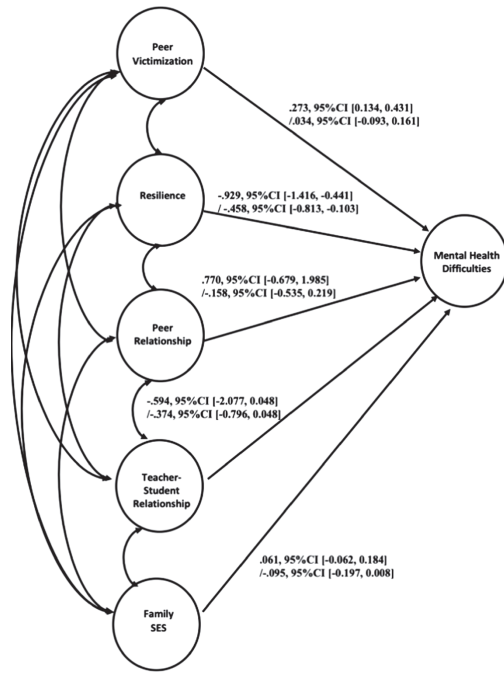
final regression coefficients and indicated whether the latent interaction was significant.

Assessing Model Fit

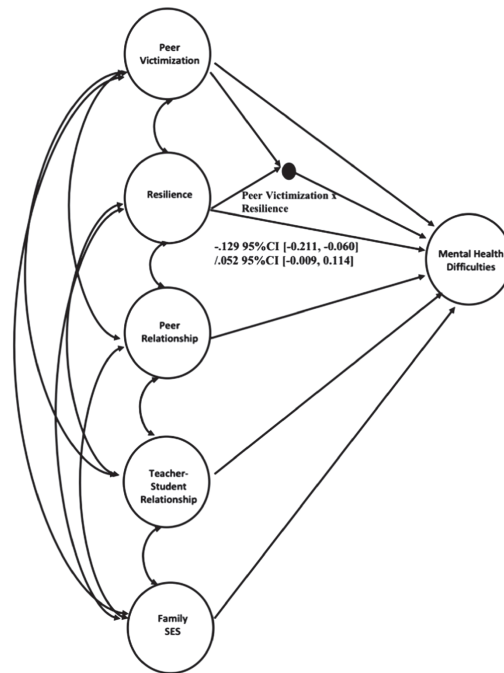
Model fit indices generally used to interpret the fit of structural equation models (e.g., CFI, RMSEA, and χ^2) have not been developed for LMS models (Maslowsky et al., 2015). Alternatively, a two-step method was used for assessing the overall fit of each LMS model (Klein & Moosbrugger, 2000; Muthén, 2012). First, model fit indices were obtained from Model 0 (null model examining main effects). Second, using a log-likelihood ratio test, the relative fit of Model 0 and Model 1 (alternative model, where the latent interaction term was estimated) was compared. The log-likelihood ratio test was used to determine whether the more parsimonious Model 0 represented a significant loss in fit relative to the more complex Model 1 (Satorra, 2000; Satorra & Bentler, 2010). The test statistic for a log-likelihood ratio test, often denoted as *D*, was calculated using the following equation: $D = -2[(\log\text{-likelihood for Model 0}) - (\log\text{-likelihood for Model 1})]$. The values of *D* were approximately distributed as χ^2 . The degrees of freedom (*df*) for *D* were calculated by subtracting the number of free parameters in Model 0 from the number of free parameters in Model 1. In the present study, the three latent interaction terms were added separately, and one additional parameter was estimated in Model 1 as compared to Model 0. Hence, the difference in free parameters was one, with the critical value of $\chi^2(1) = 3.841$ at significance level $\alpha = 0.05$. If Model 0 fits well per the log-likelihood ratio test (i.e., Model 0 represents a significant loss in fit relative to Model 1), then the Model 1 is said to be a well-fitted model. Additionally, standardized regression coefficients were obtained from standardizing the data prior to analysis by using "standardize" command in *Mplus 7.4* (Klein & Moosbrugger, 2000; Maslowsky et al., 2015).

Figure 2
Structural Models, Without and With Latent Variable Interaction

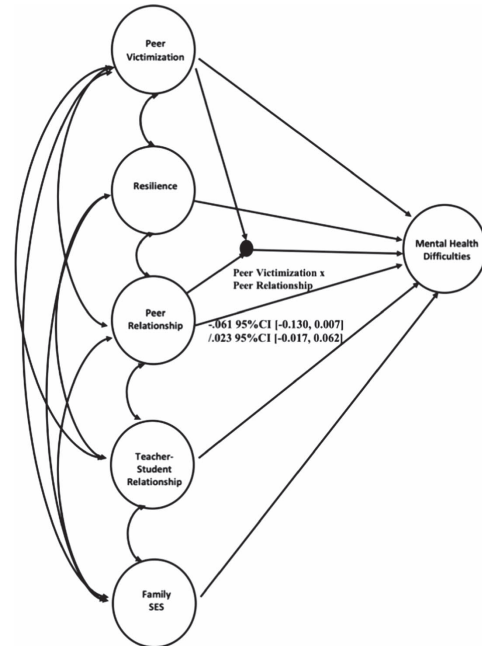
(A) Model 0



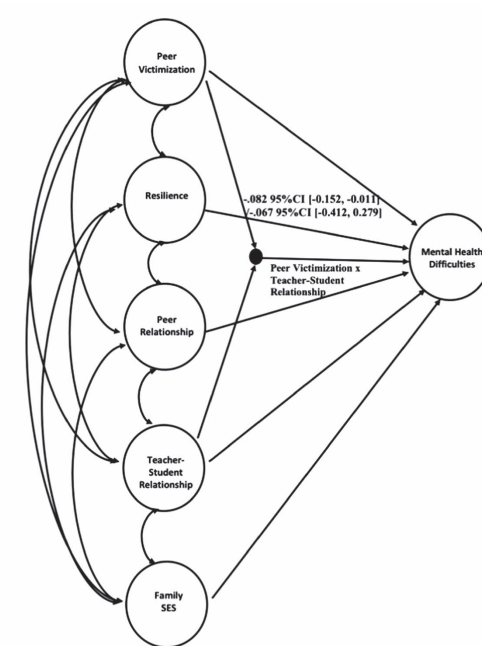
(B) Model 1a



(C) Model 1b



(D) Model 1c



Note. β before/was for elementary school students, and β after/was for secondary school students. Model 0: Main effects of peer victimization, resilience, peer relationship, and teacher–student relationship predicting mental health difficulties, controlling for family SES. Model 1a: Model including the latent variable interaction of Peer victimization \times Resilience. Model 1b: Model including the latent variable interaction of Peer victimization \times Teacher–student relationship. Model 1c: Model including the latent variable interaction of Peer victimization \times Peer relationship. The latent variable interaction was depicted as a filled circle per Mplus standard notation. Each path loading of elementary/secondary school data were presented separately. All estimates are standardized.

Additionally, we examined gender differences in elementary and secondary school data separately. First, we tested measurement invariance. We compared the constrained model (all loadings for CFA constrained to be equal across gender) with the unconstrained model (all loadings freely estimated). Model comparison showed no significant differences for elementary school students, $\Delta\chi^2 = 45.734$, $\Delta df = 8$, $p > .05$, nor middle school students, $\Delta\chi^2 = 22.495$, $\Delta df = 8$, $p > .05$. In other words, results suggested measurement equivalence across gender. Finally, we compared path loadings by gender. We tested differences between constrained and unconstrained structural models, followed by reporting of the paths that were significantly different across gender.

Results

Descriptive Analyses

The number of students who experienced verbal, physical, relational, and cyber peer victimization at least once a month were 505 (13.79%), 343 (9.37%), 330 (9.01%), and 199 (5.43%) respectively. About 32.17% ($n = 1,178$) reported emotional difficulties, and about 10.16% of ($n = 372$) behavioral difficulties ($M > 3.00$) during COVID-19. Generally, the elementary school students reported higher scores on peer victimization, resilience, and the quality of teacher–student and peer relationships but a lower score on mental health difficulties ($p < .05$; see Figure 3). More specifically, the 4th graders (the youngest group in the sample) reported the highest score on physical and relational victimization as well as the quality of teacher–student and peer relationships. The 5th graders reported the highest score on peer victimization, and the 6th graders (the oldest students in the elementary school) reported the highest score on resilience. The 10th graders (freshmen in the high school) reported the highest scores on mental health difficulties. But there were no grade differences in cyber peer victimization.

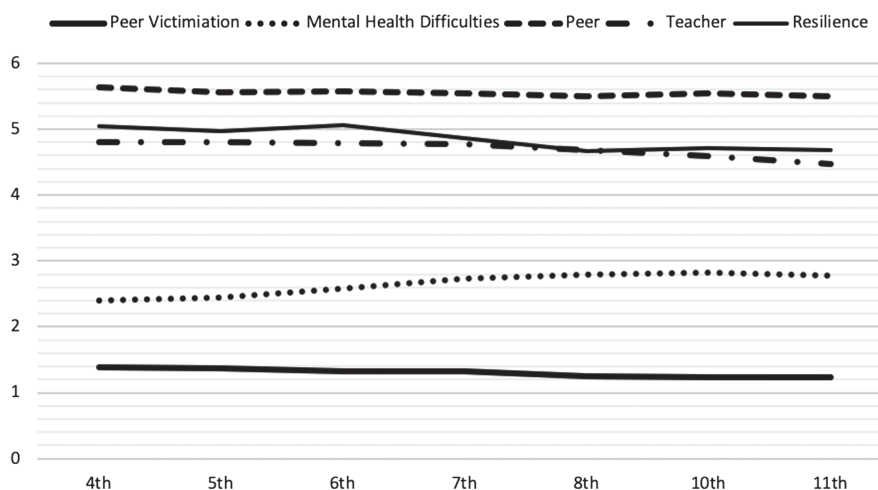
Furthermore, the results of independent sample t -test showed that boys reported more physical peer victimization than girls, $t(2,340/1,290) = 5.30/3.19$, $p < .001/= .001$ across elementary

and secondary levels. Additionally, elementary school boys also reported more verbal and cyber peer victimization than girls, $t(2,340/2,340) = 5.30/3.19$, $p = .003/= .009$. Elementary and secondary school girls reported more mental health difficulties than boys, $t(2,340/1,290) = 3.80/4.50$, $p < .001/<.001$. Girls across elementary and secondary schools reported a higher score on the positive peer relationships, $t(2,340/1,290) = 2.73/3.46$, $p = .006/= .001$. Secondary school boys reported a higher score on the negative teacher–student relationships, $t(1,290) = 2.21$, $p = .027$. Additionally, peer victimization, mental health difficulties, and the quality of peer and teacher–student relationships did not vary significantly by fathers' or mothers' job stability. Students whose fathers had a stable job reported higher scores on resilience than students whose fathers did not, $M_{diff} = 0.072$, $SD_{diff} = 0.031$, $t(3,611) = 2.338$, $p = .019$. Tables 3 and 4 of the electronic Supplemental Material presented the means and standard deviations for all variables across grade levels and gender.

Main Effects of Resilience, Peer and Student–Teacher Relationships

First, we examined whether peer victimization would predict more mental health difficulties, and personal resilience, peer and teacher–student relationships would predict less mental health difficulties. Model 0 of elementary and secondary school data (Figure 2A) fit the data well, with $\chi^2(99/99) = 625.565/564.143$, CFI = .960/.936, RMSEA = .049/.061, and SRMR = .034/.042, respectively. The results indicated that for elementary school students, peer victimization, $\beta = .273$, 95% CI [0.120, 0.222], $p < .001$, positively and resilience, $\beta = -.929$, 95% CI [-1.416, -0.441], $p < .001$, negatively predicted mental health difficulties, controlling for family SES, but the quality of teacher–student and peer relationships did not. For secondary school students, only resilience, $\beta = -.458$, 95% CI [-0.813, -0.103], $p = .012$, negatively predicted mental health difficulties, controlling for family SES. Peer victimization and the quality of peer relationships and the teacher–student

Figure 3
Variables of Interest Across Grade Levels



Note. Peer = the quality of peer relationship; Teacher = the quality of teacher–student resilience.

relationships did not significantly predict secondary school students' mental health difficulties.

Moderation Effects of Resilience, Peer and Student–Teacher Relationships

Second, we tested whether personal resilience, peer relationships, and teacher–student relationships would serve as moderators to buffer the relations between peer victimization and mental health difficulties. Three interactions (Peer victimization \times Resilience, Peer victimization \times Teacher–student relationships, and Peer victimization \times Peer relationships) were estimated separately in the Models 1a, 1b, and 1c. For elementary school students, when Peer victimization \times Resilience was estimated in the Model 1a (Figure 2B), a significant χ^2 difference test comparing Model 0–Model 1, $D = \Delta\chi^2(1) = 25.318$, $p < .05$, indicated that Model 1a (with the interaction Peer victimization \times Resilience effect) fitted significantly better than Model 0. The Peer victimization \times Resilience interaction effect was significant, $\beta = -.129$, 95% CI $[-0.211, -0.060]$, $p = .002$. When Peer victimization \times Teacher–student relationships was estimated in the Model 1b (Figure 2C), a significant χ^2 difference test comparing Model 0–Model 2, $D = \Delta\chi^2(1) = 15.590$, $p < .05$, indicated that Model 1b (with the interaction Peer victimization \times Teacher–student effect) fitted significantly better than Model 0. The Peer victimization \times Teacher–student interaction effect was significant, $\beta = -.082$, 95% CI $[-0.152, -0.011]$, $p = .023$. When Peer victimization \times Peer relationships was estimated in the Model 1c (Figure 2D), a significant χ^2 difference test comparing Model 0–Model 3, $D = \Delta\chi^2(1) = 9.774$, $p < .05$, indicated that the Model 1c (with the interaction Peer victimization \times Peer effect) fitted better than Model 0. However, the Peer victimization \times Peer interaction effect was not significant, $\beta = -.061$, 95% CI $[-0.130, 0.007]$, $p = .080$. For secondary school students, compared with Model 0, Models 1a, 1b, and 1c did not present a better model fit, $D = \Delta\chi^2(1) = 1.08/.124/.088$, $p > .05$. In other words, none of interactions was significant for secondary school students.

Therefore, only elementary school students' resilience and the quality of teacher–student relationships, not the quality of peer relationships, moderated the relation between peer victimization and mental health difficulties. Figures 4A and 4B indicated that for elementary school students, when students experienced more peer victimization, they tended to report more mental health difficulties, and this relation was weaker among students who reported higher resilience or students who reported better teacher–student relationships, suggesting buffering effects.

Gender Differences

We used multigroup analysis to examine whether the effects of peer victimization, resilience, peer, and teacher–student relationships impacted mental health difficulties differently for boys and girls. For elementary students, the model fits of boys' and girls' data were $\chi^2(51/51) = 297.601/426.284$, CFI = .964/.939, RMSEA = .065/.079, and SRMR = .048/.056. Multigroup analysis showed significant differences between boys' and girls' model 0, $\Delta\chi^2 = 141.836$, $\Delta df = 16$, $p < .05$. Two path loadings were significantly different for boys and girls. More specifically, resilience negatively predicted boys' emotional difficulties, $\beta = -.742$, 95% CI $[-1.206, -0.277]$, $p = .002$, but not for girls. The quality of teacher–student

relationships negatively predicted girls' emotional difficulties, $\beta = -1.272$, 95% CI $[-2.485, -0.058]$, $p = .040$, but not for boys.

For secondary school students, the model fits of boys' and girls' data were $\chi^2(52/52) = 191.440/413.497$, CFI = .950/.912, RMSEA = .069/.098, and SRMR = .053/.071. Multigroup analysis showed significant differences between boys' and girls' Model 0, $\Delta\chi^2 = 125.492$, $\Delta df = 16$, $p < .05$. Two path loadings were significantly different for boys and girls. Both peer victimization, $\beta = .166$, 95% CI $[0.079, 0.253]$, $p < .001$, and the quality of teacher–student relationships predicted girls' emotional difficulties, $\beta = -.298$, 95% CI $[-0.573, -0.022]$, $p = .034$, but not boys.

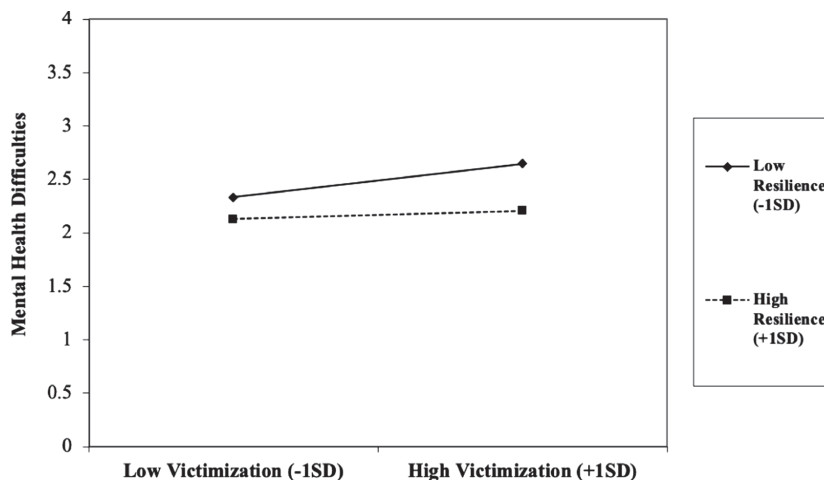
Discussion

Our study is one of the first to examine students' mental health among a diverse sample of Chinese students in Xinjiang Province during COVID-19. Prior studies mainly sampled Chinese *Han* students who are ethnic majority from large cities, with few studies sampling a large percentage of ethnic minority students. About 40% of the participants in the participating school district were ethnic minorities. Concerns about the consequences of adversity, such as the current pandemic, have been a long focus of resilience research (Masten, 2014; Masten & Narayan, 2012). Our findings showed that frequent peer victimization was detrimental to students' mental health during COVID-19, especially among elementary school students, and that different protective factors emerged for elementary and secondary school students. In line with the multisystemic approach to resilience framework, our findings showed that both intrapersonal and social contextual factors served as promotive and protective factors for students' mental health (Cicchetti, 2006; Masten, 2014). Resilience and positive teacher–student relationships mitigated the impact of peer victimization and mental health difficulties for elementary school students, but not secondary students. Lastly, results revealed gender differences such that resilience predicted less mental health difficulties among elementary school boys, whereas the positive teacher–student relationships predicted less mental health difficulties among secondary school girls. These findings shed light on both risk (i.e., peer victimization) and protective factors (i.e., personal resilience, peer relationships, and teacher–student relationships) for students' mental health difficulties during COVID-19 and revealed how protective factors would work differently based on youth's school level and gender.

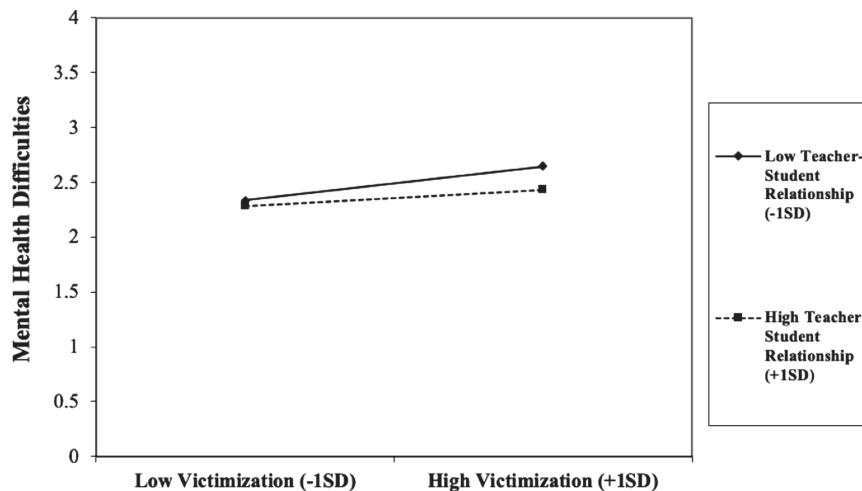
We found that elementary students in our sample reported higher levels of mental difficulties ($M = 2.38$, $SD = 0.93$) than a prior study ($M = 1.51$, $SD = 0.41$; Wang et al., 2018). Although this is not a direct comparison as the present sample is different from Wang et al.'s sample (2021), this suggests that the COVID-19 pandemic may trigger distress and mental health difficulties for children, consistent with other research during COVID-19 (Magson et al., 2021; Zhang et al., 2020). On the other hand, the prevalence of face-to-face peer victimization (defined as at least "once or twice a month") in the present study were 13.79% (verbal peer victimization), 9.37% (physical peer victimization), and 9.01% (relational peer victimization), which were much lower than a previous study using the same measure (31.53%, 20.55%, and 19.60%, respectively; Xie et al., 2019). However, the prevalence of cyber peer victimization was 5.43%, which was slightly higher than the previous study (4.3%; Xie et al., 2019). During COVID-19 virtual learning, students had fewer face-to-face interactions with peers and had to rely on the

Figure 4
The Resilience and the Quality of Teacher–Student Relationship Moderating the Effect of Peer Victimization on Elementary School Students' Mental Health Difficulties

(A) *Resilience*



(B) *Teacher-Student Relationship*



internet for learning and leisure activities. As schools reopened, wearing a mask and maintaining social distance made it harder for students to have typical social interactions with peers. This could explain why the prevalence of face-to-face peer victimization was much lower than in a previous study. In other words, quarantine during COVID-19 may serve as a protective factor for peer victimization for some students.

In examination of the protective factors for students' mental health, our results suggested that more personal resilience predicted less mental health difficulties and buffered the effects of peer victimization on mental health difficulties during COVID-19. Students' internal capabilities to be goal-oriented, to regulate emotions effectively, and to approach their negative experiences of peer victimization with optimism mitigated the impact of peer victimization on their mental health difficulties. The results are consistent with previous studies (Raskauskas & Huynh, 2015; Ye et al., 2016)

suggesting that personal resilience can help youth cope with adversity (e.g., pandemic and peer victimization).

Moreover, we found that teacher–student relationships' quality predicted fewer mental health difficulties and also buffered against the effects of peer victimization on mental health difficulties among elementary-school students. Positive teacher–student relationships fulfill students' basic needs for belonging, especially during the pandemic. Repeatedly, research showed a positive effect of teacher–student relationships on a wide range of student adjustment outcomes (Baker et al., 2008; Sulkowski & Simmons, 2017). On the other hand, peer relationships' quality did not play a buffering role. During COVID-19, social distancing has made it challenging to maintain positive relationships with peers (Magson et al., 2021). While adopting various preventive measures may restrict peer's one-on-one support, teachers may take more central role in creating the supportive interactions and school environment for students.

Group Differences

In risk and resilience framework, protective factors promote resilience when it is sensitive to contextual and sociocultural dynamics (Ungar et al., 2013), such as the varying developmental needs of the students and gendered peer contexts in this study. Our findings suggested that resilience and the quality of teacher–student relationships buffered the relations between peer victimization and mental health during COVID-19 among elementary school students, but not secondary school students. One explanation is that peer victimization does not predict secondary school students' mental health difficulties. In this study and previous studies (e.g., Sentse et al., 2015; Yang et al., 2018), elementary school students reported higher peer victimization than secondary school students, and the experiences of victimization could have more direct relation to these students' mental health difficulties. Another explanation is that the teacher–student relationships have less impact as students get older (Chang et al., 2004; Lynch & Cicchetti, 1997; Pianta et al., 2003). Compared with elementary school students, secondary school students are adolescents who may be more likely to seek independence from adults (e.g., teachers; McLaughlin & Clarke, 2010). Additionally, in the present study, secondary school students reported a lower score on the positive aspects and a higher score on the negative aspects of the teacher–student relationships than elementary school students (see Table 3 of the electronic Supplemental Material). The findings were consistent with previous studies that as students aged, degree of closeness in teacher–student relationships decreased while teacher–student conflict increased (Jerome et al., 2009). Consequently, teacher–student relationships did not appear to serve as a buffer for secondary school students.

Additionally, consistent with previous studies (e.g., Chu et al., 2019), we found that boys reported a higher rate of peer victimization but a lower level of mental health difficulties than girls. Yet, we found that peer victimization was associated with more mental health difficulties among secondary-school girls (not boys), possibly because girls are socialized to care more about social relationships than boys (Underwood, 2003). We also found that student–teacher relationships functioned differently for boys and girls. Secondary school boys reported more negative teacher–student relationships than girls. Relatedly, the quality of teacher–student relationships was associated with less mental health difficulties for girls in both elementary and secondary schools, but not for boys. This is in line with the prior research showing that girls are more likely to report higher quality teacher–student relationships than boys, and the quality of teacher–student relationships can work as a protective factor for girls' mental health (O'Connor, 2010; Spilt et al., 2012). This may be because girls tend to have better academic and behavioral performance than boys (Entwisle et al., 2007; Matthews et al., 2009), and relatedly, teachers may prefer girls' calm and compliant behaviors (Koch, 2003; Rimm-Kaufman et al., 2000).

Furthermore, girls are more likely to seek affiliation with teachers (Underwood, 2003), while boys are more likely to seek autonomy. Chinese traditional culture emphasizes collectivism (e.g., interpersonal connectedness) and children's compliance and obedience to teachers, which may affect teacher–student relationships (Chen et al., 2019). Girls' connectedness and compliance with teachers may contribute to better quality teacher–student relationships as it is adherent with Chinese culture. Furthermore, gender role socialization/expectations can also explain this difference. Boys are expected

to be strong, brave, and independent at school (Rosen & Nofziger, 2019). Boys who have close teacher–student relationships or need support from teacher may be perceived as weak and incompetent by peers, which could result in diminished social status and more mental health difficulties. This may be why a high level of personal resilience (coping capacity and skills) is important for boys' mental health as shown in our data. Understanding the varying needs for autonomy, while mainlining connectedness and compliance for teachers in Chinese culture, and gendered perception of support suggests for developmentally and culturally sensitive approach to interventions.

Limitations

The results of our study should be interpreted within the context of several limitations. First, data relied on student self-report, contributing to a mono-method bias. Future studies should employ multiple informants (i.e., teacher and peer reports), which will provide fuller picture about these students' adjustment in school setting. Second, data were only collected at one-time point, and we should not infer any causal relationships. Future research should collect longitudinal data to examine the changes in mental health difficulties and peer victimization overtime during COVID-19 and whether resilience factors may predict mental health changes over time. Third, although we were able to collect data from one large city in Xin Jiang, China, students' experiences may differ for other ethnic minority students across China, so more studies are needed with ethnically diverse samples within China. This will also allow researchers to examine how the theorized relations may differ between ethnic majority and minority students. Fourth, students were nested within schools. However, we did not control for the nested structure of our data because we did not have enough schools (three elementary schools and seven secondary schools) to conduct hierarchical linear modeling. Future studies with more school/class-level variables can reveal school characteristics or approaches to intervene with peer victimization. Fifth, we did not collect data on family income, which might be a key predictor of family SES and economic insecurity during COVID-19. We only were able to control for parents' education and job stability in the analysis. Future studies should collect family income as a key indicator of family financial stress during the pandemic. Lastly, in the present study, gender conceptualization is limited. Research in the future should include broader conceptualizations of gender identity, including gender nonconforming youth.

Conclusions and Implications for Practice

Our results highlight important findings in the context of COVID-19 pandemic and suggest multiple implications. First, peer victimization was associated with more mental health difficulties during COVID-19. In comparison to previous studies, students in our sample reported experiencing more cyber victimization and more mental health difficulties. Schools should pay more attention to prevent cyber peer victimization and protect students' mental health as they use electronic devices more frequently during the pandemic and cannot easily defend themselves (Kowalski et al., 2014). School psychologists and counselors can conduct regular peer victimization and mental health screenings to design prevention and intervention programs based on the data. They can also train adults in school to

recognize peer victimization, respond to victimization immediately, and provide needed support to students who struggle with peer victimization and mental health difficulties.

Second, it is important to foster students' personal resilience strategies and social support (from teachers and peers) in school, especially during challenging times like the current COVID-19 pandemic. For resilience promotion, teachers can help students identify their personal strengths and strategies they used to overcome challenges in the past. They can also teach students to set small and achievable goals (e.g., SMART goals) and developing problem-solving skills (Kuperminc et al., 2020), such as having students brainstorm the most effective ways to solve the problem and trying different strategies. Additionally, it is important to teach positive thinking and emotional regulation skills (e.g., mindfulness; Galante et al., 2018; Reivich et al., 2013). For example, teachers, school counselors, and school psychologists can encourage students to list three things they did well each day to promote confidence and inspire positive thinking.

As a part of social support in school, developing positive relationships between teachers and students and among peers is crucial, especially because social interactions may take different forms (e.g., online communication) during COVID-19. School psychologists or counselors can provide teachers and staff with training on how to establish relationships with students and provide tips that can benefit students when they are doing distance learning and when they return to the school (Ye et al., 2021). Schools may also consider assigning high-risk elementary school student a designated staff member who will maintain a relationship with the student and coordinate with their families throughout the school year, particularly when transitioning between in-person and virtual learning.

Third, at the school level, transformative social emotional learning (SEL) curriculums should be implemented. The present study was based on an ethnical diverse sample, and previous studies showed that ethnical minority students were vulnerable in social conflicts in school (Hu et al., 2009). Transformative SEL curriculums can aim to promote equity and the optimal developmental outcomes in schools by building authentic relationships between students and teachers, which further facilitates colearning to explore inequities and cocreates inclusive solutions during COVID-19 (Jagers et al., 2019). With transformative SEL, schools can examine the potential ethnic and economic inequities.

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Received February 15, 2021

Revision received November 10, 2021

Accepted November 29, 2021 ■