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Adolescent Peer Victimization and Deliberate Self-Harm: A Three-Wave Moderated Mediation Model

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Abstract

Background: Identifying deliberate self-harm (DSH) and peer victimization in adolescents is a public health issue. The present study evaluates a three-wave longitudinal model to examine the effect of peer victimization on DSH and the roles of internalizing problems (depression and anxiety) and perceived peer and teacher support climate in this relationship. **Methods**: The participants were 2381 adolescents (51.2% boys, Mage = 13.38, SD = .59) from Chinese middle schools. Self-report measures were used to collect data every 6 months in three waves. **Results**: (1) Peer victimization at T1 positively predicted DSH at T3. (2) Depression at T2, rather than anxiety, mediated the relationship between peer victimization at T1 and DSH at T3. (3) Perceived peer support climate at T1 played a moderating role between peer victimization at T1 and depression and anxiety at T2, but perceived teacher support climate did not. Peer victimization had a stronger predictive effect on depression and anxiety for students with high level of perceived peer support

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climate. **Limitations**: Study limitations include the short interval (6 months) of the longitudinal design, the reliance on self-report questionnaires, the inclusion of only one aspect of student-student and teacher–student relationships, and the age limitation. **Conclusions**: The results demonstrated the importance of prevention for improving social and emotional skills to reduce peer victimization and of interventions to promote a peer support climate in the classroom. The findings highlight the need to consider different types of internalizing problems and perceived support in studies of DSH in adolescents.

Keywords
peer victimization, deliberate self-harm, peer support climate, teacher support climate, internalizing problems, longitudinal design

Introduction

The Relationship Between Deliberate Self-Harm and Peer Victimization

Deliberate self-harm (DSH) is gaining worldwide attention as a growing public health concern, especially in adolescence, which is a period of increased risk for self-harm (Lockwood et al., 2020). DSH is defined as nonfatal forms of deliberate, direct destruction, or alteration of body tissue resulting in injury severe enough for tissue damage to occur (Lundh et al., 2007). For teenagers, some risk factors associated with DSH include bullying victimization, interpersonal difficulties, impulsivity, and stress relating to housing, school, or financial pressures (Abdelraheem et al., 2019; Huntley et al., 2019; O'Reilly et al., 2021).

Peer victimization is an important predictor of DSH. Victimization occurs when "a student is being bullied or victimized when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other students" (Olweus, 1993). Peer victimization could have serious consequences for mental health and may lead to sleep disorders, internalizing problems, self-harm, and suicidal ideation (Fite et al., 2019; Hysing et al., 2019; O'Reilly et al., 2021). Both cross-sectional and longitudinal research has revealed a strong association between peer victimization and DSH (Jiang et al., 2019; Karanikola et al., 2018), and peer victimization in childhood is associated with an increased risk of self-harm in adolescence (Fisher et al., 2012). However, the underlying mechanisms that help to explain and modulate this risk are not fully understood.

There are also cultural, regional, and group differences in peer victimization and DSH in adolescents. Cross-cultural studies found that the characteristics of peer victimization and students' attitudes towards bullying among Chinese teenagers were significantly different from those among teenagers in Western countries. For example, Chinese teenagers had a more positive attitude towards anti-bullying and were more willing to help victims than British teenagers (Ji et al., 2003). Some scholars believe that middle school students are at the early stage of self-consciousness, and the internal and external conflicts experienced by teenagers are more intense in the context of Chinese traditional culture than in Western liberalistic culture, and thus, the incidence rate of self-harm is also higher (Jiang et al., 2011). Because of these differences, peer victimization and DSH may develop differently and have different influencing factors in Chinese adolescents.

Internalizing Problems as a Mediator

The fact that not all teenagers who experienced peer victimization engage in DSH implies that there might be other factors that influence the association. The pressure interaction model provides a theoretical foundation for the mediating role of internalizing problems (Lazarus & Folkman, 1987). According to this theory, negative behaviors such as peer victimization may cause a high level of pressure. When the pressure cannot be properly dealt with, it will accumulate, leading to internalizing problems such as depression and anxiety (Fan et al., 2021). Internalizing problems will further induce victims' deviant behaviors, such as self-harm and suicide. Therefore, internalizing problems are important mediators of peer victimization's impact on DSH.

Depression and anxiety, as typical internalizing problems, have mediating roles in the relationship between peer victimization and DSH. Research suggests that peer victimization is significantly positively correlated with individual depression and anxiety, and early peer victimization predicts later depression and anxiety levels (Iyer-Eimerbrink et al., 2015; Reijntjes et al., 2010; Williford et al., 2018). The continuity of depression also elevates the risk of self-harm (Zubrick et al., 2017). Cross-sectional studies indicated that internalizing problems play a partial mediating role in the relation between peer victimization and DSH (Claes et al., 2015). Moreover, researchers found that different types of internalizing problems might play different roles. Klomek et al. (2016) surveyed 168 middle school students in Europe and found that depression served as a partial mediator between verbal victimization, relational victimization, and self-harm, while anxiety did not. There are still inconsistent results regarding whether anxiety plays a mediating role between peer victimization and DSH, and further exploration is required. In recent years, much of the scholarship on the mediating mechanism between

peer victimization and DSH has focused on adolescents from Western societies, but it is difficult to make causal inference due to the lack of longitudinal research in China.

Perceived Peer Support and Teacher Support as Moderators

In addition to the focus on risk factors, protective factors are equally important in the relationship between peer victimization and DSH. The social support buffer hypothesis (Cohen & Wills, 1985) explains the possible mechanism by which social support mitigates individual internalizing problems. The hypothesis proposes that social support reduces an individual's stress reaction and the evaluation of the severity of negative events, thus buffering the negative impact of pressure on individuals and protecting mental health. Peer support and teacher support are important components of the social support system and have a positive impact on the internalizing problems of teenagers. Davidson and Demaray (2007) found that peer support, as part of social support, could act as a buffer and played an important regulating role between peer victimization and internalizing problems, as could teacher support (Yeung & Leadbeater, 2010).

Most previous studies focused on the effects of peer support or teacher support at the individual level, and few explored these effects at the class level. Classrooms might be an extremely relevant and powerful context for students' social development (Perry & Weinstein, 1998) because they are the main places in which students learn and interact with classmates. Students are assigned to fixed classes and classrooms in China; therefore, the atmosphere of and belongingness to classes are significant to middle school students. Bullying will be less likely to happen in a positive class climate, and the individual depression level will also be lower (Jia et al., 2009; Leadbeater et al., 2014). Although interactions among students have been the focus for most peer relations research, studies on the influences of class-level factors related to peer victimization are less common. Considering the importance of classes for Chinese students, how class climate affects the relation between peer victimization and DSH may also be different between China and Western countries.

The Current Study

Large-scale surveys using internationally standard methodology to investigate teenager bullying victimization are still mainly limited to European and other Western countries (Chester et al., 2015; Lebrun-Harris et al., 2020; Lian et al., 2018). Considering the lack of large-sample research in China, the current study is based on a large sample of Chinese students. A longitudinal research design is used in order to reveal the relation between peer victimization and

DSH. Additionally, considering the particularity of Chinese fixed classes, which means teenagers have fixed peers, teachers, and classroom, examining the effects of class peer support climate and teacher support climate may be interesting. Finally, it is still controversial whether there are gender differences in the moderating effects of peer support and teacher support on peer victimization and internalizing problems. Some research found no evidence supporting gender differences (Cooley et al., 2015; Mihalas et al., 2012). Tanigawa et al. (2011) found that peer support of middle school students could regulate the depression level of boys but not girls after they were bullied. Therefore, it is necessary to further explore whether there are gender differences in the relational mechanism to better understand the characteristics of boys and girls as they pertain to the studied factors.

To summarize, this longitudinal study examined the association between peer victimization and DSH at three points (T1, T2, and T3) to investigate the complex linkages among peer victimization, DSH, internalizing problems and perceived peer/teacher support climate. As for no similar research has been conducted using Chinese teenager participants, drawing on past research conducted in Western societies, the following hypotheses were developed: (1) T1 peer victimization is associated directly with T3 DSH; (2) T2 depression and anxiety mediate the association between T1 peer victimization and T3 DSH; (3) T1 perceived peer support and teacher support climate moderate the relationship between T1 peer victimization and T2 depression and anxiety; and (4) there are gender differences in the model. The hypothetical model M1 is shown in Figure 1. Given that we found few studies on peer victimization, DSH, internalizing problems, and perceived support with a moderated mediation model, we considered these analyses exploratory in nature, especially

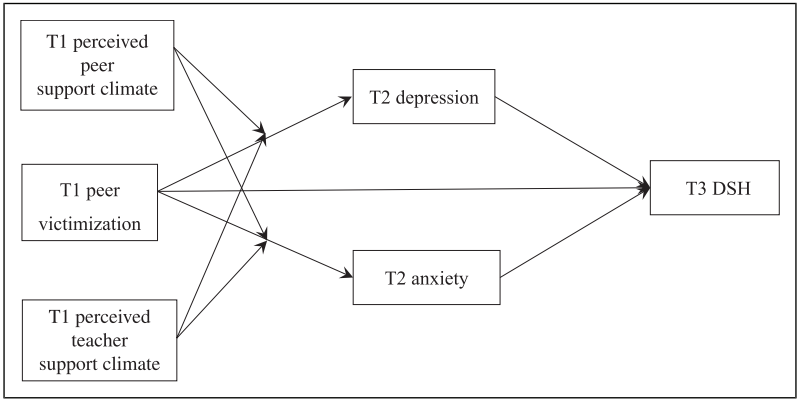

Figure 1. Hypothetical model: mediating effects of depression and anxiety and moderating effects of perceived peer support and teacher support climate.

regarding the moderating effect. Therefore, in addition to the hypothetical model, we constructed model M2, in which T1 perceived peer support and teacher support climate moderate the relationship between T2 depression and anxiety and T3 DSH, and model M3, in which T1 perceived peer support and teacher support climate moderate both the relationship between T1 peer victimization and T2 depression/anxiety, and the relationship between T2 depression/anxiety and T3 DSH paths.

Methods

Participants

Data were collected from 47 classrooms in 7 secondary schools (2 urban schools, 1 county school, and 4 township schools) in two districts of China with average economic levels. Participants took part in the study at the end of the second semester of grade 7 (T1), the end of the first semester of grade 8 (T2) and the end of the second semester of grade 8 (T3), with an interval of 6 months. A total of 2643 questionnaires were distributed and collected at T1. Students with missing values and extreme values were eliminated, resulting in a final sample of 2608 subjects (effective response rate of 98.68%). Because of absence due to illness, transfer to another school and other reasons, some students did not take part in the two subsequent waves. Ultimately, 2381 students took part in all of the waves, with a dropout rate of 8.7%. Of the students, 1218 (51.2%) were boys and 1163 were girls, and the average age of the sample at T1 was 13.38 years ($SD = .59$). T-tests showed that there was no significant difference in peer victimization, depression, anxiety, or self-harm between the lost subjects and the retained subjects. Before the survey was administered, we obtained institutional approval and students' written informed assent at each wave. All parents or legal caregivers also provided corresponding written informed consent for the study. Under the guidance of trained undergraduate or postgraduate students, the participants were assured of the confidentiality of their responses and were given examples to understand how to complete the questions. Students were assessed collectively by taking the class as a group and completed all questionnaires on paper in their classrooms during school hours.

Measures

Peer Victimization. Peer victimization was assessed by the Chinese version of the Olweus Bullying Questionnaire at T1 (Zhang et al., 1999). Seven items, such as "being teased by others," were rated on a 5-point scale from "never" to "more than 5 times." The questionnaire has demonstrated good reliability and validity, including the Chinese version we used (Zhang et al., 1999) The Cronbach's α of the scale at T1 was .82.

Depression Symptoms. Adolescents completed the Children's Depression Inventory at T2 (CDI; Kovacs, 2003). This scale consists of 27 items divided into 5 dimensions: lack of pleasure, negative emotion, low self-esteem, low self-efficacy, and interpersonal problems. Items are scored on a 3-point Likert-type scale on which symptoms range from light (0) to severe (2 points). An example is "In the last 2 weeks, (1) I have not felt lonely, (2) I have often felt lonely, or (3) I always felt lonely." The Cronbach's α of the scale at T2 was .89.

Anxiety. The Social Anxiety Scale for Adolescents (SAS-A) compiled by Greca and Lopez (1998) and revised by Ma (1999) was used to assess anxiety at T2, which has been demonstrated adequate reliability and validity. It includes 18 items, such as "When meeting new people, I feel nervous" and "I'm afraid others may not like me." Every item was rated on a 5-point scale from "never" to "always." The scale has good reliability and validity, and the Cronbach's α of the scale at T2 was .93.

Perceived Peer Support and Teacher Support. Two dimensions of the Perceived School Climate Scale (Jia et al., 2009) were selected to measure adolescents' perceived peer support and teacher support in the classroom at T1. A total of 26 items rated on a four-point scale from "never" to "always" were used. For this assessment, the Cronbach's α of the teacher support dimension at T1 was .81, and that of the peer support dimension was .85.

Deliberate Self-Harm. Deliberate self-harm was determined using the Deliberate Self-harm Inventory-9r (DSHI-9r) developed by (Gratz, 2001) and revised by Bjärehed and Lundh (2008), which contains 9 self-report items. The definition of DSH is the deliberate, direct destruction, or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage to occur (Lundh et al., 2007). The subjects were asked whether they participated in 9 different types of self-harm in the past 6 months, such as "intentionally hitting myself and creating bruises." Every item was rated on a 6-point scale from "never" to "more than 5 times." This measure has been used in previous work and has adequate internal consistency. The evaluation of DSH in this study was divided into a 5-point scale from 0-4 corresponding to 0, 1 time, 2 times, 3–4 times and more than 5 times. The final self-harm level is the average score of each item. The Cronbach's α of the scale was .87 at T2 and .82 at T3.

Data Analysis

SPSS19.0 and MPLUS7.4 were used to analyze the descriptive statistics and for the structural equation model analysis, respectively. According to the recommendations of Hooper (Hooper et al., 2008), when the CFI is higher

than .90, the TLI is higher than .90, the RMSEA is lower than .06, and the SRMR is lower than .08, the model is considered to have satisfactory fit. Full information maximum likelihood estimation (FIML) was used to calculate the missing data. Considering the possibility of the non-normal distribution of variables such as peer victimization, depression, anxiety, and self-harm in adolescents, maximum likelihood estimation with robust standard errors (MLR) was used to estimate the chi-square values and parameters.

Results

Descriptive Statistics

The descriptive statistics, correlations, and gender differences among the variables are shown in Table 1. The incidence of adolescent DSH reached 34.4%. Peer victimization at T1 was positively correlated with anxiety, depression, and self-harm at T2, while perceived peer support and teacher support at T1 were negatively correlated with peer victimization at T1, depression and anxiety at T2 and self-harm at T3. T-test results showed that there were significant sex differences in peer victimization (t = 7.42, p < .001), perceived peer support (t = −7.34, p < .001), anxiety (t = −4.03, p < .001), and DSH (t = −2.84, p < .001). Compared with boys, girls perceived a higher level of peer support and a lower level of peer victimization, but girls' anxiety and DSH levels were significantly higher than boys.'

Relationship Between Peer Victimization and Deliberate Self-Harm: A Moderated Mediation Model

According to the causal steps approach (Baron & Kenny, 1986), three models (M1a, M1b, M1c) were constructed step by step. DSH at T3 was taken as the dependent variable and age, sex, and baseline DSH level were taken as the control variables in model M1a to analyze the direct effect of peer victimization at T1 on DSH at T3. The results showed that DSH at T3 was significantly predicted by peer victimization at T1 (β= .08, p < .01).

Whether depression and anxiety at T2 mediated the link between peer victimization at T1 and DSH at T3 was examined in model M1b. The results indicated that the model had good fit (Figure 2): χ^2 (10) = 102.94, CFI = .92, TLI = .86, RMSEA = .06, and SRMR = .04. Peer victimization at T1 positively predicted anxiety at T2 (β = .25, p <.001) and depression at T2 (β = .23, p <.001). Depression level at T2 positively predicted DSH at T3 (β = .09, p < .001), while anxiety at T2 did not significantly predict DSH at T3 (p > .05). Depression, not anxiety, played a partial mediating role in the process by which peer victimization affected self-harm. The direct effect of T1 peer

Table 1. Descriptive statistics and correlations for the major variables.

	Boys (M ± SD)	Girls (M ± SD)	1	2	3	4	5	6	7
1. Peer victimization T1	0.58 ± 0.74	0.38 ± 0.53	—	−.41**	−.18**	.33**	.32**	.18**	.17**
2. Perceived peer support T1	3.10 ± 0.50	3.24 ± 0.50	−.43**	—	.48**	−.35**	−.23**	−.15**	−.11**
3. Perceived teacher support T1	2.80 ± 0.60	2.80 ± 0.56	−.23**	.51**	—	−.30**	−.09**	−.14**	−.10**
4. Depression T2	0.50 ± 0.30	0.53 ± 0.31	.25**	−.36**	−.31**	—	.45**	.31**	.23**
5. Anxiety T2	2.18 ± 0.81	2.32 ± 0.78	.24**	−.22**	−.10**	.47**	—	.20**	.16**
6. DSH T2	0.20 ± 0.50	0.19 ± 0.45	.18**	−.13**	−.13**	.31**	.10**	—	.49**
7. DSH T3	0.20 ± 0.46	0.26 ± 0.54	.21**	−.19**	−.15**	.30**	.12**	.61**	—

Note. **p <.01; the correlation coefficients above the diagonal are the boys' results, and those below the diagonal are the girls' results.

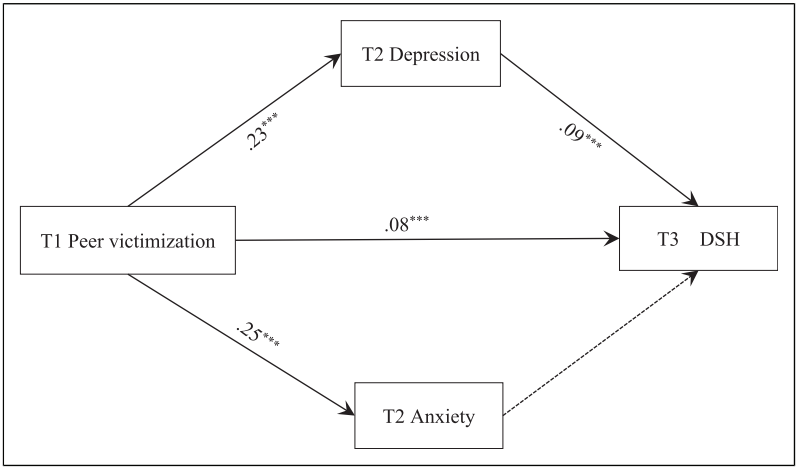

Figure 2. Mediating effects of depression and anxiety. *Note.* The significant paths are represented as solid lines and the insignificant paths as dotted lines. ***$p < .001$.

victimization on T3 DSH was .08, and the indirect effect of T2 depression was .02 ($p < .001$), accounting for 0.02/(0.08+0.02) = 20% of the total effect.

As the basis of model M1b, perceived peer and teacher support and gender differences were included in model M1c. The variables were centralized to avoid the multicollinearity problem. Multiple groups of comparisons were used to test the sex differences in the model. Two models were constructed: M4, a model without path coefficient restrictions, and M5, a model with equal restriction of all path coefficients. According to the chi-square test (http://www.uoguelph.ca/~ Scolwell/difftest), the chi-square value difference between M4 (χ^2 (26) = 81.45, CFI = .96, TLI = .91, RMSEA = .04) and M5 (χ^2 (44) = 116.37, CFI = .95, TLI = .93, RMSEA =.04) was not significant ($\Delta\chi^2$ (18) = 34.92, $p > .05$), indicating that there was no significant gender difference in the model. Further excluding the influence of control variables, the results showed that there was no significant difference between the models. Therefore, boys' and girls' data are combined in the following analysis.

The final model M1c had good fit: χ^2 (16) = 120.34, CFI = .92, TLI = .86, RMSEA = .05, and SRMR = .04. The results indicated (Figure 3) that peer victimization at T1 positively predicted depression ($\beta = .16$, $p < .001$) and anxiety ($\beta = .24$, $p < .001$) at T2; perceived peer support at T1 negatively predicted depression at T2 ($\beta = -.19$, $p < .001$) and anxiety at T2 ($\beta = -.12$, $p < .001$); and the interactive effect of peer victimization and perceived peer support at T1 on depression ($\beta = .06$, $p < .05$) and anxiety ($\beta = .07$, $p < .05$) at T2 was significant. Perceived teacher support at T1 negatively predicted depression at T2 ($\beta = -.16$, $p < .001$), but the effect on anxiety at T2 was not

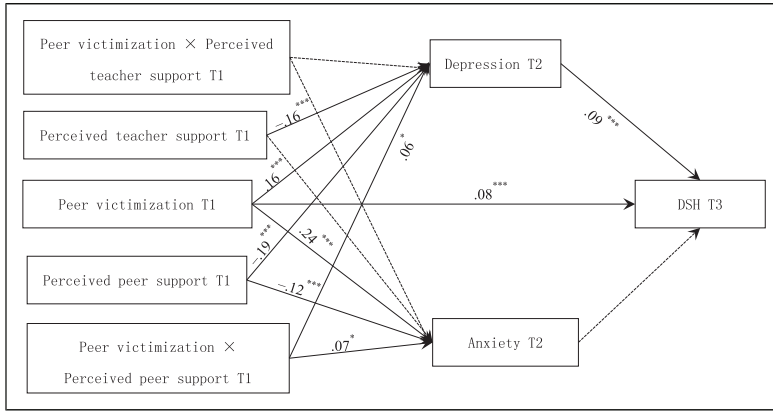

Figure 3. Moderating effects of perceived peer support and teacher support climate. *Note.* ***$p < .001$, *$p < .05$. The coefficients listed in the figure are standardized coefficients, and the dotted lines indicate that the coefficients are not significant.

significant ($p > .05$). The interaction effect of peer victimization and perceived teacher support at T1 on depression and anxiety at T2 ($p > .05$) was not significant.

To examine the possibility of the two moderators acting on the other paths, two hypothetical models mentioned in the introduction paragraph above, M2 and M3, were constructed to verify different moderating effects. M2, in which the adjustment variables moderated the second half of the path, showed poor fit: χ^2 (36) =120.34, CFI = .79, TLI = .72, RMSEA = .07, and SRMR = .05. M3, in which the adjustment variables moderated both paths, also showed poor fit: χ^2 (32) =294.67, CFI = .80, TLI = .73, RMSEA = .06, and SRMR = .04. Therefore, these two models will not be discussed further.

Perceived peer support was divided into high perceived peer support and low perceived peer support according to the sign of the standard deviation. Simple slope analysis was performed based on the website http://www.quantpsy.org/ (Figures 4, and 5). Peer victimization significantly predicted depression in both the high and low peer support groups. When perceived peer support was high, peer victimization was more closely related to depression and anxiety ($b = .12$, $t = 6.02$, $p < .01$; $b = .36$, $t = 9.26$, $p < .001$). Peer victimization was less closely related to depression ($b =. 06$, $t = 4.01$, $p < .05$) and anxiety ($b = .23$, $t = 5.95$, $p < .001$) when perceived peer support was low. In addition, the mediating effect of depression differed between the high and low groups. In the low perceived peer support group, the mediating effect of depression was 0.012 ($p < .001$), and in the high perceived peer support group, the mediating effect of depression was 0.024 ($p < .001$). Therefore, when peer support was perceived to be low, peer victimization appeared to have a weak

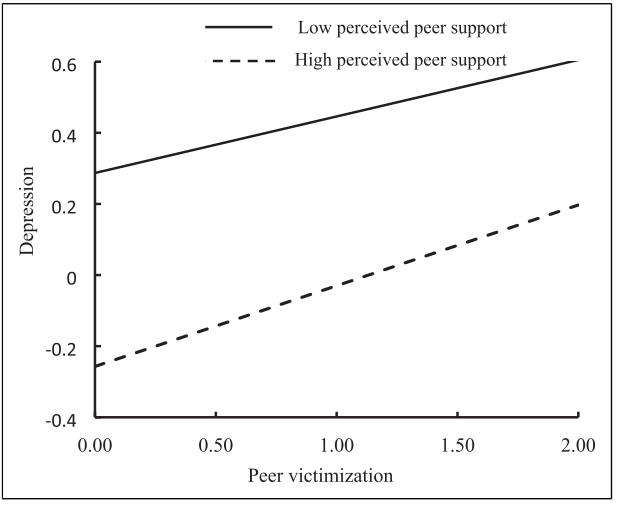

Figure 4. Moderating effect of peer support climate between peer victimization and depression.

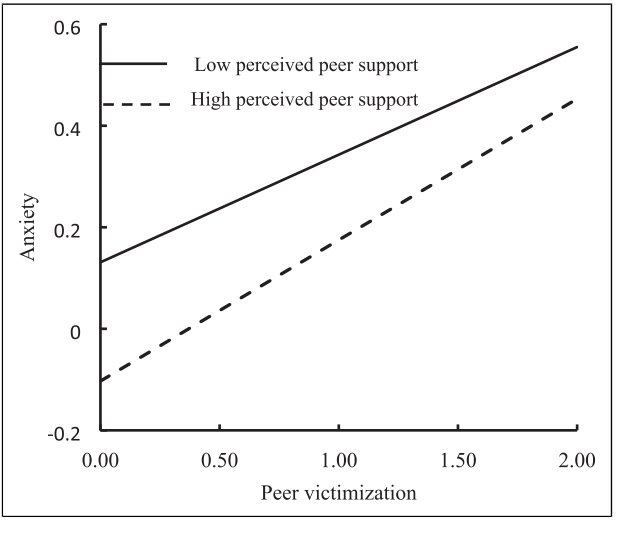

Figure 5. Moderating effect of peer support climate between peer victimization and anxiety.

effect on depression and anxiety. By contrast, when students perceived a high level of peer support, peer victimization had a strong effect on depression and anxiety for victims.

Discussion

Decreasing the levels of risk factors and increasing the levels of protective factors are two crucial strategies for DSH prevention. In this study, we investigated a three-wave longitudinal moderated mediation model of DSH with two risk factors (depression and anxiety) and two protective factors (perceived peer support and teacher support) in a large sample of Chinese adolescents. The incidence of DSH among adolescents in China reached 34.4%, which was higher than in previous studies, showing a rising trend of DSH in Chinese adolescents. The results indicated that (1) peer victimization was positively related to anxiety, depression, and DSH and negatively related to perceived peer support and teacher support, (2) depression partially mediated the relation between peer victimization and DSH, and (3) perceived peer support moderated the relation of peer victimization with depression and anxiety. In the context of high perceived peer support, peer victimization has a stronger predictive effect on depression and anxiety.

Association Between Peer Victimization and Deliberate Self-Harm

The study found that early peer victimization significantly predicted later depression, anxiety, and DSH, which is consistent with existing literature (Sigurdson et al., 2018; Zwierzynska et al., 2013). The results draw attention to the deleterious consequences of victimization. The campus is the main venue of social life for middle school students, which means that peer victimization can be repetitive and continuous and have long-term negative consequences. Therefore, the influence of victimization on youth health problems is a vital area for continued research. Heerde and Hemphill (2019) conducted a meta-analysis of international literature to examine the association between peer victimization and DSH and found that peer victimization was associated with an increased likelihood of DSH. Since peer victimization may have a negative impact on early adulthood or even the entire lifespan, it is necessary to pay attention to the mental health of victims and implement early intervention to prevent internalizing problems and the development of self-harm behavior.

Mediating Role of Internalizing Problems Between Peer Victimization and Deliberate Self-Harm

The findings indicated an indirect effect of peer victimization on DSH through the symptoms of depression, implying that the pressure interaction theory (Lazarus & Folkman, 1987) can also be applied to our understanding of the internalizing problems and DSH faced by campus victims in China. When individuals are repeatedly bullied and cannot respond effectively, it may lead

to negative emotions such as depression and anger (Pouwelse et al., 2011). Victims who cannot cope likely internalize the negative feedback, causing them to turn to self-harm to control and cope with these internalizing problems. Consequently, it is important to prevent adolescent DSH by intervening in negative emotions, improving emotion regulation skills, and cultivating positive and healthy regulation methods.

The study demonstrated that, unlike for depression, a mediating role of anxiety was not found between peer victimization and DSH, indicating the necessity of distinguishing depression from anxiety to some extent. In previous peer victimization studies, depression and anxiety were essentially not distinguished from each other, and most researchers mainly focus on depression, while anxiety is seldom studied. However, depression and anxiety may have different characteristics and play different roles. Sentse et al. (2017) explored peer victimization, depression, and anxiety through a cross-lagged analysis and found different association models for depression and anxiety, which further emphasizes the importance of distinguishing depression from anxiety. Depression and anxiety are common negative emotions. School staff and educators should pay attention to the impacts of different types of internalization problems on the risks of DSH when carrying out peer victimization or self-harm interventions.

Moderating Role of Perceived Peer and Teacher Support in the Entire Model

The results revealed that the associations between peer victimization and depression and anxiety were moderated by perceived peer support. Previous studies have examined the positive and negative effects of peer support and teacher support at the individual level. However, considering the two dimensions of school climate (individuals' perceptions of peer support and teacher support in the classroom) requires exploration at different levels. In the low perceived peer support group, the baseline levels of depression and anxiety were higher than those in the high perceived peer support group, but as the level of peer victimization increased, the difference decreased. When the peer support climate was high, the level of depression and anxiety was much lower than low perceived peer support at first. As the peer victimization level increased, the depression level of the low perceived peer support climate group increased more quickly than high perceived peer support climate group and gradually approached the level of the high perceived peer support climate group.

It is also worth noting that peer victimization was more strongly predictive of depression and anxiety when adolescents perceived higher peer support climate than lower peer support climate when the peer victimization was low, which was inconsistent with previous findings. This finding is similar with

"healthy context paradox" (Huitsing et al., 2019). Researchers have indicated that despite the overall success of bullying interventions, compared with those in the control group, victims in the intervention group showed a higher level of depressive symptoms and a lower level of self-esteem 1 year later. Therefore, researchers believe that a good class climate may lead to a "healthy context paradox," that is, in a relatively good class or school climate, victims' depression symptoms may develop more quickly (Garandeau et al., 2018; Huitsing et al., 2019; Salmivalli, 2018). These results imply that schools should pay attention not only to the classes with a poor peer support climate but also those with a good peer support climate.

The other possible explanation is that the moderating effect of peer support may depend on the measures of peer support used. The peer support measured in this study was the perceived student–student support and teacher support climate, which are two dimensions of school climate, rather than the specific peer support that individuals received. Kochenderfer-Ladd and Skinner (2002) measured two kinds of social support, actual social support, and usable social support. Demaray and Malecki (2003) found that only the available social support played a positive role. In other words, even if victims perceive a good climate of peer support in the class, they may have little available peer support, which means they may have more negative cognition of their own experiences under a good classroom climate. Previous studies have shown that for bullying victims, what matters is not the number of allies but whether their allies have the ability to provide protection (Hodges et al., 1999). Teenagers are not willing to make friends with victims because of the increased risk of low social status. Therefore, victims' friends always have low status, which makes them more likely to become the targets of bullying. This highlights that schools or teachers need to focus on the issue of victims' friendships by helping them expand their interpersonal circle and improve their friendship quality so that they have available and strong peer support.

The study did not find a moderating effect of teacher support climate. One possible reason is that middle school students are beginning to realize the importance of peer support during adolescence; thus, the influence of teacher support may gradually weaken while the influence of peer support increases (Colarossi & Eccles, 2003; Jenkins et al., 2018). Cultivating supportive interpersonal relationships and improving friendship quality are especially important for adolescents who have experienced peer victimization.

The present study has implications for multi-facet interventions to promote peer support systems, as well as classroom-wide bullying victimization prevention programs. As mentioned above, Chinese students are assigned to fixed classes to study and make friends, which means the peer support climate of class has an important impact on students. Therefore, as for researchers and policy-makers, additional intervention options need to be developed so that to make up for the lack of school-level antibullying programs. The findings of

this study also highlight the possible seriousness of ignoring bullied students in classes of high peer support climate based on the moderating effect results, suggesting that school interventions need to incorporate targeted support measures for these individuals, rather than only focusing on the overall support climate of the class. Moreover, given that class peer support climate is an underlying mechanism that has a long-term impact on students' mental health, future efforts to carry out prevention programs at the class level should be invested and relevant courses for students should be encouraged. This strategy maybe helps to construct a more comprehensive protective mechanism from bullying victimization to internalizing problems for Chinese teenagers.

Limitations and Future Directions

Compared with prior studies, this study has several merits, including its use of a three-wave longitude design and a large sample size and its focus on both risk and protective factors (i.e., perceived peer support and teacher support). However, there are still some limitations in this study, and further research is required.

First, because of the data limitations, the interval may have been too short (6 months) to fully reflect the relationship between peer victimization and DSH. As most longitudinal studies last for 12 months or even longer, a longer time frame should be adopted to further explore the causal relationship. Second, a cross-lagged design can be used in the future to explore the association between peer victimization, internalizing problems, and DSH. Third, we included only one aspect of student-student and teacher-student relationships in our study: adolescents' perceived peer support and teacher support. Other aspects of relationships, such as friendship quality and mutuality, as well as other variables, such as policies, the school environment, and parental factors (such as parental support; Tanigawa et al., 2011), may also play a buffering role between peer victimization and DSH. The expansion of the research to these variables will help us understand the dynamic development process between peer victimization and DSH. Future research can examine the roles of different types of social support in the mechanism linking peer victimization and DSH as well as the role of social support at the individual level and class level. Finally, the study sample was not divided into groups based on residence in an urban or rural area. Considering regional differences and physical development, the incidence and degree of peer victimization and DSH among adolescents in different areas and of different ages may vary to some extent.

This study explored the association between early adolescent peer victimization and later DSH as well as the roles of risk factors (depression and anxiety) and protective factors (perceived peer support and teacher support in

the classroom) through a three-wave longitudinal study of a large sample in China. The results verified the applicability of the stress interaction model and social support buffer theory to this relation, providing relevant theoretical support for interventions targeting adolescent peer victimization and DSH. In view of the high incidence of peer victimization and DSH in Chinese middle schools, it is necessary to further study the possible protective mechanisms of the relation between peer victimization and DSH against the social and cultural background of Asian areas, which could provide references for future campus screening and intervention. In practice, schools are supposed to care about the reasons behind the DSH of teenagers, pay attention to their emotional state, improve their social and emotional adjustment skills, and provide effective DSH-related supervision, prevention, and intervention.

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Author Contributions

All authors were involved in writing the manuscript.
Author Wei, Ren, Qin, Zhang and Chen managed the literature searches and analyses.
Authors Wei, Ren, Qin and Luo undertook the statistical analysis.
All authors contributed to and have approved the final manuscript.

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