

## *Original Paper*

# The Influence of Bullying Behavior on Depression in Middle School Students: A Moderated Mediating Effect

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### **Abstract**

*This research aims to explore the relationship between bullying and depression in middle school students, and to investigate the role of loneliness and self-esteem. A cluster sampling method was used to sample 554 students from a middle school in China, and OBVQ, CES-D-10, UCLA-6, and SES were used to measure bullying, depression, loneliness, and self-esteem. The results found that bullying behavior can significantly positively predict students' depression, and loneliness is an intermediary variable in this path; at the same time, when loneliness transforms into depression, it is regulated by the self-esteem level of students, and there is a moderated mediating effect.*

### **Keywords**

*bullying, depression, loneliness, self-esteem*

## **1. Introduction**

In recent years, there have been frequent news of school bullying, and attention to this social issue has continued to increase around the world. In 2019, UNESCO released a survey report based on 144 countries and regions, the results showed that in the past month, approximately 32% of students reported that they had been bullied at least once. School violence has become a major problem that needs to be solved urgently all over the world (Attawell, 2019).

Olweus defined school bullying as early as 1993. It refers to a student who is exposed to the main negative behaviors of other students for a long time and repeatedly, and it is difficult to protect himself

(Awiria, 1994). Its involved objects can be divided into three categories: bullies, victims, and bully/victims (Haynie et al., 2001). It has found that the proportion of victims on campus is the largest. The proportion of victims in Italian primary and secondary schools is as high as 29%, and 13% of students are bully/victims, while bullies only account for 8% (Genta, Menesini, Fonzi, Costabile, & Smith, 1996); a domestic survey of more than 100,000 students across the country also found that the victimization situation of our country's primary and middle school students is more serious than the bullying situation. (Hongchang & Jianlong, 2018). As a negative life experience, school bullying has a more profound negative impact on the mental health of victims (Yan, Anqi, Si, & Shuang, 2021), and it has become an important risk factor that threatens the healthy life and study of young people. After being bullied, the bullied person is prone to sleep disturbances, difficulty falling asleep and other sleep disorders (Fangfang et al., 2021), and they show an increase in cognitive rumination thinking (Blake, Trinder, & Allen, 2018; Xuliang, Ya, Yaoqian, Shuo, & Bing, 2020), decreased sense of security, so that individuals are more prone to internalizing problems, depression, anxiety (Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Moore et al., 2017), social adjustment difficulties, and increased the risk of suicidal behavior problems (Shiyang & Huibing, 2021; Xiaoqun, Dali, Lihua, & Linyan, 2013); in addition, after bullying leads to depression, it will damage the working memory function of young people and seriously affect their academic performance (Shuai, Jinqin, Zhiyan, Liping, & Mingxuan, 2021; Vaillancourt et al., 2011).

Adolescence is a transition period of growth and development of young individuals suffering from bullying at this stage have produced negative experiences tend to have a lasting effect on its (Lereya, Copeland, Costello, & Wolke, 2015; Stapinski et al., 2014). Therefore, it is necessary to pay more attention to school bullying among middle school students and take corresponding intervention measures to create a safe growth environment for them.

### *1.1 The Mediating Role of Loneliness*

Loneliness may be an important mediating factor of the influence of bullying behavior on depression in middle school students. Loneliness refers to the feeling of anxiety that an individual develops when he finds that the number and quality of the social network is lacking, in other words, the feeling that is formed when the existence is found to be significantly inconsistent with the actual existence (Wiseman, 1997). This is an unpleasant emotional experience. Long-term occurrence of this state will cause serious adverse reactions, cause externalization problems, and seriously threaten the individual's mental health (Dongmei, Zongkui, & Jiujun, 2007). On the one hand, there have been many studies on the relationship between being bullied and loneliness. There is a significant correlation between bullying behavior and loneliness, Early peer relationships (such as being bullied by peers) will make students feel distrustful of peers and insecure about the school environment, and may show less class participation behaviors, and then experience loneliness (Zongkui, Dongmei, Xiaojun, & Xianfeng, 2006). In addition to having a stronger sense of loneliness among peers who are bullied, they are also

more likely to be abused by their peers. Such a vicious circle has a serious negative impact on their life satisfaction (Cava, Buelga, & Tomás, 2018). On the other hand, there are many related studies on the relationship between loneliness and depression. Loneliness is significantly positively correlated with depression and can positively predict depression, Individuals with high loneliness have perception bias, It is easy to feel low self-esteem and self-denial when encountering problems, so there will be a higher level of depression (Xiaohe, Zuoshan, & Jing, 2021). According to the reaction style theory, Lone teenagers have a negative reaction style, Unable to positively regulate their emotions, leading to its recognition among immersed in solitary, more likely to be depressed (Chunyang, Meng, & Jianping, 2019). Based on the above discussion, this research proposes research hypothesis 1: Loneliness plays a mediating role in the relationship between bullying behavior and depression in middle school students.

### *1.2 The Moderating Role of Self-esteem*

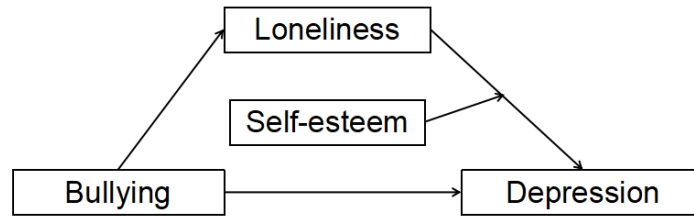
Although middle school students' bullying behavior and feelings of loneliness can affect depression, there may be individual differences in this effect. This study shows that bullying behavior may be affected by individual loneliness and depression based on differences in individual self-esteem.

Self-esteem is the overall evaluation of one's own value, strengths and importance. It is a core component of self-concept and has an important impact on the growth and development of an individual (Garofalo, Holden, Zeigler-Hill, & Velotti, 2016). The Anxiety-buffer hypothesis states that self-esteem can act as a barrier against loneliness, thereby hindering symptoms of anxiety and depression (Rossi et al., 2020). Studies have shown that with a good social support system, individuals with high levels of self-esteem tend to have less loneliness, thereby inhibiting the generation of negative emotions such as depression (Chao, Shuyang, Xin, & Jinping, 2018); adolescents with low self-esteem have a strong sense of self-criticism. When they are subjected to bullying, they experience strong anxiety, increase their sense of loneliness, and are more prone to depression, anxiety and other problems (Jiaqi et al., 2020). In summary, self-esteem, as an individual characteristic, meets the requirements as a moderating variable.

Therefore, this study proposes hypothesis 2: self-esteem significantly regulates the mediation path "being bullied → loneliness → depression".

In this study, middle school students were used as subjects to investigate the mediating and regulating mechanisms of the depressive mood of being bullied. Specifically, it includes two goals: (1) To examine the mediating role of loneliness in the relationship between bullied behavior and depression; (2) Examine the moderating role of self-esteem in the mediation path "being bullied → loneliness → depressive mood".

Based on the existing conclusions and research hypotheses, a moderated mediation model can be formed. Figure 1 presents the conceptual model diagram of this research design.



**Figure 1. Conceptual Model Diagram of Research Design**

## 2. Method

### 2.1 Participant

Conveniently select four junior high schools and three senior high schools in Huangshi City, Hubei Province. The students are selected in groups according to their grades. Each junior high school selects three classes, each grade has one class, and each high school selects two classes. One class each for Senior One and Senior Two. A total of 602 questionnaires were distributed and 554 valid questionnaires were returned. Among them, the number of students in grades one to two is 134 (24.1%), 134 (24.1%), 126 (22.7%), 79 (14.2%), 81 (14.6%); boys are 265 (47.8%), and girls are 289 (52.1%).

### 2.2 Research Tool

#### 2.2.1 Child Bullying Questionnaire

Using the Olweus Bullying Questionnaire (Bully/Victim Questionnaire, OBVQ) translated by Zhang Wenxin et al. (1992), there are 12 items in total, divided into two dimensions, bullying and being bullied, with 6 items each, to investigate the bullying of children and adolescents in the past six months. The frequency of bullying by others and by others. The questionnaire uses a five-point scoring method, 1 means “never”. 5 stands for “almost always”. The higher the score in each dimension, the higher the frequency of being bullied or committed; The higher the total score, the more serious the involvement in bullying. There is no reverse scoring problem. The internal consistency reliability Cronbach’s  $\alpha$  coefficients of the scale, the bullied dimension, and the bullied dimension are 0.832, 0.764, and 0.777, respectively.

#### 2.2.2 Flow center depression scale

The Short Version of Center for Epidemiological Studies Depression Scale (CES-D-10) revised by Andresen et al. Domestic research shows that the Cronbach alpha coefficient of this scale in clinical samples is 0.81. In this study, the ten topics of the simplified Liu Tiao Center Depression Scale were optimized, 3 items were deleted, 7 items were retained, and a 5-point scoring was adopted. The total scale was 7-35 points. The higher the score, the more severe the depression.

### 2.2.3 Loneliness Scale

The ULS-8 loneliness scale (the short-form of the UCLA Loneliness Scale) adapted from Hays and DiMatteo (1987) based on the UCLA-20 scale (University of California Los Angeles Loneliness Scale). The scale has 8 items, including 6 items describing “loneliness” and 2 items describing “non-loneliness” (item 3 “I am a person willing to make friends” and item 6 “When I am sad, I can find someone to accompany me”), Each item uses a 5-point scoring method, and non-lonely items are scored in reverse order, with a total score of 8-40 on the scale. The higher the total score, the higher the degree of loneliness. The cronbach’s  $\alpha$  coefficient of this scale is 0.741.

### 2.2.4 Self-esteem scale

Using the Self-esteem Scale (SES) compiled by Rosenberg, it is designed to assess individuals’ overall feelings about self-worth and self-acceptance. A 5-point scoring method is adopted. Items 3, 5, 9, and 10 adopt a reverse scoring method. It is worth noting that Item 8 (I hope I can gain more respect for myself) was originally a reverse scoring method, but because Differences in language and culture were revised by scholars and changed to positive scores. The higher the total score on the scale, the higher the degree of self-esteem. The cronbach’s  $\alpha$  coefficient reported by Dobson et al. (1979) and Fleming et al. (1984) were 0.77 and 0.88, respectively.

### 2.3 Test Procedures and Data Processing

This study is convenient to select the first to second grade students of 7 middle and high schools in Huangshi City, Hubei Province as the survey objects. They are stratified according to grades. After the informed consent of the school, parents and students, each grade is selected for the test. The main test is held by postgraduates majoring in psychology who have received systematic training. They will explain to the students the precautions for answering, and the students will answer independently, and the questionnaire will be collected on the spot. After the data was sorted and invalid data were eliminated, SPSS23.0 was used for statistical analysis.

## 3. Result

### 3.1 Common Method Bias Test

According to Harman’s single-factor test method, the items of bullying, depression, loneliness, and self-esteem were included in exploratory factor analysis for testing. A total of 4 factors with characteristic roots greater than 1 were generated, and the first factor explained the variance of 33.34%, less than the critical standard of 40%, so this study performed well on the common method bias problem.

### 3.2 Descriptive Statistics

Through a one-way analysis of variance on the individual’s bullied behavior, depression, self-esteem level, and loneliness, it was found that there was no significant difference in the gender dimension of the bullied behavior ( $F=2.397$ ,  $p>.05$ ), but the level of depression ( $F=14.650$ ,  $P<.001$ ), loneliness

( $F=8.098$ ,  $p<.01$ ) and self-esteem level ( $F=2.397$ ,  $p<.001$ ) all have significant gender differences. In other words, men have higher self-esteem and loneliness than women, and depression levels are lower. The study also found to be bullying, self-esteem, loneliness and depression levels were not significantly different ( $F<1.071$ ,  $p>.05$ ) on the left-behind dimension, that is, whether the stay will not have to be bullying, depression, loneliness, self-esteem The level has a significant impact. However, depression level ( $F=4.364$ ,  $p<.05$ ) and self-esteem level ( $F=6.740$ ,  $p<.01$ ) have significant differences in the single-parent dimension, while bullying behavior and loneliness have no significant difference in the single-parent dimension ( $F<2.431$ ,  $p>.05$ ), that is, compared with non-single-parent individuals, single-parent individuals show higher levels of depression and lower self-esteem.

**Table 1. Bullying, Depression, Loneliness and Self-esteem under Various Conditions**

Category		Bullying	Depression	Loneliness	Self-esteem
Gender	Male	9.46±4.05	17.66±5.24	17.60±5.85	36.18±6.92
	Female	8.94±3.84	19.40±5.46	19.09±6.43	34.02±7.42
	F	2.397	14.650***	8.098**	12.543***
Left-behind children	Yes	9.65±4.34	18.85±5.96	19.28±6.82	35.13±7.28
	No	9.14±3.91	18.55±5.38	18.30±6.14	35.14±7.26
	F	0.700	0.131	1.071	0.809
Single parent	Yes	10.02±4.62	20.20±5.85	19.77±6.90	32.34±7.07
	No	9.11±3.88	18.43±5.37	18.26±6.12	35.29±7.23
	F	2.154	4.364*	2.431	6.740*
Total		9.19±3.95	18.57±5.42	18.38±6.20	35.05±7.26

Note: \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$ , the same below.

### 3.3 Correlation Analysis

Pearson's product-difference correlation analysis was used to analyze the bullying behavior, depression, loneliness and self-esteem level. The results showed that: ① Students' bullying behavior was significantly positively correlated with depression and loneliness, and significantly negatively correlated with self-esteem; ② There is a significant positive correlation between student depression and loneliness, and a significant negative correlation with self-esteem level; ③ The self-esteem level is significantly negatively correlated with loneliness.

It means bullying behavior as a kind of negative feelings, loneliness and depression and other negative emotions are often the same direction change, when an individual is subjected to more bullying behavior, depression and feelings of loneliness the more intense. Self-esteem, as an individual's

acceptance and acceptance of oneself, is a positive psychological quality, which is often in inverse proportion to the above-mentioned negative feelings.

**Table 2. Correlation between Variables**

	1	2	3	4
1 Bullying	1			
2 Depression	.440**	1		
3 Loneliness	.505**	.654**	1	
4 Self-esteem	-.333**	-.532**	-.535**	1

### 3.4 Mediating Mediation

In this study, student bullying behavior is treated as an independent variable, and depression as the dependent variable, loneliness as intermediary variables, self-esteem as a moderator. Then use the PROCESS plug-in in SPSS, select model 14, which is the path that self-esteem level adjusts the influence of loneliness on depression level, and output the result.

**Table 3. Model Test of Moderated Mediation Effect**

	Depression	Loneliness
Constant	15.013** (5.788)	11.093** (19.240)
Bullying	0.171** (3.447)	0.793** (13.747)
Self-esteem	-0.154* (-2.189)	
Loneliness	0.455** (3.710)	
Loneliness*Self-esteem	-0.002 (-0.452)	
Sample	554	554
R <sup>2</sup>	0.486	0.255
Adjusted R <sup>2</sup>	0.481	0.252
F	F (4,549)=129.652***	F (1,552)=188.981***

Notes: \* p<.05 \*\* p<.01 \*\*\* p<.001, the value of t is in parentheses

From the above table, we can see that the mediating effect analysis involves two models, which are as follows: ①

depression=15.013+0.171\*victims-0.154\*self-esteem+0.455\*loneliness-0.002\*loneliness\*self-esteem;

②loneliness=11.093+0.793\* victims. By further testing the direct effects of bullying behavior and depression scores, it is found that bullying behavior can significantly predict individual depression (t=3.447, p<0.001). It can be considered that the direct effect is significant, and the self-esteem level at different levels can affect the individual's depression.

**Table 4. Results of Direct Effects**

Effect	SE	t	p	LLCI	ULCI
0.171	0.049	3.447	<.001	0.074	0.268

Notes: LLCI refers to the lower limit of the estimated value 95% interval, ULCI refers to the upper limit of the estimated value 95% interval

Subsequently, the self-esteem adjustment effect under different levels of loneliness was tested, and the upper and lower standard deviations of the mean of loneliness were used as the high and low level groups to test the effect size and significance respectively. The results found that the 95% BootCI interval of any level of loneliness does not contain 0, that is, high, medium, and low levels of loneliness can interact with self-esteem, and then affect student depression. It can be concluded that the mediation effect is established.

**Table 5. Conditional Indirect Effect Results**

Mediating variable	Level	Regression coefficients	Effect	BootSE	BootLLCI	BootULCI
Loneliness	Low level (-1SD)	27.794	0.326	0.044	0.243	0.411
	Average value	35.052	0.317	0.038	0.245	0.393
	High level (+1SD)	42.31	0.307	0.044	0.23	0.404

Notes: BootLLCI refers to the lower limit of the 95% interval of Bootstrap sampling, and BootULCI refers to the upper limit of the 95% interval of Bootstrap sampling

## 4. Discussion

### 4.1 Gender Differences in Depression, Loneliness, Bullying, and Self-esteem

The study found that depressed women were significantly higher than men, which is consistent with the vast majority of research results (Xuan, Xingna, Xiaozhe, Yi, & Ping, 2021). Numerous studies speculate that it may be related to women's social status, sensitivity and physiological characteristics. In recent years, some scholars have also proposed that this correlation may not be inborn, but related to the individual's gender role (Kirklewski, Watson, & Lauckner, 2020; Yu et al., 2020). The results of a meta-analysis covering 31 studies showed that the degree of virilization is negatively correlated with the level of depression, and there are few other modifiers that act on this path. Feminization degree of depression appear weak negative correlation may be subject to biological sex, adjust the level of education and time variables (Jingyuan, Wuji, Yueyue, & Hong, 2019). Therefore, masculine psychological traits are more likely to be a protective effect, so that individuals from harassment by



depressed mood, but also may be affected by social and cultural background (Xiaoyan & Xiaoqun, 2018). Many studies have also found that depression may be greatly affected by personality, especially dependent personality and self-critical personality. They correspond to affect-dependent depression and introspective depression, respectively. Therefore, some scholars have suggested, to determine the individual's experience of depression by measuring depression susceptible personality, this method is different from the evaluation of symptoms of depression, but depression associated with trying to evaluate the inner experience (Ya-jun, 2016). In the context of Chinese culture, some researchers conducted the Depressive experiences questionnaire gender equivalence test and found that women are significantly higher than men in dependence factors, and men are significantly higher than women in efficacy factors (Yu et al., 2020). This also provides some ideas for our follow-up intervention on depression based on gender differences. Limited by the research tools used in this article, there is no specific division of bullying behavior. However, previous studies indicate that in junior high school group, the boys suffered physical bullying was significantly higher than girls (Ya-jun, 2016).

#### *4.2 The Impact of Bullying on Depression*

We find that bullying and depression are positively correlated, when an individual is subjected to bullying, it could boost the level of depression. Studies of junior high school students were investigated by mutual predicted relationship between bullying and depression, and to explore the possible regulatory role of gender in the process. Their research results are consistent with this study, and it is found that bullying behavior is positively correlated with depression (Xuan et al., 2021). But the study also found that bullying and depression present an interactive relationship, that is, being bullied can cause depression in students, and depressed students may also be more likely to be bullied. At the same time, there are certain gender differences in this bullying behavior and depression (Wei Ming, 2017). Despite the bullying did not differ significantly in this article, but the consequences brought about by bullying is somewhat different. A cross-lag analysis results showed that: there is no significant difference in gender in the path between being bullied for the first time and depressive mood (Yingzi, 2021). But in bullying incidents, boys are more likely to be hurt than girls, and they are more likely to show serious emotional problems. While, there are also studies that show that girls are more vulnerable than boys. There is no broad and consistent conclusion (Ting, Shan-shan, & Ye, 2021). At the same time, some predecessors found that compared with women's depressive traits, male individuals with depressive traits are more likely to be bullied. This also provides a focus on our follow-up interventions to reduce school bullying (Ya-jun, 2016). In addition, being bullied can not only lead to depression in students, but also cause suicidal behavior in students. When students sustained in the context of being bullied, their depression increased gradually, slowly produce a learned helplessness, will own more closed, more silence. The tension and pressure that students experience will make students have a negative evaluation of the environment, and at the same time they may internalize this evaluation. This is also worthy of educators' vigilance (Li-li, 2021).

#### *4.3 The Mediating Role of Loneliness between Being Bullied and Depression*

The data in this study show that loneliness plays a mediating role between being bullied and depression. This means that when an individual is bullied, he may have a feeling of not being accepted by the group, which may lead to depression. There have been studies at home and abroad to test this path (Wang, 2021). But as mentioned above, due to the limitations of the data, it is also difficult for us to infer the possible causal connection between this relationship. However, we have to admit that no matter what the cause and effect of the relationship, our interventions on teenagers' depression and bullying cannot only focus on behavior or psychology. On the contrary, it should not only analyze the causes of children's depression, but also consider the potential consequences that bullying may bring to adolescents. Some scholars have also found that there are differences in the mechanism of different types of bullying victims on adolescents' self-injury behavior. Being bullied directly affects adolescents' self-harm behavior by influencing their depression, while indirect bullying affects adolescents' loneliness, and uses the effects of loneliness on depression, thereby affecting self-harm behavior (Ya-jun, 2016). Thus, different types of bullying bring feelings of individuals is not the same, there may be differences in the path of the conduction process.

#### *4.4 The Moderating Role of Self-esteem between Loneliness and Depression*

In previous studies, it was found that self-esteem played a mediating role between relationship bullying and depression (Ting et al., 2021). Being bullied is closely related to the degree of self-esteem. When an individual is bullied, students feel marginalized and isolated, which may lower their evaluation and lead to a decline in self-esteem (Moon & Mello, 2021; Yu et al., 2020). But in the theoretical construction of this article, it focuses on the path of student loneliness and depression. At the same time, the research team believes that when an individual to maintain a high level of self-esteem, it can interact with loneliness, regulate the path of transformation from loneliness to depression, and play a protective and buffering role (Cava, Buelga, & Tomás, 2021). Individuals will realize that their loneliness does not stem from their own incompetence or mistakes, but from external bullying individuals. Should face this kind of bullying behavior, and actively seek solutions through this, students can effectively reduce the level of depression (Wang, Gan, & Wang, 2021).

### **5. Research Deficiencies and Prospects**

This article explores the relationship between bullying and depression in adolescents through the analysis of data samples. And the mediating role of loneliness and the moderating role of self-esteem on this path. Under the cultural background of our country, it is very necessary to study the mechanism of bullying and depression, It can provide certain theoretical support for future campus bullying intervention. However, there are some possible deficiencies in the research results:

① This article uses a cross-sectional study, and the causal relationship between bullying and depression is not clear. According to previous research, it is possible that the student's depressive traits have

caused the bullying. That is, weak students seem to be bullied;

② In addition, The data comes from students' self-reporting reports, and there may be some data deviations. A combination of teacher evaluation, peer nomination, and family evaluation may be considered. Through multi-source data, the data structure is more authentic and reliable;

③ At last, The variables collected in this article are relatively concise, and follow-up studies can consider analyzing the types of bullying behavior. For example, cyber bullying, relationship bullying, physical bullying, examining the differences in the impact that different bullying behaviors may have on young people, At the same time, a comprehensive analysis is carried out based on the students' personality characteristics, gender characteristics and other factors that may cause additional influence.

## 6. Conclusion

① There are significant differences in depressive mood, loneliness, and self-esteem in the gender dimension; the main effect of depression and self-esteem in single-parent families is significant.

② Loneliness has a mediating effect between adolescents' bullying behavior and depression. Self-esteem can buffer the depression caused by loneliness.

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Xu Li is responsible for the overall conception of the article, supervising the project progress, integrating the article structure and hosting part of the tasks of review and discussion.

Zhang Zheng is responsible for the data processing of the article, the writing of data results, and the writing of the discussion part.

Li Sihui is responsible for the questionnaire design, data collection and entry, writing of the introduction, translation and format adjustment of the article.