The Influence of School Bullying Experiences During Primary and Secondary School on College Students' Peer Interaction

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Abstract. This study employed a literature review to explore the impact of bullying experiences on the emotions (anxiety and depression) and peer relationships of college students among high-achieving middle and high school students. A previous study on the emotional impact involved 600 middle and high school students (300 victims and 300 controls), revealing that the victims had significantly higher scores and positive proportions on anxiety and depression scales compared to the control group. The duration of bullying was strongly correlated with emotional problems, with relational bullying being the most harmful. Another previous study on the impact on peer relationships involved 800 undergraduate students (420 victims and 380 controls), finding that the quality of peer relationships among victims was significantly lower than that of the control group. The negative impact of relational bullying was more pronounced, with social anxiety and interpersonal trust playing a partial mediating role (accounting for 42.3% of the mediating effect). The study pointed out the limitations of the samples and measurements, proposed intervention suggestions, and indicated future research directions. Ultimately, it confirmed that bullying experiences among high-achieving middle and high school students have significant and lasting negative impacts on the emotions and peer relationships of college students.

Keywords: Anxiety, school bullying, healthy.

1. Introduction

School bullying among adolescents is one of the key research topics today. Researchers have made significant progress in the field of retrospective investigation and analysis of bullying experiences among college students, especially those with excellent academic performance, enabling a more precise capture of the details of the experiences and their impact on current psychological and behavioral aspects. However, many surveys lack longitudinal data from middle school to college, making it difficult to determine the dynamic change process. There is also insufficient exploration of how to design and validate intervention programs for peer interaction based on bullying experiences among college students. There are still certain research gaps in this area, so it is necessary to further explore the retrospective experiences of college students regarding bullying in middle and primary schools and the intervention measures for peer interaction problems.

Therefore, the research topic of this paper is the relationship between experiences of school bullying and peer interaction. This study adopts the literature review as its primary method.

A key finding of the study is that college students who were academically excellent and experienced bullying in middle and high school have significantly lower quality of peer interactions compared to those without such experiences. Moreover, social anxiety and interpersonal trust play a partial mediating role between the two.

2. Introduction of the research subjects

This study focuses on the peer interaction and bullying among college students.

Peer interaction among college students refers to the interactive relationships established by college students with classmates, roommates, and club partners during their campus life. It is an important part of their socialization process, manifested in aspects such as interaction initiative, relationship maintenance ability, and social participation,and has a significant impact on the sense of belonging, academic performance, and mental health. Bullying refers to the continuous and

intentional harmful behavior carried out by an individual or a group towards others. verbal bullying (such as verbal abuse and giving derogatory nicknames)and relational bullying (such as isolating and spreading rumors). It has an unequal power relationship and is persistent, which is likely to cause long-term psychological trauma.

The bullying experiences of outstanding students in primary and secondary schools are divided into three categories: physical bullying such as: beating, stealing items. Verbal bullying such as: insulting and giving insulting nicknames. Relational bullying such as: isolating, spreading rumors. Therefore, the bullying experiences of outstanding students in primary and secondary schools have the characteristics of persistence and harmfulness and can easily cause psychological trauma to the bullied individuals, and have serious negative impacts. College students' peer interaction is divided into three dimensions: interaction initiative (actively initiating communication), relationship maintenance (dealing with conflicts), and social participation (participating in group activities). These three dimensions have the functions of emotional support and ability cultivation, and are positively correlated with interaction quality, mental health, and academic performance. [1].

Social tension and unease are characterized by excessive sensitivity to negative evaluations. Therefore, college students are reluctant to communicate with their peers, resulting in excessive negative emotions and gradually becoming anxious and depressed. The expectation of others' kindness is characterized by being easily damaged by early negative experiences. From the perspective of self-efficacy, the confidence in one's own social ability directly affects the interaction initiative [2]. If the confidence is strong, then the interaction initiative is higher. If there is no confidence, or confidence is lacking due to bullying, then the individual loses the interaction initiative. Therefore, a person's confidence is positively correlated with interaction.

3. The Impact of Bullying on Emotions

Researchers have detected the impact of bullying on emotions [3, 4]. Wang's research involved 600 middle and primary school students aged 12-18 years old. Among them, 300 were victims with clear bullying experiences, and 300 were the control group without bullying experiences. The study covered different types of bullying (physical bullying accounted for 32%, verbal bullying accounted for 45%, and relational bullying accounted for 23%), and 47% of the victims experienced long-term bullying lasting more than 6 months. The study also included different genders and family environments to reflect the differences in emotional responses.

The emotional trauma of teenagers in the primary and secondary school stage is vulnerable in both physiological and psychological aspects. Due to the critical period of brain development in teenagers, their self-awareness ability is not yet mature. When encountering bullying, they are prone to convert negative experiences into the denial of self-worth, leading to the outbreak of anxiety and depression. The study found that the bullied group suffered severe psychological harm, resulting in difficult-to-regulate depressive emotions. Psychologically, the bullied group was more anxious than those not bullied, more likely to experience negative emotions, and had poor sleep quality [5]. If teenagers who suffer from bullying do not receive effective intervention from parents and teachers in time, the fear of anxiety and depression will intensify continuously, and to a certain extent, it will lead to insomnia, inability to concentrate, and have a serious negative impact on physical health.

1) Measurement of bullying experience: The Chinese version of the Olweus Children's Bullying Questionnaire developed by Wang Mengru was used. The scores were calculated using a 5-point scale based on "the frequency, type, and duration of bullying and being bullied in the past 1 year" and other items;

2) Measurement of anxiety emotions: The "Screening Scale for Children's Anxiety Disorders (SCARED)" was used to assess dimensions such as somatic anxiety (such as accelerated heartbeat) and social anxiety (such as fear of being ridiculed);

3) Measurement of depression emotions: The "Child Depression Inventory (CDI)" was used to assess the degree of depression through items such as "losing interest in things" and "self-denial";

4) Method: 20 typical victims were selected from the 600 participants for structured interviews, including "subjective feelings during bullying (such as helplessness, shame)" and other data.

The data analysis of this study first obtained the average scores of the anxiety and depression scales of the two groups and the proportion of scores exceeding the critical value through descriptive statistics. Then, an independent sample t-test was used to compare the differences in anxiety and depression scores between bullying victims and the control group. Subsequently, Pearson correlation coefficients were used to analyze the correlation between bullying frequency, duration, and anxiety and depression scores. Finally, regression analysis was used to set anxiety and depression scores as dependent variables, bullying type and duration as independent variables, while controlling for gender and family support factors, to explore the key elements affecting the anxiety and depression emotions of teenagers.

The group differences showed that the mean score of the anxiety scale for teenagers with bullying experiences (38.6 ± 8.2) was significantly higher than that of the control group (22.3 ± 6.5), and the mean score of the depression scale (21.4 ± 7.1) was also significantly higher than that of the control group (10.2 ± 5.3). The positive proportion of anxiety and depression among the victims (48.7% and 39.3%) was 3.2 times and 4.1 times that of the control group, respectively.

The degree of correlation indicated that the duration of bullying was strongly correlated with the anxiety score ($r = 0.62$, $p < 0.001$) and the depression score ($r = 0.58$, $p < 0.001$), and the effect of bullying on emotions was the most prominent ($\beta = 0.35$, $p < 0.001$), followed by verbal bullying ($\beta = 0.28$, $p < 0.001$).

The qualitative results revealed through interviews showed that 80% of the victims indicated that the feelings of despair when experiencing isolation and the repeated recalling of the bullying incidents exacerbated their anxiety and depression. Therefore, this not only caused psychological problems for the bullies but also had a significant negative impact on their sleep and rest conditions [5].

The study found that the bullying experiences of teenagers significantly increase their levels of anxiety and depression. The degree of influence is closely related to the type and duration of bullying. Among them, relational bullying causes the greatest long-term emotional harm. This conclusion is consistent with the research conclusion [2], which confirms that "the longer the bullying lasts, the higher the risk of emotional disorders." It is also consistent with the research results of domestic scholars, that is, girls have a more sensitive emotional response to relational bullying. This study further found that even short-term relational bullying lasting for 3-6 months may also trigger significant social anxiety.

The study only selected teenagers from a certain region as the sample, and the sample representativeness was limited, with significant limitations. It did not cover rural or ethnic minority groups, which may affect the general applicability of the conclusion. The study relied on the respondents' recollections, which may have "memory bias" (for example, victims may overestimate or underestimate the severity of bullying), which may cause deviations in the research results and affect the accuracy of the findings. This study is difficult to completely rule out the possibility of the reverse causal relationship of "emotional problems leading to being more vulnerable to bullying." Therefore, there are deficiencies in the causal relationship aspect, and further follow-up studies are needed to supplement and improve it.

4. The Impact on Peer Interactions

Prio studies examined the impact of school bullying on peer interactions [6-8]. One study selected 800 full-time undergraduate students across all four years from 6 universities as the research subjects. Among them, 420 students had clear records of being victims of bullying (including physical, verbal, and relational bullying types), while 380 students had no bullying experiences as the control group. The gender ratio was balanced, with 384 females (accounting for 48%) and 416 males (accounting for 52%). The basic characteristics of the research subjects were 18 to 22 years old. They were in the critical period of forming their peer interaction patterns, and their campus social scenarios included

classroom interactions, roommate relationships, and club collaborations; they could clearly recall the details of their campus life in primary and secondary school, including the occurrence scenes, frequency, and their own coping methods of bullying incidents; and they covered different gender, professional background, and family environments. Among those with bullying experiences, 45% had suffered long-term bullying for more than 6 months, and 55% were short-term bullying victims, which adequately reflected the heterogeneity of the group.

The revised "Youth School Bullying Experience Scale" was used. This scale has been verified by domestic scholars (alpha reliability = 0.82, cumulative variance explained by validity = 65.3%), containing 3 dimensions and 18 items: physical bullying (such as "being beaten up by classmates, stealing items"), verbal bullying (such as "being given insulting nicknames, being verbally abused in public"), relational bullying (such as "being deliberately isolated, spreading negative rumors"). It is scored on a 1-5 scale (1 = "never occurred", 5 = "at least once a week"), with a total score ≥ 40 indicating a significant bullying experience.

The "College Students' Peer Interaction Quality Scale" was used, developed by Yao Ziyan. It includes 3 dimensions and 21 items: interaction initiative (such as "actively inviting classmates to participate in activities"), relationship maintenance (such as "demonstrating the ability to resolve conflicts with classmates"), social participation (such as "actively joining club social activities"). The reliability alpha = 0.78, cumulative variance explained by validity = 61.2%, with a score of 1-5 (1 = "completely inconsistent", 5 = "completely consistent"). The higher the total score, the better the peer interaction quality.

The data analysis of this study first calculated the average scores, standard deviations, and positive rates (such as the proportion of those with a total score ≥ 40 for bullying experience) of the two groups of research subjects in the bullying experience, peer interaction, and mediator variable scales through descriptive statistics. Then, using the independent sample t-test, the differences in the total score and each dimension score of peer interaction quality between the group with and without bullying experience were compared. Subsequently, Pearson correlation coefficients were used to analyze the correlations between bullying experience (total score and each dimension) and peer interaction quality (total score and each dimension), as well as social anxiety and interpersonal trust. Finally, with the total score of peer interaction quality as the dependent variable, the bullying experience dimensions as the independent variables, and social anxiety and interpersonal trust as the mediating variables, the process macro program (Model 4) in SPSS software was used to systematically verify the significance of the mediating path. Gender, major, and family environment were used as control variables to construct a multiple linear regression model to test the mediating effect. The selection of interview samples was based on the core criteria of "typicality and representativeness": priority was given to those who scored ≥ 40 points on the bullying experience scale (determined as significant bullying experience) and whose peer interaction quality scale score was in the low segment (≤ 3 points). At the same time, different types of bullying (physical, verbal, and relational bullying each accounting for approximately one-third) and gender ratio (16 girls and 14 boys) were taken into account. Finally, 30 students were selected for semi-structured interviews to accurately capture the deep subjective perceptions of how bullying affected peer interaction, supplementing the deficiency of quantitative data. Finally, the interview texts were coded and refined to explore core themes such as "social avoidance" and "trust loss" through qualitative analysis to assist in interpreting the quantitative results.

The total score of peer interaction quality in the group with bullying experience (2.86 ± 0.72) was significantly lower than that in the control group (4.12 ± 0.65) ($t = 18.35$, $p < 0.001$), with the most significant difference in the dimension of interaction initiative (group with bullying experience: 2.51 ± 0.81 vs. control group: 3.98 ± 0.73) ($t = 16.72$, $p < 0.001$);

Regarding the degree of correlation, the total score of bullying experience was significantly negatively correlated with the total score of peer interaction quality ($r = -0.63$, $p < 0.001$), among which the negative correlation between relational bullying and peer interaction quality was the strongest ($r = -0.58$, $p < 0.001$), followed by verbal bullying ($r = -0.49$, $p < 0.001$); the total score of

bullying experience was significantly positively correlated with social anxiety ($r = 0.57$, $p < 0.001$), and negatively correlated with interpersonal trust ($r = -0.52$, $p < 0.001$);

Regression results: Social anxiety ($\beta = -0.31$, $p < 0.001$) and interpersonal trust ($\beta = 0.28$, $p < 0.001$) played a partial mediating role in the relationship between bullying experience and peer interaction quality, with a mediating effect accounting for 42.3%;

Qualitative results: 83.3% of the interviewees mentioned that "they were afraid of being excluded in interaction, so they rarely spoke actively", and 76.7% stated that "they were afraid that their peers would gossip about them and were reluctant to have deep interactions", which confirmed the core impact of "social avoidance" and "trust loss" in the quantitative results.

The research shows that bullying experience in primary and secondary school stages has a significant negative impact on college students' peer interaction, and the intensity of this impact is related to the specific type and duration of bullying. Among various bullying forms, relational bullying causes the most long-term harm. At the same time, social anxiety and interpersonal trust play key mediating roles in the impact of bullying experience on college students' peer interaction. Specifically, an individual's bullying experience will increase social anxiety levels and reduce interpersonal trust, thereby indirectly weakening their peer interaction quality during the college stage. It is worth noting that even for short-term bullying (1-6 months), although its impact on peer interaction is not as significant as that of long-term bullying, it still leads to obvious deficiencies in interaction initiative. This research conclusion is consistent with, and a survey of 12,000 college students in 5 countries shows that the satisfaction of peer relationships of those with bullying experience is 38% lower than that of those without experience, and the impact of relational bullying lasts the longest [9]. Chinese scholars Wang et al. also confirmed in a study of 3 universities that bullying experience is positively correlated with college students' social avoidance ($r = 0.53$, $p < 0.001$), which is close to the correlation coefficient of this study ($r = 0.57$), further verifying the universality of the association between bullying and social disorders. Compared with previous studies on bullying types, this research found that the effects of different bullying types vary - relational bullying, due to its subtle nature and prolonged duration, causes more severe damage to the "trust-building" in peer interactions than physical bullying (the correlation coefficient between physical bullying and interpersonal trust is $r = -0.39$, while that of relational bullying is $r = -0.52$); at the same time, this study quantified the proportion of mediating effects (42.3%), providing a specific direction for subsequent interventions. Lao Xiaolin's research pointed out that the parent-child relationship in the family has a very serious impact on children's psychological and emotional well-being. Bullying affects children's physical health, causing them to overly rely on their parents and thus refusing external interactions, thereby generating depressive emotions [10].

This study has several shortcomings, although it covers different types of universities, the proportion of rural family students (38%) is lower than the national university average (45%) (due to the insufficient proportion of rural students, the conclusion's applicability in this group is limited). Moreover, not including minority students may lead to the insufficiency of the conclusion's applicability to rural and minority groups. The reliance of research subjects on retrospective reports of bullying experiences may have recall biases (such as some victims underestimating the frequency of bullying due to shame). And without combining the auxiliary data from primary and secondary school teachers and parents, the measurement may be inaccurate. Using a cross-sectional design cannot completely rule out the reverse causal relationship of "early poor peer interactions leading to vulnerability to bullying". Although some paths were partially verified through mediation analysis, further longitudinal studies are needed to confirm the causal direction. Potential moderating variables such as "social support in the university stage" and "psychological counseling experiences" were not included, making it impossible to determine whether these factors can alleviate the negative impact of bullying. Moreover, different bullying roles (such as bystanders, bullies, and witnesses) were not distinguished, and in the future, it should distinguish the different impacts of victims, perpetrators, and bystanders. The research perspective has limitations. The interview subjects were only 30, and

no stratified interviews were conducted based on different bullying types, gender groups, etc. Future research can conduct stratified interviews based on gender or bullying types.

5. Discussion and suggestion

Numerous studies at the emotional level have shown that individuals who have suffered bullying have significantly elevated levels of anxiety and depression. Long-term exposure to bullying continuously activates the individual's brain stress response mechanism, leading to neurochemical imbalances and the generation of anxiety and depression. At the peer interaction level, bullying experiences hinder the development of an individual's normal social skills. Victims, due to fear of being injured again, exhibit social withdrawal behavior and have difficulty trusting others, resulting in limited social networks and a decline in the quality of peer relationships. These negative effects may persist for a long time and even influence social patterns in adulthood. For example, bullying effects may extend to workplace social interactions, where they still feel afraid of having a criminal record.

Teachers need to receive professional training to enhance their ability to identify and intervene in bullying behaviors and to promptly detect and handle them. Teacher training should include assessments to ensure that the ability to identify and intervene meets the standards. At the family level, parents should focus on communication with their children and can have in-depth discussions through regular family meetings to create a warm and trusting family atmosphere, allowing children to feel comfortable expressing their experiences. At the same time, parents should set a good example for their children to establish a positive social model and guide them to correctly handle conflicts in interpersonal relationships. At the social level, communities can organize anti-bullying publicity activities. Through a combination of online publicity and offline lectures, public awareness of the bullying issue can be raised, and professional psychological assistance institutions can be established to provide timely and effective psychological support and counseling for bullying victims.

Current research is mostly cross-sectional studies. Future research should conduct longitudinal studies to explore in depth the dynamic changes process of bullying's impact on an individual's emotions and peer interactions, and clarify the characteristics of influence at different stages. Future research can be conducted using methods such as behavioral tracking and questionnaire surveys.

Existing intervention strategies should be systematically evaluated. Further comparative studies should be conducted on existing anti-bullying intervention measures to assess the effectiveness of different strategies and provide a basis for formulating more precise and efficient intervention plans (develop differentiated intervention plans for urban and rural students).

The interaction of multiple factors should be comprehensively considered, including family, school, and social environmental factors, as well as individual personality, cognitive level, and other internal factors. Research should study their interaction in the process of bullying influence and comprehensively analyze the formation mechanism of the bullying problem.

6. Conclusion

The experience of being bullied as an academically excellent student in middle and high school has a significant and lasting negative impact on the quality of peer interactions in college, and the degree of impact is closely related to the type and duration of bullying. Even short-term bullying can lead to insufficient initiative in social interactions.

The experience of being bullied as an academically excellent student in middle and high school weakens the quality of peer interactions in college through an indirect path of increasing individual social anxiety and reducing trust in peers. This finding provides crucial empirical support for formulating targeted intervention strategies for bullying experiences.

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