

Xiaomin Ni<sup>1</sup>  
Changchun Yin<sup>1,\*</sup>  
Ru Gao<sup>1</sup>

## The Relationship between Campus Bullying and Depression: The Mediating Role of Personality

<sup>1</sup>College of General Education, Hainan Vocational University, 570100 Haikou, Hainan, China

### Abstract

**Background:** School bullying and depression have a great negative psychological impact on college students, and personality analysis is the key to the detection of psychopathological states. Therefore, this study aimed to explore the mediating effect of personality on depression and school bullying in college students.

**Method:** This cross-sectional study investigated the bullying situation in colleges and universities by using the Olweus Scale, the Self-Rating Depression Scale (SDS) and the Eysenck Personality Questionnaire. The participants were 1200 college students. Spearman correlation analysis was used to analyze the data and the mediating effect of exposure, and the mediating effect was tested.

**Results:** Spearman correlation analysis showed that bullying experience was associated with introversion ( $r = 0.702$ ), neuroticism ( $r = 0.219$ ) and depressive symptoms ( $r = 0.600$ ), but was negatively correlated with extraversion ( $r = -0.537$ ). Depressive symptoms were positively correlated with neuroticism ( $r = 0.279$ ) and introversion ( $r = 0.611$ ), but negatively correlated with extraversion ( $r = -0.469$ ). In relationship between bullying and depression, neuroticism showed positively partially mediating effect and mediating effect ratio was 4.39% ( $\beta = 0.161$ ,  $p < 0.05$ ), and introversion had an obvious mediating effect and the ratio was 40% ( $\beta = 0.611$ ,  $p < 0.001$ ). Otherwise, extraversion partially mediated between campus bullying and depression adversely and mediating ratio is 8.75% ( $\beta = -0.359$ ,  $p < 0.05$ ).

**Conclusion:** Campus bullying is significantly associated with depression and personality, and personality has a remarkable mediating effect in campus bullying and depression.

\*Corresponding author details: Changchun Yin, College of General Education, Hainan Vocational University, 570100 Haikou, Hainan, China. Email: yinchangchun2023@163.com

### Keywords

college students; campus bullying; depression generation; correlation; personality mediation

### Introduction

Depression is an adaptive response of individual and is highly sensitive to the surrounding environment. It is clinically manifested symptoms as low mood, inexplicable irritability, etc. People with depression are unable to show interest in anything and have a significant descending in self-esteem. In the intention report of 2020, the depression rate of Chinese teenagers exceeds 20% and will continue to rise, which is very adverse for growth of Chinese teenagers [1]. In recent years, the frequent occurrence of school bullying in China not only leads to the decline of the performance but also easily results in negative emotions of the bullied students [2,3]. In serious cases, it will also lead to the emergence of depression. Therefore, campus bullying has a quite negative impact on the physical and mental health of the victims [4]. Related studies have shown that college students experience certain psychological changes after suffering bullying, such as non-suicidal self-injury and depression [5,6]. Previous research has shown that bullying not only leads to an increase in behavioral and emotional problems, psychiatric symptoms and reduced academic performance but also is associated with an augmented risk of suicidal ideation and behavior [7–10]. The evidence also shows that bullying is strongly associated with depressive symptoms from adolescence to young adulthood [11]. Therefore, it is imperative to reduce the risk of depression among students suffered from school bullying. However, direct intervention for school bullying is likely to be ineffective. Victims of school bullying may choose to hide their experiences for fear of being ostracized by peers. Therefore, exploring the intervenable factors between campus bullying and student depression is significant and useful. Previous study suggests that personality is a risk factor for bullying [12]. Personality traits

include cognitive, affective, and behavioral aspects of an individual which may contribute to occurrence or increase of psychopathological states such as depressive symptom [13]. Eysenck personality traits define three dimensions of personality, namely introversion, neuroticism and psychosis. Different types of personality may also be related to different emotion regulation or coping styles [14]. It has been reported previously that neuroticism is a strong mediator of relevance between gender and depression in addition to various social and psychological factors [15]. However, the analysis and application of Eysenck personality traits in school bullying and depression has not been thoroughly explored in the Chinese population. Therefore, in this study, the mediating role of personality between campus bullying and student depression is researched via selecting 1206 students from Hainan Vocational College, in Haikou city, Hainan province to questionnaire and analysis.

## Materials and Methods

### Baseline Information

The subjects of this study are students from a university in Hainan Vocational College, in Haikou city, Hainan province.

The inclusion criteria:

1. High degree of survey cooperation;
2. From freshman to sophomore in university;
3. Sign an informed consent form indicating voluntary participation in this study.

Exclusion criteria:

1. Students who are not on campus due to personal reasons;
2. Refusing to participate in this investigation;
3. Exit midway.

### Methods

#### Research Tools

**Demographic Informatics Scale.** This scale includes the student's gender, age, number of friends, place of residence, only or multiple children, parent-child relationship, parental education level, and family economic status, etc.

**Bullying Scale (Olweus).** The items of the Chinese version of Olweus Bullying Questionnaire revised by Solberg ME and Olweus D [16] and Zhang Wenxin *et al.* [17] were used to investigate the bullying situation of college students. The scale consisted of two parts: bullying and bullying victimization, each part consisted of 76 items to understand the bullying and bullying situation of the subjects in the past year (each item was scored according to the standard of 0 to 4, and each item was scored according to the standard of 0 to 4. 0 = none, 1 = only a few times, 2 = two or three times a month, 3 = about once a week, 4 = many times a week, and scores for each dimension range from 0 to 24. The definition of bullying and being bullied was as follows: as long as any one item score was not 0, it was judged as bullying or being bullied. In this study, the bullying subscale was selected to evaluate the bullying status of college students on campus. The scale reliability was 0.79, and the structural validity coefficients were between 0.81–0.89.

**Self-Rating Depression Scale (SDS).** The SDS scale was developed by Zung [18] and scored by four points scoring method. It has been widely used world widely. It can reflect the depression severity of the subject and higher scores suggests more severe depression, and the cutoff value of the scale was 53. The scale reliability was 0.88 and the structure validity was 0.91.

**Eysenck Personality Inventory (EPQ).** The short-form scale of Eysenck Personality Questionnaire revised by Qian MY *et al.* [19] in 2000 was used. It scored as 1 and 0 and contained four subscales of introversion-extraversion (E), neuroticism (N), and psychoticism (P), as well as the validity scale of Lying (L) and higher scores indicates higher extraversion, emotional instability, psychoticism, and lying separately. The reliability of the scale was 0.83, and the structural validity coefficients were between 0.77–0.86.

### Data Collection

This is a cross-sectional study with data from a field questionnaire survey of 1206 university students. The researchers checked the identity of all respondents, sought their informed consent, and determined whether the respondents met the inclusion criteria for study participants. The questionnaire evaluation was conducted by the main test and the counselor at the designated time. According to the masking scores of Eysenck Personality Questionnaire, 6 invalid questionnaires with high masking scores were excluded, and 1200 valid questionnaires (99.9%) were finally collected.

**Table 1. Demographic informatics statistical data of student.**

Variable	Level	Overall (n, %)
n	-	1200
Age	18–23 yrs	19.54 (1.13)
Grade	One	942 (78.5)
	Two	258 (21.5)
Department	College of Tropical Agricultural Technology	432 (36.0)
	College of Economics and Management	297 (24.8)
	College of Industry and Intormation Technology	471 (39.2)
Gender	Female	400 (33.3)
	Male	800 (66.7)
Place of residence	Rural	176 (14.7)
	Urban	1024 (85.3)
Economic status	Very low	259 (21.6)
	Low	252 (21.0)
	Middle	583 (48.6)
	High	106 (8.8)
Only child	No	717 (59.8)
	Yes	483 (40.2)
Single parent family	No	802 (66.8)
	Yes	398 (33.2)

### Statistical Methods

SPSS 23.0 (IBM Corporation, Armonk, NY, USA) was used for statistical analysis of the data. Shapiro-wiktest was used to evaluate the normal distribution of continuous variables, and M (P25, P75) was used for continuous variables that did not meet the normal distribution. Mamn-whitney U test was used for comparison between groups, and spearman correlation analysis was used. Mediating effect test and Bootstrap assay were used to test the mediating effect of personality between bullying experience and depressive symptoms.  $p < 0.05$  was considered statistically significant.

**Table 2. Range and total scores of bullying experiences, Eysenck personality, and depressed mood scores for college students M (P25, P75).**

	Range	Total score M (P25, P75)
Bullying	0–24	2.19 (1.06, 5.61)
Psychoticism	0–12	5.95 (2.55, 9.12)
Neuroticism	0–12	5.92 (1.82, 10.33)
Extraversion	0–12	8.94 (5.75, 10.56)
Introversion	0–12	3.54 (1.03, 7.02)
Lie	0–12	5.52 (1.30, 9.08)
SDS	0–100	41.22 (30.96, 53.88)

SDS, Self-Rating Depression Scale.

### Results

#### Demographic Informatics Statistical Results

A total of 1200 college students were finally included, with an age range of 18–23 years old, 590 cases (49.2%) were aged 18–20 years old, and 610 cases (50.8%) were older than 20 years old; 800 cases (66.7%) were males, and 400 cases (33.3%) were females, and the others information are shown in Table 1.

#### The Number of Students with Bullying Experience, Eysenck Personality and Depression and Scores in Scales

We counted the 1200 copies of questionnaires and get the scores of every scale. The mean score was calculated and number of students who experienced bullying, depression and had the personality of extraversion, introversion, psychoticism and neuroticism were confirmed depending on the score of scales (Table 2). Need of special note is the students were divided into extraversion and introversion depended on score of subscales of extraversion (E) in Eysenck Personality Questionnaire.

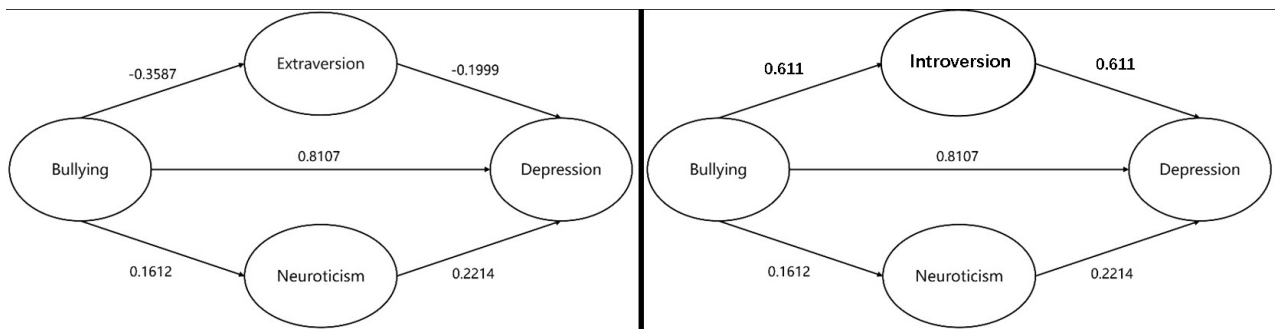
**Table 3. Correlation analysis of bullying experiences, Eysenck personality, and depressed scores of students.**

Correlation (r, p)	Bullying	Psychoticism	Neuroticism	Extraversion	Introversion	SDS
Bullying	-					
Psychoticism	r = -0.007	-				
Neuroticism	r = 0.219	r = -0.008	-			
Extraversion	r = -0.537	r = -0.019	r = -0.155	-		
Introversion	r = 0.702	r = 0.077	r = 0.185	r = -0.901	-	
SDS	r = 0.600	r = 0.001	r = 0.279	r = -0.469	r = 0.611	-

**Table 4. Mediating effects of personality between bullying experiences and depressed mood.**

Item	c (total effect)	a	b	a×b (intermediation effect)	a×b (boot SE)	a×b (z value)	a×b (p value)	a×b (95% boot CI)	c'	Conclusion
Bullying=> Neuroticism=> SDS	0.8107**	0.1612*	0.2214*	0.0356	0.059	5.545	0.031	0.020–0.052	0.7033**	Partial mediation
Bullying=> Extraversion=> SDS	0.8107**	-0.358**	-0.199*	0.071	0.084	7.825	0.014	0.031–0.113	0.7033**	Partial mediation
Bullying=> Introversion=> SDS	0.8107**	0.611**	0.532**	0.325	0.0213	4.358	<0.001	0.201–0.430	0.7033**	Partial mediation

\* p < 0.05, \*\* p < 0.001. CI, confidence interval; SE, standard error.



**Fig. 1. Intermediation effect of Eysenck personality between bullying experiences and depressed mood among college students.**

*The Correlation Analysis of Bullying Experience, Eysenck Personality and Depression of College Students*

Spearman correlation analysis showed that bullying experience was associated with introversion (r = 0.702), neuroticism (r = 0.219) and depressive symptoms (r = 0.600), but negatively correlated with extraversion (r = -0.537). Depressive symptoms were positively correlated with neuroticism (r = 0.279) and introversion (r = 0.611), but negatively correlated with extraversion (r = -0.469) (Table 3).

*The Mediating Role of Eysenck Personality in the Relationship between Bullying Experience and Depressive Symptoms in College Students*

The mediating effect test which was conducted with Bootstrap assay showed that bullying experience not only directly predicted depressive symptoms, but also predicted depressive symptoms through the mediating effect of neuroticism, extraversion and introversion, respectively (Fig. 1). In personality, neuroticism and extraversion weakly but introversion obviously mediated the relationship between bullying experience and depressive symptoms, the ratio of mediative effect of neuroticism, extraversion and introversion are 4.39%, 8.75% and 40% respectively (Tables 4,5). Those results suggest that bullying ex-

**Table 5. Collection of mediating effects of personality between bullying experiences and depressed mood.**

Item	c (total effect)	a×b (intermediation effect)	a×b/c (computational formula)	Effect ratio
Bullying=>Neuroticism=>SDS	0.8107**	0.0356	0.0439	4.39%
Bullying=>Extraversion=>SDS	0.8107**	0.0710	0.0875	8.75%
Bullying=>Introversion=>SDS	0.8107**	0.3250	0.4000	40%

\*\*  $p < 0.001$ .

perience could predicts depression directly, which may be intermediated by personality trail of neuroticism, extraversion and introversion.

## Discussion

Campus bullying is a global phenomenon and one of the major challenges facing the education circle [15]. The incidence of previously self-reported depression, anxiety and suicide attempts was associated with bullying. Victims may also suffer from a variety of physical illnesses, such as headaches and sleep disorders [20]. However, little is known about the role of personality traits in this association. This study analyzed campus bullying, personality and depression through correlation analysis and mediating effect test. The results demonstrate that bullying experience, personality and depression correlate with each other, what's more, campus bullying may directly predict depression and indirectly predict via mediating effect of personality of neuroticism, extraversion and introversion, in which, introversion has an apparent mesmeric effect.

Spearman correlation analysis results showed that the bullying experience and introversion ( $r = 0.702$ ), neuroticism ( $r = 0.219$ ) and depression ( $r = 0.600$ ), but with extraversion negatively correlation ( $r = -0.537$ ). The reason may be that college students who suffer from psychological abuse form unsafe attachment. They have no appropriate coping style in the face of the new environment, resulting in negative emotions about the surrounding things, such as self-mutilation. Hamal Manisha *et al.* [21] have found that in the continuous mediation analysis, depression and dissociation mediated the association between bullying victimization and self-harm, which makes the bullied more likely to be involved in bullying incidents. The results of this study also showed that depressive symptom were positively correlated with neuroticism ( $r = 0.279$ ) and introversion ( $r = 0.611$ ), but negatively correlated with extraversion ( $r = -0.469$ ). The reason may be that bullying is a common and modifiable risk factor for mental health disorders [22]. A study has revealed that abnormal personality in patients with depression is related to a wide range of negative emotion [23]. Depression is the most common and serious clinical

emotion in which individuals have a pessimistic attitude towards everything and have difficulty controlling themselves [24]. A report has pointed out that adolescents experiencing campus bullying have higher prevalence of depression, and the main reason is that the bully is under greater pressure, causing emotional sensitivity, isolation, and difficulty in normal communication with peers, resulting in an increased incidence of depression [25].

The mediating effect test of the Bootstrap method showed that neuroticism, extraversion and introversion significantly mediated the relationship between bullying experience and depressive symptoms. The mediating effects of neuroticism, extraversion and introversion accounted for 4.39%, 8.75% and 40%, respectively. Personality plays an important mediating role between campus bullying and depression. In the personality dimension, the mediating effect of introversion is the strongest. This important finding highlights the importance of personality in interventions to prevent depression caused by campus bullying. Therefore, the incidence of depression caused by school bullying can be reduced by seeking to adjust and stablish the personality traits of students. When these personality traits are properly developed, students will be more likely to show greater empathy and responsibility, more likely to communicate positively with others and build affirmative relationships, more likely to have good psychological resilience and more likely optimistic pursue their future. When confronted with bullying, they will have the appropriate psychological and emotional stability by interfering personality traits like introversion and neuroticism, that will enable them to face bullying effectively and defuse negative emotions. Our research has also shown that extraversion is adversely relate to depression and oppositely exert mediating effect between bullying and depression, which indicates people who are extroverted, outgoing, agreeable and self-disciplined have better mental health.

This report has limitations. First, this is a cross-sectional study, and causal inferences should be avoided. Secondly, this study is a retrospective study, and data collection may be prone to information bias. Third, the face validity of the Olweus Scale for behavior description is too high, and filling it out by college students may be af-



ected by social desirability. Finally, the study population was from a specific province in southern China, and representability should be considered when interpreting the results.

## Conclusion

In summary, campus bullying is closely related to depression and personality. Campus bullying can indirectly predict depression through the mediating role of neuroticism, extraversion and introversion, and introversion has a significant mediating effect, indicating the potential value of personality intervention in preventing bullying-related depression in college students.

## Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Author Contributions

XN and CY designed the research study. CY and RG performed the research. XN analyzed the data. CY and RG drafted the manuscript. All authors contributed to important editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

## Ethics Approval and Consent to Participate

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Hainan Vocational College (approval number: 20191225). We obtained informed consent from the research subjects.

## Acknowledgment

Not applicable.

## Funding

This research was funded by Project of Hainan Social Science Research Base (the current situation, problems and countermeasures of mental health education in

Hainan higher vocational colleges under the background of the COVID-19), Project No. JD22-15, Project Approval in 2022; National Natural Science Foundation of Hainan (The impact of psychological intervention on alexithymia on psychological resilience among students under the background of the epidemic), Project No. 323RC513, project approved in 2023.

## Conflict of Interest

The authors declare no conflict of interest.

## References

- [1] Ma L, Mazidi M, Li K, Li Y, Chen S, Kirwan R, *et al.* Prevalence of mental health problems among children and adolescents during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Affective Disorders*. 2021; 293: 78–89.
- [2] Cao R, Gao T, Ren H, Hu Y, Qin Z, Liang L, *et al.* The relationship between bullying victimization and depression in adolescents: multiple mediating effects of internet addiction and sleep quality. *Psychology, Health & Medicine*. 2021; 26: 555–565.
- [3] Wen Y, Zhu X, Haegele JA, Yu F. Mental Health, Bullying, and Victimization among Chinese Adolescents. *Children (Basel, Switzerland)*. 2022; 9: 240.
- [4] Al-Darmaki F, Al Sabbah H, Haroun D. Prevalence of Bullying Behaviors Among Students from a National University in the United Arab Emirates: A Cross-Sectional Study. *Frontiers in Psychology*. 2022; 13: 768305.
- [5] Wang L, Zou HO, Liu J, Hong JF. Prevalence of Adverse Childhood Experiences and Their Associations with Non-Suicidal Self-Injury Among Chinese Adolescents with Depression. *Child Psychiatry and Human Development*. 2023. (online ahead of print)
- [6] Zhang J, Gu J, Wang W. The Relationship Between Bullying Victimization and Cyber Aggression Among College Students: The Mediating Effects of Relative Deprivation and Depression. *Psychology Research and Behavior Management*. 2022; 15: 3003–3012.
- [7] Reijntjes A, Kamphuis JH, Prinzie P, Telch MJ. Peer victimization and internalizing problems in children: a meta-analysis of longitudinal studies. *Child Abuse & Neglect*. 2010; 34: 244–252.
- [8] Holt MK, Vivolo-Kantor AM, Polanin JR, Holland KM, DeGue S, Matjasko JL, *et al.* Bullying and suicidal ideation and behaviors: a meta-analysis. *Pediatrics*. 2015; 135: e496–e509.
- [9] Armitage R. Bullying in children: impact on child health. *BMJ Paediatrics Open*. 2021; 5: e000939.
- [10] Schreier A, Wolke D, Thomas K, Horwood J, Hollis C, Gunnell D, *et al.* Prospective study of peer victimization in childhood and psychotic symptoms in a nonclinical population at age 12 years. *Archives of General Psychiatry*. 2009; 66: 527–536.
- [11] Kwong ASF, López-López JA, Hammerton G, Manley D, Timpson NJ, Leckie G, *et al.* Genetic and Environmental Risk Factors Associated with Trajectories of Depression Symptoms from Adolescence to Young Adulthood. *JAMA Network Open*. 2019; 2: e196587.

- [12] Bowes L. Editorial: Selective Prevention in Anti-Bullying Programs: Could Targeting Personality Be the Answer? *Journal of the American Academy of Child and Adolescent Psychiatry*. 2020; 59: 504–505.
- [13] Ho CSH, Chua J, Tay GWN. The diagnostic and predictive potential of personality traits and coping styles in major depressive disorder. *BMC Psychiatry*. 2022; 22: 301.
- [14] Gentry TA, Wakefield JA, Jr, Friedman AF. MMPI Scales for measuring Eysenck's personality factors. *Journal of Personality Assessment*. 1985; 49: 146–149.
- [15] Li H, Qian X, Gong J, Dong H, Chai X, Chao H, *et al.* Previous School Bullying-Associated Depression in Chinese College Students: The Mediation of Personality. *Behavioral Sciences (Basel, Switzerland)*. 2022; 13: 14.
- [16] Solberg ME, Olweus D. Prevalence estimation of school bullying with the Olweus Bully/Victim Questionnaire. *Aggressive Behavior*. 2003; 29: 239–268.
- [17] Zhang WX, Wu JF, Jones K. Revision of the Chinese version of the Olweus Child Bullying Questionnaire. *Psychological Development and Education*. 1999; 15: 8–12.
- [18] Zung WW. The Depression Status Inventory: an adjunct to the Self-Rating Depression Scale. *Journal of Clinical Psychology*. 1972; 28: 539–543.
- [19] Qian MY, Wu GC, Zhu RC, Zhang S. Revision of the Chinese version of the Eysenck Personality Questionnaire-Reduced Scale (EPQ-RSC). *Journal of Psychology*. 2000; 32: 317–323.
- [20] Newman KL, Alexander DS, Rovers JP. Sadness, hopelessness and suicide attempts in bullying: Data from the 2018 Iowa youth survey. *PLoS One*. 2023; 18: e0281106.
- [21] Hamal M, Kekkonen V, Kraav SL, Kivimäki P, Rissanen ML, Hintikka J, *et al.* Depression and dissociation mediate the association between bullying victimization and self-cutting. *Nordic Journal of Psychiatry*. 2023; 77: 676–685.
- [22] Liu Y, Yu X, An F, Wang Y. School bullying and self-efficacy in adolescence: A meta-analysis. *Journal of Adolescence*. 2023; 95: 1541–1552.
- [23] Dinger U, Fuchs M, Köhling J, Schauenburg H, Ehrental JC. Change of Emotional Experience in Major Depression and Borderline Personality Disorder During Psychotherapy: Associations with Depression Severity and Personality Functioning. *Journal of Personality Disorders*. 2021; 35: 1–20.
- [24] Jayanthi P, Thirunavukarasu M, Rajkumar R. Academic stress and depression among adolescents: a cross-sectional study. *Indian Pediatrics*. 2015; 52: 217–219.
- [25] Hase CN, Goldberg SB, Smith D, Stuck A, Campain J. Impacts of traditional bullying and cyberbullying on the mental health of middle school and high school students. *Psychology in the Schools*. 2015; 52: 607–617.