



Mediating Effect of Depression Between Cyberbullying Victimization Experience and Negative Bystander Behavior Among College Students

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Abstract. To examine the mediating effect of depression on cyberbullying victimization experience and negative bystander behavior among college student. Undergraduate students from freshman to senior years were sampled from a university in Henan Province using a convenience sampling method in May 2024. A virtual cyberbullying scenario was presented via an online questionnaire. After viewing it, the participants completed the Bystanders' Negative Behaviors Questionnaire, the Cyberbullying Experience Questionnaire, and the Center for Epidemiologic Studies Depression Scale. The Process macro program was used to analyze the mediating effect of depression between cyberbullying victimization experience and negative bystander behavior, and the Bootstrap method was employed to test the significance of the mediating effect. A total of 1147 students were surveyed, and 1022 valid questionnaires were obtained, with a valid rate of 89.10%. Among them, 193 were male students (18.88%), and 829 were female students (81.12%). There were 348 freshmen (34.05%), 319 sophomores (31.21%), 289 juniors (28.28%), and 66 seniors (6.46%). The average age was (20.26±1.12) years old. The median score of cyberbullying victimization experience was 1.00 (interquartile range, 0.50), the median score of depressive symptoms was 8.00 (interquartile range, 6.00), and the median score of bystanders' negative behaviors was 2.08 (interquartile range, 1.25). The results of the mediating effect analysis indicated that the cyberbullying victimization experience could directly and positively affect bystanders' negative behaviors, with an effect value of 0.329 (95%CI: 0.251 - 0.407). It could also indirectly affect bystanders' negative behaviors through depression, with an effect value of 0.067 (95%CI: 0.042 - 0.096). The indirect effect accounted for 16.92% of the total effect. College students' experiences of being cyberbullying victims can directly or indirectly affect bystanders' negative behaviors through the mediating role of depression.

Keywords: cyberbullying victimization experience, depression, negative bystander behavior

1 Introduction

Cyberbullying is defined as the repeated use of aggressive behaviors on electronic platforms with the intention of causing harm to others ^[1]. Individuals who are subjected to cyberbullying may experience significant psychological distress, including emotional problems such as depression and anxiety ^[2], as well as suicidal tendencies ^[3]. College students constitute a significant demographic that frequently experiences cyberbullying ^[4]. A survey of Chinese college students revealed that 46.41% of respondents had experienced cyberbullying, and 36.27% had engaged in cyberbullying ^[5]. Victims of cyberbullying may become bystanders or even perpetrators when encountering cyberbullying incidents ^[6].

Bystanders play an important role in cyberbullying situations. Bystanders may offer help, stand by idly, or even join the bullies in perpetrating the bullying. These behaviors all have a crucial impact on the development of cyberbullying incidents. Among these behaviors, standing by idly and joining the bullies in perpetrating the bullying are referred to as negative bystander behaviors, and these behaviors can cause serious psychological harm to the victims. Some researchers have classified negative bystander behaviors into outsider behaviors, reinforcing behaviors, and assisting behaviors. Outsider behaviors refer to doing nothing and thus condoning the bullies. Reinforcing behaviors refer to strengthening the bullying behaviors through actions such as jeering and laughing. Assisting behaviors refer to bystanders joining the bullies in committing cyber violence ^[7]. The extensive freedom college students have in Internet usage may increase their exposure to violent content, which could subsequently lead to negative behavioral outcomes related to bullying ^[8]. A study found a significant positive correlation between prior bullying victimization and subsequent bullying perpetration, suggesting a predictive model for such behavior ^[9].

College students who have experienced cyberbullying victimization tend to have negative emotional experiences^[2], and these negative emotions may influence the way they behave making them act negatively. One study found that college students' experience of cyberbullying victimization is a significant risk factor for depression among college students ^[10]. Research also indicates that school bullying exposure predicts depressive symptoms in primary and secondary school students ^[11], while depression itself shows a strong positive correlation with aggressive behavior ^[12]. This study examines the relationship between college students' bullying experiences and bystanders' negative behaviors, with depression as a potential mediator, to inform cyberbullying prevention and intervention strategies. A simulated cyberbullying scenario was developed to investigate these relationships empirically.

2 Methods

2.1 Participants

The study protocol was approved by the Institutional Review Board (IRB) at the authors' affiliated institution. We recruited 1,147 undergraduate students through voluntary sampling from a university in Henan Province, China. After excluding invalid responses (e.g., abnormally short completion times or patterned responses), 1,022 valid datasets were retained, resulting in an 89.10% valid response rate.

The final sample comprised 193 male (18.88%) and 829 female (81.12%) participants, aged 16–25 years ($M = 20.26$, $SD = 1.12$). By class standing, the sample included 348 freshmen (34.05%), 319 sophomores (31.21%), 289 juniors (28.28%), and 66 seniors (6.46%). Regarding hometown origin, 427 participants (41.78%) hailed from urban areas, while 595 (58.22%) came from rural regions.

2.2 Procedure

Adopting the methodological approach employed in prior investigations of bystander behavior in cyberbullying contexts^[13], participants were administered a simulated cyberbullying dialogue screenshot via an online survey platform. Following standardized instructions detailing the experimental scenario's contextual background, participants subsequently completed a battery of validated psychometric measures. The procedural steps involved are outlined as follows: (1) Participants were asked to sign an informed consent form, which clarified the anonymous nature of the survey, voluntary participation, and the right to withdraw at any time. (2) They then completed a demographic information questionnaire. (3) A cyberbullying scenario was presented, depicting a situation where Student A (the victim) asked a question in a WeChat group, and Student B (the perpetrator) responded impatiently and verbally harassed Student A three times. Student A did not respond. The scenario was displayed in the form of a WeChat conversation screenshot. (4) Participants were instructed: "Imagine you are a bystander in this group witnessing such verbal aggression. How would you react? Based on your genuine thoughts, please complete the following questionnaires." These included: the Bystander Negative Behavior Questionnaire, the Cyberbullying Experience Questionnaire, and the Depressive Symptoms Scale.

2.3 Measures

Cyberbullying victimization experience: The Cyber Victimization Experience Questionnaire (CVEQ)^[7] was administered to assess college students' exposure to cyberbullying. The scale comprises 8 items rated on a 5-point Likert scale: 1 ("never"), 2 ("once"), 3 ("rarely"), 4 ("several times"), and 5 ("many times"). A mean score was calculated, with higher scores indicating greater frequency of cyber victimization experiences. In the current study, the questionnaire demonstrated excellent internal consistency (Cronbach's $\alpha = 0.94$).

Depressive symptom: Depressive symptoms were assessed using the 9-item short form of the Center for Epidemiologic Studies Depression Scale (CES-D-9) [14]. This scale consists of 9 items rated on a 4-point Likert scale: 0 ("rarely or none of the time"), 1 ("some or a little of the time"), 2 ("occasionally or a moderate amount of time"), and 3 ("most or all of the time"). Items 5 and 7 were reverse-scored. Total scores range from 0 to 27, with cutoff scores of 10 and 17 indicating depressive tendency and high risk for depression, respectively. In the current study, the scale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.90$).

Negative Bystander Behavioral Intentions: The study employed three negative behavior subscales (outsider behavior, reinforcer behavior, and assistant behavior) from the Bystander Behavior Intention Questionnaire [7], comprising a total of 12 items. The items were rated on a 7-point Likert scale, ranging from 1 ("completely disagree") to 7 ("completely agree"). Dimension scores were calculated by averaging item responses within each subscale, with higher scores indicating stronger intentions to engage in negative bystander behaviors. In the current study, the Cronbach's α coefficients for the three subscales were 0.88, 0.77, and 0.64, respectively, while the overall composite scale demonstrated good internal consistency (Cronbach's $\alpha = 0.86$).

2.4 Data Analysis

Statistical analyses were performed using SPSS 27.0. Quantitative data that did not follow normal distribution were presented as median and interquartile range [M (IQR)], with between-group comparisons made using the Mann-Whitney U test or Kruskal-Wallis H test. Qualitative data were described using proportions. Spearman's rank correlation was used for correlation analysis. Common method bias was examined by Harman's single-factor test. Mediation effects were analyzed using Hayes' PROCESS macro (Model 4, version 4.1). Statistical significance was defined as $p < 0.05$.

A mediation model was constructed with cyber victimization experience as the independent variable, negative bystander behavior as the dependent variable, and depression as the mediating variable. First, Model 1 was established with cyber victimization experience as the independent variable and negative bystander behavior as the dependent variable to examine the direct effect of cyber victimization on negative bystander behavior. Next, Model 2 was constructed with cyber victimization experience as the independent variable and depression as the dependent variable to assess the effect of cyber victimization on depression. Then, Model 3 was developed with depression as the independent variable and negative bystander behavior as the dependent variable to analyze the effect of depression on negative bystander behavior. All models included gender, age, place of origin, and birth order as control variables. For the mediation model to be valid, the following three conditions must be satisfied simultaneously: (1) The main effect of cyber victimization experience on negative bystander behavior must be statistically significant. (2) The main effect of cyber victimization experience on depression must be statistically significant. (3) The main effect of depression on negative bystander behavior must be statistically significant. The Bootstrap method was employed to test the mediation effect, with the number of resampling iterations set to

5,000. A 95% confidence interval (CI) not including zero indicated that the mediation effect was statistically significant.

3 Results

3.1 Preliminary Analysis

The median (interquartile range) score for cyber victimization experience was 1.00 (0.50). Using a cutoff score > 1 to define victimization experience, 421 participants (41.19%) were identified as victims. For depressive symptoms, the median (IQR) score was 8.00 (6.00). Using cutoff scores of 10 and 17 for depressive tendency and high-risk depression respectively, 593 participants (58.02%) showed depressive tendency and 32 (3.13%) were at high risk. Regarding negative bystander behaviors, the overall median (IQR) score was 2.08 (1.25). The subscale scores were: outsider behavior median (IQR) = 2.75 (2.50), reinforcement behavior = 1.50 (1.25), and assisting behavior = 2.00 (1.75).

3.2 Demographic Variables Analysis of Differences in Dependent Variables

Significant gender differences were observed among college students in three types of bystander behaviors: outsider behaviors ($Z=-2.610$, $p=0.009$), reinforcing behaviors ($Z=-4.349$, $p<0.001$), and assisting behaviors ($Z=-5.619$, $p<0.001$). Birthplace differences were significantly associated with outsider behaviors ($Z=2.998$, $p=0.003$) and assisting behaviors ($Z=2.194$, $p=0.028$). Additionally, birth order showed a statistically significant effect on assisting behavior ($H=7.938$, $p=0.047$). Complete statistical results are presented in Table 1.

Table 1. Comparison of the negative bystander behavior scores among college students.

Item	Number of participants [<i>n</i> (%)]	Outsider behavior score [<i>M</i> (<i>IQR</i>)]	Reinforcing behavior score [<i>M</i> (<i>IQR</i>)]	Assistant behavior score [<i>M</i> (<i>IQR</i>)]
Gender				
Male	193 (18.88)	3.25 (2.38)	1.75 (2.00)	2.50 (2.25)
Female	829 (81.12)	2.75 (2.25)	1.50 (1.00)	1.75 (1.50)
<i>Z/H</i>		-2.610 ^①	-4.349 ^①	-5.619 ^①
<i>P</i>		0.009	<0.001	<0.001
Academic Year				
Freshman	348 (34.05)	2.75 (2.50)	1.50 (1.50)	2.00 (2.00)
Sophomore	319 (31.21)	2.75 (2.00)	1.50 (1.25)	1.75 (1.50)
Junior	289 (28.28)	3.00 (2.50)	1.50 (1.25)	2.00 (1.75)
Senior	66 (6.46)	2.89 (2.25)	1.50 (1.25)	1.75 (1.50)
<i>Z/H</i>		2.952 ^②	2.147 ^②	6.528 ^②
<i>P</i>		0.399	0.542	0.089

Place of Origin				
Urban	427 (41.78)	2.50 (2.25)	1.50 (1.25)	1.75 (1.75)
Rural	595 (58.22)	3.00 (2.25)	1.50 (1.25)	2.00 (1.75)
Z/H		2.998 ^①	1.651 ^①	2.194 ^①
P		0.003	0.099	0.028
Birth Order				
Only child	167 (16.34)	2.75 (2.25)	1.25 (1.25)	1.75 (1.50)
Firstborn	457 (44.72)	2.75 (2.25)	1.50 (1.25)	2.00 (2.00)
Middle child	339 (33.17)	2.75 (2.00)	1.50 (1.25)	1.75 (1.50)
Youngest child	59 (5.77)	2.25 (2.75)	1.25 (1.50)	2.00 (1.75)
Z/H		2.600 ^②	4.359 ^②	7.938 ^②
P		0.457	0.225	0.047

Note: ①Z-values from Mann-Whitney U tests; ②H-values from Kruskal-Wallis tests.

3.3 Correlation Analysis Among Variables

The correlation analysis revealed significant positive associations between cyber victimization and depressive symptoms ($r_s = 0.31, p < 0.001$), as well as negative bystander behavior ($r_s = 0.22, p < 0.001$). Specifically, cyber victimization was positively correlated with all three dimensions of negative bystander behavior: outsider behavior ($r_s = 0.18, p < 0.001$), reinforcing behavior ($r_s = 0.21, p < 0.001$), and assisting behavior ($r_s = 0.16, p < 0.001$). Furthermore, depressive symptoms demonstrated significant positive correlations with both overall negative bystander behavior ($r_s = 0.29, p < 0.001$) and its individual dimensions: outsider behavior ($r_s = 0.32, p < 0.001$), reinforcing behavior ($r_s = 0.23, p < 0.001$), and assisting behavior ($r_s = 0.16, p < 0.001$).

3.4 Testing for Mediating Effects in the Model

The results of Harman's single-factor test indicated the absence of significant common method bias, with five factors exhibiting eigenvalues greater than 1 and the first factor accounting for only 30.05% of the total variance, well below the critical threshold of 40%. After standardizing the independent, dependent, and mediating variables, we conducted a series of analyses using Hayes' Process macro 4.1 (Model 4) in SPSS while controlling for demographic variables including gender, age, place of origin, and birth order.

The analysis revealed that cyberbullying victimization demonstrated a significant total effect on negative bystander behaviors ($\beta = 0.31, p < 0.001$). When depression was included as a mediator in the model, cyberbullying victimization continued to positively predict negative bystander behaviors ($\beta = 0.25, p < 0.001$), while also showing a significant positive association with depression ($\beta = 0.29, p < 0.001$). Furthermore, depression itself emerged as a significant predictor of negative bystander behaviors ($\beta = 0.18, p < 0.001$), suggesting its role as a partial mediator in the relationship between cyberbullying victimization and negative bystander behaviors, as detailed in Table 2.

Table 2. Regression analysis of the mediating role of depression.

Predictors	Mode 1 (Negative bystander behavior)		Mode 2 (Depression)		Mode 3 (Negative bystander behavior)	
	β	t	β	t	β	t
Gender	-0.12	-4.00***	-0.02	-0.57	-0.12	-3.96***
Age	-0.06	-1.95	0.03	1.14	-0.06	-2.20
Place of Origin	0.12	3.90***	0.13	4.19***	0.10	3.14
Birth Order	-0.06	-2.07	-0.05	-1.48	-0.06	-1.82
Victimization	0.31	10.21***	0.29	9.32***	0.25	8.28***
Depression					0.18	6.05***
R^2	0.13		0.10		0.16	
F	32.43***		22.93***		34.06***	

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

A series of empirical tests were conducted to ascertain the impact of college students' experiences with cyberbullying on bystander behavior. The nonparametric percentile bootstrap estimation method was employed, with 5,000 samples being drawn for the analysis. The findings revealed a direct effect value of 0.25 for the victimization experience of college students with cyberbullying, which was followed by an indirect effect value of 0.05 through depression. The direct and indirect effects collectively accounted for 83.33% and 16.67% of the total effect, respectively. A comprehensive array of data is delineated in Table 3 and illustrated in Figure 1.

Table 3. Mediating effects analysis of depression.

Item	Effect value	Boot SE	Boot LLCI	Boot ULCI	Effect ratio
Total effect	0.30	0.03	0.25	0.36	100%
Direct effect	0.25	0.03	0.19	0.31	83.33%
Indirect effect	0.05	0.01	0.03	0.07	16.67%

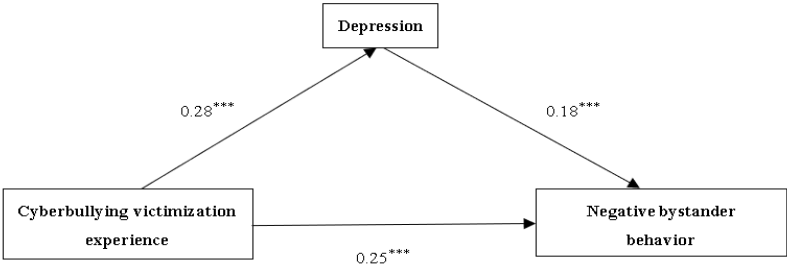


Fig. 1. The mediating effect model of depression between cyberbullying victimization experience.

Note: The coefficients in the figure are standardized regression coefficients, *** $p < 0.001$.

4 Discussion

The findings of this study indicate a significant prevalence of online victimization among university students, with 41.19% reporting experiences of being bullied in online environments, 58.02% exhibiting depressive tendencies, and 3.13% identified as having high-risk depressive symptoms. These results underscore the imperative for academic institutions to systematically monitor students' digital interactions and establish proactive intervention mechanisms to mitigate the psychological consequences associated with online harassment.

Analysis of bystander responses revealed distinct behavioral patterns in cyberbullying situations. The composite score for negative bystander behavior showed a median of 2.08 (IQR = 1.25), with notable variations across behavioral dimensions. Specifically, outsider behavior (median = 2.75, IQR = 2.50) was most prevalent, followed by assisting behavior (median = 2.00, IQR = 1.75), while reinforcing behavior was least common (median = 1.50, IQR = 1.25). This behavioral profile suggests that while students predominantly assume the role of passive observers in online harassment incidents, they demonstrate relatively lower propensity to actively perpetuate the bullying. These findings highlight the necessity for universities to implement comprehensive digital citizenship education programs aimed at both enhancing students' coping strategies when subjected to online harassment and fostering active bystander intervention in cases of peer victimization.

The findings of this study suggest that experiences of cyber victimization among university students may contribute to more passive behavioral responses when witnessing cyberbullying incidents. Drawing upon established theoretical frameworks, these results can be interpreted through multiple psychological perspectives. The principle of negative reciprocity^[15] suggests that individuals who experience maltreatment from others may develop similar aggressive behavioral tendencies. Furthermore, the frustration-aggression hypothesis^[16] posits that adverse experiences can lead to various forms of aggressive behavior. Within this context, cyber victimization represents a significant stressor that may generate internal tension and anger, potentially motivating individuals to engage in either direct or indirect aggressive behaviors as a coping mechanism. Several characteristics of online environments may exacerbate these tendencies. The inherent anonymity and virtual nature of digital spaces^[17] have been shown to facilitate more passive bystander behaviors compared to face-to-face interactions^[18]. Empirical evidence indicates that cyberbullying is more easily perpetrated than traditional bullying^[19], with prior victims demonstrating increased likelihood of exhibiting aggressive responses^[20]. Notably, research has established that cyber victimization experiences significantly predict antisocial response strategies among bystanders^[15], while bullying victimization positively correlates with passive bystander behaviors in adolescent populations^[21]. These findings reveal a significant association between cyber victimization and subsequent passive bystander behaviors online, highlighting the need for targeted interventions addressing these psychological mechanisms.

The results of this study indicate that the influence of college students' experiences of being victims of cyberbullying on their negative behaviors as bystanders may be mediated in part by depression. According to the Frustration-Aggression Hypothesis^[16],

after being cyberbullied, individuals may exhibit substitute aggression or have a tendency towards negative behaviors due to their inability to directly retaliate against the perpetrators, and depressive emotions may exacerbate this process. Victims of cyberbullying often experience a sense of helplessness and low self-worth. These negative emotions may, through the mediating effect of depression, prompt them to show indifference or reinforce bullying behaviors when witnessing other bullying incidents. Furthermore, the Emotion Regulation Theory indicates that individuals with depression often adopt maladaptive emotion regulation strategies, such as emotional suppression or avoidance. The depressive emotions of cyberbullying victims may undermine their moral responsibility, making them more likely to choose negative coping methods rather than intervening or helping the victims when facing bullying situations.

Previous studies have found that, as a common form of aggressive behavior on college campuses, cyberbullying has become an important predictive factor leading to the impairment of the psychological and behavioral functions of college students^[22,23]. Students who experience cyberbullying often develop social anxiety, sleep disturbances, and other issues that are closely associated with depression^[10,24]. When experiencing depressive states, students may struggle to regulate their negative emotions, which could subsequently manifest as outwardly-directed aggressive behaviors. Thus, cyberbullying victimization may contribute to increased negative bystander behaviors through its effect on depression.

In summary, cyberbullying victimization not only directly predicts negative bystander behaviors among college students, but also indirectly influences such behaviors through the development of depressive symptoms. These results highlight the need for greater attention to the detrimental effects of cyberbullying on students' mental health and social behaviors. Educational institutions and families should actively monitor negative online experiences encountered by college students, strengthen psychological counseling and intervention efforts, and implement cyber wellness education programs. Such measures would help students develop effective coping strategies for cyberbullying incidents and potentially break the vicious cycle between cyberbullying, depression, and associated negative bystander behaviors.

Although this study provides an empirical reference for exploring the impact of cyberbullying victimization experiences on bystanders' negative behaviors and the psychological mechanisms by simulating real cyberbullying situations, it also has certain limitations. Firstly, this study is a cross-sectional one, which is unable to reveal the causal relationship between perceived severity and bystanders' negative behaviors. Future research can design more rigorous experimental groupings to explore such causal relationships. Secondly, this study samples undergraduates from a university in Henan Province, resulting in a single sampling approach. In the future, research can be conducted on more diverse groups, such as college students at different levels (junior college students, postgraduate students), primary and secondary school students, and working adults. Finally, the cyberbullying scenario set in this study is verbal abuse in a WeChat group, which is only one type of cyberbullying behavior, and whether the findings can be generalized to other forms of cyberbullying remains to be verified.

5 Conclusions

This study investigates the relationship between cyberbullying victimization experience, depression, and negative bystander behavior among college students. Using an online scenario-based survey and validated questionnaires, data were collected from 1022 undergraduate students at a university in Henan Province. The results indicate that depression partially mediates the relationship between cyberbullying victimization and negative bystander behavior, accounting for approximately 16.67% of the total effect.

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