


# Longitudinal Relationships Between Bullying Victimization and Dual Social Behaviors: The Roles of Self-Compassion and Trauma-Related Shame

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**Purpose:** Bullying victimization is a serious issue among college students, which might affect the development of their social behaviors. Based on the theory of stress and coping and emotion regulation theory, the present study examined the mediating role of self-compassion and trauma-related shame between bullying victimization and cyber aggression/prosocial behavior.

**Patients and Methods:** We gathered self-reporting data on bullying victimization, self-compassion, trauma-related shame, cyber aggression, and prosocial behavior from 634 college students in China using a three-wave longitudinal design survey. Structural equation modeling was used to test temporal mediation.

**Results:** The results showed that bullying victimization predicted cyber aggression and prosocial behavior via trauma-related shame and the chain effect of self-compassion and trauma-related shame. Moreover, self-compassion also mediated the relationship between bullying victimization and prosocial behavior.

**Conclusion:** The study revealed the different emotional processes that underlie both bullying victimization and different social behaviors. It also contributes to more effective prevention and intervention measures for the social adaptation of bullied students.

**Keywords:** bullying victimization, self-compassion, trauma-related shame, cyber aggression, prosocial behavior, emotional mechanisms

## Introduction

Bullying victimization among youth has become an increasing and widespread public health issue in recent years. According to Olweus,<sup>1</sup> bullying victimization is a phenomenon in which an individual is exposed to intentional, repeated, and negative actions from one or more students over a long time. Many scholars have researched bullying victimization in primary and secondary school. What's more, school bullying is also very common in universities,<sup>2</sup> and bullying victimization in universities also needs to be focused on. Bullying victimization not only brings physical pain and harm to university students but also results in adverse psychological symptoms such as depression and anxiety.<sup>3</sup> Additionally, students who have experienced bullying victimization are more likely to exhibit impaired academic functionality, such as dropping out or failing courses.<sup>4</sup> Bullying victimization also damages the interpersonal functionality of university students, fostering maladaptive social behavior.<sup>5</sup> As university students are in a crucial period transitioning from adolescence to adulthood, it is a key time for socio-psychological development.<sup>5</sup> Positive social behavior is conducive to integrating into adaptive groups, developing social skills, and forming harmonious social relationships.<sup>6</sup> This is crucial for personal social adaptation and growth. Therefore, it is necessary to explore the mechanism of school bullying on

college students' social behaviors in order to provide better interventions for the bullied group and help them develop adaptive social behaviors.

## Bullying Victimization and Prosocial Behavior/Cyber Aggression

Much research has demonstrated that individuals who are bullied often display more aggressive behavior. According to the theory of stress and coping,<sup>7</sup> bullying victimization is a significant stressor for college students, triggering negative emotional reactions and the use of maladaptive coping methods, such as aggression as a form of self-defense or retaliation. Notably, the primary forms of aggression vary by age group. Due to their higher Internet usage than children and teenagers, college students are more prone to engage in cyber aggression.<sup>8</sup> Additionally, due to the development of a sense of rules and self-esteem, college students who experience bullying are more likely to resort to anonymous cyber aggression as a means of retaliating against others, thus avoiding accountability.<sup>9</sup> Cyber aggression refers to the intentional harm inflicted on others through electronic devices.<sup>10</sup> Many studies and meta-analyses have confirmed the positive correlation between bullying victimization and cyber aggression among college students.<sup>9,11,12</sup> Considering that our study group is college students who use the Internet more conveniently, it is necessary for us to pay more attention to college students' cyber aggression.

Furthermore, the connection between prosocial behavior—the antithesis of aggressive behavior—and bullying victimization has garnered attention from numerous scholars. Prosocial behavior is defined as behavior that benefits others,<sup>13</sup> which can be classified into four dimensions: altruism, commonweal-rule, interpersonal relationships, and personality traits.<sup>14</sup> It can also be assumed that bullying victimization reduces prosocial behavior among college students because aggression and prosocial behavior have a negative link.<sup>15</sup> According to the theory of stress and coping,<sup>7</sup> individuals who have experienced bullying are more likely to feel rejected,<sup>12</sup> which makes them less likely to be prosocial and reluctant to assist others. Also, victims of bullying are often of low social status and have poor peer relationships,<sup>16</sup> which is also detrimental to the development of their prosocial behavior.<sup>17</sup> There is research confirming that children and adolescents tend to exhibit less prosocial behavior after bullying,<sup>18</sup> and such adverse consequences of bullying in the preteen years will also carry over into early adulthood, causing prolonged social adjustment problems.<sup>19</sup> Meanwhile, a study of college students also found negative effects of bullying victimization on future prosocial behavior.<sup>20</sup> However, traumatic events may also lead to more prosocial behavior, which is a phenomenon that Vollhardt attributes to “altruism born of suffering”.<sup>21</sup> He said that specific emotions triggered by an individual's experience of a traumatic event may enhance his or her motivation to help others. Bullying victimization, a common interpersonal traumatic event, may also promote prosocial behavior.

In summary, the impact of bullying victimization on prosocial behavior has not been consistent in previous theories and studies, so in order to offer a more comprehensive understanding of the phenomenon of victims' helping behavior, we must thoroughly investigate the relationship between the two and their influencing mechanisms. Meanwhile, previous research has not examined cyber aggression and prosocial behavior following bullying victimization in a single model. Therefore, in this study, we will concurrently examine the effects of bullying victimization on different college students' social behaviors, which will aid in our understanding of the psychosocial issues that affect college students.

## The Mediating Role of Trauma-Related Shame

According to the theory of stress and coping,<sup>7</sup> stressful events such as bullying victimization increase an individual's aggressive behavior by eliciting an individual's emotions. Social emotions, as important influences on social behavior, are likely to be potential mediators between bullying victimization and aggressive behavior. Among them, shame is one of the typical social emotions and the shame that arises after a traumatic event such as bullying victimization is considered to be a trauma-related shame, which specifically refers to the feelings of worthlessness, powerlessness, and self-condemnation that individuals experience after a traumatic event.<sup>22</sup>

According to the Broken World Hypothesis,<sup>23</sup> bullying victimization as a traumatic experience shatters the victim's pre-existing perceptions of self and others, leading to the person's insecurity as well as negative self-attributions of the experience. Thus, bullying victims tend to negatively interpret being bullied as their fault, and this leads to disgust, condemnation, and devaluation of the self, which in turn increases feelings of shame. Wu<sup>24</sup> found that the experience of

bullying victimization makes individuals feel rejected, disliked, and stigmatized by others, which causes them to feel ashamed of themselves. There is evidence that bullying victimization triggers higher levels of trauma-related shame in college students.<sup>20</sup>

Bullying victims are likely to increase their aggressive behavior towards others after feeling higher levels of shame. According to the compass of shame of Nathanson,<sup>25</sup> aggression toward others is one of the four ways individuals deal with shame. When individuals experience trauma-related shame, they tend to be reluctant to accept the shame, so they externalize the shame by directing their anger at others or the external environment, which somehow allows them to feel a decrease in shame. The shame-anger theory<sup>26</sup> also suggests that shame is accompanied by intense anger and hostility, which can result in more aggressive behavior towards others. In addition, shame is also able to stimulate self-protection in victims as a way to generate aggressive behavior in self-defense.<sup>27</sup> Therefore, we hypothesize that college students who have suffered bullying victimization may develop higher levels of shame and, in turn, exhibit more severe cyber aggression.

However, the impact of a victim's trauma-related shame on their prosocial behavior may be more complex. Nathanson's compass of shame also suggests that victims with high levels of shame also exhibit withdrawal and avoidance and they show higher levels of social situations anxiety and stress,<sup>24</sup> are reluctant to interact with others, and naturally exhibit less prosocial behavior.<sup>28</sup> At the same time, shamed bullying victims are also more inclined to attribute victimization to their own inadequacies, believing themselves to be inferior and unacceptable,<sup>29</sup> and this negative self can also cause individuals to refuse to protect themselves from further bullying and victimization by interacting with or helping others.<sup>19</sup> Trauma-related shame in victims has also been found to predict a decrease in subsequent prosocial behavior.<sup>30</sup> However, some researchers have also argued that individuals can alleviate their own negative emotions such as shame by helping others,<sup>31</sup> while shamed individuals are very concerned about their self-image,<sup>32</sup> and thus may also compensate for their negative image after bullying by engaging in positive prosocial behavior.<sup>33</sup> In summary, past research has been inconsistent in examining the effects of shame on prosocial behavior. Thus, in order to better understand the mechanisms behind the emotional impact of bullying victimization on college students' prosocial behavior, the current study also aimed to investigate the role that trauma-related shame plays between bullying victimization and prosocial behavior.

## The Mediating Role of Self-Compassion

The theory of stress and coping also suggests that individuals' self-regulation determine the emotions generated in response to stressors, subsequently influencing coping behavioral strategies. And self-compassion, as a typical self-regulation strategy, may play an important role in the developmental process of victims' social behavior. And according to emotion regulation theory,<sup>34</sup> self-compassion is a typical positive emotion regulation strategy, which may play an important role in the developmental process of victims' social behavior. Self-compassion, a concept proposed by Neff drawing on Buddhist philosophy, has been defined in numerous previous studies as an individual's attitude toward the self after experiencing a negative event,<sup>35,36</sup> and can be divided into three components in total: (a) self-kindness vs self-judgment, (b) common humanity vs isolation, and (c) mindfulness vs over-identification.

Past research has demonstrated that the ability to use self-compassion, an emotion regulation strategy, decreases after an individual experiences bullying victimization.<sup>37,38</sup> Bullying victimization is a traumatic life event for students; therefore, bullying victimization may deprive students of their ability to emotionally take care of themselves.<sup>39</sup> It has also been shown that experiencing bullying victimization causes victims to acquire more negative thinking, resulting in compromised levels of self-compassion,<sup>40</sup> causing individuals to exhibit greater post-traumatic negative emotions.

Self-compassion may reduce aggression and promote prosocial behavior in individuals. Some researchers have suggested that building the capacity to care for and accept oneself while suffering may help extend compassion to multiple targets, including the self, others, and all beings,<sup>41</sup> thus reducing individuals' aggression toward others and promoting interpersonal interactions and caring behaviors.<sup>42</sup> Furthermore, individuals high in self-compassion display lower negative emotions and have higher levels of kindness, which leads them to adopt a friendlier approach to interpersonal relationships rather than aggression.<sup>43</sup>

Meanwhile, self-compassion, as a positive attitude of accepting oneself and treating oneself well, is effective in alleviating individuals’ negative thinking and reducing the level of negative emotions,<sup>35</sup> which may help to reduce individuals’ negative emotions such as shame after trauma. Empirical studies have also confirmed that self-compassion significantly reduces the emotional level of shame.<sup>44</sup> Several clinical studies related to compassion training, such as CMT (Compassionate Mind Training), have found that individuals trained in self-compassion develop feelings of empathy and warmth and significantly reduce the level of shame.<sup>45,46</sup>

In summary, we hypothesized that when college students suffer from bullying, their self-compassion as an emotional regulation is weakened, which in turn produces higher levels of trauma-related shame, thus affecting their social behaviors.

The Present Study

From Table 1, we can see that previous studies often only focused on changes in one social behavior after experiencing bullying, without fully incorporating discussions on the mediating mechanisms related to self-regulation and victim-related emotions. In conclusion, to fill this gap, the present study will explore the impact of bullying victimization on different social behaviors (prosocial behavior/cyber aggression) and examine the emotional mechanisms involved. Thus, the present study constructed a chained mediation model to explore the effects of bullying victimization on college students’ cyber aggression and prosocial behavior, as well as the mediating role of self-compassion and trauma-related shame (see Figure 1). Specifically, we hypothesized:

H1: Self-compassion mediates the relationship between bullying victimization and college students’ cyber aggression and prosocial behavior.

H2: Trauma-related shame mediates the relationship between bullying victimization and college students’ cyber aggression and prosocial behavior.

H3: Bullying victimization predicts college students’ cyber aggression and prosocial behavior through the chain-mediated effects of self-compassion and trauma-related shame.

Methods

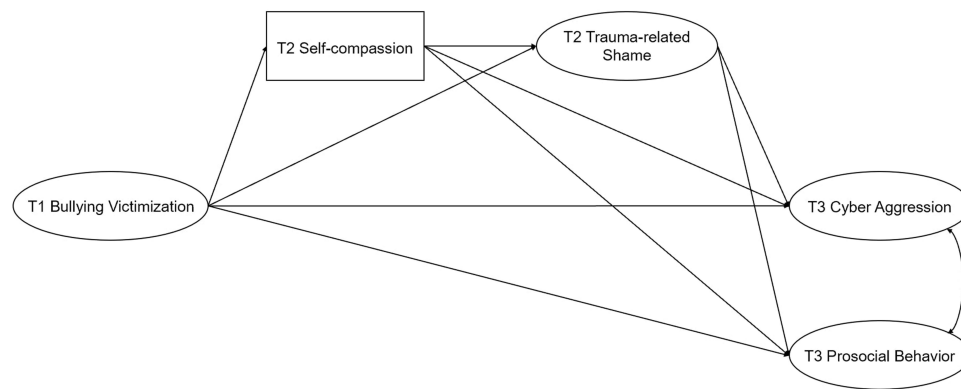
Participants

After gaining approval from the local education authorities, we conducted three surveys with a 6-month interval at five universities in China’s central provinces. 849 students participated in all three investigations, and 634 students who experienced bullying victimization from primary school to college (a total score of bullying victimization scale equal to or greater than 13) were included as a valid sample for this study. Of the 634 participants, 260 (41%) were male, and 374 (59%) were female. Participants had a mean age of 18.96 years (*SD* = 1.31) with a range of 16–28 years at Time 1. 164 (25.9%) participants had urban household registration, and 470 (74.1%) had rural household registration.

**Table 1** An Overview of Studies on the Social Behaviors of Bullying Victims and Factors Mediating the Relationship Between Bullying Victimization and Social Behaviors

Author, Year	Sample	Mediating factors		Output (Social behavior)	
		Self-regulation	Emotion	Cyber aggression	Prosocial behavior
Lian et al, 2022 <sup>20</sup>	College students		/		/
Song et al, 2023 <sup>12</sup>	College students		/	/	
Zhang et al, 2023 <sup>9</sup>	College students	/		/	
Zhang et al, 2022 <sup>47</sup>	College students		/	/	
Pepe et al, 2023 <sup>48</sup>	Female Adolescents	/			/

Notes: “/” denotes that the variable has been examined in the respective study.



**Figure 1** The framework of the research study.

## Procedures

Professional psychology-trained teaching staff at each university were contacted prior to the survey, and those who expressed interest in the study assisted with data collection. Based on their teaching schedules, they selected classes from each major in the school for the survey, conducted during the spare time of these classes. Preceding each survey, students received an oral briefing highlighting their voluntary participation. Any student not wishing to participate could freely leave the classroom. All remaining students were then invited to complete an online questionnaire anonymously. Under the guidance of professionally trained psychology graduate students, participants were prompted to answer questions in an online survey using the application software on their mobile phones, which lasted no longer than 30 minutes. In this study, we acquired informed consent from each participant. This study was approved by the ethics committee of the Faculty of Psychology, Beijing Normal University (protocol number: No.12220085). At Time 1, participants completed the Chinese version of the Delaware Bullying Victimization Scale-Student. At Time 2, participants completed the Self-Compassion Scale and the Trauma-Related Shame Inventory. At Time 3, participants completed the Prosocial Behaviors Questionnaire and the revised version of the Adolescent Cyberaggression Scale. Additionally, participants were informed that school psychologists or teachers could provide psychological or counseling services if needed. The Figure 2 shows the details.

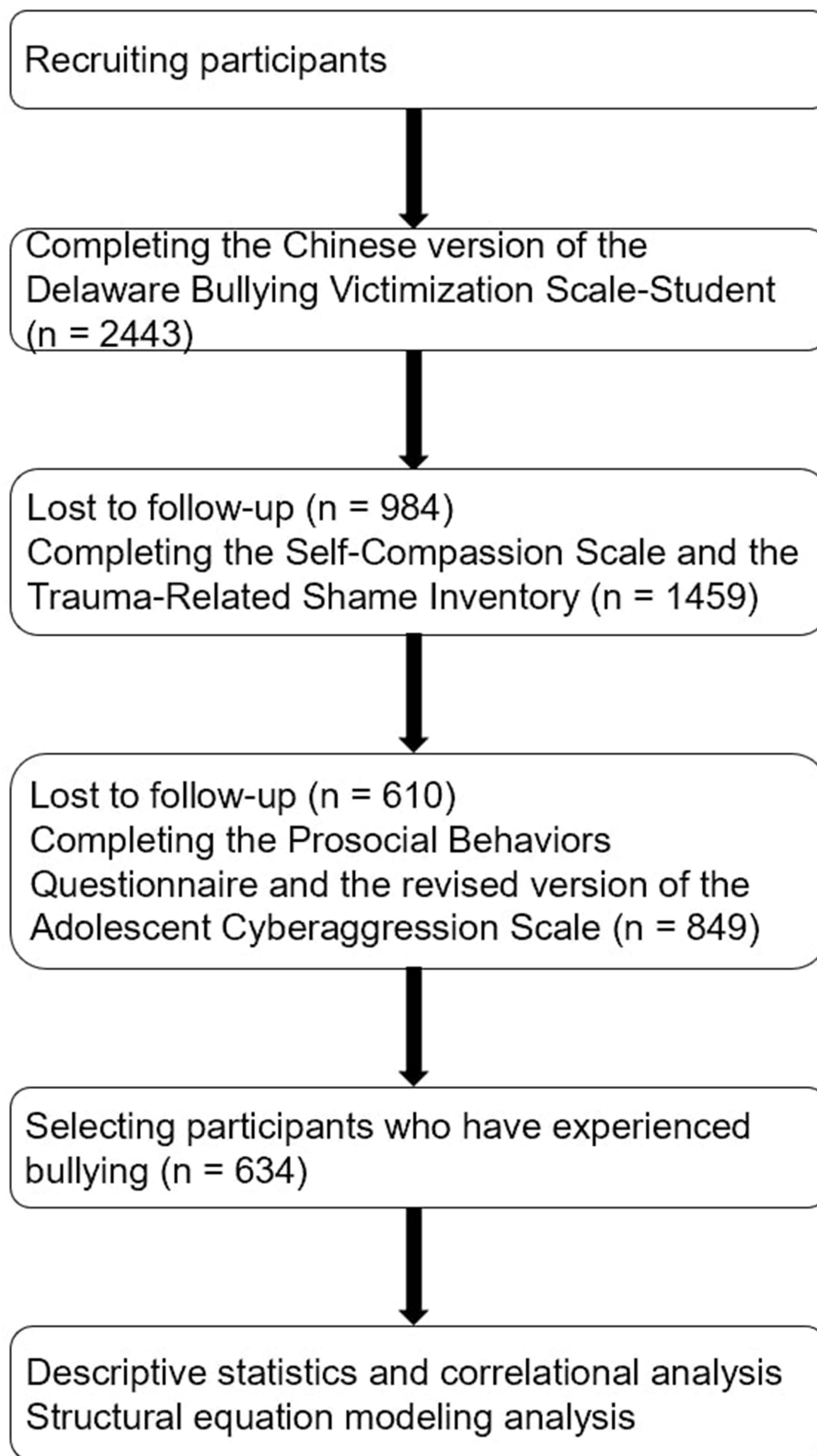
## Measures

### Bullying Victimization

The Chinese version of the Delaware Bullying Victimization Scale-Student (DBVS-S)<sup>49,50</sup> was employed to gauge the frequency of bullying victimization experiences among participants ranging from elementary school to graduate school. The scale contains 12 items which are divided into three dimensions: verbal bullying (4 items,  $\alpha = 0.79$ ; eg, “Some of my classmates have said some mean things to me.”), physical bullying (4 items,  $\alpha = 0.86$ ; eg, “I was hit or kicked, and it hurt.”), and relational bullying (4 items,  $\alpha = 0.83$ ; eg, “Some students have told or urged others not to be friends with me.”). The items are rated on a 6-point Likert scale from 1 (never) to 6 (every day). Higher total scores indicate more frequent exposure to bullying victimization. Cronbach’s  $\alpha$  for the overall bullying victimization was 0.92.

### Self-Compassion

The 26-item Self-Compassion Scale compiled by Neff<sup>35</sup> was used to assess the participants’ self-compassion. The scale contains 26 items which are divided into six dimensions: common humanity (4 items), self-judgment (5 items), self-kindness (5 items), isolation (4 items), mindfulness (4 items), and overidentified (4 items). The items are rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). According to the suggestions of Neff,<sup>51</sup> we used a total score of the scale to represent overall self-compassion in the present study. Higher total scores indicate higher levels of self-compassion. Cronbach’s  $\alpha$  for the overall self-compassion was 0.91.



**Figure 2** The process of the methods.

### Trauma-Related Shame

The Trauma-Related Shame Inventory compiled by Øktedalen et al<sup>22</sup> was used to assess the degree of trauma-related shame in participants. The scale contains 24 items which are divided into two dimensions: internal shame (12 items,  $\alpha =$



0.94; eg, “I am ashamed of myself because of what happened to me”) and external shame (12 items,  $\alpha = 0.96$ ; eg, “If others knew what had happened to me, they would look down on me”). The items are rated on a 4-point Likert scale from 1 (completely disagree) to 4 (completely agree). Higher total scores indicate higher levels of trauma-related shame. Cronbach’s  $\alpha$  for the overall shame was 0.97.

### Cyber Aggression

The revised version of the Adolescent Cyberaggression Scale<sup>52,53</sup> was employed to evaluate the extent to which participants are involved in cyber aggression. Research has demonstrated that the scale is a reliable and valid instrument for evaluating cyber aggression among Chinese university students.<sup>9,53</sup> The scale contains 15 items which are divided into two dimensions: overt aggression (8 items,  $\alpha = 0.96$ ; eg, “I often insult and scold others when playing online games”) and relational aggression (8 items,  $\alpha = 0.89$ ; eg, “I excluded others on social networking sites”). The items are rated on a 4-point Likert scale from 1 (never) to 4 (always). Higher total scores indicate a higher level of cyber aggression. In the current study, Cronbach’s  $\alpha$ s for cyber aggression was 0.95.

### Prosocial Behavior

The Prosocial Behaviors Questionnaire compiled by Zhang & Kou<sup>54</sup> was used to measure the prosocial behaviors of the participants. The scale contains 15 items which are divided into four dimensions: altruism (4 items,  $\alpha = 0.94$ ; eg, “I help my classmates make up lessons or play basketball”), commonweal-rule (5 items,  $\alpha = 0.93$ ; eg, “I like participating in social activities for the public good”), interpersonal relationship (3 items,  $\alpha = 0.89$ ; eg, “I would like to invite other bystanders to join in our games”), and personality trait (3 items,  $\alpha = 0.92$ ; eg, “I keep my mouth shut about others’ secrets”). The items are rated on a 7-point scale from 1 (completely disagree) and 7 (completely agree). Higher total scores indicate more prosocial behaviors. Cronbach’s  $\alpha$  for the overall prosocial behavior was 0.98.

## Data Analyses

In this study, the data obtained were analyzed using SPSS 26.0 and Amos 24.0. Since the online survey software considered the incomplete questionnaire invalid, there were no missing values in the final sample data. First, descriptive statistics and correlational analysis of the obtained data were conducted to examine the relationship between variables.

Then the mediating roles of self-compassion and trauma-related shame between bullying victimization and prosocial behavior/cyber aggression were examined by SEM analysis. Since this study aims to validate a theory-based causal model, SEM is a technique that can test the appropriateness of the theory or model, explaining the complex causal relationships between variables.<sup>55</sup> Also, SEM can effectively utilize all measurement data and construct an analysis of latent variable mediation models, making the research conclusions more reliable and applicable.<sup>55</sup> Moreover, SEM values the use of multiple statistical indicators, allowing the judgment of model fit through various indicators to construct a more accurate model.<sup>55</sup>

Finally, as Hayes & Preacher<sup>56</sup> suggested, we use a 5000-sample bias-corrected bootstrap analysis program to test for mediating effects.

## Results

### Descriptive Statistics and Correlational Analysis

The means, standard deviation, and intercorrelation among variables are presented in Table 2. The results showed that bullying victimization significantly correlated with self-compassion, trauma-related shame, and prosocial behavior. Self-compassion significantly correlated with trauma-related shame, cyber aggression, and prosocial behavior. Cyber aggression is significantly correlated with prosocial behavior. Meanwhile, gender, age, and residence at Time 1 also correlated with some study variables to a different extent, indicating the need to use them as covariates in the following research.

### Structural Equation Modeling (SEM) Analysis

With sex, age, and residence as covariates, we established a mediation model for the effect of bullying victimization on cyber aggression and prosocial behavior via self-compassion and trauma-related shame (see Figure 3). The assessment of whether the model fits were acceptable relied on the following criteria:  $\chi^2/df < 3$ , TLI  $> 0.90$ , GFI  $> 0.90$ , AGFI  $> 0.90$ ,

**Table 2** The Means, Standard Deviations, and Intercorrelations Among All Study Variables

Variables	M	SD	1	2	3	4	5	6	7	8
1. Sex	—	—	1							
2. Age	18.960	1.310	0.018	1						
3. Residence <sup>a</sup>	1.741	0.438	0.049	0.010	1					
4. T1 BV	18.606	6.851	-0.105**	-0.021	-0.026	1				
5. T2 SC	88.468	12.912	-0.062	0.126**	-0.019	-0.217***	1			
6. T2 TRS	33.527	12.443	-0.070	-0.028	0.037	0.177***	-0.342***	1		
7. T3 CA	17.039	4.895	-0.125**	-0.084*	0.030	0.039	0.115**	0.200***	1	
8. T3 PB	78.058	19.070	0.141***	0.117**	0.000	-0.098*	0.365***	-0.224***	-0.220***	1

**Notes:** <sup>a</sup>Urban = 1, rural = 2. \* $p < 0.05$ , \*\* $p < 0.01$ , and \*\*\* $p < 0.001$ .

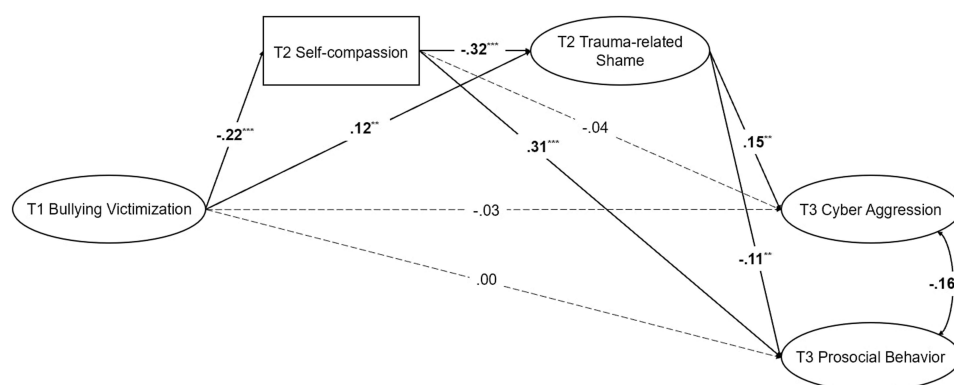
**Abbreviations:** BV, Bullying Victimization; SC, Self-compassion; TRS, Trauma-related shame; CA, Cyber aggression; PB, Prosocial Behavior; T1, Time 1; T2, Time 2; T3, Time 3.

CFI > 0.90, NFI > 0.90, RFI > 0.90, IFI > 0.90, RMSEA < 0.80.<sup>57</sup> The model fits shown in Table 3 were acceptable. Indirect effects are reported in Table 4. The results showed that trauma-related shame, as well as the chain mediating effect of self-compassion and trauma-related shame, significantly mediated the relationship between bullying victimization and cyber aggression. Meanwhile, self-compassion, trauma-related shame, and the chain mediating effect of the two significantly mediated the relationship between bullying victimization and prosocial behavior. All other indirect paths were not significant.

## Discussion

Under the guidance of the theory of stress and coping and the emotion regulation theory, the present study focused on the emotional processes of bullying victimization on social behaviors among Chinese college students. Specifically, the chain mediating role of self-compassion and trauma-related shame between bullying victimization and cyber aggression/prosocial behavior was examined. Such an investigation provided us with a deeper insight into the victims' social behaviors and indicated some useful emotional interventions to promote their social adaptation.

The study showed that bullying victimization indirectly influenced cyber aggression through two pathways. First, bullying victimization positively predicted cyber aggression via trauma-related shame. College students who suffer from bullying are highly prone to internal attribution of their victimization experience, and this cognitive pattern causes them to develop shame.<sup>20</sup> Elementary school to college is a critical period for the development of an individual's social identity, so bullying and ostracism from peers in the public arena are also particularly prone to triggering an individual's sense of shame.<sup>19</sup> According to the theory of stress and coping,<sup>7</sup> victims are likely to resort to aggression to cope with and externalize their internal shame and to achieve self-protection or revenge.<sup>58</sup> However, Chinese college students are



**Figure 3** Mediation model among bullying victimization, self-compassion, trauma-related shame, cyber aggression, and prosocial behavior.

**Notes:** \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .



**Table 3** The Model Fits of the Mediation Model

Model fits								
$\chi^2/df$	TLI	GFI	AGFI	CFI	NFI	RFI	IFI	RMSEA [90% CI]
4.053	0.957	0.947	0.903	0.973	0.965	0.944	0.973	0.069 [0.061, 0.078]

**Table 4** Standardized Indirect Path Coefficients and Bias-Corrected Bootstrapping Test in All Participants

Model pathways	$\beta$	SE	p	95% CI
T1 BV → T2 SC → T3 CA	0.009	0.009	0.184	[-0.005, 0.031]
T1 BV → T2 TRS → T3 CA	<b>-0.070***</b>	0.017	<b>&lt;0.001</b>	<b>[-0.105, -0.040]</b>
T1 BV → T2 SC → T2 TRS → T3 CA	<b>0.018*</b>	0.012	<b>0.040</b>	<b>[0.000, 0.053]</b>
T1 BV → T2 SC → T3 PB	<b>-0.013*</b>	0.009	<b>0.022</b>	<b>[-0.037, -0.001]</b>
T1 BV → T2 TRS → T3 PB	<b>0.011*</b>	0.006	<b>0.045</b>	<b>[0.000, 0.025]</b>
T1 BV → T2 SC → T2 TRS → T3 PB	<b>-0.008*</b>	0.004	<b>0.014</b>	<b>[-0.018, -0.002]</b>

**Notes:** Bold indicates that the confidence interval does not include zero. \* $p < 0.05$ , \*\*\* $p < 0.001$ .

**Abbreviations:** BV, Bullying Victimization; SC, Self-compassion; TRS, Trauma-related shame; CA, Cyber aggression; PB, Prosocial Behavior; T1, Time 1; T2, Time 2; T3, Time 3.

less likely to use offline aggression due to rules and norms on a strictly regulated campus, so they are more likely to use cyber aggression due to the anonymity and accessibility of the Internet.

Meanwhile, bullying victimization could also influence cyber aggression via the chain effect of self-compassion and trauma-related shame. Interpersonal traumas such as bullying victimization can diminish college students' ability to show empathy for themselves, ie, self-compassion, leading to a risk of exposure to their emotional dysregulation, the inability to control the regulation of distressing emotions such as trauma-related shame, which in turn leads to higher levels of cyber aggression. It supports the theory of stress and coping and the emotion regulation theory.

However, the results suggest that self-compassion does not mediate the relationship between bullying victimization and cyber aggression. A possible explanation is that victims' aggression is more likely to be directly induced by bad emotions, whereas self-compassion as an emotion regulation strategy needs to influence post-traumatic emotions such as shame before it can further influence cyber aggression. This role has also been found in previous literature.<sup>59</sup> Thus, we believe this indicates the significance and necessity of emotions in eliciting cyber aggression, while emotion regulation strategies are merely more distant influencing factors. Certainly, future research is needed to validate such speculation.

The present results also showed that bullying victimization indirectly influenced prosocial behavior via three pathways. First, victims showed less prosocial behavior with more trauma-related shame. This may indicate that victims feel more anxiety and stress due to shame in offline settings, showing withdrawal and avoidance, which outweighs the motivation to repair their self-image, and therefore refuse to engage in prosocial behaviors. Therefore, we speculate that shame induced by bullying victimization has a destructive rather than constructive impact on socially friendly behaviors. In this case, the avoidance motivation exhibited by shame is stronger than the compensatory motivation. Of course, further validation is still required for future research.

Second, bullying victimization diminishes self-compassion, which is the ability to self-regulate, and causes college students to develop more shame and less prosocial behavior. It also support the theory of stress and coping.<sup>7</sup> Following bullying experiences in college, students experience a decline in emotional regulation and self-compassion abilities, becoming more self-critical. Consequently, they may feel ashamed of facing trauma and those around them. This avoidant and withdrawn mindset naturally hinders their capacity for engaging in prosocial behavior. It is evident that the mechanism of emotional regulation plays a role in the relationship between bullying victimization and prosocial behavior.

Third, bullying victimization can also affect prosocial behavior through self-compassion. A good capacity for self-compassion is the basis for the emergence of altruistic behaviors.<sup>43</sup> Individuals high in self-compassion balance their own needs with those of others, accept themselves and others with an open mind, and treat others in a prosocial manner.<sup>60</sup> Thus, when self-compassion is diminished by bullying victimization, individuals impair their ability to care for and accept themselves amid pain, show less compassion for themselves, and are naturally less able to give more compassion and warmth to others, leading to a decline in prosocial behavior. The influence of self-compassion in the relationship between bullying victimization and cyber aggression has not been manifested. This may suggest that, in contrast to emotion-driven cyber aggression, the proximal factors influencing prosocial behavior do not necessarily have to be emotions; they can also extend from goodwill towards oneself to goodwill towards others.

Meanwhile, the negative predictive effect of bullying victimization on prosocial behavior is also contrary to the “altruism born of suffering”, which may be because the model is based on non-interpersonal trauma. Thus, we supposed that the model may be less applicable in interpersonal trauma contexts such as bullying victimization, and should also be further explored in the future.

## Limitations

The current research has some limitations. First, the self-report measures employed in this study to gather data could lead to the subjectivity of the assessment and be impacted by common methods bias. We can use more measurement techniques in future studies, like multi-subject evaluation or lab experiments. Second, in this study, college students in China were selected as the subjects, and the results were only applicable to college students in China. In the future, more group data should be collected to verify the applicability of the conclusions. Third, we only considered trauma-related shame as the emotion caused by bullying victimization, and the possible mediating roles of other types of negative emotions, such as guilt and fear, should be further explored in future studies. Fourth, given that different roles (bullies, victims, bully-victims) in bullying and victimization have different cognitive and behavioral patterns. Therefore, future research should distinguish the differences between different bullying victimization subtypes. Last, due to the simultaneous measurement of self-compassion and trauma-related shame in this study, for a more rigorous demonstration of the causal relationship between them, future research should measure self-compassion and trauma-related shame at two different time points.

## Contributions

### Theoretical Implications

The present study contributes significantly to theoretical implications. A primary strength lies in addressing the gap in understanding the relationship between bullying victimization and various social behaviors and their emotional mechanisms. Moreover, the results align with the stress and coping theory and the emotion regulation theory, suggesting that stressful victimization weakens self-compassion, leading to trauma-related shame, thereby influencing college students to exhibit more cyber aggression and less prosocial behavior. We have also found that emotions, rather than emotion regulation strategies, serve as the direct influencing factors of cyber aggression.

### Practical Implications

The present study also contributes significantly to practical implications. Specifically, to reduce the effect of trauma-related shame, victims should improve emotional regulation especially self-compassion, which helps them cope with negative emotions and promote social adaptation. Meanwhile, psychological counseling workers plan more self-compassion-related treatments for victims, such as Mindful Self-Compassion (MSC), Compassion Focused Therapy (CFT), and Compassionate Mind Training (CMT).

## Conclusion

Under the guidance of the stress and coping theory and the emotion regulation theory, the present study examined the mediating role of self-compassion and trauma-related shame between bullying victimization and cyber aggression/

prosocial behavior. The results showed that bullying victimization predicted cyber aggression and prosocial behavior via trauma-related shame and the chain effect of self-compassion and trauma-related shame. Moreover, self-compassion also mediated the relationship between bullying victimization and prosocial behavior.

## Ethics Approval

This study was approved by the ethics committee of the Faculty of Psychology, Beijing Normal University (protocol number: No.12220085). The study complied with the Declaration of Helsinki. We also obtained informed consent from the parents of participants under 18 years of age.

## Informed Consent

All participants gave informed consent before their inclusion in the study.

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## Disclosure

The authors report no conflicts of interest in this work.

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