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## The Sense of Responsibility and Bystanders' Prosocial Behavior in Cyberbullying: The Mediating Role of Compassion and the Moderating Roles of Moral Outrage and Moral Disgust

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### Abstract

*The sense of responsibility can play an important role in the behavior of college students involved in cyberbullying incidents. Research on the relationship between the sense of responsibility and bystander behavior in cyberbullying is limited. This study examined the relationship between the sense of responsibility and prosocial cyberbystander behavior in cyberbullying, focusing on investigating compassion as a mediator and moral emotions (i.e., moral outrage and moral disgust) as a moderator in this relation. A total of 1,114 Chinese college students (35.4% female), aged from 18 to 23 years ( $M = 19.55$ ,  $SD = 1.05$ ), completed an online questionnaire. Results showed that compassion played a partial mediating role in the relationship between the sense of responsibility and prosocial cyberbystander behavior. Moral outrage moderated the relationship between the sense of responsibility and prosocial cyberbystander behavior. Specifically, among participants with higher levels of moral outrage, the relationships between the sense of responsibility and prosocial cyberbystander behavior became much weaker. These results provide a new direction for promoting prosocial cyberbystander behavior.*

**Keywords:** cyberbullying; cyberbystander behavior; sense of responsibility; compassion; moral outrage; moral disgust

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### Introduction

Cyberbullying is defined as "an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot defend themselves" (Smith et al., 2008, p. 376). Due to the nature of cyberspace, such as its openness and anonymity, the number of bystanders is often greater than that of the bullies and the victims, with over 70% of Internet users having witnessed cyberbullying (Balakrishnan, 2017). A cyberbystander is "the individual who witnesses bullying events online" (X. Huang et al., 2019, p. 1249). When confronted with cyberbullying, the behavioral responses of bystanders have a significant impact on the development and outcome of the incident. For instance, passive behavior, which is common among bystanders in such incidents, can reinforce bullying behavior because bullies may perceive it as approval (Freis & Gurung, 2013). On the other hand, bystanders can reduce victimization and even help stop cyberbullying by

punishing or stopping the perpetrator's behavior and supporting the victim (Freis & Gurung, 2013). Therefore, it is necessary to explore the factors influencing the positive intervention of cyberbystanders and provide empirical evidence to enhance their willingness to intervene. To achieve this goal, the present study explored the relationship between the sense of responsibility and prosocial cyberbystander behavior, and revealed the mediating role of compassion and the moderating role of moral emotions, including moral outrage and moral disgust.

China is a collectivist country, where the sense of responsibility is often emphasized within this cultural context. Previous studies have revealed a positive link between the sense of responsibility and prosocial behaviors in real life (Y.-I. Chen et al., 2023; Sanmartín et al., 2011). However, studies examining this relationship in the network environment are relatively lacking. This study focused on the relationship between the sense of responsibility and prosocial cyberbystander behavior, and explored the role of moral emotions (i.e., moral outrage and moral disgust) and helpfulness emotions (i.e., compassion) in this relationship. College students, as emerging adults about to enter society, play a crucial role in cyberbullying incidents. The sense of responsibility is an important aspect of self-reliance and a key component of social self-reliance consciousness (X. Tan, 2004). Additionally, previous research has found that college students use social media more frequently and are more likely to witness cyberbullying incidents (Gahagan et al., 2016). Therefore, the present study will focus on college students.

In the bystander intervention model proposed by Latané and Darley (1970), an important point is that bystanders need to feel responsible for helping. An individual is responsible if they can act rationally and thoughtfully (Schlenker et al., 1994). Individuals with a high level of responsibility feel the need to contribute to the maintenance of society (Q. Zhang et al., 2020). According to the theory of social norms, an individual's altruistic behavior is influenced by their sense of responsibility (Yang et al., 2020). In situations involving the violation of social norms, individuals with a higher sense of responsibility demonstrate a greater willingness to both penalize wrongdoers and help those in need, even if such behavior may have personal costs (S. Chen & Ma, 2011). The researchers pointed out that increased bystander responsibility by adding situational information (e.g., audience size) in the online field led participants to intervene more in cyberbullying incidents (DiFranzo et al., 2018). Therefore, the sense of responsibility can prompt bystanders to pay more attention to the plight of others and push them to take positive helping actions to alleviate the suffering of victims. Based on the above analysis, this study proposed the first hypothesis (**H1**): The sense of responsibility would be positively linked with prosocial cyberbystander behavior.

Compassion is an affective state that arises when witnessing another's suffering and motivates a subsequent desire to help (Goetz et al., 2010). The empathy-altruism hypothesis suggests that when an individual observes and feels the pain of others, there will be an emotion of caring (e.g., compassion and pity) for others (Batson, 1987). The stronger the emotion, the more likely individuals are to be inclined to help others (Förster & Kanske, 2022). Numerous studies have shown that compassion can positively predict prosocial behavior (Carlo et al., 2015; Vossen & Fikkers, 2021; Vossen et al., 2015). As a form of prosocial behavior, prosocial cyberbystander behavior may yield similar results. In other words, individuals with higher levels of compassion are more likely to engage in prosocial cyberbystander behavior.

The motive-action tendencies theory suggests that an affective state is triggered by an individual's attitude and perspective toward the event and further guides action (Mascolo & Fischer, 2015). Individuals with a high sense of responsibility believe that they are responsible for social security and interpersonal harmony and have a closer interpersonal distance (Lachowicz-Tabaczek & Kozłowska, 2021). When they witness someone being bullied online, they experience a high level of psychological self-involvement and emotionally connect with the distress of the victim (Gu et al., 2017). In this sense, a high sense of responsibility leads people to believe that the victim is worthy of their compassion, resulting in higher compassion for the suffering individuals. This, in turn, makes people more likely to either punish the perpetrator or help the victim when faced with cyberbullying incidents. Previous research has supported the mediating role of compassion in the relationship between individual characteristics (such as perspective-taking) and prosocial behaviors (altruistic behavior tendency; Deng et al., 2023). Based on the above analysis, this study proposes the second hypothesis (**H2**): Compassion would mediate the relationship between the sense of responsibility and prosocial cyberbystander behavior.

Moral emotions may moderate the relationship between the sense of responsibility and prosocial cyberbystander behavior. Moral emotions are defined as those "linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent" (Haidt, 2003, p. 276). Previous research indicates that moral emotions influence the connection between moral principles and actions (Schipper & Koglin, 2021). Haidt (2003)

further distinguished moral emotions according to their directivity, dividing them into other-condemning emotions and other-suffering emotions. Among them, the emotion of other-condemning can promote prosocial behavior more than other types (Ma, 2016). This emotion represents a negative experience caused by another person's violation of moral norms. Moral outrage and moral disgust, as forms of other-condemning emotions (Ma, 2016), usually play a critical role in compensating or punishing behavior (Chu et al., 2023; Olatunji & Puncochar, 2014).

Moral outrage is a type of anger directed at a third party for violating some moral standard of justice or fairness (Haidt, 2003). It is an emotional reaction to an unfair or intentional injury event (Segovia et al., 2009; Vyver & Abrams, 2015). Cyberbullying constitutes an unfair and intentionally hurtful event (Patchin & Hinduji, 2015). Therefore, bystanders' moral outrage may be triggered in cyberbullying incidents, which in turn drives compensatory behavior toward the victim (e.g., comforting the victim) and punitive behavior toward the bully (e.g., confronting the bully). Previous studies have also found that moral outrage positively predicted defending the victim and supporting the victim in the context of cyberbullying (Chu et al., 2023).

Moral disgust is evoked by moral offenses, including cheating, stealing, and murder, as well as unfairness (Chapman & Anderson, 2013; X. Zhang et al., 2015). It can function to protect the social order (Tybur et al., 2009). The crowd-emotion-amplification effect states that the experience of disgust makes the individual's moral evaluation more negative than in other situations, leading to the wrong event being evaluated as more wrong, thus increasing the condemnation of the moral violation (Goldenberg et al., 2021; Huo, 2020). When individuals face cyberbullying events, those with higher levels of moral disgust may be more sensitive to the wrong behavior of the bully. In order to alleviate disgust, individuals may seek to prevent the continuation of the unethical event, making them more likely to engage in prosocial behavior. While few studies have focused on the relationship between moral disgust and bystander prosocial behavior, Oriol et al. (2021) found that moral disgust was negatively related to bullying behavior. This suggests that bystanders with high levels of moral disgust were less likely to join in the bullying.

The "Dual System" theory mainly explains the role of cognitive and emotional factors in social behavior decision-making (Epstein, 1994). Individuals who make social decisions (e.g., engage in online prosocial behavior) require both a rational system (top-down, slow response) and an emotional system (bottom-up, quick response; Epstein, 1994; Wang & Cao, 2022). Many studies have supported the idea that prosocial behavior is influenced by the interaction of emotion and cognition (Chu et al., 2023; L. Huang et al., 2023). The sense of responsibility is a part of the cognitive system that makes individuals more aware of their responsibilities and obligations, motivating them to take positive actions. Moral outrage and moral disgust, as strong moral emotions, are aroused when individuals witness or experience behaviors that violate social norms (Haidt, 2003; Tybur et al., 2009). Individuals who experience these emotions, regardless of whether they have a strong sense of responsibility, may engage in more behaviors (e.g., supporting the victim) to restore their emotions to a stable level. Previous research has shown similar points (W. Tan et al., 2012). Moral emotion serves a powerful function, guiding people's behavior and naturally leading the individual into a cognitive mode and state (W. Tan et al., 2012). In other words, when individuals experience high levels of moral outrage or moral disgust, the role of the sense of responsibility in prosocial cyber bystander behavior may be weakened.

Pohling et al. (2019) found that moral emotion (moral elevation) and personality traits (need for cognition and engagement with moral beauty) had an interactive effect on prosocial behavior. However, Rothschild and Keefer (2017) demonstrated that moral emotion (moral outrage) in response to a threatened moral identity would subsequently attenuate guilt, restore one's perceived personal morality, and avoid the potentially high cost of engaging in prosocial behavior. Building on the above analysis, this study further proposes the third hypothesis (**H3**): Moral outrage and moral disgust would moderate the relationship between the sense of responsibility and bystanders' prosocial behavior in cyberbullying.

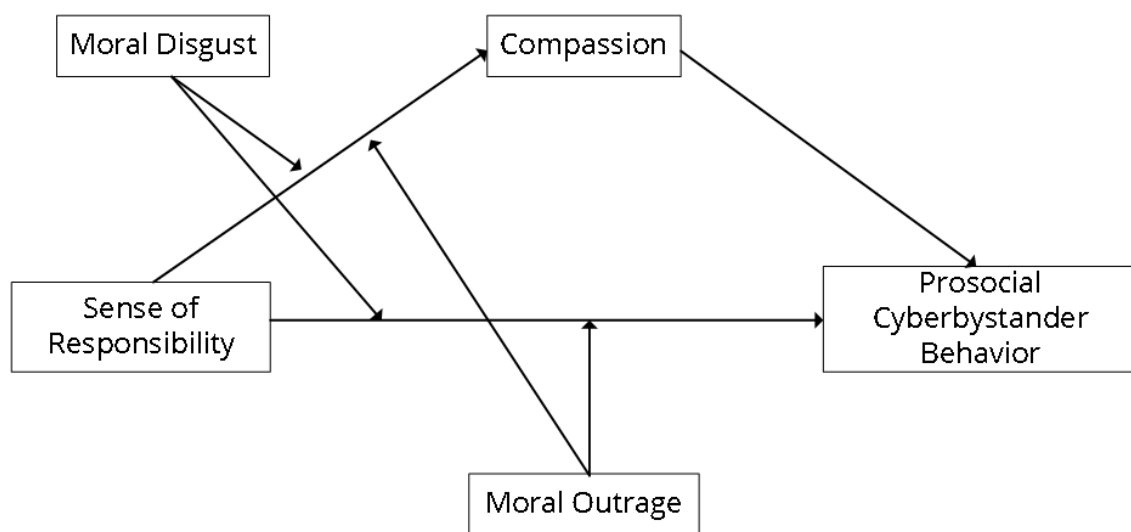
Compassion is a unique affective state generated through an evaluation process, which is affected by emotional factors (Goetz et al., 2010). For example, researchers have found that from the perspective of mindfulness and neurology, being aware of emotional experience can increase a person's compassion (Hofmann et al., 2011; Lutz et al., 2009). However, Rončević Zubković et al. (2020) tested the level of participants' compassion in a bullying situation and found that participants were less prone to compassion if they had higher levels of anger. Building on the above analysis, this study further proposes the fourth hypothesis (**H4**): Moral outrage and moral disgust would moderate the relationship between the sense of responsibility and compassion.

## Purpose of the Present Study

Since bystanders' prosocial behaviors play an important role in the development and influence of cyberbullying (Freis & Gurung, 2013), this study sought to explore the relationship between the sense of responsibility and prosocial cyberbystander behavior and the mediating role of compassion in this relationship. Moreover, since it has been shown that moral emotions moderate the relationship between personal factors and prosocial moral behavior (Schipper & Koglin, 2021), this study explored the moderating roles of moral outrage and disgust in this model (see Fig. 1).

In addition, previous studies' results showed significant gender and grade differences in predicting bystanders' defending behavior in cyberbullying (Allison & Bussey, 2017; Bastiaensens et al., 2014; Olenik-Shemesh et al., 2017). To obtain more pure results, these variables would be controlled in analyses predicting prosocial cyberbystander behavior.

**Figure 1.** *The Hypothesized Moderated Mediation Model.*



## Methods

### Participants

The research was approved by the Ethics Committee of the authors' university. A total of 1,339 students voluntarily participated in the present study. Most of the participants in the study were college students from Wuhan, Jinhua, and Qingdao in China. The economic and cultural development of these cities was at a moderate level. After excluding invalid data (completing the questionnaire within 5 minutes or answering irregularly), the final sample included 1,114 students (35.4% female). The students ranged in age from 18 to 23, with an average age of 19.55 ( $SD = 1.05$ ). As for the sample, 21.5% were freshmen, 45.8% were sophomores, 30.3% were junior students, and 2.3% were senior students. Concerning the family structure of participants, 92.8% of participants lived in two-parent families, and 7.2% lived in single-parent families or other types of families. Additionally, 40.9% of the samples were the only child in the family, and 59.1% had brothers and sisters. Regarding household income, 18.0% were classified as poor, 56.4% were below average, 25.5% were above average, and 0.1% were considered rich. The average educational attainment for mothers and fathers was 3.18 ( $SD = 1.05$ ) and 3.47 ( $SD = 1.01$ ), respectively, indicating that the participants came from families whose parents received education between junior and senior high school on average.

### Measures

#### *The Sense of Responsibility*

The sense of responsibility was assessed using the most inclusive overall sense of responsibility scale from the Responsibility Questionnaire (X. Tan, 2004). The scale includes five items (e.g., *I want to be a useful person to society*).

Participants answered on this scale of 1 (*completely disagree*) to 5 (*completely agree*). The mean score was calculated for each participant, with a higher score indicating a higher sense of responsibility. The results of confirmatory factor analysis showed that the fit indices of the scale were excellent ( $\chi^2/df= 2.814$ , CFI = .998, TLI = .996, RMSEA = .040, SRMR = .009). Cronbach's alpha for the questionnaire in the present study was .79.

### ***Prosocial Cyberbystander Behavior***

Prosocial cyberbystander behavior (PCB) was measured using the Bystander Behavioral Intention Questionnaire in Cyberbullying developed by Chu (2020). The questionnaire includes five dimensions (defending the victim, supporting the victim, remaining an outsider, reinforcing the bully, and assisting the bully). Based on the aim of this study, we used two subscales involving prosocial behavior for measurement, namely defending the victim and supporting the victim. Each subscale has four items, and example items include *I would persuade the actor to stop his/her behavior* and *I would try to comfort the victim*. Participants were asked to give a response on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The mean score was calculated for each participant, with higher scores indicating a higher willingness to help others in a cyberbullying incident. In previous studies, defending the victim and supporting the victim were regarded as two dimensions, with Cronbach's alpha of .72 and .68, respectively (Chu, 2020). Cronbach's alpha in the present study was .81.

### ***Compassion***

The Santa Clara Brief Compassion Scale (SCBS) was used to measure compassion (Hwang, 2008), which has five questions (e.g., *I tend to feel compassion for people, even though I do not know them*). Respondents recorded to what extent statements were true for them using a 7-point Likert scale ranging from 1 (*not at all true of me*) to 7 (*very true of me*). Higher scores indicate higher compassion. The Chinese version was translated and back-translated by an associate professor of psychology and three graduate students. The results of confirmatory factor analysis showed that the fit indices of the scale were excellent ( $\chi^2/df = 4.084$ , CFI = .999, TLI = .997, RMSEA = .053, SRMR = .005). The Cronbach's alpha of the Chinese version of SCBC in the present study was .83.

### ***Moral Outrage***

We assessed moral outrage using the Moral Outrage Scale (Bastian et al., 2013), which consists of 10 items. Before displaying the questionnaire items, eight cyberbullying incidents were presented to participants, which derived from the Cyberbullying Offending Scale developed by Patchin and Hinduja (2015). Participants were instructed to indicate the degree to which they felt each emotion when considering the cyberbullying incidents, they had just read about, including "angry," "mad," "furious," and so on. Each item was rated on a 7-point Likert scale (1 = *not at all*, 7 = *extremely so*), and higher mean scores represent higher moral outrage. The Chinese version was translated and back-translated by an associate professor of psychology and three graduate students. The results of confirmatory factor analysis showed that the fit indices of the scale were acceptable ( $\chi^2/df = 21.618$ , CFI = .970, TLI = .953, RMSEA = .136, SRMR = .027). Cronbach's alpha in the present study was .98.

### ***Moral Disgust***

We used a subscale of the Three Domain disgust scale, which explicitly measures moral disgust (Tybur et al., 2009). This subscale has seven items (e.g., *Stealing from a neighbor; A student cheating to get good grades*). Participants rated their response to each item using a 0–6 Likert scale (0 = *not at all disgusting*, 6 = *extremely disgusting*). The mean score was calculated for each participant, with higher values representing higher levels of moral disgust. A previous study in Chinese culture demonstrated that Cronbach's alpha was .80 for this scale (X. Huang, 2019). Cronbach's alpha for the moral disgust scale in the present study was .88.

## **Analytic Procedures**

All the data analyses were conducted with the SPSS 21.0 software package. We adopted Pearson's correlation analyses to explore the relationships among research variables. The hypothesized moderated mediation model was tested in SPSS using the PROCESS macro (Model 10) developed by Hayes (2013). All the variables (excluding gender and age) in regression models were standardized.

## Results

### Preliminary Analyses

In the current study, an independent sample *t*-test showed that there were significant gender differences in the sense of responsibility, moral outrage, and PCB. The mean value of males in the sense of responsibility ( $p < .001$ ) and PCB ( $p = .001$ ) was significantly higher than that of females. The mean value of females in moral outrage was significantly higher than that of males ( $p < .001$ ). The ANOVA results indicated that there were significant differences in the sense of responsibility ( $F(3, 1110) = 3.78, p = .010$ ) and compassion ( $F(3, 1110) = 4.18, p = .006$ ) across different grades. The results of multiple comparisons showed that the sense of responsibility of freshmen was significantly higher than that of sophomores ( $p = .002$ ) and junior students ( $p = .005$ ), and the compassion of freshmen was significantly lower than that of junior students ( $p = .008$ ). Therefore, in the subsequent regression test, this study controlled participants' gender and grade.

Descriptive statistics, including correlations, means, and standard deviations among the variables, were shown in Table 1. Consistent with the pattern of correlations reported above, and as hypothesized, there was a significant positive correlation between every two variables.

**Table 1.** Correlations, Means, and Standard Deviations.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Sense of Responsibility	4.08	0.61	1						
2. Compassion	5.47	0.96	.22***	1					
3. Moral Outrage	5.12	1.70	.08**	.15***	1				
4. Moral Disgust	5.42	0.72	.15***	.22***	.10***	1			
5. PCB	4.69	1.10	.22***	.36***	.32***	.21***	1		
6. Gender	1.35	0.48	-.05	-.20***	.02	-.09**	-.11***	1	
7. Grade	2.13	0.77	-.07*	.06*	.00	-.01	-.02	.10	1

*Note.*  $N = 1,114$ . Gender was dummy coded (male = 0; female = 1). Grade was interval coded (Freshman year = 1; Sophomore year = 2; Junior year = 3; Senior year = 4). PCB = Prosocial cyberbystander behavior. \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ ; *M* = Mean; *SD* = Standard deviation.

### Testing for Hypothesized Moderated Mediation Model

Two regression models (see Table 2) were used to test for the moderated mediation model. After controlling gender and grade, the sense of responsibility positively predicted compassion ( $\beta = .17, p < .001$ ), and compassion positively predicted PCB ( $\beta = .30, p < .001$ ). The direct relationship between the sense of responsibility and PCB was also significant ( $\beta = .12, p < .001$ ). Results indicated that compassion partially mediated between the sense of responsibility and PCB. Hypothesis 1 and hypothesis 2 were both supported.

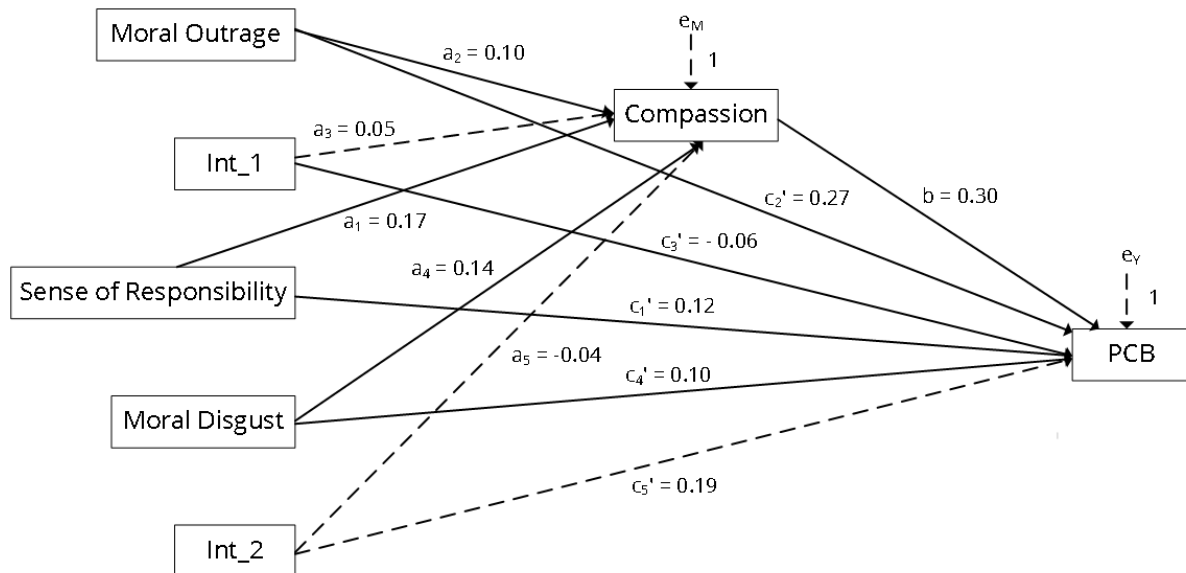
Table 2 displayed a series of multiple regression equations testing the moderating roles of two kinds of moral emotions (moral outrage and moral disgust) between the sense of responsibility and compassion and their moderating roles between the sense of responsibility and PCB. After controlling gender and grade, we used two terms (sense of responsibility  $\times$  moral outrage; the sense of responsibility  $\times$  moral disgust) to predict compassion and PCB. Results indicated that the effect of sense of responsibility  $\times$  moral outrage on PCB was significant,  $\beta = -.06, p = .010, 95\% \text{ CI} = [-.114, -.016]$ . However, the term sense of responsibility  $\times$  moral disgust did not predict PCB. The term sense of responsibility  $\times$  moral outrage and the term sense of responsibility  $\times$  moral disgust did not significantly predict compassion.

**Table 2. Regressions Testing the Moderated Mediation Model.**

Antecedents	Compassion			Outcomes				
	Coeff.	SE	p	Model	Coeff.	SE	p	Model
Gender	-.32	.05	< .001		-.10	.06	.072	
Grade	.09	.03	.008		-.03	.03	.338	
Sense of Responsibility	a <sub>1</sub>	.17	< .001		c <sub>1</sub> '	.12	< .001	
Compassion	—	—	—	R <sup>2</sup> = .14, F = 25.44, p < .001	b	.30	< .001	R <sup>2</sup> = .23, F = 42.39, p < .001
Moral Outrage	a <sub>2</sub>	.10	< .001		c <sub>2</sub> '	.27	< .001	
Int_1	a <sub>3</sub>	.05	.057		c <sub>3</sub> '	-.06	.010	
Moral Disgust	a <sub>4</sub>	.14	< .001		c <sub>4</sub> '	.10	< .001	
Int_2	a <sub>5</sub>	-.04	.076		c <sub>5</sub> '	.04	.166	
constant	i <sub>M</sub>	.33	.001		i <sub>Y</sub>	.19	.076	

Note. *N* = 1,114. Gender was dummy coded (male = 0; female = 1). Grade was interval coded (Freshman year = 1; Sophomore year = 2; Junior year = 3; Senior year = 4). PCB = Prosocial cyberbystander behavior. The research variables (excluding gender and grade) in regression models were standardized. Int\_1 = sense of responsibility × moral outrage. Int\_2 = sense of responsibility × moral disgust.

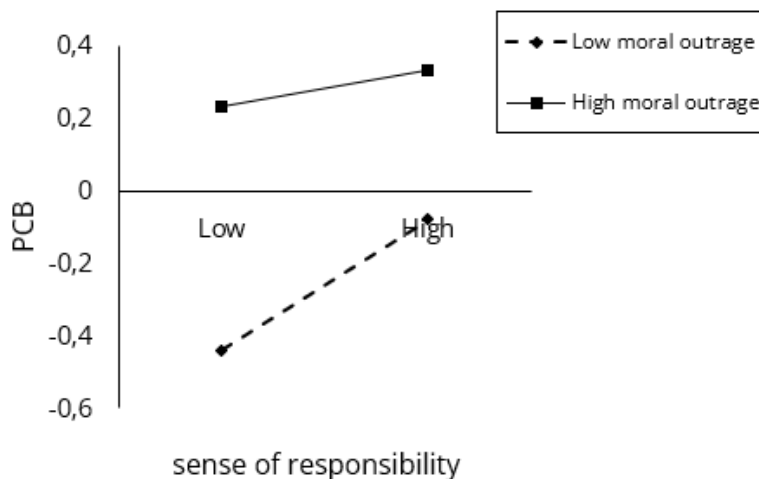
**Figure 2. Statistical Diagram of the Conditional Process Model.**



Note. *N* = 1,114. PCB = Prosocial cyberbystander behavior. Int\_1 = sense of responsibility × moral outrage. Int\_2 = sense of responsibility × moral disgust.

A simple slope analysis was used to further examine the interaction between the sense of responsibility and PCB. The present study tested the predicted effect of the sense of responsibility on PCB at two different values of moral outrage (i.e., *M* - 1SD and *M* + 1SD). Results indicated that the conditional direct effect was significant when the values of moral outrage were -1, whereas the conditional direct effect was non-significant when the value of moral outrage was 1 ( $\beta = .05, p = .182$ ). Overall, the predictive effect of the sense of responsibility on PCB diminished with the increase of moral outrage.

**Figure 3.** Simple Slope Diagram for Moderating Effects.



Note. PCB = Prosocial cyberbystander behavior.

## Discussion

The present study investigates compassion and two kinds of moral emotions (moral outrage and moral disgust) as the mediating and moderating mechanisms linking the sense of responsibility and prosocial cyberbystander behavior. Results indicated that compassion partially mediated the relationship between the sense of responsibility and bystanders' prosocial behavior when confronting cyberbullying incidents. For the tests of moderating effect, moral outrage alleviated the promotion effect of the relationship between the sense of responsibility and prosocial cyberbystander behavior. These findings broaden existing research on the relationship between the sense of responsibility and prosocial behavior in cyberspace. Besides, this study reveals the synergy of different psychological processes in the construction of moral behavior. It can further provide a basis for promoting the active intervention of bystanders in cyber violence incidents.

The present study demonstrates that the sense of responsibility positively predicts prosocial cyberbystander behavior, supporting hypothesis 1. The theory of social norms emphasizes that individuals with a higher sense of responsibility are more likely to activate their social norms and engage in prosocial behaviors (Fehr & Fischbacher, 2004; Yang et al., 2020). Among college students in China, the sense of responsibility is widely recognized as an important value and code of conduct. However, cyberbullying, as a negative behavior, may conflict with college students' sense of responsibility. The results of this study indicate that college students with a high sense of responsibility are less likely to believe it is someone else's responsibility to help the victim, and they prioritize fulfilling their responsibilities (Fischer et al., 2011). This is consistent with previous findings that individuals with a higher sense of responsibility are more inclined to consider interpersonal harmony and social security as their responsibility (Lachowicz-Tabaczek & Kozłowska, 2021).

Secondly, compassion partially mediates the relationship between the sense of responsibility and prosocial cyberbystander behavior, supporting hypothesis 2. Consistent with the motive-action tendencies theory, an individual's attitude and perspective toward the event trigger an individual's affective state and further guide action (Mascolo & Fischer, 2015). The results of this study extend the applicability of the theory in the network environment. Prosocial cyberbystander behavior is not only driven by cognition or emotion alone but also by the progressive relationship between them. The results of this study are similar to those of other studies (Chu et al., 2023). Moral outrage (an affective state) mediates the relationship between moral identity and bystander behavior in cyberbullying (Chu et al., 2023). Similar to moral identity, the higher the level of responsibility, the more negative the evaluation of cyberbullying. This negative evaluation may further trigger their compassion for the victim, driving them to intervene in cyberbullying incidents, such as comforting the victim.

Another important result shows that moral outrage moderates the relationship between the sense of responsibility and cyberbystander's prosocial behavior. The results partially support the hypothesis 3. Consistent with the main views of the "Dual System" theory, cognitive and emotional factors jointly affect individual behavior (Epstein, 1994; Y. Wang & Cao, 2022). However, the results of this study indicate that only moral outrage, not moral disgust, moderates the relationship between the sense of responsibility and cyberbystander's prosocial behavior. This may be related to the motivational direction of emotions (Gable & Harmon-Jones, 2010). Although moral



outrage and moral disgust are both moral emotions criticizing others, moral outrage is associated with approach motivation (e.g., taking positive action), while moral disgust is associated with withdrawal motivation (e.g., staying away from unethical behavior; Ugazio et al., 2012). The motivational direction of moral outrage is similar to that of the sense of responsibility, and moral outrage as an emotional system reacts more quickly than the sense of responsibility (rational system; Epstein, 1994; Y. Wang & Cao, 2022). The motivational direction of moral disgust is incompatible with the sense of responsibility. Therefore, only moral outrage can moderate the relationship between the sense of responsibility and cyberbystander's prosocial behavior. These results suggest that the "Dual System" theory may require the premise that the motivational direction of cognitive and emotional factors is similar rather than opposite.

Moral outrage and moral disgust do not moderate the predictive effects of the sense of responsibility and compassion. The statistical results show that the sense of responsibility is a stronger predictor of compassion than moral outrage and moral disgust, so the relationship between the sense of responsibility and compassion may not be easily affected by other factors. In addition, the theoretical reason is probably that moral outrage and moral disgust are emotions directed at one's own self. Their ultimate motivation can be to protect their own values (Jones & Fitness, 2008; Tetlock et al., 2000). Therefore, individuals further alleviate their own bad emotional experience through actions (e.g., protecting the victim and moving away from the bullying incident), rather than refocusing on feelings toward others (i.e., compassion).

In the field of moral studies, many researchers have focused on the role of moral reasoning, such as moral disengagement and moral identity, in moral decisions and behavior (Chu et al., 2023; Luo & Bussey, 2019; X. Wang et al., 2016). Moral emotion has not attracted enough attention from researchers, and the discussion on moral emotion and prosocial behavior in the network is just beginning (Chu et al., 2023). This result expands the research on moral emotion and validates the practicability of the "Dual System" theory in the network environment.

The present study has several limitations. First, as a cross-sectional design study, it is impossible to infer the causal relationship between the research variables. However, the proposed moderated mediation model was based on a large amount of theoretical and empirical evidence. Future longitudinal studies can determine the direction of the relationship between the variables in this study. Second, the other three types of moral emotions (e.g., self-criticism, other-suffering, and other-praising emotions) have not been studied. The role of these three types of moral emotions in promoting the positive intervention of cyberbystanders should be explored in future studies. Third, the data in this study were collected only through self-report measures. Self-reports may be subject to increased biases, such as socially desirable responses. Reports from multiple informants (e.g., parents, teachers, and peers) should be considered in future research.

For prevention and clinical implications, the findings from the present study suggest that the sense of responsibility, as an important predictor of compassion, can further promote cyberbystander prosocial behavior. This indicates that intervention targeting the sense of responsibility is an important step in developing online prosocial behavior. Currently, no study has explored intervention programs to systematically improve the sense of responsibility, but Al-Laymoun (2019) has pointed out that relative status, sense of power, and self-management have strong predictive effects on the sense of responsibility. From this perspective, school administrators and teachers should pay more attention to fostering the subjectivity of college students in their studies and lives, ensuring their sense of control, and improving their self-management ability when conducting management and teaching activities. Future studies on interventions need to validate these empirical results.

Secondly, compassion plays a mediating role between the sense of responsibility and prosocial cyberbystander behavior. Educators need to focus on compassion education for college students. The Compassion Cultivation Training (CCT) developed by Jinpa et al. (2010) has been shown to be effective as an intervention to improve compassion in adults (Jazaieri et al., 2013). In the future, educators can use this training to improve college students' compassion.

Finally, whether moral outrage plays a positive role in cyberbystander behavior still needs further exploration. Moral outrage alone can increase a bystander's positive behavior, but high levels of moral outrage can weaken the relationship between the sense of responsibility and prosocial cyberbystander behavior. This suggests that moral outrage, when acting alone, may promote positive behavior, but when combined with other positive factors, it is more likely to emphasize the characteristics of anger, thereby weakening the positive impact of other factors. In this study, the effect size of the interaction between the sense of responsibility and moral outrage is small, and more evidence is needed to confirm the role of moral outrage on online prosocial behavior in the future.

## Conflict of Interest

The authors have no conflicts of interest to declare.

## Authors' Contribution

**Xiaowei Chu:** conceptualization, investigation, project administration, writing—original draft, writing—review & editing. **Yujing Zhao:** formal analysis, writing—original draft, writing—review & editing. **Xin Li:** conceptualization, writing—original draft. **Sumin Yang:** writing—review & editing. **Yuju Lei:** writing—review & editing.

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