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# The relationship between defending self-efficacy and defending behavior in cyberbullying: a moderated mediation model

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## Abstract

Although defending self-efficacy is related to defending behavior in cyberbullying, little is known about the underlying mechanisms of this association. This study explored the relationship between defending self-efficacy and defending behavior. In a China sample, it examined the mediating role of defending intention and the moderating role of empathy in the association between defending self-efficacy and defending behavior. A cross-sectional sample of 672 Chinese adolescents ( $M_{\text{age}} = 14.86$ ,  $SD = 1.74$ ) completed a questionnaire, which includes measures of defending self-efficacy, defending intention, empathy, and defending behavior. Results showed that defending self-efficacy was significantly and positively associated with defending behavior. Mediation modeling indicated that defending self-efficacy directly affected defending behavior and could indirectly affect defending behavior through the mediating role of defending intention. In addition, the mediation role of defending intention was moderated by empathy, and as the level of empathy increased, the effect of defending self-efficacy on defending intention became stronger, and the effect of defending intention on defending behavior became stronger. These findings advance our understanding of how and when defending self-efficacy is related to defending behavior in cyberbullying among adolescents. It also sheds some light on preventing and intervening in adolescent cyberbullying from a bystander's perspective.

**Keywords** Defending self-efficacy, Defending intention, Empathy, Defending behavior

## Introduction

Cyberbullying is a pervasive phenomenon in various countries and regions across the globe, predominantly affecting adolescents [1]. The prevalence of cyberbullying among adolescents varies across countries and regions. Estimates suggest that between 14.6% and 56.9% of adolescents have experienced different forms of online bullying, including harassment, denigration, privacy violations, cheating, and ostracism [2, 3]. *Cyberbullying* is defined as aggressive behavior in which an individual or group of individuals use electronic information exchange tools to repeatedly victimize individuals who are less

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able to defend themselves [4]. This type of bullying in the online environment is also called the “invisible fist” because it does not result in any visible external harm to the victims. A substantial body of research has examined the consequences of involvement in cyberbullying for victims. For example, cyberbullying has been linked to increased psychological distress in victims, which can potentially lead to depression [5], suicidal ideation [6], post-traumatic stress disorder symptoms [7], and self-harm [8].

Individuals who witness those being bullied online are often referred to as bystanders, and bystanders play a crucial role in cyberbullying incidents [9]. In cyberbullying, the implementation of defending behavior by bystanders can facilitate the provision of diverse forms of assistance to victims, thereby attenuating the adverse consequences associated with bullying incidents. Defending behavior refers to active actions undertaken by bystanders to support and assist the victims [10]. Those subjected to cyberbullying may benefit from the defending behavior that bystanders typically employ in such situations. For example, defending behavior has been demonstrated to be effective in preventing the occurrence of bullying incidents or in mitigating their adverse effects [11]. When bystanders intervene in a cyberbullying incident to assist the victim, there is a greater than 50% probability of reducing the harm caused by bullying [12]. However, the actual situation is not very satisfactory, as the majority of individuals who witness cyberbullying incidents rarely seek assistance. Furthermore, even when adolescents offer help, they often lack effective coping strategies [13]. A review of the literature reveals that the proportion of instances in which bystanders offer assistance to victims of cyberbullying is less than 20% [12].

In examining the factors that prompt bystanders to engage in or refrain from defending behavior in the context of cyberbullying, it is crucial to consider the underlying influences that shape this decision-making process. From a general perspective, the extant research on the factors influencing defending behavior in cyberbullying needs to be more comprehensive and in-depth, particularly concerning a comprehensive exploration based on relevant theories [14]. In cyberbullying, defending behavior can be conceptualized as a complex social interaction phenomenon. Providing support and assistance to victims often entails interactions and mutual influences between individuals, groups, and even between groups [14]. Given the above considerations, this study has constructed a moderated mediated model based on the social cognitive theory and the theory of planned behavior. This model has been employed to comprehensively examine the effects of cognitive factors (defending self-efficacy), affective factors (empathy), and behavior intention (defending intention) on defending behavior in

cyberbullying, as well as the underlying mechanisms of their effects.

### **The defending self-efficacy and defending behavior**

Self-efficacy refers to an individual's evaluation and assessment of their ability to successfully perform a specific action when considering the likelihood of achieving a desired outcome [15]. Self-efficacy reflects an individual's confidence in their ability to control motivation, behavior, and the social environment, and individuals with higher levels of self-efficacy are more likely to deal with situations that arise in a pro-social way when they encounter problems [16]. Thus, when the task or situation is within the individual's problem-solving ability, they tend to take on and act on it. Conversely, when the task or situation is beyond the individual's problem-solving ability, there is a tendency to avoid and refuse to act. For a bystander in a cyberbullying incident to decide to intervene in a cyberbullying incident (e.g., to report the bullying or to help the victim fight back), they must have the requisite knowledge (e.g., whether privacy has been violated), skills (how to block or delete information), and beliefs. In addition, bystanders must believe that their actions will effectively resolve the cyberbullying incident or help the victim. Of course, bystanders may be reluctant to intervene because they fear their actions may exacerbate harm or put themselves at risk. These concerns about potential negative consequences can ultimately influence bystanders to provide support and help to victims of cyberbullying.

Researchers often use defending self-efficacy to describe an individual's assessment and judgment of their ability to intervene in a bullying incident and to help the bullied [17]. Thus, defending self-efficacy refers to an individual's ability and confidence in his or her ability to believe in their ability to intervene in a bullying incident and protect the victim successfully [17]. Defending self-efficacy was found to be significantly and positively related to defending behavior in cyberbullying, with higher self-efficacy being associated with a greater likelihood of defending behavior and individuals being more likely to act when they believe they can intervene effectively [18]. Bystander defending behavior in cyberbullying can be effective in preventing and stopping cyberbullying incidents from occurring or worsening, and bystanders who are interested in protecting cyberbullying victims are a key factor in reducing the occurrence of cyberbullying [19]. Systematic reviews and meta-analytic studies have also shown that self-efficacy is related to defensive behavior [20]. Therefore, we propose a hypothesis:

**H1** Defending self-efficacy significantly and positively predicts defending behavior in cyberbullying.

### The mediating role of defending intention

According to the theory of planned behavior, it is known that behavioral intention influences the motivation to act and is the most direct trigger for an individual to perform an actual behavior [21]. Therefore, the stronger an individual's behavioral intention is, the more likely he or she will act on the action. Meta-analytic studies have also found that behavioral intention can significantly influence the implementation of behavior [22]. In cyberbullying, the defending intention is a psychological disposition of bystanders who are willing to help the victim in a cyberbullying incident [23]. Bystanders' positive defensive intention strongly predicts their defensive behavior. For example, a study of 1,979 adolescents showed that bystanders' positive intention to help was the strongest predictor of their actual helping behavior during cyberbullying incidents [24].

Individuals with high self-efficacy are likelier to deal with situations that arise pro-social and flexibly [16]. In school bullying (offline bullying), the higher a bystander's level of defending self-efficacy, i.e., their belief in their ability to intervene in bullying behavior successfully, the more likely they are to intervene in a bullying incident [17]. In cyberbullying, researchers have also found self-efficacy to be a significant predictor of cyberbullying incidents [25]. Therefore, we propose a hypothesis:

**H2** Defending intention mediates the relationship between defending self-efficacy and defending behavior in cyberbullying.

### The moderating role of empathy

While defending self-efficacy may play a role in defending behavior through defending intention, not all individuals with high levels of self-efficacy develop stronger defending intention and thus engage in more defending behavior during cyberbullying incidents. Over the past 30 years, empathy has been recognized as an essential factor influencing individuals' pro-social behavior [26]. An individual's ability to empathize effectively is the basis for developing sympathy for others' situations, an essential prerequisite for providing help to individuals in distress [27]. Some individuals are more likely to experience empathy than others and display more pro-social behavior and less aggressive behavior [26]. According to the empathy-altruism hypothesis, it can be seen that empathy can help individuals pay attention to the needs and feelings of others more efficiently, which can further motivate individuals to perform more pro-social behavior [28]. Therefore, empathy is often used to predict cyberbullying behavior [29] and defending behavior in cyberbullying [30, 31].

Established research has also highlighted the interplay between empathy and self-efficacy, revealing how these

concepts influence behavior in different contexts. For example, in school bullying (offline bullying), high levels of empathic response and perceived social self-efficacy increased the likelihood that bystanders would engage in defending behavior [32]. This finding suggests that in the absence of empathy, bystanders struggle to engage in defending behavior during bullying incidents, even with high levels of self-efficacy. In cyberbullying, adolescents who exhibit high levels of self-efficacy and empathy are better equipped to comprehend and empathize with the experiences of cyberbullying victims. This enhanced understanding and empathy positively influence their defending intention. Empathy has markedly augmented an individual's motivation to assist others, fostering a more favorable disposition toward defending behavior. The level of empathy adolescents exhibit may influence the relationship between their self-efficacy and defending intention.

Some researchers have posited that the theory of planned behavior offers limited explanatory power concerning intention-behavior relations and that there is an "intention-behavior gap" [33]. The results of previous studies on behavioral intention and specific behaviors are less consistent. However, the reasons for this divergence can be explained by the presence of moderating variables. Defending behavior in the context of cyberbullying represents a manifestation of prosocial behavior that is influenced by a range of factors, including social cognitive variables such as self-efficacy as well as socio-emotional factors such as empathy [34]. Prior research has indicated that adolescents engage in prosocial behaviors resulting from the interaction of socio-emotional and socio-cognitive factors [35]. In school bullying (offline bullying), an individual's level of empathy can moderate the relationship between the classroom environment and defending behavior. Adolescents with higher levels of empathy are more likely to engage in defensive behavior towards those who are bullied within a classroom with a high bullying climate [36].

Furthermore, empathy serves as a protective factor, deterring the onset of aggressive behavior in individuals. The "protective factor-protective factor" model of human development posits that distinct protective factors interact to predict an individual's developmental outcomes [37]. One protective factor (e.g., empathy) can amplify the impact of another (e.g., defending intention) on outcomes (e.g., defending behavior). Thus, empathy has the potential to mitigate the effects of defending self-efficacy on defending behavior. Therefore, we propose the following hypotheses:

**H3a** Empathy significantly moderated the effect of defending self-efficacy on defending intention. The effect

of defending self-efficacy on defending intention was greater when the level of empathy was high.

**H3b** Empathy significantly moderates the effect of defending intention on defending behavior. The effect of defending intention on defending behavior was greater when the level of empathy was high.

### The present study

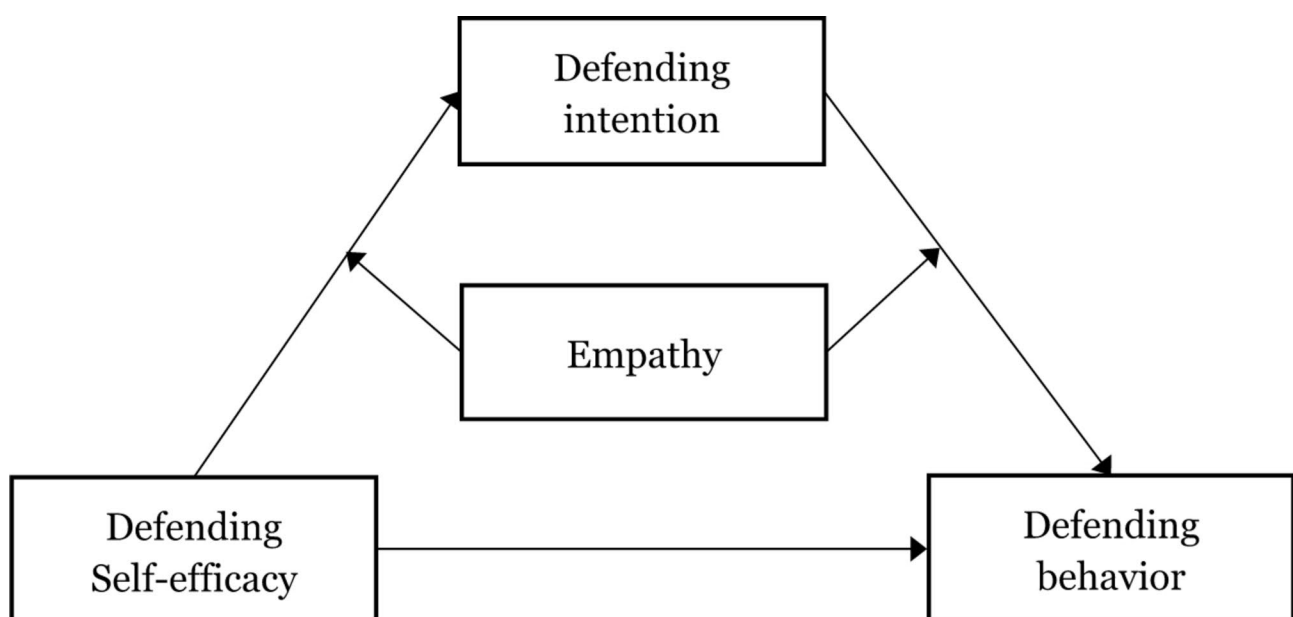
In cyberbullying incidents, defending behavior made by bystanders can not only be timely and effective in stopping the bullying or preventing it from worsening further [11]. However, it can also effectively mitigate and lessen the impact of bullying on the victim [38]. Therefore, when exploring defending behavior, it is important to understand the factors that motivate bystanders to engage (or not) in defending behavior when encountering cyberbullying incidents. Previous studies have identified several factors that influence defensive behavior. However, there is a need for a more comprehensive and in-depth exploration of the factors and their mechanisms of action that influence defensive behavior in adolescent cyberbullying. Therefore, this study intends to examine the relationship between defending self-efficacy and defending behavior and their mechanisms of action, construct a mediated model with moderation, and examine the mediating role of defending intention and the moderating role of empathy (see Fig. 1). The conduct of this study can enrich the research on the mechanism of defending behavior in adolescent cyberbullying, and it also provides a theoretical basis for the scientific prevention and intervention

of adolescent cyberbullying from the perspective of bystanders.

## Method

### Participants and procedure

Our survey was conducted in four secondary schools in China. Two schools were located in rural areas and two in urban areas. Before the survey, an application was made to the secondary school where the survey was conducted, and informed consent was obtained from the school and staff. Subsequently, teachers in the schools informed the student's parents or legal guardians about the study's purpose and methodology. Parents of the students were told that they could not complete the questionnaire if they did not want their children to participate. If a student did not want to continue answering while completing the questionnaire, he or she could stop at any time without any penalty. Participating students were guided by a researcher and a teacher to complete the paper questionnaire for approximately 30 min. All participants were asked to read the instructions carefully before answering the questionnaire and to complete the questionnaire independently within the allotted time. The data for this study were obtained after excluding the apparent regularity of responses (e.g., choosing the same option for ten consecutive questions) and removing incomplete questionnaires. A total of 700 questionnaires were distributed, and 672 were returned, representing a 96.0% response rate. Of the participants, 249 (37.1%) were male and 423 (62.9%) were female. The age range of the study participants was 13 to 18 years, with a mean age of 14.86 years and a standard deviation of 1.74.



**Fig. 1** Moderated mediation model

## Measures

### *Defending self-efficacy*

A defending self-efficacy questionnaire developed by Thornberg et al. [17]. The defending self-efficacy questionnaire was developed for school bullying (offline bullying), which was modified to cyberbullying in this study. The questionnaire has five items (e.g., “I can help those who are being bullied online”) and was scored on a 7-point scale, with options ranging from “strongly disagree” to “strongly agree.” The internal consistency coefficient for the defending self-efficacy questionnaire in this study was 0.84.

### *Defending intention*

A defending intention questionnaire developed by Hayashi et al. was used [23]. The questionnaire consisted of three items (e.g., “If I see someone being bullied online, I intend to help the person being bullied”). The defending intention is a 7-point questionnaire with options ranging from “strongly disagree” to “strongly agree.” The internal consistency coefficient for the defending intention questionnaire in this study was 0.82.

### *Defending behavior*

A defending behavior scale developed by Chen et al. was used [10]. The scale was divided into four dimensions: emotional support (e.g., “I sent or left a message to comfort the cyberbullied person.”), reporting authority (e.g., “I reported the cyberbullying to the webmaster.”), aggressive defending (e.g., “I sent an abusive message to the bully to stop the cyberbullying.”), and problem-solving (e.g., “I helped the bullied person respond to untrue comments made by others.”) with 24 items. The scale was scored on a 5-point Likert scale, with options ranging from 1 to 5, corresponding to “completely disagree” to “completely agree,” with higher scores indicating a higher level of defending behavior in cyberbullying. The internal consistency coefficients of the total score and the four dimensions in this study were 0.87, 0.88, 0.89, 0.91, and 0.77, respectively. The confirmatory factor analysis (CFA) index showed a good fit of the scale model:  $\chi^2/df=2.74$ , RMSEA = 0.05, SRMR = 0.05, CFI = 0.93, TLI = 0.93.

### *Empathy*

The basic empathy scale (BES), developed by Jolliffe and Farrington, was utilized in this study [39]. The Chinese version of the basic empathy scale (BES) was tested and revised by Li et al. in an adolescent population [40]. The revised Chinese version of the BES comprises two dimensions: cognitive empathy and emotional empathy. It contains 20 questions, including the following item: “I often get involved in my friends’ emotions.” Eight items are reverse-scored. The scale was scored on a 5-point Likert scale, ranging from 1 to 5, with higher scores indicating

higher levels of empathy. The internal consistency of the total score and the two dimensions of the questionnaire were 0.78, 0.75, and 0.69, respectively.

## Statistical analyses

The data were subjected to analysis to test the hypothesis in this study. First, the correlation, mean, and standard deviation were calculated for the primary variables. Secondly, the PROCESS macro (Model 4) of SPSS was employed to assess the mediating role of defending intention [41]. The PROCESS macro (Model 58) was employed to assess the moderating role of empathy on the impact of defending self-efficacy on defending intention and, subsequently, on defending behavior. Once more, bootstrap confidence intervals (CIs) were employed to ascertain the significance of the effects observed in Models 4 and 58, using a random sample of 5,000 [41]. The effect was deemed significant if the confidence interval did not encompass zero. Ultimately, if the moderating effect was found to be significant, the Johnson-Neyman technique was employed to ascertain the region of significance. In particular, the Johnson-Neyman technique furnishes a moderation region in which the simple slope of the outcome variable is demonstrably distinct from zero to the predictor variable.

Previous research has found significant gender differences and age effects as far as adolescent defending behavior is concerned. For example, boys would use more direct counterattack strategies, while girls would use gentler comforting strategies [42]. Older adolescents are more likely to offer help, while younger adolescents are less likely to do so [43]. Accordingly, all analyses were conducted with gender and age as control variables.

## Results

### *Common methodological Bias*

All data for this study were collected using self-report questionnaires, so there is a possibility of common methodological bias. In order to avoid the effects of common method bias, we used Harman’s single-factor test to examine common method bias. The results of the exploratory factor analysis showed that a total of 11 factors with eigenvalues greater than one were extracted, and the amount of variance that the first factor could explain was 19.82%, which was less than the critical value of 40%, indicating that the data of the current study did not suffer from serious common method bias [44].

### *Descriptive and correlational analysis*

The correlations, means, and standard deviations of the main variables in this study are presented in Table 1. The correlations among these variables were consistent with our expectations. Specifically, defending self-efficacy was positively correlated with defending intention, empathy,

**Table 1** Descriptive statistics and correlations between variables

Variables	M	SD	1	2	3	4
1 Defending self-efficacy	4.43	1.19	1			
2 Defending intention	5.08	1.18	0.61**	1		
3 Empathy	3.64	0.48	0.21**	0.27**	1	
4 Defending behavior	2.95	0.56	0.53**	0.46**	0.20**	1

Note:  $N = 672$ . \*\* $p < 0.01$

**Table 2** Testing the mediation effect of defending intention

Outcome	Predictors	$R^2$	F	$\beta$	LLCI	ULCI	t
Defending behavior	Gender	0.29	89.03	0.01	-0.07	0.09	0.23
	Age			0.01	-0.01	0.03	1.03
	Defending self-efficacy			0.24	0.21	0.27	16.33***
Defending intention	Gender	0.38	135.66	-0.30	-0.18	0.13	-0.31
	Age			-0.01	-0.05	-0.05	0.42
	Defending self-efficacy			0.58	0.55	0.66	20.13***
Defending behavior	Gender	0.31	75.54	0.01	-0.07	0.09	0.30
	Age			0.01	-0.01	0.03	1.13
	Defending self-efficacy			0.18	0.15	0.22	10.03***
	Defending intention			0.10	0.06	0.13	5.04***

Note:  $N = 672$ , Bootstrap sample size = 5000. LL = low limit, CI = confidence interval, UL = upper limit. \*\*\* $p < 0.001$

and defending behavior. Defending intention was positively associated with empathy and defending behavior. Empathy was positively associated with defending behavior.

### Testing for mediation

Mediated effects analyses were conducted with defending self-efficacy as a predictor variable, defending behavior as an outcome variable, and defending intention as a mediating variable. As shown in Table 2, defending self-efficacy was positively associated with defending intention ( $\beta = 0.58$ ,  $p < 0.001$ ), and defending self-efficacy was positively associated with defending behavior ( $\beta = 0.18$ ,  $p < 0.001$ ).

Furthermore, defending intention was positively associated with defending behavior ( $\beta = 0.10$ ,  $p < 0.001$ ). In addition, the direct relationship between defending self-efficacy and defending behavior was also significant ( $\beta = 0.24$ ,  $p < 0.001$ ), which indicated that defending intention partially mediated the relation between defending self-efficacy and defending behavior. Testing the mediation effect, the indirect relationship between defending self-efficacy and defending behavior through defending intention was significant (indirect effect = 0.06, SE = 0.01, 95% CI = 0.04–0.08). Thus, hypothesis 1 and 2 were supported.

### Testing for moderated mediation

We employed Model 58 of the PROCESS macro in SPSS to examine whether the mediating effect of defending intention is moderated by empathy. As shown in Table 3, after placing empathy into the model, defending self-efficacy significantly predicted defending intention ( $\beta = 0.55$ ,

$p < 0.001$ ), and defending intention significantly predicted defending behavior ( $\beta = 0.09$ ,  $p < 0.001$ ). The interaction term of defending self-efficacy and empathy significantly affected defending intention ( $\beta = 0.13$ ,  $p < 0.05$ ), suggesting that empathy can act as a moderator between defending self-efficacy and defending intention. Likewise, the interaction term of defending intention and empathy significantly affected defending behavior ( $\beta = 0.09$ ,  $p < 0.01$ ), suggesting that empathy can act as a moderator between defending intention and defending behavior.

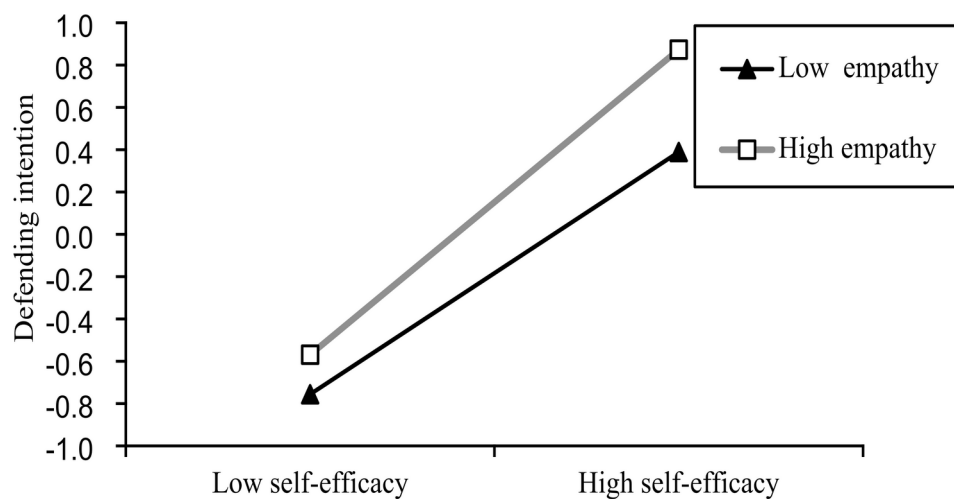
To further analyze how empathy moderates the relationship between defending self-efficacy and defending behavior, empathy was divided into high and low subgroups according to  $M \pm 1$  SD, a simple slope test was conducted, and simple effect plots were drawn (shown in Figs. 2 and 3). Results indicated that when empathy was low ( $M - 1$  SD), defending self-efficacy was a significant predictor of defending intention ( $\beta_{\text{simple}} = 0.48$ ,  $p < 0.05$ ). When empathy was high ( $M + 1$  SD), defending self-efficacy was a significant predictor of defending intention ( $\beta_{\text{simple}} = 0.61$ ,  $p < 0.05$ ). In addition, when empathy was low ( $M - 1$  SD), defending intention was not a significant predictor of defending behavior ( $\beta_{\text{simple}} = 0.04$ ,  $p > 0.05$ ). When empathy was high ( $M + 1$  SD), defending intention was a significant predictor of defending behavior ( $\beta_{\text{simple}} = 0.13$ ,  $p < 0.05$ ). Therefore, hypothesis 3a and 3b were supported.

To summarize, the process by which defending self-efficacy influences defending behavior through defending intention is moderated by empathy. Specifically, empathy moderated the relationship between defending self-efficacy and defending intention, with defending self-efficacy having a greater influence on defending intention

**Table 3** Testing the moderated mediation effect

Outcome	Predictor	R <sup>2</sup>	F	β	LLCI	ULCI	t
Defending behavior	Gender	0.32	53.14	0.03	-0.05	0.10	0.62
	Age			0.01	-0.00	0.04	1.29
	Defending self-efficacy			0.18	0.14	0.21	9.83***
	Empathy			0.07	-0.00	0.14	1.75
	Defending intention			0.09	0.05	0.12	4.36***
Defending intention	DI × Empathy	0.40	90.30	0.09	0.13	0.15	2.98**
	Gender			0.06	-0.10	0.22	0.73
	Age			-0.01	-0.05	0.04	-0.23
	Defending self-efficacy			0.55	0.49	0.60	18.72***
	Empathy			0.35	0.20	0.49	4.74***
	SE × Empathy			0.13	0.02	0.25	2.21*
Conditional indirect effect analysis at moderator values							
	β	BootSE		BootLLCI		BootULCI	
M– 1 SD	0.02	0.01		-0.01		0.04	
M	0.05	0.01		0.02		0.07	
M + 1 SD	0.08	0.20		0.05		0.11	

Note: N = 672, DI = Defending intention, SE = Self-efficacy. Bootstrap sample size = 5000. LL = low limit, CI = confidence interval, UL = upper limit. The research variables in regression models were standardized. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

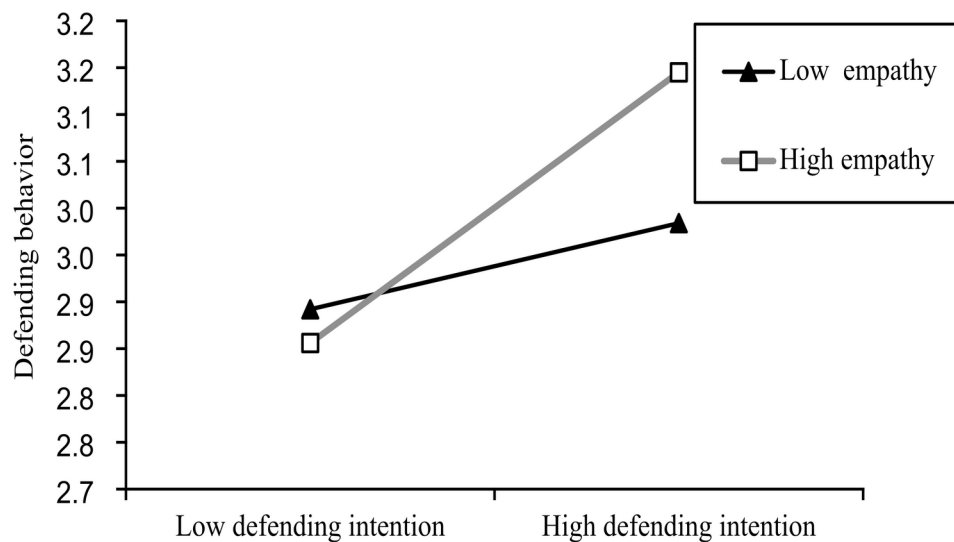
**Fig. 2** Empathy moderated the relation between defending self-efficacy and defending intention

when adolescents had high levels of empathy. Empathy moderated the relationship between defending intention and defending behavior, with defending intention having a greater influence on defending behavior when adolescents had high levels of empathy.

## Discussion

In instances of cyberbullying, the act of a bystander providing tacit approval or endorsement of the bullying can have a significant and detrimental impact on the victim. Conversely, a greeting and encouragement from bystanders to the victim may also mitigate the adverse effects of the bullying incident. It is, therefore, crucial for researchers and administrators to comprehend the diverse coping strategies employed by bystanders in cyberbullying. This understanding can inform the guidance provided

to adolescents, enabling them to navigate the risks they encounter effectively and to offer support and assistance to victims when others are in need. It is, therefore, essential to gain an understanding of the reasons why bystanders in cyberbullying react to incidents of this nature. Based on the theory of planned behavior and social cognitive theory, this study explored the relationship between defending self-efficacy and defending behavior and the mechanism of action by which defending self-efficacy influences defending behavior. The findings of this study contribute to the development of a bystander perspective for the prevention and intervention of cyberbullying incidents among adolescents to reduce the impact of cyberbullying on this demographic.



**Fig. 3** Empathy moderated the relation between defending intention and defending behavior

#### The defending self-efficacy and defending behavior

The present study found that defending self-efficacy was effective in predicting defending behavior in adolescent cyberbullying. Defending behavior manifests adolescents' pro-social behavior, and the relationship between self-efficacy and pro-social behavior has received extensive attention in research. Self-efficacy influences an individual's motivation, behavioral choices, and persistence, so those with high self-efficacy will be more inclined to engage in activities that benefit others and society [45]. Individuals with high self-efficacy are more likely to exhibit pro-social behavior because of their confidence in their ability to successfully help others and their perceived ability to cope with challenges they may encounter. When confronted with a specific situation (e.g., a cyberbullying incident), an individual's self-efficacy affects whether or not they engage in pro-social behavior. Previous researcher surveyed 540 adolescents and found that in cyberbullying, adolescents' defending self-efficacy was strongly related to defending behavior, as evidenced by a significant positive correlation between defending self-efficacy and constructive defending (e.g., telling cyberbullies to stop bullying) and a significant negative correlation with aggressive defending (threatening or verbally abusing cyberbullies) [19].

#### The mediating role of defending intention

The present study also found that defending self-efficacy can indirectly affect defending behavior through the mediating role of defending intention. When adolescents' self-efficacy to help victims of cyberbullying is high, their intention to protect the bullied person is stronger. Accordingly, the likelihood of engaging in defending behavior is higher. Previous research has also found that adolescents are more willing to help when they feel more

empowered and resourced to help victims of cyberbullying [23]. When bystanders have a positive intention to help, they are more likely to engage in defensive behavior during cyberbullying incidents [46]. According to the theory of planned behavior, it is known that adolescents' defending intention in cyberbullying is the direct reason that drives them to engage in defending behavior, and adolescents' defending intention in cyberbullying is significantly influenced by their defending self-efficacy. Therefore, this study's exploration of the mediating role of defending intention in cyberbullying further validates the idea that behavioral intentions influence specific behavior as proposed by the theory of planned behavior. Therefore, future cyberbullying prevention and intervention programs for adolescents who wish to enhance bystanders' defensive behavior can enhance their willingness to defend, facilitating the onset or change of defending behavior.

#### The moderating role of empathy

The present study also found that empathy moderated the relationship between defending self-efficacy affecting defending behavior through defending intention. Firstly, compared to adolescents with low levels of empathy, adolescents with high levels had stronger defending self-efficacy in predicting their defending intention. Empathy is a crucial psychological protective factor within an individual that induces pro-social behavior toward others [47]. Adolescents with higher levels of empathy have stronger motivation to be helpful and are more inclined to engage in defending behavior that supports and helps the victim during cyberbullying incidents. Empathy can help individuals to be more attentive to the feelings and needs of the victim during a cyberbullying incident, which can motivate their intention to engage in altruistic

behaviors such as supporting, helping, and sharing, and high empathizers generally have higher levels of motivation for pro-social behaviors compared to those with low levels of empathy [48].

Secondly, the defending intention of adolescents with high levels of empathy was a stronger predictor of their defending behavior than those with low levels of empathy. The meta-analysis results showed the associations between empathy and defending behavior of adolescent cyber bystanders [20]. Socio-emotional factors such as empathy are also essential influences on defending behavior by bystanders during offline and online bullying incidents [49]. Previous studies have found that an individual's level of empathy predicts their defending behavior in response to online bullying incidents through an experimental method, which showed that those individuals with high levels of empathy were more likely to intervene in cyberbullying behavior by changing the topic and shifting attention [50].

Lastly, empathy can help individuals to be more attentive to the feelings and needs of the victim during a bullying incident, which can motivate them to engage in altruistic behaviors such as supporting, helping, and sharing. As Bandura states, those who believe they can make a difference are more likely to take action when they empathize with the suffering of others [45]. Therefore, when adolescents have high defending self-efficacy and develop defending intention in cyberbullying, if the individual has a high level of empathy, it will increase the impact of their defending intention on defending behavior to some extent, leading to more positive defensive behavior.

### Limitations and future directions

There are several limitations to this study that need to be taken into account when interpreting the results. First, the study design has limitations. Because defending behavior in cyberbullying is pro-social behavior and our study data relied on self-reports, the participants' responses may have been influenced by the social desirability, which may have affected the validity of the data. In addition, our study had a cross-sectional design, and cross-sectional studies could not establish causality. Although we explored the effect of defending self-efficacy on defending behavior based on the theory of planned behavior and social cognitive theory, defending behavior may also increase defending self-efficacy. Therefore, future researches should adopt a longitudinal design to clarify the relationship between defending self-efficacy and defending behavior. Second, the data for this study were obtained through convenience sampling with samples from adolescents in China, which may limit the generalizability of the findings. Future researches should seek to use cross-cultural samples.

Despite some limitations, this study still contributes to theory and practice. From a theoretical perspective, our study extends previous research by confirming the mediating role of defending intention and the moderating role of empathy. This theoretical model will help better understand how and when self-efficacy influences adolescents' defending behavior. From a practical perspective, guiding adolescents to know what strategies they can use to respond effectively or what avenues they can take to report cyberbullying incidents can help them gain the courage and confidence to intervene proactively, thus increasing their intention to intervene. In addition, elevated bystander empathy is a key factor in enhancing defending behavior in cyberbullying. Adolescents with higher levels of empathy can understand the victim's situation and feelings more appropriately, which has a gainful effect on their defending behavior.

### Conclusion

Although this study has some limitations and needs to be further explored, it has an important implication in revealing the relationship between self-efficacy and defending behavior in cyberbullying among adolescents. This study reveals the relationship between self-efficacy affecting defending behavior in cyberbullying and its mechanism of action. It was shown that defending self-efficacy significantly and positively predicts defending behavior in cyberbullying and defending intention is a potential mechanism by which self-efficacy is associated with defending behavior. Empathy moderates the relationship between defending self-efficacy through defending intention and, thus, defending behavior. The results of this study provide a solid theoretical foundation for proposing programs to prevent and intervene in adolescent cyberbullying from a bystander perspective.

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### Author contributions

Hong Chen (conceptualization; methodology; writing original draft). Yong Fang (conceptualization; methodology; formal analysis). Ling Wang (methodology; investigation). Yanjun Chen (methodology; investigation). Cuiying Fan (conceptualization; methodology; writing– review).

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### Data availability

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

## Declarations

### Ethics approval and consent to participate

The ethics committee of Central China Normal University approved this study. All procedures performed in studies involving human participants were by the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The instructions and written informed consent forms were provided to all participants. Participants under the age of 16 had obtained the informed consent of their parents or legal guardians.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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