



Callous-Unemotional traits and cyberbullying perpetration: The mediating role of moral disengagement and the moderating role of empathy

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ABSTRACT

Although callous-unemotional traits have been shown to play an important role in cyberbullying perpetration, little is known about mediating and moderating mechanisms underlying this relationship. In the present study, we examined the mediating role of moral disengagement in the association between callous-unemotional traits and cyberbullying perpetration and the moderating role of empathy. Six hundred and fifty Chinese college students completed the measures of callous-unemotional traits, moral disengagement, cyberbullying perpetration, and empathy. The results indicated that callous-unemotional traits were significantly and positively associated with cyberbullying perpetration, and moral disengagement partially mediated this relationship. Moderated mediation analysis further indicated that empathy moderated the relationship between callous-unemotional traits and moral disengagement as well as moral disengagement and cyberbullying perpetration. These two relationships became weaker for college students with higher levels of empathy. Results highlight the significance of identifying the mechanisms that moderate the mediated paths between callous-unemotional traits and college student cyberbullying perpetration.

1. Introduction

With the development of Internet technology, cyberbullying perpetration has become a major youth problem worldwide, and its prevalence is increasing (Kowalski, Giumetti, Schroeder & Lattanner, 2014; Watts, Wagner, Velasquez & Behrens, 2017). It is also a major issue for Chinese young people due to the fact that the total number of youth Internet users was estimated to be 354 million by the end of June 2019 (China Internet Network Information Center, 2019). For instance, 39.18% of mainland Chinese college students have participated in cyberbullying (Zhu et al., 2016), and 58% of Hong Kong college students reported cyberbullying others (Leung, Wong & Farver, 2018). A meta-analysis also indicated if individuals in high school have been cyberbullies, they tend to further cyberbully others in college (Watts et al., 2017). Cyberbullying perpetration among college students is an emerging issue that deserves attention.

Cyberbullying perpetration is often defined as aggression that is repeatedly and deliberately implemented in an online context against

others who often cannot defend themselves (Kowalski, Morgan & Limber, 2012). Cyberbullying perpetration can lead to a series of adverse outcomes, such as anxiety, depression, substance abuse, and suicide ideation (Kowalski et al., 2014). Therefore, it is of theoretical and practical importance to explore those factors that may contribute to an increase or decrease in youth cyberbullying perpetration. Callous-unemotional traits, as a risk factor, can significantly predict more adolescents' cyberbullying (Fanti, Demetriou & Hawa, 2012; Orue & Andershed, 2015; Orue & Calvete, 2019; Wright, Harper & Wachs, 2019), much less is known about whether and how callous-unemotional traits increase the risk of college students' cyberbullying perpetration. Thus, the aims of the present study were to explore whether callous-unemotional traits could significantly predict cyberbullying perpetration in Chinese college students and extend previous studies by examining the underlying mediating and moderating mechanisms in this association.

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1.1. Callous-unemotional traits and cyberbullying perpetration

Callous-unemotional (henceforth CU) traits characterize youths who lack remorse and guilt, have the shallow affect, and are unconcerned about the negative consequences of their actions (Frick, Ray, Thornton & Kahn, 2014). Two meta-analyses indicated CU traits were significantly and positively associated with bullying behaviors (van Geel, Toprak, Goemans, Zwaanswijk & Vedder, 2017; Zych, Ttofi & Farrington, 2019). In the digital era, numerous cross-sectional studies have also shown that CU traits are significantly and positively associated with adolescents' cyberbullying perpetration (Orue & Andershed, 2015; Orue & Calvete, 2019; Wright et al., 2019). Most importantly, results from the longitudinal study show that CU traits significantly predict adolescents' cyberbullying perpetration one year later, even after controlling for baseline cyberbullying perpetration (Fanti et al., 2012).

CU traits research in Asian countries is lagging far behind research in Western culture (Sng et al., 2018). Little is known about the extent to which CU traits are associated with cyberbullying perpetration in Chinese populations. It is important to note that Chinese culture of suppressing emotional expression (Soto, Perez, Kim, Lee & Minnick, 2011) may make it more difficult for Chinese college students to recognize other individuals' emotions, thereby prompting them to perpetrate cyberbullying. Although not yet tested, it is reasonable to expect that CU traits would significantly predict Chinese college students' cyberbullying perpetration.

1.2. Moral disengagement as a mediator

Moral disengagement (henceforth MD) is a socio-cognitive, self-regulatory strategy through which individuals justify their immoral actions to appear less harmful, minimize their role in the outcome of their immoral actions, or reduce the apparent distress that they cause others (Bandura, Barbaranelli, Caprara & Pastorelli, 1996; Bjärehed, Thornberg, Wänström & Gini, 2020). Drawing from the general aggression model (GAM) (Anderson & Bushman, 2002; Watts et al., 2017), we proposed moral disengagement as a mediator between CU traits and cyberbullying perpetration. The GAM emphasizes three levels in understanding why people act aggressively: personal and situational factors, internal states, and outcomes of appraisal and decision-making processes. Personal factors interact with situational factors to influence internal states, which affect aggression and cyberbullying perpetration. Specifically, the GAM claims that CU traits may affect an individual's propensity to aggression and cyberbullying perpetration by distorting social cognitive processes (i.e., the mechanism of justifying aggressive behaviors). Thus, given the mechanism of moral disengagement that can be used as a means to justify aggression and cyberbullying perpetration (Bjärehed et al., 2020), CU traits, as a personal factor, may influence cyberbullying perpetration through the mechanism of moral disengagement. Consistent with this theoretical framework, a growing number of studies have demonstrated that MD mediates the relationship between personal factors (e.g., big five personality and traits anger) and cyberbullying perpetration (X. Wang, Yang, Wang & Lei, 2017; Zhou, Zheng & Gao, 2019). More specially, one study shows that moral disengagement mediates the relationship between CU traits and relational aggression (Kokkinos, Voulgaridou & Markos, 2016). Although not yet tested, it is reasonable to expect that moral disengagement acts as a mediator between CU traits and cyberbullying perpetration. In the following section, previous research findings would be reviewed to support this argument.

First, high CU traits are more likely to develop a high level of MD. According to the moral model of criminal lifestyle development (Walters, 2018), CU traits can positively predict proactive criminal thinking (e.g., MD), which in turn accelerate the occurrence of delinquent behavior. Moreover, some studies also indicate that CU traits can

significantly and positively predict MD in adolescents with disruptive behavior disorders (Paciello, Masi, Clemente, Milone & Muratori, 2017), offenders' MD (Shulman, Cauffman, Piquero & Fagan, 2011; Walters, 2018) and MD of students (Kokkinos et al., 2016; Fang, Wang, Yuan, & Wen, 2020)). Most importantly, one longitudinal study shows that initial CU traits significantly predict adolescents' MD after one year (Muratori et al., 2017).

Second, some studies supports the idea that individuals with high MD are more likely to cyberbullying others (X. Wang et al., 2017; Wang, Yang, Wang & Lei, 2019; Wang, Zhao, Yang & Lei, in press; Zhou et al., 2019). Furthermore, MD can predict cyberbullying perpetration one year later, even after controlling for baseline cyberbullying perpetration (Orue & Calvete, 2019). The results from three meta-analyses also indicate that individuals with high MD report more cyberbullying perpetration (Chen, Ho & Lwin, 2017; Gini, Pozzoli & Hymel, 2014; Kowalski et al., 2014). It is noteworthy that the effect of MD on antisocial behavior remains significant and largely unaltered even after controlling for CU traits, which shows that the contribution of CU traits to antisocial behavior is distinct from that of MD (Shulman et al., 2011).

1.3. Empathy as a moderator

Although CU traits may increase the risk of cyberbullying perpetration through the mediating role of MD, not all individuals with high CU traits homogeneously experience higher levels of moral disengagement and show cyberbullying perpetration. Therefore, it is necessary to explore potential moderating variables that may influence the relation between CU traits and cyberbullying perpetration. The present study tests a hypothesis that the links between CU traits and cyberbullying perpetration would be moderated by empathy.

Empathy is defined as the ability to understand the emotions of others (cognitive empathy) and share their emotional state (affective empathy) (Jolliffe & Farrington, 2006). The results from two meta-analyses show that individuals with high empathy report less cyberbullying perpetration (Kowalski et al., 2014; Zych, Baldry, Farrington & Llorent, 2019). According to the risk and protective factor framework (Masten, 2001), cyberbullying perpetration is the result of a dynamic interplay between risk and protective factors: while risk factors such as CU traits make individuals tend to cyberbully others, protective factors such as empathy may reduce the likelihood of cyberbullying perpetration. Thus, empathy may weaken the negative impacts of CU traits on cyberbullying perpetration. Empirical studies have supported this hypothesis. For instance, empathy can moderate the relationship between social anxiety and MD and aggression, such that the positive link between social anxiety and MD and aggression is weaker at higher levels of empathy (Batanova & Loukas, 2011; Bussey, Quinn & Dobson, 2015). Moreover, empathy could also moderate the relationship between parental solicitation and antisocial behaviors as well as parental support and aggressive (Crocetti et al., 2016; Van der Graaff, Branje, Wied & Meeus, 2012). To our knowledge, no previous research has examined whether empathy is a protective factor that buffers the adverse impact of CU traits on cyberbullying perpetration.

1.4. The present study

Taken together, the purposes of the current research were twofold. First, the current research tested whether MD would mediate the relationship between CU traits and cyberbullying perpetration. Second, we tested whether the direct and indirect relationships between CU traits and cyberbullying perpetration via MD was moderated by empathy (Fig. 1). Based on the literature review, we proposed the following hypotheses:

Hypothesis 1. MD would mediate the relationship between CU traits and cyberbullying perpetration.

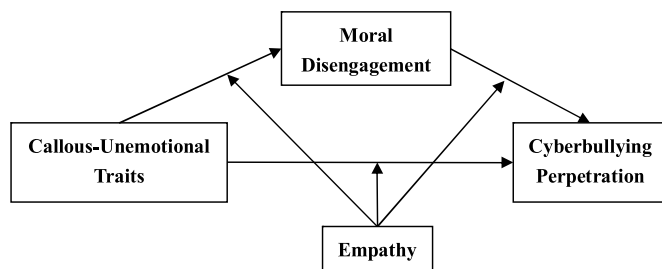


Fig. 1. The proposed moderated mediation model.

Hypothesis 2. The direct and indirect relationships between CU traits and cyberbullying perpetration via MD would be moderated by empathy.

2. Method

2.1. Participants

The present study conveniently sampled six hundred and ninety seven college students from three universities in Guangdong Province, China. After excluding participants with invalid data (i.e., missing values), six hundred and fifty participants were included in the full analyses. The participants were students in freshman (26.15%), sophomore (21.54%), junior (27.54%), and senior (24.77%). The mean age of the participants was 20.46 (SD = 1.75, range = 18–24). Sixty-four percent of the participants were female, and 78.8% had one or more siblings.

2.2. Measures

2.2.1. Callous-unemotional traits

The Chinese version of the Inventory of Callous-Unemotional Traits (M. Wang et al., 2017) developed by Frick (2004) was used. This scale consists of eleven items (e.g., “I do not care who I hurt to get what I want”) and includes two dimensions: callousness (six items) and uncaring (five items). Each item is scored from 1 (*not at all true*) to 4 (*definitely true*). This scale has been used among the Chinese participants before (e.g., Liu et al., 2016; M. Wang et al., 2017, Wang et al., 2019, Zhang et al., 2019) and shown good reliability and validity. Responses to all items were averaged, with higher scores indicating higher levels of CU traits. Cronbach's α was 0.87 in the study. Furthermore, confirmatory factor analysis (CFA) suggested that all the factor loadings ranged from 0.56 to 0.77, and the two-factor model fitted the data well: $\chi^2/df = 2.46$, TLI = 0.97, CFI = 0.98, RMSEA = 0.047, SRMR = 0.027.

2.2.2. Moral disengagement

The Civic Moral Disengagement Scale developed by Caprara, Fida, Vecchione, Tramontano and Barbaranelli (2009) consists of 32 items. It was adapted for the Chinese context by Wang, Yang and Gao (2013). Individuals rated each item (e.g., “Thefts in large department stores are irrelevant compared to the stores”) on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This scale has been used among the Chinese participants before (e.g., (Wang et al., 2013); Wang et al., 2017b, (Wang et al., 2018)) and shown good reliability and validity. Responses to all items were averaged, with higher scores indicating higher levels of MD. Cronbach's α was 0.96 in the study. Moreover, CFA showed that all the factor loadings ranged from 0.43 to 0.78, and the unidimensional model fitted the data well: $\chi^2/df = 3.71$, TLI = 0.89, CFI = 0.90, RMSEA = 0.061, SRMR = 0.047.

2.2.3. Cyberbullying perpetration

Cyberbullying experiences were assessed by the E-Bullying Scale (Lam & Li, 2013). This scale was developed for adolescents in the

Chinese population, and their psychometric properties have also been tested in Chinese population (Lam & Li, 2013). This scale was previously used in Chinese participants (e.g., (Lam and Li, 2013); Yang, Wang, Chen & Liu, 2018) and has shown good reliability and validity. This scale includes six items (e.g., “teasing someone using emails, texting, short messages, on a website such as Renren, etc.”). Respondents were asked to indicate the number of times that they had engaged in specific cyberbullying perpetration in the past seven days on a seven-point scale (0 = *never*, 6 = *6 times or more*). Responses to all items were averaged, with higher scores indicating higher levels of cyberbullying perpetration. Cronbach's α was 0.93 in the study. Furthermore, CFA showed that all the factor loadings ranged from 0.74 to 0.86, and the unidimensional model fitted the data well: $\chi^2/df = 3.12$, TLI = 0.99, CFI = 0.99, RMSEA = 0.057, SRMR = 0.008.

2.2.4. Empathy

The Chinese version of the Basic Empathy Scale (Geng, Xia & Qin, 2012) developed by Jolliffe and Farrington (2006) was used. Chinese Revision of Basic Empathy Scale consists of 16 items and includes two dimensions: cognitive empathy (eight items) and affective empathy (eight items). This scale was previously used in Chinese participants (e.g., Geng et al., 2012; Liu et al., 2016) and has shown good reliability and validity. Individuals rated each item (e.g., “I often become sad when watching sad things on TV or in films”) on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses to all items were averaged, with higher scores indicating higher levels of empathy. Cronbach's α was 0.83 in the study. Moreover, CFA showed that all the factor loadings ranged from 0.55 to 0.95, and the two-factor model fitted the data well: $\chi^2/df = 4.27$, TLI = 0.89, CFI = 0.91, RMSEA = 0.071, SRMR = 0.050.

2.3. Procedure

This investigation was approved by the first author's University Ethics Committee. We obtained assent from all participating college students before the data collection. College students filled out questionnaires in a quiet classroom and were free to withdraw from the study at any time. The anonymity of the study was emphasized before data collection.

2.4. Data analysis

First, data screening revealed that there were no outliers in our data, and then responses with missing data (e.g., gender not reported) were excluded from the data processing. Second, whether data followed normal distribution was examined. The skewness and kurtosis of CU traits, MD, and empathy fell within the acceptable range (i.e., skewness < |2.0| and kurtosis < |7.0|; Hancock & Mueller, 2010). However, the distributions of cyberbullying perpetration (skewness = 2.43) was somewhat skewed. Thus, we used square-root transformation on the overall mean scores to approximate normal distributions. The transformed variable was used for the following analyses.

The moderated mediation model analysis was developed according to the following steps. First, descriptive statistics and Pearson correlations were calculated among the study variables. Second, the PROCESS macro for SPSS (Model 4) was applied to examine the mediating effect of MD (Hayes, 2013). Third, the PROCESS macro (Model 59) was applied to examine the moderating effect of empathy on the direct and indirect links between CU traits and cyberbullying perpetration. The bootstrap confidence intervals (CIs) determine whether the effects in Model 4 and Model 59 are significant based on 5000 random samples (Hayes, 2013). An effect is regarded as significant if the CIs do not include zero. All study variables were standardized in Model 4 and Model 59 before data analyses.

Table 1
Means, standard deviations, and correlations of the main study variables.

	M	SD	1	2	3	4
1. CU traits	1.91	0.53	1			
2. MD	1.84	0.68	0.54**	1		
3. CBP	1.24	0.33	0.48**	0.65**	1	
4. Empathy	3.56	0.55	-0.61**	-0.49**	-0.46**	1

Note: $N = 650$. CU = Callous-Unemotional. MD = Moral Disengagement. CBP = Cyberbullying Perpetration.
** $p < 0.01$.

3. Result

3.1. Preliminary analyses

Table 1 shows means, SDs, and Pearson correlations for the study variables. As the results showed, CU traits were positively correlated with MD and cyberbullying perpetration, and negatively correlated with empathy. MD was positively correlated with cyberbullying perpetration and negatively correlated with empathy. Cyberbullying perpetration was negatively correlated with empathy.

3.2. Testing for mediation effect

In Hypothesis 1, we assumed that MD would mediate the relationship between CU traits and cyberbullying perpetration. This hypothesis was tested with Model 4 of the PROCESS macro (Hayes, 2013). As Table 2 shows, CU traits was positively associated with MD ($\beta = 0.51, t = 15.53, p < 0.001$), which in turn was positively related to cyberbullying perpetration ($\beta = 0.53, t = 15.17, p < 0.001$). The positive direct association between CU traits and cyberbullying perpetration remain significant ($\beta = 0.18, t = 5.07, p < 0.001$). Therefore, Hypothesis 1 was supported. MD partially mediated the relationship between CU traits and cyberbullying perpetration (indirect effect = 0.273, SE = 0.033, 95%CI = [0.212, 0.340]). The mediation effect accounts for 60.92% of the total effect of CU traits on cyberbullying perpetration.

3.3. Moderated mediation effect analysis

To test the moderated mediation model, we used Model 59 of the SPSS macro PROCESS compiled by Hayes (2013). The results of the empathy moderation test are shown in Table 3. As shown in Model 1 of Table 3, the product (interaction term) of CU traits and empathy had a significant predictive effect on MD ($\beta = -0.11, t = -5.20, p < 0.001$). Following the previous study (Zhao, Li, Li & Yu, 2019), we plotted predicted MD against CU traits, separately for low and high

Table 2
Testing the mediation effect of CU traits on Cyberbullying perpetration.

Predictors	Model 1 (CBP)		Model 2 (MD)		Model 3 (CBP)	
	β	t	β	t	β	t
Gender	0.40	5.54***	0.35	5.16***	0.21	3.31**
CU traits	0.45	13.07***	0.51	15.53***	0.18	5.07***
MD					0.53	15.17***
R^2	0.267		0.322		0.459	
F	117.68***		153.49***		182.91***	

Note. $N = 650$. Each column is a regression model that predicts the criterion at the top of the column. CU = Callous-Unemotional. MD = Moral Disengagement. CBP = Cyberbullying Perpetration. The beta values are standardized coefficients, thus they can be compared to determine the relative strength of different variables in the model. Gender was dummy coded such that 0 = female and 1 = male.
** $p < 0.01$.
*** $p < 0.001$.

Table 3
Testing the moderated mediation effect of CU traits on cyberbullying perpetration.

Predictors	Model 1 (MD)		Model 2 (CBP)	
	β	t	β	t
Gender	0.28	4.23***	0.17	2.76**
CU traits	0.33	8.29***	0.11	2.92**
Empathy	-0.18	-4.26***	-0.04	-1.08
CU traits \times Empathy	-0.11	-5.20***	-0.04	-1.22
MD			0.43	11.58***
MD \times Empathy			-0.10	-3.91***
R^2	0.383		0.504	
F	99.97***		108.75***	

Note. $N = 650$. Each column is a regression model that predicts the criterion at the top of the column. CU = Callous-Unemotional. MD = Moral Disengagement. CBP = Cyberbullying Perpetration. The beta values are standardized coefficients, thus they can be compared to determine the relative strength of different variables in the model. Gender was dummy coded such that 0 = female and 1 = male.
** $p < 0.01$.
*** $p < 0.001$.

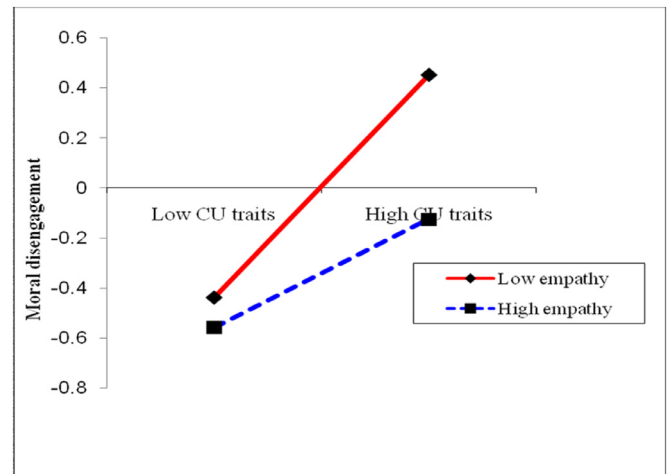


Fig. 2. Interaction between CU traits and empathy on moral disengagement.

levels of empathy (Fig. 2). Simple slope tests showed that for college students with low empathy, CU traits significantly predicted MD, $b_{simple} = 0.44, p < 0.001$. However, for college students with high empathy, CU traits significantly predicted MD but much weaker, $b_{simple} = 0.22, p < 0.001$. Moreover, model 2 of Table 3 shows that the product (interaction term) of MD and empathy had a significant predictive effect on cyberbullying perpetration ($\beta = -0.10, t = -3.91, p < 0.001$). For descriptive purposes, we plotted predicted cyberbullying perpetration against MD, separately for low and high levels of empathy (Fig. 3). Simple slope tests showed that MD significantly predicted cyberbullying perpetration in high-level empathy and low-level empathy, but the predictive function of MD on cyberbullying perpetration was stronger for college students with low levels of empathy ($b_{simple} = 0.53, p < 0.001$) than for college students with high levels of empathy ($b_{simple} = 0.32, p < 0.001$). However, the moderating effect of empathy was not significant in the relationship between CU traits and cyberbullying perpetration.

The bias-corrected percentile bootstrap analyses further showed that the indirect effect of CU traits on cyberbullying perpetration via MD was moderated by empathy. Specially, for college students with high empathy, the indirect relationship between CU traits and cyberbullying perpetration was significant, $b = 0.070, SE = 0.021, 95\% CI = [0.034, 0.122]$. For college students with low empathy, the indirect relationship between CU traits and cyberbullying perpetration

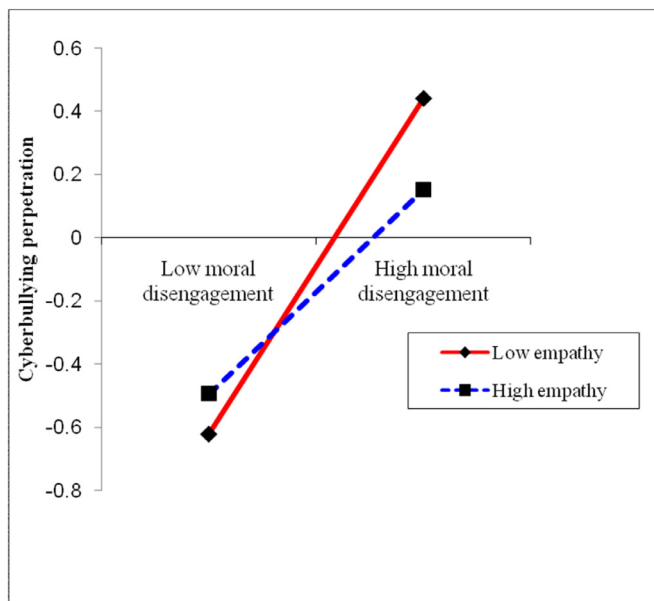


Fig. 3. Interaction between moral disengagement and empathy on cyberbullying perpetration.

use was also stronger, $b = 0.235$, $SE = 0.034$, $95\% CI = [0.173, 0.309]$. In sum, these results indicated that empathy moderated indirect associations between CU traits and cyberbullying perpetration via MD. Therefore, Hypothesis 2 was partially supported.

4. Discussion

Although the effect of CU traits on adolescents' cyberbullying perpetration has accumulated considerable empirical support (Fanti et al., 2012; Orue & Andershed, 2015; Orue & Calvete, 2019; Wright et al., 2019), the underlying mediation and moderation mechanisms are less clear. Thus, we formulated a moderated mediation model to test how CU traits work and whether all individuals are equally influenced by CU traits. Our findings indicated that the CU traits were significantly and positively associated with cyberbullying perpetration among Chinese college students, and MD partially mediated this relationship. Furthermore, empathy moderated the relationship between CU traits and MD as well as MD and cyberbullying perpetration. These two relationships became weaker for college students with higher levels of empathy.

4.1. The mediating role of MD

The present study is the first to demonstrate the mediating role of MD in the association between CU traits and cyberbullying perpetration. That is, CU traits can promote activation of MD mechanisms, which in turn intensifies their cyberbullying perpetration. Therefore, MD is not only an outcome of CU traits, but also a catalyst of cyberbullying perpetration. Furthermore, it is worth noting that MD only partially mediated the relationship between CU traits and cyberbullying perpetration. The remaining direct and positive relationship between CU traits and cyberbullying perpetration may suggest that CU traits may function as a direct factor that can significantly increase college students' cyberbullying perpetration.

In addition to the overall mediation result, each of the separate links in our mediation model is noteworthy. For the first stage of the mediation process (i.e., CU traits \rightarrow MD), the present study found that CU traits significantly facilitated the activation of MD mechanisms. The reason may be as follows. First, individuals with CU traits have been found to exhibit low fearfulness and insensitivity to punishment

(Fanti, Panayiotou, Lazarou, Michael & Georgiou, 2016). These characteristics are thought to interfere with the internalization of moral standards of conduct and ignore the consequences of immoral behaviors (Shulman et al., 2011). Second, individuals with CU traits are insensitive to negative emotions and have difficulty in recognizing them (Dawel, O'Kearney, McKone & Palermo, 2012). This deficiency in the ability to process negative emotions may lead them to easily disregard the apparent distress that they cause victim and do whatever they want to achieve the goal. Third, individuals with CU traits are more likely to feel anger than other emotions (Hawes et al., 2014), which exacerbates the activation of MD (X. Wang et al., 2017).

For the second stage of our mediation model (i.e., MD \rightarrow cyberbullying perpetration), the present study found that MD was associated with more cyberbullying perpetration. According to Bandura's MD theory (Bandura et al., 1996), the activation of MD will lead to the failure of the individual's moral self-regulation function and cognitively reconstruct cyberbullying perpetration so as to make it appear less harmful or not harmful at all to others. This in turn would alleviate college students' guilt and self-blame caused by cyberbullying perpetration and prompt the occurrence of cyberbullying perpetration. Moreover, there are two reasons why MD is closely related to college students' cyberbullying perpetration. One reason is that early experiences of cognitive reconstruction of immoral behavior will be embedded in the individual's normative behavior and may even lead individuals to rationalize their immoral behavior in a similar manner in the future (Moore, 2008). Thus, college students can be more proficient and efficient in activating MD and perpetrate cyberbullying than adolescents. Another reason is that due to the lack of effective moral clues and the restraints of moral rules in online communication, the mechanism of moral self-discipline of individuals can easily fail, which in turn accelerates the activation of MD and the occurrence of cyberbullying perpetration.

4.2. The moderating role of empathy

Our results also showed that empathy moderated the relationship between CU traits and MD as well as MD and cyberbullying perpetration. Both these patterns are consistent with the risk-buffering model (Masten, 2001) and suggest the adverse effect of CU traits on MD as well as MD on cyberbullying perpetration is weaker for college students with high than low empathy. That is, empathy is a protective factor that buffers the adverse impact of CU traits on MD as well as MD on cyberbullying perpetration. Two possible explanations exist for these findings. Firstly, individual with CU traits are more like to experience anger than other emotions (Hawes et al., 2014), but empathy enables individual to understand the emotions of others and consider issues from the perspective of others, thereby alleviating individuals' anger (Roberts, Strayer & Denham, 2014). Thus, empathy, as a buffer to anger, may protect college students from the potential negative effects of CU traits. Although Antoniadou and colleagues (2019) have attempted to investigate the moderating role of empathy in the association between CU traits and online disinhibition, but have not been successful (Antoniadou, Kokkinos & Markos, 2019). The present study to our knowledge is the first to confirm that empathy as a moderator decreases the adverse effect of CU traits on MD. Therefore, our results fill this gap in understanding the importance of empathy in attenuating the negative effects of CU traits.

Second, individuals with high empathy will have more prosocial behavior (Pavey, Greitemeyer, & Sparks, 2012) and be more motivated to act according to their moral standards and feel self-censure for violating moral standards. Accordingly, the more self-condemnation and guilt individuals feel for cyberbullying perpetration, the less likely they are to initiate MD to avoid self-condemn. Therefore, high empathy decreases the connection between MD and cyberbullying perpetration. This finding is also consistent with the results of previous study. Bussey and colleagues (2015) showed that empathy moderated the relationship

between MD and aggressive behavior. That is, high empathy reduces the adverse effect of MD on aggressive behavior. These findings indicate that MD works in some cases and not in others.

Furthermore, it is noteworthy that the relationship between CU traits and MD as well as MD and cyberbullying perpetration was still significant at high-level of empathy. Those results do not deny the possible beneficial impacts of empathy on high-risk college students, but implies that it may not be enough to defend college students from negative outcomes in the face of high-levels of CU traits and MD.

Contrary to our expectations, the relationship between CU traits and cyberbullying perpetration was not moderated by empathy. This finding suggests that high CU traits are a salient risk factor for cyberbullying perpetration among college students, and empathy does not serve as a buffer against the adverse impact of high CU traits. There is one possible explanation. That is, online interpersonal interaction is “emotionally colder” and it is difficult to vicariously experience the emotions of victims. For instance, compared to face cried cybervictims in reality, individuals experience less empathy when cybervictims cry in front of computers (X. Wang et al., 2017; Zych et al., 2019).

4.3. Limitations and future directions

Several limitations need to be considered when interpreting the findings. First, our cross-sectional data limit causal inferences. Future research should use longitudinal designs to test our moderated mediation model. Second, all variables were assessed via self-report measures, which might affect the validity of the present study. Third, although the current study believes that expression suppression may increase cyberbullying perpetration among Chinese college students, expression suppression may also have a positive effect in collectivist cultures. For example, expression suppression is an appropriate way to maintain interpersonal harmony in collectivist cultures (Wei, Su, Carrera, Lin & Yi, 2013). Thus, the generalizability of our findings should be further verified with samples from other culture countries. Fourth, cyberbullying perpetration is the result of a dynamic interplay between MD and empathy. The present study test the moderating role of empathy in the relationship MD and cyberbullying perpetration. Previous studies, however, showed that MD mediate the relationship between empathy and aggression (Wang, Lei, Yang, Gao & Zhao, 2016), bullying perpetration (Kokkinos & Kipritsi, 2018; Zych & Llorent, 2019), and online celebrity aggression (Ouvrein, De Backer & Vandebosch, 2018). Further research should test the mediating role of MD in the relationship empathy and cyberbullying perpetration.

Despite these limitations, the current study has several theoretical and practical contributions. From a theoretical perspective, this study further extends previous research by confirming the mediating role of MD and the moderating role of empathy. This will contribute to a better understanding of how and when CU traits influence cyberbullying perpetration. From a practical perspective, our study may provide information about how to reduce college students' cyberbullying perpetration in this digital era. For example, we should let students more aware of MD mechanisms and teach them to oppose and reject MD mechanisms not only in real life but also in cyberspace. College students may also reduce their cyberbullying perpetration by increasing empathy in cyberspace (Zych et al., 2019).

5. Conclusion

In summary, although further replication and extension are needed, this study is an important step in unpacking how CU traits relate to cyberbullying perpetration of Chinese college students. It shows that MD serves as one potential mechanism by which CU traits are associated with more cyberbullying perpetration. The focus on MD brings additional nuances in linking CU traits to cyberbullying perpetration of college students. Moreover, the relationship between CU traits and MD as well as MD and cyberbullying perpetration is moderated by empathy,

and these two relationships appear to be weaker for college students with high empathy than for those with low empathy.

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