



Childhood psychological maltreatment and moral disengagement: A moderated mediation model of callous-unemotional traits and empathy

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ABSTRACT

Although childhood psychological maltreatment has been shown to play an important role in moral disengagement, little is known about the mediating and moderating mechanisms underlying this relationship. This study examined whether callous-unemotional (CU) traits mediated the relationship between childhood psychological maltreatment and moral disengagement, and whether this mediating process was moderated by empathy. Eight hundred and thirty-nine Chinese college students completed the measures of childhood psychological maltreatment, CU traits, moral disengagement, and empathy. The results indicated that childhood psychological maltreatment was significantly and positively associated with moral disengagement and this relationship was partially mediated by CU traits. Empathy further moderated the relationship between childhood psychological maltreatment and CU traits as well as childhood psychological maltreatment and moral disengagement. Specifically, the relationship between childhood psychological maltreatment and CU traits was significant for college students with low empathy, while it became non-significant for those with high empathy. The relationship between childhood psychological maltreatment and moral disengagement became weaker for high empathy among college students.

1. Introduction

Childhood maltreatment is a worldwide public health problem with adverse effects on the physiological and psychological development of individuals (Carlson, Oshri, & Kwon, 2015; Hodgdon, 2009; Wang et al., 2017b). It is also a widespread and serious problem among college students in China, due to the fact that the pooled prevalence of childhood maltreatment reported by Chinese college students was 64.7% (Fu et al., 2018). Studies that have considered types of maltreatment have typically focused on physical and sexual abuse, while psychological maltreatment has received scant attention (Feiring & Zielinski, 2011; Fu et al., 2018; Miller-Perrin, Perrin, & Kocur, 2009). However, psychological maltreatment is a central issue in all forms of child maltreatment experiences (Arslan, 2017; Jellen, Mccarroll, & Thayer, 2001; Miller-Perrin & Perrin, 2007). Miller-Perrin and colleagues further find that the effect of psychological maltreatment on college students' psychological outcomes (e.g., anxiety, depression, and hostility) is more important than physical abuse (Miller-Perrin et al.,

2009). A meta-analysis indicates that psychological maltreatment is 36.7% reported by Chinese college students (Fu et al., 2018).

Childhood psychological maltreatment (henceforth CPM), also known as emotional maltreatment or psychological aggression, is a repeated pattern of behaviors that conveys to children under the age of 18 that they are worthless, unwanted, unloved, only of value in meeting the needs of others that cause lasting damage to their cognitive, emotional and behavioral development (Arslan, 2017; Deng, Pan, Tang, Yuan, & Xiao, 2007; Miller-Perrin & Perrin, 2007; Miller-Perrin et al., 2009; Paul & Eckenrode, 2015). Some empirical studies have supported the idea that CPM is significantly and positively correlated with moral disengagement (henceforth MD) (Jin, Lu, Zhang, Fan, & Li, 2017; Sun, Du, Niu, Li, & Hu, 2017). That is, youths who experience CPM are more likely than non-maltreated youths to activate MD. It is noteworthy, however, that previous studies have focused primarily on the direct relationship between CPM and MD (Jin et al., 2017; Sun et al., 2017). The mediating and moderating mechanism underlying this relationship remain largely unknown (Wang, Yang et al., 2017).

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Therefore, the aims of the present study were to replicate the relationship between CPM and MD and to extend previous literature by utilizing a sample of college students to examine the mediating effect of callous-unemotional traits and the moderating effect of empathy.

1.1. CPM and MD

Moral disengagement (MD) is defined as a cognitive mechanisms (e.g., moral justification, euphemistic labeling, dehumanization, and attribution of blame), which permit individuals to perpetrate immoral behaviors without apparent guilt or self-censure (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). A history of CPM is more likely to activate MD (Jin et al., 2017; Sun et al., 2017). The effect of CPM on MD can be explained by cognitive social learning theory. According to this theory, individuals learn to regard scolding or derogation as a reasonable way to deal with differences by observing their parental behavior (Hodgdon, 2009; Wang, Yang et al., 2017; Wang, Yang, Wang, & Lei, 2019). For example, parents often claim that they scold or derogate their children because they simply want to help children correct mistakes. In other words, parents may provide children with opportunity to learn that one could use seemingly reasonable excuses to scold or degrade another. In addition, it is noteworthy that the relationship between CPM and MD may be more obvious for Chinese college students, due to the fact that Chinese societies and even the children themselves accept the psychological maltreatment behaviors of parents when parents try to teach their children (Sng et al., 2018; Wang, Yang et al., 2017, 2019).

1.2. Callous-unemotional traits as a mediator

Callous-unemotional (henceforth CU) traits characterize youths who lack guilt and remorse, have the shallow affect, and are unconcerned about the negative consequences of their behaviors (Frick, Ray, Thornton, & Kahn, 2014). These traits have always been linked to aggressive behaviors (Frick et al., 2014). The general aggression model (GAM; Anderson & Bushman, 2002) proposes that personal traits (e.g., CU traits) and situational factors (e.g., psychological maltreating families) can affect the individuals' internal state (i.e., cognitions about aggression and MD), which influence decision-making processes and ultimately lead to aggression.

Further, the adaptive calibration model (ACM; Del Giudice, Ellis, & Shirtcliff, 2011) believes that CU traits emerge as coping strategies aimed at adapting to stressful environments. Individuals living in psychological maltreating families are under tremendous pressure, thus those individuals are often accustomed to using CU traits to protecting them from child maltreatment. It is important to note that based on the moral model of criminal lifestyle development (Walters, 2018a), CU traits are positively associated with proactive criminal thinking (e.g., MD), thereby accelerating delinquent behavior. Using the GAM, ACM, and the moral model of criminal lifestyle development as a theoretical standpoint, we proposed that CU traits might mediate the relationship between CPM and MD.

Consistent with this theoretical framework, numerous cross-sectional studies have shown that childhood maltreatment is significantly and positively associated with CU traits (Bisby, Kimonis, & Goulter, 2017; Carlson et al., 2015; Kimonis, Cross, Howard, & Donoghue, 2013; Kimonis, Fanti, Isoma and Donoghue, 2013; Waller, Gardner, & Hyde, 2013). Furthermore, the results of two longitudinal studies can shed light on the stability of this relationship (Docherty, Kubik, Herrera, & Boxer, 2018; Walters, 2018b). Specifically, the initial levels of childhood maltreatment can significantly and positively predict the development of CU traits after 18 months, but the initial levels of CU traits could not significantly predict the development of childhood maltreatment after 18 months (Walters, 2018b). Another longitudinal study shows experiencing childhood maltreatment significantly increases the risk of lacking guilt at age 14 (Docherty et al., 2018).

Similarly, there is accumulating evidence to support CU traits

predicting MD. A clinical study has shown that CU traits are significantly associated with MD among adolescents with disruptive behavior disorders (Paciello, Masi, Clemente, Milone, & Muratori, 2017). Furthermore, many studies also indicate that CU traits can significantly and positively predict MD in adolescent offenders (Shulman, Cauffman, Piquero, & Fagan, 2011; Walters, 2018a) and adolescent students (Kokkinos, Voulgaridou, & Markos, 2016). Most importantly, results from the longitudinal study show that initial CU traits significantly predict adolescents' MD after one year (Muratori et al., 2017). Furthermore, two studies roughly support our argument by showing that CU traits mediate the relationship between childhood maltreatment and risk behaviors (Carlson et al., 2015; McDonald et al., 2017). Therefore, we proposed that CU traits would mediate the relationship between CPM and MD. To our knowledge, no research to date has examined this mediating effect.

1.3. Empathy as a moderator

Although CPM may be significantly associated with MD through the mediating role of CU traits, not all individuals who are exposed to psychological maltreatment homogeneously experience increased levels of CU traits and show more MD. Thus, it is important to explore those factors that may diminish (i.e., moderate) the strength of the association among CPM, CU traits, and MD. The ecological theory proposes that individual development is a function of the interaction between individual and environment, and individuals in the same environment will have different development due to different individual characteristics (Bronfenbrenner & Morris, 2006). Inspired by this theory, we examined whether the relationship between CPM and CU traits as well as CPM and MD 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). This is especially important for the combination of empathy and MD, as research recognized that MD is not a stable characteristic, but fluctuates based on psychological traits, such as empathy (Bandura, 2002). Empirical studies have supported this view by showing that empathy negatively predicts to MD. Some cross-sectional studies have shown that individuals with high empathy may be lower levels of MD (Detert, Treviño, & Sweitzer, 2008; Paciello, Fida, Cerniglia, Tramontano, & Cole, 2013). Most importantly, one longitudinal study shows that lower empathy at age 12 predicts greater MD at age 15 (Hyde, Shaw, & Moilanen, 2010). Furthermore, empirical studies have shown that empathy is more likely to negatively associate with CU traits (McLaren, Vanwoerden, & Sharp, 2019; Muñoz, Qualter, & Padgett, 2011).

The risk-buffering hypothesis proposes that a protective factor can attenuate the relationship between environmental risk factors and adverse outcomes (Hollister-Wagner, Foshee, & Jackson, 2001). According to this hypothesis, the relationship between CPM and CU traits as well as CPM and MD may be diminished for college students with high levels of empathy. The reason may be that individuals with high empathy are more likely to vicariously experience others feeling and care about their needs even if they have experienced CPM (Detert et al., 2008). As a result, high empathy individuals should be less likely to experience increased levels of CU traits and activate MD, and inhibit the promoting effect of CPM on CU traits as well as CPM on MD. To our knowledge, however, no previous studies have examined whether empathy is a protective factor that buffers the adverse effect of CPM on CU traits as well as CPM on MD.

1.4. The present study

Taken together, the aims of the current study were twofold. First, the current study tested whether CU traits would mediate the relationship between CPM and MD. Second, we tested whether empathy would moderate the association between CPM and CU traits as well as CPM and MD (Fig. 1). Based on the literature review, we proposed the following hypotheses:

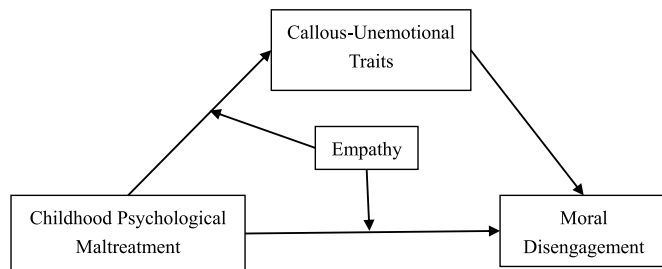


Fig. 1. The proposed theoretical model.

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

Hypothesis 2. Empathy would moderate the association between CPM and CU traits as well as CPM and MD.

2. Method

2.1. Participants

Eight hundred and thirty-nine college students recruited from five universities in Guangdong Province of China. The sample was 69.7% females, and 78.7% had one or more siblings. The average age was 19.96 (SD = 1.36), ranging from 17 to 24.

2.2. Measures

2.2.1. Childhood psychological maltreatment

Childhood Psychological Maltreatment Scale developed by Deng et al. (2007) is a 14-item questionnaire. This scale was developed for adolescents in the Chinese population, and its psychometric properties were also examined in the Chinese adolescent population (Deng et al., 2007; Pan, Deng, Guan, & Luo, 2010). Many previous studies (e.g., Jin et al., 2017; Sun et al., 2017) have used this scale, and it showed good reliability and validity in Chinese samples. This scale includes three dimensions: threat (4 item, e.g., “Parents threatened me with words such as: lock you up; kick you out; forbid you to eat; etc.”), derogation (4 item, e.g., “Parents list my shortcomings in front of others”), and intervention (6 item, e.g., “Parents peek at my diary”). Each item is scored from 0 (*never*) to 4 (*always*). Responses to all items were averaged, with higher scores representing higher levels of CPM. In this research, its Cronbach's α was 0.91.

2.2.2. Callous-unemotional traits

CU traits were measured using the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004), a 24 items self-report questionnaire. It was adapted for the Chinese context by Wang, Gao et al. (2017). This scale includes three dimensions: callousness (e.g., “I do not care if I get into trouble”), uncaring (e.g., “I always try my best”), and unemotional (e.g., “I hide my feelings from others”). Each item is scored from 1 (*not at all true*) to 4 (*definitely true*). Responses to all items were averaged, with higher scores indicating higher levels of CU traits. Some previous studies (e.g., Liu et al., 2016; Wang, Deng, Lai, & Wang, 2019) have used this scale, and it showed good reliability and validity in Chinese samples. In this research, its Cronbach's α was 0.76.

2.2.3. Moral disengagement

The Civic Moral Disengagement Scale developed by Caprara, Fida, Vecchione, Tramontano, and Barbaranelli (2009) was used. The Chinese version of this scale has demonstrated good reliability and validity in Chinese samples (Wang et al., 2018; Wang, Yang, & Gao, 2013). This scale consists of 32 items (“Some people are real disasters”). Items are

rated from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses to all items were averaged, with higher scores indicating higher levels of MD. In this research, its Cronbach's α was 0.92.

2.2.4. Empathy

Empathy was measured using the Basic Empathy Scale (Jolliffe & Farrington, 2006), a 20 items self-report questionnaire. It was adapted for the Chinese context by Li, Lv, Liu, and Zhong (2011). This scale includes two dimensions: cognitive empathy (e.g., “When someone is feeling ‘down’ I can usually understand how they feel”) and affective empathy (e.g., “After being with a friend who is sad about something, I usually feel sad”). Each item is scored from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses to all items were averaged, with higher scores indicating higher levels of empathy. Some previous studies (e.g., Li et al., 2011; Liu et al., 2016) have used this scale, and it showed good reliability and validity in Chinese samples. In this research, its Cronbach's α was 0.84.

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. Second, mean imputation was used to handle missing data because of less than 1% of missing data for all variables (Little & Rubin, 2002). Third, descriptive statistics, Pearson correlations and gender difference were calculated among the study variables. Fourth, the PROCESS macro for SPSS (Model 4) was applied to examine the mediating effect of CU traits (Hayes, 2013). Fifth, the PROCESS macro (Model 8) was applied to examine the moderating effect of empathy in the relationship between CPM and CU traits as well as CPM and MD. The bootstrap confidence intervals (CIs) determine whether the effects in Model 4 and Model 8 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 8 before data analyses.

3. Result

3.1. Preliminary analyses

The means, SD, skewness, kurtosis and Pearson correlations for the study variables are reported in Table 1. The skewness and kurtosis values showed that all variables were normally distributed (i.e., skewness < |2.0| and kurtosis < |7.0|; Hancock & Mueller, 2010). As expected, CPM was positively correlated with CU traits and MD. CU traits were positively correlated with MD and negatively correlated with empathy. MD was negatively correlated with empathy.

Preliminary analyses (*t* tests) indicated that girls, compared to boys, showed significantly less CU traits $t = 4.43, p < 0.001$ and MD, $t = 5.46, p < 0.001$. Furthermore, boys showed significantly less empathy than girls, $t = -7.55, p < 0.001$. Finally, girls and boys did not differ on CPM, $t = -1.09, p = 0.28$.

3.2. Testing for mediation effect

In Hypothesis 1, this study assumed that CU traits would mediate the relationship between CPM and MD. This hypothesis was tested with Model 4 of the PROCESS macro (Hayes, 2013), which requires the three

Table 1
Descriptive statistics and correlations among variables of interest.

	M	SD	Skewness	Kurtosis	1	2	3	4
1. CPM	0.93	0.64	0.93	1.11	1			
2. CU traits	2.00	0.25	-0.01	0.32	0.18**	1		
3. MD	1.74	0.47	0.54	0.79	0.31**	0.34**	1	
4. Empathy	3.69	0.42	-0.29	0.15	-0.06	-0.49**	-0.26**	1

Note: N = 839. CPM = Childhood Psychological Maltreatment. CU = Callous-Unemotional. MD = Moral Disengagement.

** p < 0.01.

Table 2
Testing the mediation effect of childhood psychological maltreatment on MD.

Predictors	Model 1 (MD)		Model 2 (CU)		Model 3 (MD)	
	β	t	β	t	β	t
Gender	-0.45	-6.36***	-0.33	-4.54***	-0.36	-5.23***
Age	-0.07	-2.22*	0.04	1.09	-0.08	-2.63**
CPM	0.32	9.85***	0.18	5.37***	0.27	8.53***
CU traits					0.27	8.51***
R ²	0.137		0.058		0.206	
F	44.19***		17.12***		54.08***	

Note: Each column is a regression model that predicts the criterion at the top of the column. CPM = Childhood Psychological Maltreatment. CU = Callous-Unemotional. MD = Moral Disengagement. 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 = male and 1 = female.

* p < 0.05.

** p < 0.01.

*** p < 0.001.

steps: (a) whether there is a significant association between CPM and MD (see Model 1); (b) whether there is a significant association between CPM and CU traits (see Model 2); (c) whether there is a significant association between CU traits and MD while controlling for CPM (see Model 3). Please see the Table 2 in detail. After controlling for gender and age, the results first revealed that the CPM positively predicted MD, $\beta = 0.32, t = 9.85, p < 0.001$ (Model 1). Second, CPM was positively associated with CU traits, $\beta = 0.18, t = 5.37, p < 0.001$ (Model 2). Third, CU traits was positively related to MD, $\beta = 0.27, t = 8.51, p < 0.001$, and the positive direct association between CPM and MD remain significant, $\beta = 0.27, t = 8.53, p < 0.001$ (Model 3). Therefore, CU traits partially mediated the relationship between CPM and MD (indirect effect = 0.05, SE = 0.01, 95% CI = [0.03, 0.07]). The mediation effect accounts for 15.42% of the total effect of CPM on MD. Consequently, Hypothesis 1 was supported. Since boys only account for 30.3% of the total number of participants, we also test mediation model with boys. The result showed that CU traits partially mediated the relationship between CPM and MD for boys (indirect effect = 0.09, SE = 0.03, 95% CI = [0.04, 0.16]). The mediation effect accounts for 19.6% of the total effect of CPM on MD for boys.

3.3. Moderated mediation effect analysis

To test the moderated mediation model, we used Model 8 of the SPSS macro PROCESS compiled by Hayes (2013). Specifically, we estimated the moderating effect of empathy on the relationship between CPM and CU traits in model 1, and then estimated the moderating effect of empathy on the relationship between CPM and MD in Model 2. Please see the Table 3 in detail. As shown in Model 1 of Table 3, the product (interaction term) of CPM and empathy had a significant predictive effect on CU traits ($\beta = -0.07, t = -2.50, p = 0.013$). For descriptive purposes, we plotted predicted CU traits against CPM, separately for low and high levels of empathy (Fig. 2). Simple slope tests showed that for college students with low empathy, CPM significantly

Table 3
Testing the moderated mediation effects of childhood psychological maltreatment on MD.

Predictors	Model 1 (CU)		Model 2 (MD)	
	β	t	β	t
Gender	-0.09	-1.30	-0.33	-4.72***
Age	0.01	0.36	-0.08	-2.67**
CPM	0.15	4.85***	0.26	8.37***
CU traits			0.21	5.87***
Empathy	-0.47	-15.18***	-0.11	-3.16**
CPM × Empathy	-0.07	-2.50*	-0.12	-3.98***
R ²	0.267		0.229	
F	60.59***		41.21***	

Note: Each column is a regression model that predicts the criterion at the top of the column. CPM = Childhood Psychological Maltreatment. CU = Callous-Unemotional. MD = Moral Disengagement. 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 = male and 1 = female.

* p < 0.05.

** p < 0.01.

*** p < 0.001.

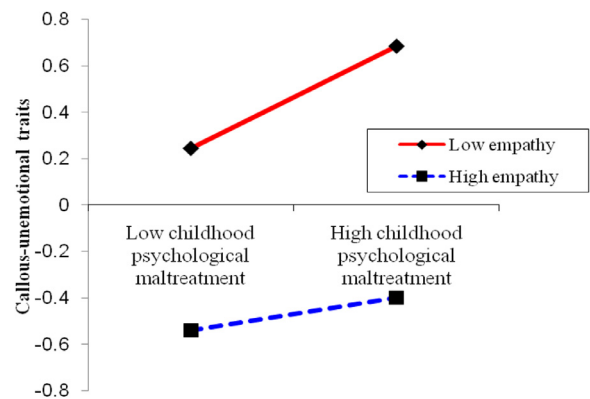


Fig. 2. Interaction between childhood psychological maltreatment and empathy on callous-unemotional traits.

predicted CU traits, $b_{simple} = 0.22, p < 0.001$. However, for college students with high empathy, the relationship between CPM and CU traits became non-significant, $b_{simple} = 0.07, p = 0.093$. Moreover, model 2 of Table 3 shows that the product of CPM and empathy had a significant predictive effect on MD ($\beta = -0.12, t = -3.98, p < 0.001$). For descriptive purpose, we plotted predicted MD against CPM, separately for low and high levels of empathy (Fig. 3). Simple slope tests showed that CPM significantly predicted MD in high-level empathy and low-level empathy, but the predictive function of CPM on MD was stronger for college students with low levels of empathy ($b_{simple} = 0.38, p < 0.001$) than for college students with high levels of empathy ($b_{simple} = 0.14, p = 0.002$). We also test moderated mediation model with boys. The result showed that the product of CPM and empathy had a significant predictive effect on CU traits for boys

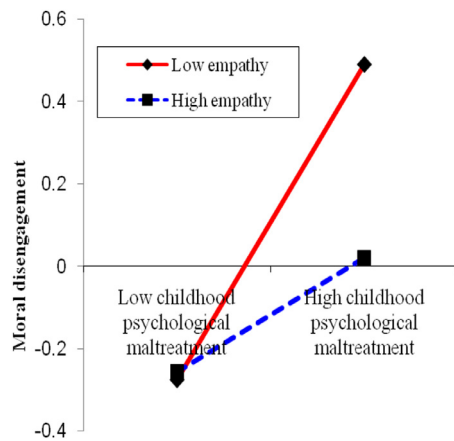


Fig. 3. Interaction between childhood psychological maltreatment and empathy on moral disengagement.

($\beta = -0.22$, $t = -3.36$, $p < 0.001$), and the product of CPM and empathy had a significant predictive effect on MD for boys ($\beta = -0.17$, $t = -2.53$, $p = 0.012$).

The bias-corrected percentile bootstrap analyses further showed that the indirect effect of CPM on MD via CU traits was moderated by empathy. Specially, for college students with low empathy, the indirect relationship between CPM and MD use was significant, $\beta = 0.05$, $SE = 0.01$, 95% CI = [0.02, 0.08]. For college students with high empathy, the indirect relationship between CPM and MD was not significant, $\beta = 0.02$, $SE = 0.01$, 95%CI = [-0.002, 0.036]. In sum, these results indicated that empathy moderated indirect associations between CPM and MD via CU traits.

4. Discussion

Individuals who experience high levels of CPM are more likely to activate MD (Jin et al., 2017; Sun et al., 2017). However, questions regarding the mediating and moderating mechanisms underlying this relationship remain largely unanswered. Our findings indicated that the adverse effect of CPM on MD was partially explained by CU traits. Furthermore, the relationship between CPM and CU traits as well as CPM and MD were moderated by empathy. The following sections discuss each of the research hypotheses in light of this mediation and moderation model of CPM and MD.

4.1. The mediating role of CU traits

The present study is the first to document the mediating effect of CU traits in the association between CPM and MD. That is, CPM may amplify CU traits, which in turn promote activation of MD. Therefore, CU traits were not only an outcome of CPM, but also a catalyst of MD. Furthermore, it is worth noting that CU traits only partially mediated the relationship between CPM and MD. The remaining direct and positive relationship between CPM and MD may suggest that CPM may function as a direct factor that increases college students' MD.

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., CPM \rightarrow CU traits), our findings support the premise that CPM is associated with more CU traits. This finding is consistent with the adaptive calibration model (Del Giudice et al., 2011). That is, the development of CU traits is considered a functional adaptation to child maltreatment. First, a child experiencing psychologically maltreatment may not respond to maltreatment, which will help child avoid acknowledging maltreatment and thus to avert the conscious awareness of distressing emotions and maintain the relationship with the abuser. This interpretation is supported by work finding that the

link between trauma and callousness was mediated by emotional numbing (Kerig, Bennett, Thompson, & Becker, 2012). Second, two studies indicate that a child who is maltreated may suppress their emotional reaction to achieve increased readiness to attack or flee (Carlson et al., 2015; Del Giudice et al., 2011).

For the second stage of our mediation model (i.e., CU traits \rightarrow MD), the present study found that CU traits significantly accelerated the activation of MD. The reason may be as follows. First, it has been found that individuals with CU traits exhibit fearlessness and insensitivity to punishment (Pardini, Lochman, & Frick, 2003). These characteristics will interfere with the internalization of moral standards of action and ignore the consequences of immoral behaviors (Shulman et al., 2011). Second, individuals with CU traits are not sensitive to negative emotions and have difficulty in identifying them (Frick, Cornell, Barry, Bodin, & Dane, 2003; Wang et al., 2019). This deficiency in processing negative emotions may lead them to easily ignore the harm done to victims. Third, adults with CU traits are not disgusted by immoral behaviors, but have a sense of expectation and even feel happy and stimulated, which helps them activate MD (Cima, Tonnaer, & Hauser, 2010).

4.2. The moderating role of empathy

Our results also showed that empathy moderated the relationship between CPM and CU traits as well as CPM and MD. Specially, the relationship between CPM and CU traits was significant for college students with low empathy, while it became non-significant for those with high empathy. The relationship between CPM and MD became weaker for high empathy among college students. These findings suggest that high empathy can restrain experience increased levels of CU traits and the activation of MD even if they have experienced CPM. College students with high empathy can effectively understand the emotion of others, so it may be unlikely to experience high CU traits. Moreover, college students with high empathy are more likely to understand the harmful consequences of activating MD (Detert et al., 2008; Hyde et al., 2010; Paciello et al., 2013) and therefore are less likely to activating MD. Overall, these findings confirm the significance of examining the risk-buffering hypothesis (Hollister-Wagner et al., 2001) in understanding the impact of CPM on CU traits as well as CPM on MD.

4.3. Limitations and future directions

Several limitations of the current study should be addressed. First, due to the cross-sectional and correlation nature of the study design, it is not possible to infer causality. However, when the moderated mediation models are based on theoretical foundations and supported by previous empirical research, cross-sectional moderated mediation can provide valuable information about the relationship of variables. Future studies should use longitudinal data to better examine our moderated mediation model. Second, all variables were assessed via self-report measures. Although all the questionnaires have been validated in previous research, future studies would benefit from using multiple informants (e.g., parents, teachers, and peers) to collect data. Third, though we focused on the influence of environment risk factors (i.e., CPM) on CU traits, we were not able to exclude the confounding effect of gene in the intergenerational transmission of CU traits. Two meta-analysis indicated that CU traits are significantly influenced by genetics (Dhanani et al., 2018; Moore, Blair, Hettema, & Roberson-Nay, 2019). Hyde and colleagues further indicated that CU traits develop through a complex interplay between genes and environment (Hyde et al., 2016). Although environment factors (e.g., parenting) have a unique role of in influencing the development of CU traits, even after controlling the genetic factor with monozygotic twin (Waller, Hyde, Klump, & Burt, 2018), future studies should pay attention to the combined contributions of environment and gene to CU traits.

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 CU traits and the moderating role of empathy. This will contribute to a better understanding of how and when CPM influences MD. From a practical perspective, our findings may help to design effective psychological interventions aimed at improving empathy and family relationship (e.g., low levels of family conflict, parental warmth and acceptance fulfill children's needs for love, affection, and belonging) to prevent and reduce college students' MD.

5. Conclusion

In summary, although further replication and extension are needed, this study is an important step in unpacking how CPM relates to MD of college students. It shows that CU traits can serve as one potential mechanism by which CPM is associated with more MD. The focus on CU traits brings additional nuances in linking CPM to MD of college students. Moreover, empathy moderated the relationship between CPM and CU traits as well as CPM and MD. Specially, the adverse impact of CPM on CU traits was significant for college students with low empathy, while it became non-significant for those with high empathy. The adverse impact of CPM on MD appears to be weaker for college students with high empathy than for those with low empathy.

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Supplementary materials

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