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Witnessing Intimate Partner Violence and Cyberbullying Among Chinese Adolescents: The Mediating Effect of Self-Control and Moderating Effect of Parental Psychological Control

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Abstract

Witnessing intimate partner violence (IPV) is associated with adolescents' externalizing behavior problems such as bullying and aggression, but its association with cyberbullying perpetration remains unclear. Given the prevalence of cyberbullying perpetration, this study aims to examine the relationship between witnessing IPV and cyberbullying perpetration, and also to explore whether self-control mediates, and parental psychological control (PPC) moderates the association. 1,670 primary and junior high school students (aged from 10 to 15 years, 53.7% boys) in China participated in the questionnaire survey in May, 2017. The results showed that witnessing IPV positively predicted cyberbullying perpetration significantly when sex and grade were controlled. Self-control partially mediated the relationship between witnessing IPV and cyberbullying perpetration, while PPC moderated the relation between witnessing IPV and cyberbullying perpetration. Specifically, the effect of IPV on cyberbullying perpetration was stronger when PPC was high compared to when PPC was low. Multi-group analysis showed that the effect of witnessing IPV on cyberbullying perpetration was stronger in boys than in girls and the mediation effect of self-control was stronger among junior high school students than among primary schools. The implications for intervention of cyberbullying perpetration are discussed.

Keywords: cyberbullying perpetration; witnessing intimate partner violence; parental psychological control; self-control; adolescents

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Introduction

With the development of information and communication technologies (ICTs), adolescents' use of online platforms for social purposes is increasingly common. According to The 45th statistical report on the development of Internet in China (China Internet Network Information Center, 2020), the number of Internet users in China was 904 million, and users aged 10–19 accounted for 19.3% of all Internet users. Given that adolescents have not yet reached maturity in their physical and mental development, it is easy for them to use the Internet improperly, engaging in practices such as cyberbullying perpetration (Hamm et al., 2015). Researchers have recently begun to pay more attention to this phenomenon. Cyberbullying perpetration is defined as any behavior performed through electronic or digital media by individuals or groups that repeatedly communicate hostile or aggressive messages intended to inflict harm or discomfort on others (Tokunaga, 2010). It involves a systematic abuse of power which occurs through the use of ICTs (Slonje et al., 2013). The incidence of cyberbullying perpetration among Chinese adolescents reported by different researchers ranges from 6% to 35% (Lam et al., 2013; Li et al., 2018). Compared with traditional bullying, cyberbullying perpetration is more destructive and extreme because it can happen anytime and anywhere, and the content of cyberbullying perpetration remains accessible after the event, which brings repeated harm to the victims (Wong et al., 2018). Thus, it is important to investigate cyberbullying perpetration in adolescence.

A large number of research studies have focused on the risk and protective factors involved in cyberbullying perpetration (Bottino et al., 2015; Kowalski et al., 2019; Park et al., 2021; Yudes et al., 2020), including individual factors (i.e., gender, self-esteem, self-control, and dark personality) and environmental factors (i.e., parental supervision, violence exposure, and deviant peer affiliation). Among these factors, family is of specific importance. Previous studies have shown that negative family factors (e.g., parental conflict and marital disharmony) are associated with adolescents' aggressive behaviors (Sturge-Apple et al., 2006), particularly with exposure to intimate partner violence (IPV) (Holmes et al., 2015; Holmes et al., 2017; Weir et al., 2021). IPV is defined as any physical, psychological, or sexual harm committed by a current or former partner or spouse (Centers for Disease Control and Prevention, 2015). For adolescents, one of the major ways to become exposed to IPV is through witnessing it; they frequently witness all aspects of IPV (Poehacker et al., 2020). Previous studies have focused in particular on the relationship between witnessing IPV and traditional bullying or aggressive behaviors (Ballif-Spanvill et al., 2007; Knous-Westfall et al., 2012; Mustanoja et al., 2011). A recent study based on a large sample of children found a significant relationship between IPV exposure and bullying (Chesworth et al., 2019). Although the relation between witnessing IPV and bullying has been increasingly emphasized, few studies have focused on the relation between witnessing IPV and cyberbullying perpetration. Given the prevalence and far-reaching impact of these factors, it is important to illustrate the influence of witnessing IPV on cyberbullying perpetration as well as the boundary conditions for this influence. Therefore, the aim of this study is to explore the relation between witnessing IPV and cyberbullying perpetration as well as potential mediating and moderating mechanism.

Witnessing IPV and Cyberbullying Perpetration

Social cognitive theory (Dodge et al., 1990) provides a theoretical framework for understanding the relationship between exposure to violence and aggression. Frequent exposure to violence may lead individuals to suppose that violence is acceptable and effective. Individuals who are exposed to violence are more likely to choose violence to solve conflicts in their social relationships. Ouztürk et al. (2019) found that the rates of being involved in fights at school were higher in children exposed to domestic violence than in children who were not. A meta-analysis study indicated a significant effect of domestic violence exposure on adolescents' emotional/behavioral problems and academic difficulties (Kitzmann et al., 2003). Witnessing IPV is part of domestic violence exposure (Holden, 2003). A follow-up study of 103 families discovered that witnessing IPV predicted future deviant behaviors such as bullying and aggression (Margolin et al., 2010). However, little evidence was found on the effect of witnessing IPV on cyberbullying perpetration. As a new type of bullying, cyberbullying perpetration is likely to be affected by witnessing IPV. Therefore, we hypothesize that witnessing IPV could positively predict cyberbullying perpetration.

Self-Control as a Mediator

Self-control refers to the ability for an individual to resist temptation and conform to ideals, values, morality, and social expectations (Baumeister et al., 2007). Several studies have shown that low self-control is a risk factor of deviant behaviors (Cho & Lee, 2021; García-Vázquez et al., 2020; Van Lange et al., 2016). Vazsonyi et al. (2012) found a significant and positive correlation between low self-control and cyberbullying perpetration. Individuals with lower self-control are more likely to become victims or perpetrators of traditional bullying, which makes it easier for them to take part in cyberbullying perpetration. Lianos et al. (2017) also pointed out that a low level of self-control was a risk factor of cyberbullying perpetration.

The depletion model of self-control points out that self-control comes from a limited self-regulation system. Individuals use self-control when they experience pressure: the more stressful an experience is, the more self-control is used. This in turn leads to a lack of self-control resources when self-control is needed later, which results in impulsive behavior (Baumeister et al., 2007; Muraven & Baumeister, 2000). Teenagers who often witness IPV need to mobilize their own self-control system to deal with such exposure to violence. Frequent depletion will lead to a lack of resources when individuals need self-control in other events of daily life, resulting in low self-control and eventually deviant behavior. Researchers have highlighted the mediating role of self-control between other family-related variables and problem behaviors. For example, previous empirical studies have indicated the mediating role of self-control in the relationship between ineffective parenting and deviant behaviors (such as crime and aggression; Crosswhite & Kerpelman, 2009; Finkenauer et al., 2005). Recent study has shown that self-control mediated the relation of exposure to domestic violence and adolescents' aggression (Agbaria & Natur, 2018). However, few empirical studies have explored the mediating role of self-control between witnessing IPV and cyberbullying perpetration. Thus, the present study aims at filling the gap in the literature by examining the mediating effect of self-control between witnessing IPV and cyberbullying perpetration. We hypothesize that self-control mediates the association between witnessing IPV and cyberbullying perpetration.

"The Double Whammy Effect": Parental Psychological Control as a Moderator

It is worth noting that "the double whammy effect" (Hughes et al., 1989) is an important topic in studies of exposure to domestic violence. They found that compared to those who only witnessed IPV, children who were physically abused by their parents concurrently showed more internalizing and externalizing problems. A large body of literature have shown that the dual-violence exposure to child abuse and IPV increases the risk of behavioral and emotional problems (Brown et al., 2021; Herrenkohl et al., 2008; Moylan et al., 2010). Those who are doubly exposed to both forms of violence have worsened behavioral and mental outcomes. Previous studies focused on physical abuse but psychological abuse has been ignored in the research on such a dual-violence effect.

Among the research related to problem behavior in adolescence, parenting style has also been a major area of focus. Parental control is the core content of parenting style. Barber et al. (1994) divided parental control into two dimensions: parental behavior control and parental psychological control (PPC). In PPC, parents invade children's inner world, ignore their emotions, restrict their expression, and control them through withdrawal of love and inducing of guilt to make children's thoughts, behaviors, and emotions consistent with their own requirements (Barber, 2002). Blossom et al. (2016) showed that PPC positively predicted adolescents' externalizing problems significantly, such as bullying and aggression and those problems worsened with the increase of PPC (He et al., 2019). Parents who practice psychological control regard their children as an extension of their own development rather than as an independent individual, which makes it difficult for their children to develop a high sense of self-efficacy and identity (Miri & Limor, 2018). It can be said that PPC is a potential harm to children's physical and mental development, which is a kind of psychological abuse.

Based on the phenomenon of "the double whammy effect", adolescents who suffer from parental abuse and witness IPV at the same time will display more problem behaviors, so we would expect PPC to play a moderating role between witnessing IPV and cyberbullying perpetration. PPC might increase the predictive effect of witnessing IPV on problem behaviors. Therefore, we hypothesize that PPC plays a moderating role in the path between witnessing IPV and cyberbullying perpetration.

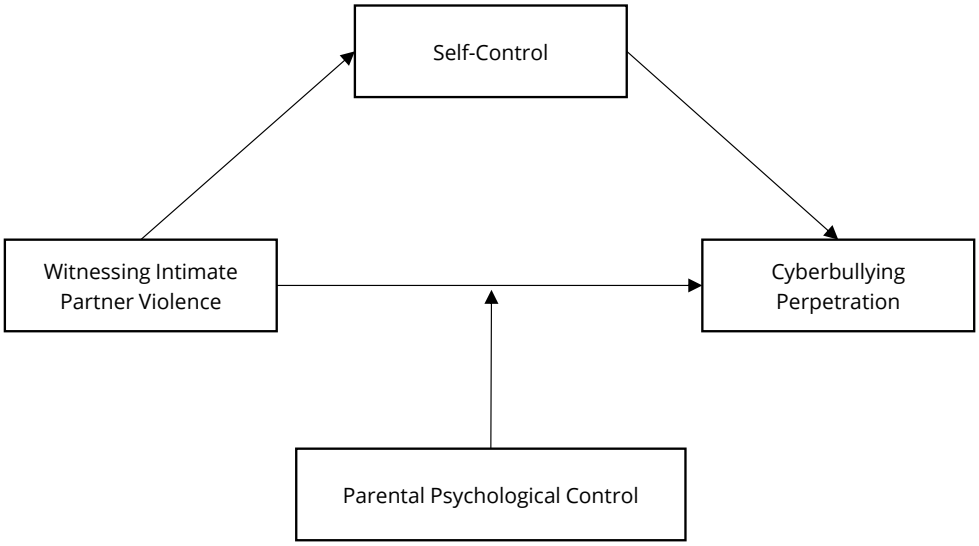
Gender and School Grade Differences

Researchers have confirmed that there is a gender difference in cyberbullying perpetration: boys are more likely to be perpetrators than girls (Barlett & Coyne, 2014; Moreno-Ruiz et al., 2019; P. Wang et al., 2021). However, some studies found that cyberbullying perpetration is an indirect form of bullying and that incidence among girls is significantly higher than among boys (Bergmann & Baier, 2018; Kowalski & Limber, 2007; Rice et al., 2015). Regarding the age difference in cyberbullying perpetration, Festl and Quandt (2014) found in a longitudinal study that cyberbullying perpetration gradually increased with age. With the development of individuals, adolescents gain more online social skills and are more likely to use multiple forms of cyberbullying perpetration. Some researchers also believe that cyberbullying perpetration increases in middle and late adolescence (Moreno-Ruiz et al., 2019). The age and gender differences in cyberbullying perpetration are probably caused by some underlying mechanism differences. This study intends to compare the sex and age grade differences in the model to determine whether there are differences in the mechanism of cyberbullying perpetration among different age and gender groups.

The Present Study

The present study proposes a moderated mediation model based on theoretical and empirical research; see Fig.1. This model tests the effect of PPC and self-control on the relationship between witnessing IPV and cyberbullying perpetration. To achieve the study goals, the direct effect of witnessing IPV on cyberbullying perpetration was first examined. Next, the effect of witnessing IPV on cyberbullying perpetration via self-control was assessed. Then, it was considered whether PPC moderated the relation between witnessing IPV and cyberbullying perpetration. Finally, gender and grade differences in the model were examined. The hypothesized theoretical model can be seen in Figure 1.

Figure 1. *The Hypothesized Theoretical Model.*



Methods

Participants

Stratified randomization was used to select the samples. Participants were from ten schools in different areas of Wenzhou. The types of schools included public schools, private schools, as well as rural and urban schools. All students from grades 4, 5 (primary school) and grades 7, 8 (junior high school) were invited to participate in the survey in May, 2017. In total, 1,765 students took part in this study with 1,670 valid questionnaires completed, giving an effective rate of 94.6%. The sample of the valid questionnaires consisted of 921 (55%) primary school students and 749 (45%) junior high school students. There were 898 (54%) boys and 772 (46%) girls, and their average age was 12.22 years old (*SD* = 1.63).

Measures

Cyberbullying Perpetration

Cyberbullying perpetration was assessed using nine items from the Cyberbullying Perpetration Scale (Wright & Michelle, 2014), which measures cyberbullying perpetration in adolescence (an example item is *tease others in a mean way online or through text messages*). The participants rated all items on a Likert scale ranging from 1 = *never* to 5 = *always*. The average scores were calculated as an indicator of cyberbullying perpetration, with higher scores representing a higher rate of cyberbullying perpetration. The single-factor model of confirmatory factor analysis (CFA) provided a good fit for the data (χ^2/df = 3.23, CFI = .92, TLI = .91, RMSEA = .03, SRMR = .03). In the present study, the scale showed good reliability (Cronbach's α = .88).

Witnessing IPV

We used the Chinese version of the revised Conflict Tactics Scales Questionnaire (CTS2; Straus et al., 1996) to measure witnessing IPV. This scale consists of five dimensions: negotiation, psychological violence, physical violence, forced sex, and injuries. Considering cultural differences, three dimensions were selected: psychological aggression (e.g., *insults your partner*), physical violence (e.g., *pinches your partner's arm or pulls his/her hair*) and injuries (*your partner had sprains, bruises or small wounds due to a fight with you*). After deleting one item that did not match the Chinese cultural background (*threatening your partner with a gun*), the remaining 25 items were used. Each item was responded to on a seven-point scale ranging from 1 = *never* to 7 = *almost every day*. In the scale, participants were asked to answer the frequency of witnessing violence between their father (or stepfather) and mother (or step-mother) (e.g., witnessing their father/mother yelling at his/her partner). The average score of all items was calculated, with higher scores representing a higher frequency of witnessing IPV. CFA was conducted because it was the first time this questionnaire had been used to measure Chinese adolescents witnessing IPV. The three-factor model provided a good fit for the data (χ^2/df = 2.43, CFI = .93, TLI = .91, RMSEA = .058, SRMR = .03). In this study, the Cronbach's α was .82.

Parental Psychological Control (PPC)

Parental psychological control was measured using the Chinese version of the Parental Control Questionnaire (Q. Wang et al., 2007). Adolescents rated 18 items on a five-point scale, including ten items for the guilt induction dimension (e.g., *My parents tell me that I should feel guilty when I do not meet their expectations*), five items for the love withdrawal dimension (e.g., *My parents act cold and unfriendly if I do something they do not like*), and three items for the authority assertion dimension (e.g., *My parents tell me that what they want me to do is the best for me and I should not question it*), ranging from 1 = *not at all true* to 5 = *very true*. Higher scores indicated higher levels of PPC. CFA showed that the three-factor model provided a good fit for the data (χ^2/df = 3.25, CFI = .95, TLI = .92, RMSEA = .06, SRMR = .03). In the present study, the Cronbach's α was .96.

Self-Control

Self-control was measured by using the Chinese version of the self-control questionnaire (Qu & Zou, 2009). After revision, the questionnaire contained 16 items, including three dimensions: impulsive risk-taking (e.g., *I often do things on impulse rather than after careful consideration*), temper (e.g., *When I'm angry, people better stay away from me*), and simplification tendency (e.g., *Sometimes I take risks for fun*). All items were rated on a five-point scale (1 = *strongly disagree* to 5 = *strongly agree*). A higher score represented lower levels of self-control. In the present study, all items were reverse scored, with higher scores indicating a higher level of self-control. CFA showed that the three-factor model provided a good fit for the data (χ^2/df = 2.75, CFI = .90, TLI = .91, RMSEA = .07, SRMR = .04). The Cronbach's α was .76 in this study.

Procedures and Analytic Strategy

This research was approved by the local ethical committee of Wenzhou Medical University (Number 2017048). Prior to the data collection, informed consent was obtained from the students, parents, and teachers. The survey was anonymous and every student had a unique number. Students voluntarily participate in the investigation and

have the right to withdraw at any time. All participants completed the questionnaires in Chinese in 30 minutes under the supervision of trained students majoring in psychology. Before administering the questionnaires, the researchers explained the study requirements and procedures. After testing, the completed questionnaires were collected in the classroom. Analysis of descriptive statistics, reliability analysis and correlation analysis were performed using SPSS 19.0. We used PROCESS for SPSS 19.0 developed by Hayes (2013) to test the moderated mediation model because the variables are all observed. Moreover, PROCESS can further analyze the moderating effect via the Johnson-Neyman method. CFA and multi-group analysis were performed in Mplus 7.0 (Muthén & Muthén, 2012).

Test of Common-Method Biases

In this study, the common-method biases were controlled by anonymous measurement and reverse scoring of some items. CFA was used to test the common-method biases of all self-evaluation items. The results showed that the single-factor model fitting was very poor, χ^2/df = 9.25, CFI = .37, TLI = .35, RMSEA = .09, SRMR = .14, so there were no common-method biases.

Results

Preliminary Analyses

In the present study, 41.6% of adolescents reported that they had been cyberbullied at least once and 66.1% of adolescents had witnessed IPV at least once in the past 6 months. Table 1 provides descriptive statistics of the study variables and a comparison of gender/grade differences. There were significant gender differences in self-control and PPC. Girls' self-control was significantly higher than that of boys (t = 2.19, p = .027, d = 0.11), and the level of PPC reported by boys was significantly higher than that of girls (t = 3.46, p < .001, d = 0.17). There were significant grade differences in witnessing IPV, self-control, and cyberbullying perpetration. Junior high school students reported significantly higher levels of witnessing IPV (t = 3.30, p < .001, d = 0.28) and PPC (t = 5.58, p < .001, d = 0.28) than primary school students. Cyberbullying perpetration of junior school students was significantly higher than that of primary school students (t = 3.60, p < .001, d = 0.17).

Table 1. *Descriptive Statistics of the Study Variables and Gender/Grade Differences.*

	Witnessing IPV		Self-control		PPC		Cyberbullying perpetration	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Male	1.26	0.51	3.66	0.53	2.14	0.83	1.22	0.39
Female	1.25	0.48	3.72	0.50	2.00	0.79	1.18	0.37
t	0.3		2.25		3.46		1.70	
p	.876		.027		< .001		.762	
Primary	1.22	0.51	3.70	0.52	1.98	0.81	1.17	0.36
Junior	1.30	0.46	3.67	0.50	2.20	0.80	1.24	0.40
t	3.30		1.16		5.58		3.60	
p	< .001		.070		< .001		< .001	

Correlation Analyses of Study Variables

Table 2 presents the correlations for all the variables. The main variables were correlated with each other in the expected directions. Witnessing IPV was positively correlated with cyberbullying perpetration significantly and negatively correlated with self-control significantly. Self-control was negatively correlated significantly with cyberbullying perpetration. In addition, PPC was positively correlated with cyberbullying perpetration and positively correlated with witnessing IPV.

Table 2. *Correlation Analysis Among the Study Variables.*

	M ± *SD*	1	2	3	4
1. Witnessing IPV	1.25 ± 0.49	1			
2. Self-control	3.69 ± 0.51	−.23**	1		
3. Parental psychological control	2.08 ± 0.81	.23**	−.12**	1	
4. Cyberbullying perpetration	1.21 ± 0.39	.33**	−.26**	.21**	1

Note. *p < .05, **p < .01, ***p < .001.

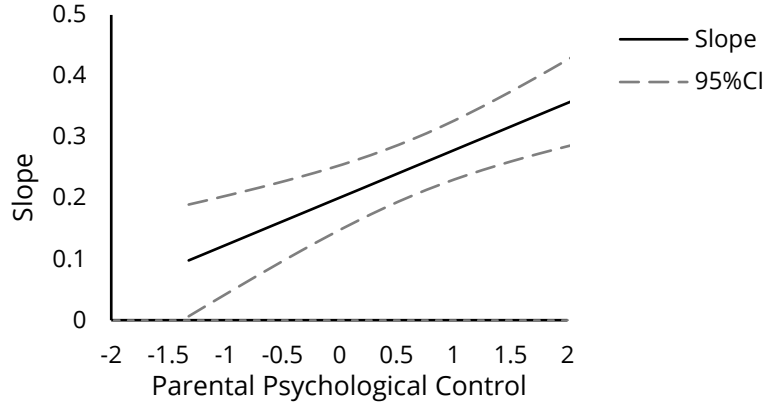
Testing the Moderated Mediation Model

Prior to conducting the analyses, the continuous variables were mean-centered to reduce multicollinearity. Gender and grade were also included in this moderated mediation model. A moderated mediation model was constructed with self-control as the mediating variable and parental psychological control as the moderating variable. The results are shown in Table 3.

Table 3. *Moderated Mediating Effects of Witnessing IPV on Cyberbullying Perpetration Through Self-Control Conditional on PPC.*

Outcome variable	Prediction variable	Fitting index				Coefficient and		
		R	R^2	*F*	*p*	β	*t*	*p*
Cyberbullying perpetration		.33	.11	69.88	< .001			
	Gender					.05	1.86	.086
	Grade					−.07	−2.79	.007
	Witnessing IPV					.32	13.82	< .001
Self-control		.24	.06	33.71	< .001			
	Gender					.11	2.26	.031
	Grade					<.01	−0.02	.621
	Witnessing IPV					−.26	−10.71	< .001
Cyberbullying perpetration		.41	.17	55.97	< .001			
	Gender					−.05	−1.10	.072
	Grade					.02	1.26	.068
	Witnessing IPV					.20	7.42	< .001
	Self-control					−.19	−8.25	< .001
	PPC					.12	4.80	< .001
	Witnessing IPV × PPC					.07	3.81	< .001

Figure 2. *The Moderating Effect of Parental Psychological Control on Witnessing IPV and Cyberbullying Perpetration.*



Note. The X axis is the moderating variable and the Y axis represents the change of regression coefficient (slope) in the regression equation with adolescent cyberbullying perpetration as the dependent variable, witnessing IPV as the independent variable, and parental psychological control as the moderating variable. All variables were standardized; the straight line is the point estimation value, and the upper and lower curve is the value of the 95% confidence interval.

First, without the mediating and moderating variables, witnessing IPV positively predicted adolescent cyberbullying perpetration (β = .32, $p < .001$). After adding self-control, witnessing IPV negatively predicted self-control (β = −.26, $p < .001$), and self-control negatively predicted cyberbullying perpetration (β = −.19, $p < .001$). Moreover, witnessing IPV still positively predicted cyberbullying perpetration (β = .20, $p < .001$), that is, self-control played a partial mediating role in witnessing IPV and cyberbullying perpetration, with the mediating effect accounting for 15.45% of the total effect.

The interaction between witnessing IPV and PPC significantly positively predicted cyberbullying perpetration (β = .07, $p < .001$). This indicated that PPC moderated the relationship between witnessing IPV and cyberbullying perpetration. In this study, the moderating variable is continuous, so the Johnson-Neyman method was used to test the simple slope, that is, by fixing the *t* value as the critical value, the range of the moderating variable is found when the simple slope is significantly not zero. The result of the simple slope test is shown in Fig. 2: with the increase of PPC, the effect of witnessing IPV on cyberbullying perpetration increased.

Gender and Grade Differences in the Model

In the present study, multi-group analysis was used to investigate whether there were significant sex and grade differences in the model. Two models were defined in the study. In Model 1 (baseline model), the male and female groups (primary school and junior high school groups) had the same model structure, and the path coefficient was estimated freely. In Model 2 (constrained mode 2), the path coefficients of boys and girls (primary school and junior high school groups) were equal. The model difference between models 1 and 2 was analyzed with a $\Delta\chi^2$ test. A significant result would show that the model has cross-gender (grade) inconsistency. The test results are shown in Table 4.

Table 4. *Grade and Sex Differences in the Model.*

Model	χ^2	*df*	χ^2/df	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$	*p*
M_{total}	13.43	4	3.36	.98	.94	.04	.03		
$M_{primary}$	4.24	3	1.41	.99	.95	.02	.02		
M_{junior}	9.69	3	3.23	.96	.89	.56	.04		
M_1	17.28	6	2.88	.96	.88	.05	.03		
M_2	42.04	11	3.82	.92	.88	.06	.05	24.76(5)	< .001
M_{male}	12.52	3	4.17	.95	.90	.06	.03		
M_{female}	10.55	3	3.52	.97	.91	.06	.03		
M_1	23.07	6	3.85	.96	.88	.06	.03		
M_2	48.16	11	4.38	.91	.86	.06	.05	25.09(5)	< .001

The results of the multi-group analysis showed that the model was inconsistent with sex and grade. In terms of gender differences, a further path coefficient Wald test showed that there were significant sex differences in the effect of witnessing IPV on cyberbullying perpetration ($\Delta\chi^2 = 9.04$, $p = .003$). Specifically, the effect of males was 0.3 ($p < .001$) and that of females was 0.14 ($p = .011$). Moreover, the interaction between witnessing IPV and PPC was significantly different ($\chi^2 = 17.42$, $p < .001$). The moderating effect of PPC in males was 0.08 ($p = .030$) and that of females was 0.16 ($p = .020$).

In terms of grade differences in the model, the effect of witnessing IPV on self-control was significantly different ($\chi^2 = 4.39$, $p = .029$). The path coefficient was −0.19 ($p < .001$) in primary students and −0.28 ($p < .001$) in junior high students. The path coefficient between self-control and cyberbullying perpetration was also significantly different ($\chi^2 = 15.47$, $p < .001$): −0.15 ($p < .001$) among primary students and −0.24 ($p < .001$) among junior high students. Finally, the interaction between witnessing IPV and PPC was significantly different ($\chi^2 = 9.03$, $p < .020$). The moderating effect of PPC in primary students was 0.04 ($p = .058$) and that of junior high students was 0.18 ($p = .006$).

Discussion

This study constructed a moderated mediation model between witnessing IPV and cyberbullying perpetration with self-control as the mediating variable and PPC as the moderating variable. The results of this study contribute to

understanding the association between family environment and cyberbullying perpetration as well as the underlying mechanism.

Witnessing IPV and Cyberbullying Perpetration

First, we found that witnessing IPV significantly positively predicted cyberbullying perpetration. Adolescents who witnessed IPV were more likely to perpetrate cyberbullying perpetration. Similarly, a recent study found that interparental conflict can positively predict adolescents' cyberbullying perpetration in China (Yang et al., 2018). From the perspective of social cognition theory, this can be understood as follows. Long-term witnessing of IPV leads to individuals perceiving violence as a strategy that can be used in interpersonal communication. When this kind of strategy is used by adolescents during communication via the Internet, cyberbullying perpetration occurs. In the context of Chinese culture, the link between parents and children is closer comparing to some western countries. On the one hand, adolescents have a lot of time and space to live with their parents, which increases their opportunities to contact IPV; On the other hand, the use of ICTs is also very common. Notably, previous studies have examined the relationship between witnessing IPV and involvement in traditional bullying, and found a positive prediction (Bauer et al., 2006). The results of this study further enrich the existing research and expand the association between witnessing IPV and cyberbullying perpetration. This study also found that boys were more likely to be affected by witnessing IPV to perpetrate cyberbullying than girls, which was consistent with previous study. Ballif-Spanvill et al. (2007) found that boys who witnessed IPV were more likely to have externalizing problems. For the social learning model of aggression, male models were more likely than female models to be imitated and their influence endured over time (Bandura, 1965).

The Mediating Role of Self-Control

We found that self-control partially mediated the relationship between witnessing IPV and cyberbullying perpetration. This indicates that, on the one hand, witnessing IPV can directly affect cyberbullying perpetration; on the other hand, it can lead to cyberbullying perpetration by reducing self-control. According to social cognition theory, individuals gain parental conflict strategies and use them in online environments, which explains the direct effect of witnessing IPV on cyberbullying perpetration. In addition, parents who often have conflicts with their partners have poor self-control ability (Brewer et al., 2019) and their children might acquire poor self-control skills during growth. Some researchers believe that mastery of self-control skills can alleviate aggressive behaviors (Agbaria et al., 2012). According to the depletion model of self-control, being exposed to violence makes adolescents get lack of self-control. More importantly, the high anonymity and low regulation of cyberspace make it easier for adolescents to perpetrate bullying on impulse. Actually, self-control plays important role in Chinese culture which stresses endurance. However, it is difficult for adolescents to suppress their feelings and behaviors.

This study also found grade differences in the mediating effect. Specifically, witnessing IPV had a stronger negative effect on self-control, and self-control had a stronger negative predictive effect on cyberbullying perpetration among junior high school students compared to primary school students. This may be because junior high school students are in puberty and have strong impulsivity in emotions and behavior, so self-control plays a considerable role. In addition, junior high school students have more heavy academic work than primary school students especially in China. Facing more external stimulation, they also need to mobilize more self-control resources to regulate their own behaviors. This suggests that self-control is very important in the junior high school stage of individuals' development. This result suggests that to prevent cyberbullying perpetration, the effect of risk factors such as exposure to violence can be partly controlled through the intervention of self-control. Schools can design and develop mental health courses or group activities related to the improvement of self-control.

"Double Whammy Effect": PPC and Witnessing IPV

The present study revealed that PPC enhanced the association between witnessing IPV and cyberbullying perpetration. This may be related to the essential characteristics of PPC. The process of PPC includes promoting children's dependence, restraining personality, and destroying self-consciousness. These processes are intrusive and manipulative (Miri & Limor, 2018). It can be seen as a kind of implicit psychological bullying. For individuals who witnessed IPV, adolescents who suffered more PPC were more likely to implement cyberbullying perpetration, which is consistent with "the double whammy effect". It also suggests that PPC is a dangerous and

negative parenting style, which may not only directly lead to individuals' problem behavior but also aggravate the effect of other environmental variables. This study also found that the interaction between PPC and witnessing IPV was stronger among girls, which shows that girls are more likely to be affected by the cumulative effect of PPC and IPV. At the same time, junior high school students are more likely to be affected by PPC and witnessing IPV. PPC is common in the interaction between Chinese parents and children. Parents often have high expectations for their children's studies, and use PPC to transfer pressure to their children. As the children grow up, parents will be more and more inclined to this way of PPC (Geng et al., 2020). The above results reveal that family is quite important to prevent cyberbullying perpetration. Parents should strive to create a suitable environment without exposure to violence and psychological control. In addition, parents can adopt different parenting attitudes and behaviors towards individuals at different stages to ensure a good family growth environment for individuals.

Conclusion

The study has expanded previous research into cyberbullying perpetration. Mediation analysis indicated that self-control may be an explanatory factor for why exposure to domestic violence such as witnessing IPV can trigger cyberbullying perpetration. Moreover, the moderation analysis revealed that such negative parenting as PPC can moderate the association between witnessing IPV and cyberbullying perpetration. Finally, the study has demonstrated the sex and grade differences in the model. In practical guidance, the study suggests more work with parents to prevent IPV and reduce children's exposure to violence. Secondly, more work with parents to avoid such negative parenting style as PPC and teach them how to love and accompany their children. Thirdly, considering the effect of self-control, some trainings are needed to improve the ability of self-control. It could be important for cyberbullying perpetration prevention.

Although this study has achieved the above results, there are still some limitations. First, this study only examined the relation between witnessing IPV and cyberbullying perpetration, and did not involve other types of exposure to violence. Future research could focus on exposure to violence in communities, schools, and the media, and explore whether PPC can moderate the effect of other types of exposure to violence on problematic behaviors. Moreover, the outcome variable was only cyberbullying perpetration; further study could take more outcome variables such as traditional bullying and other kinds of aggressive behaviors. Finally, the variables in this study are self-reported by adolescents. Future research could be combined with multi-agent evaluation methods such as parents, peers, and teachers, which would be more objective and accurate. In addition, a follow-up study could also explore the causal relationship and internal mechanism between witnessing IPV and cyberbullying perpetration.

Conflict of Interest

The authors do not have any conflicts of interest to report.

Authors' Contribution

Suo Jiang and **Yijun Lv**: conceptualization. **Suo Jiang**: supervision and funding acquisition. **Jiaying Zhang**: formal analysis, methodology, writing – original draft, writing – review & editing. **Yijie Xu**: data curation, writing – original draft, writing – review & editing. **Yue Wang**: methodology, formal analysis. **Xiaoqing Li**: validation. **Yuan Xu** and **Zhaoming Guo**: data curation, investigation.

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