

# The Effect of Violent Online Games Exposure on Chinese Teenagers' Cyberbullying: The Mediation Role of Cognitive Empathy and Affective Empathy

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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i2/21095>

DOI:10.6007/IJARPED/v13-i2/21095

*Published Online:* 13 April 2024

## Abstract

**Objective:** To explore the association between violent online games exposure on cyberbullying among teenagers, as well as the mediating role of cognitive empathy and affective empathy in this relation. **Methods:** 721 Chinese adolescents were recruited to complete Questionnaire of Violent Online Games Exposure, Basic Empathy Scale, Cyberbullying Inventory. **Results:** I. Violent online games exposure was positively correlated with cyberbullying in teenagers, while negatively correlated with cognitive and affective empathy; cognitive and affective empathy were negatively correlated with cyberbullying in teenagers. II. Violent online games exposure significantly predicted cyberbullying in teenagers. III. Both cognitive empathy and affective empathy significantly mediated the effects of violent online games exposure on cyberbullying in teenagers. **Conclusion:** Cognitive empathy and affective empathy could act as mediating role in the association between violent online games exposure and teenagers' cyberbullying.

**Keywords:** Violent Online Games Exposure, Cyberbullying, Teenagers, Cognitive Empathy, Affective Empathy

## Introduction

In today's Internet era, online games have become one of teenagers' favorite forms of entertainment, and relevant survey data shows that 69.9% of teenagers play online games in China (CNNIC, 2023). Online games are rich in violent content, and cross-cultural studies have pointed out that violent online games are often popular with players (Bijvank et al., 2011; Chory & Goodboy, 2011). The negative influence of violent content in online games on teenagers has always been the focus of social attention.

Many empirical studies have pointed out that violent content in media can induce individual aggression and increase aggressive behavior. Researchers have further proposed the general aggression model (GAM) to explain the mechanism of aggressive behavior (Anderson et al., 2010; Anderson & Bushman, 2018). Cyberbullying, as a new type of aggressive behavior that appears with the rise of the Internet, has attracted more and more

attention in recent years. Cyberbullying refers to repeated hostile attacks by individuals or groups against individuals or groups who are not easy to protect themselves through the use of electronic information exchange tools (Smith et al., 2008). Relevant studies have also revealed the relationship between violent online games and cyber bullying. Research has found that the use of online games can significantly predict adolescents' cyber bullying/bullying behavior (Chang et al., 2015). Longitudinal studies have also found that higher levels of exposure to media containing antisocial and risky behavior are significantly associated with higher levels of online bullying among adolescents, and that greater exposure to media containing such content is associated with greater levels of online bullying. This effect does not discriminate between men and women, but the effect is greater for boys (Den & Konijn, 2015). Research in China have also found that violent media exposure has a significant predictive effect on cyber aggression behavior, and is significantly related to teenagers' cyber bullying (Wang et al., 2019; Jin et al., 2018). Compared with traditional media, the interactive properties of online games, the immediate and direct intensification of attack behaviors, and the active participation of players in attacks will affect individual aggression and related network attack behaviors to a greater extent (Anderson et al., 2007). Based on these, this study intends to explore the influence of violent online games exposure on cyberbullying and its internal mechanism, and assume that violent online games exposure is significantly positively correlated with cyberbullying(H1).

Empathy plays an important role among the factors that inhibit aggression and bullying (Zhao et al., 2016; Pi et al., 2013). Empathy is the ability to understand and share the emotions of others and respond appropriately to their situations and experiences (Xu, 2010). Empathy includes two parts: cognitive empathy and affective empathy. Affective empathy is the ability of an individual to experience the emotions of others and reach agreement through indirect means, that is, the ability of empathy. Cognitive empathy is the ability to pick up the emotional feelings and thoughts of another person through some manifestation of that person. Empathy is not only a protective factor for aggressive behavior including bullying, but also an important internal mechanism of external environmental factors leading to individual aggressive behavior (Li et al., 2017; Wang et al., 2019). In addition, exposure to violent media can lead to a decline in empathy levels among adolescents (Jing et al., 2017). When individuals are repeatedly exposed to violent environments, their aversion to violent scenes will gradually decrease, the inhibition effect will weaken, violence desensitization will occur, sympathy for victims will decline, and individuals' awareness and behavior of aggression will be triggered (Mruget et al., 2015; Krantz et al., 2016; Yu et al., 2016). However, previous studies often regard empathy as a one-dimensional variable. With the deepening of research, researchers have pointed out that the two components of empathy have different influence mechanisms on adolescents' aggressive behavior (Vossen et al., 2015; Li et al., 2015). Thus, it might be assumed that violent online games exposure predicts cyberbullying through the mediating role of cognitive empathy and affective empathy (H2).

In addition, teenagers are not only the main group of online game users, but also the group with a high incidence of cyber bullying (Zhou et al., 2016). Based on these, this study aims to explore the effects of violent online games exposure on adolescent cyberbullying, as well as the roles of cognitive and emotional empathy, in order to provide theoretical basis and reference suggestions for the intervention of adolescent cyberbullying.

## Method

### *Participants and procedure*

Using cluster sampling, 721 teenagers with experience in using online games were selected from three middle schools at different levels in Wuhan, China. After collecting and sorting, 714 valid subjects were obtained after eliminating invalid questionnaires. Male students 425 (59.5%), female students 289 (40.5%); There were 226 (31.7 %) first-year middle school students, 184 (25.8 %) second-year middle school students, 168 (23.5 %) first-year high school students, and 136 (19.0 %) second-year high school students. The mean age of the participants was 14.57 years (SD = 1.61).

### *Measures*

#### *Violent online game exposure questionnaire*

Using the violent online game exposure questionnaire compiled by Anderson and Dill (2000), subjects were asked to fill in five kinds of their favorite online games through self-report, and score each game on the graphic violence and content violence. The questionnaire adopted a 7-level score, from 1 "no violence" to 7 "extreme violence". Participants were also asked how often they played each of the five games, using a seven-point scale from 1 "never play" to 7 "almost addicted." Finally, the violence score of each game is added up and multiplied by the frequency to obtain the total score. In this study, the Cronbach's coefficient  $\alpha$  of the questionnaire was 0.90.

#### *Basic Empathy Scale (BES-C)*

The Chinese version of the Basic Empathy Scale (Jolliffe & Farrington, 2006) was used, with a total of 20 questions, which were divided into two dimensions of affective empathy and cognitive empathy, and were scored on a 5-level scale, with 1 being "completely disagree" and 5 being "completely agree" Cognitive empathy included 9 questions and affective empathy included 11 questions. 8 reverse scoring questions. In this study, the Cronbach's coefficients  $\alpha$  of cognitive empathy and affective empathy scales were 0.83 and 0.78, respectively.

#### *Cyberbullying Inventory*

Using the cyberbullying inventory compiled by Erdur and Kavsut (2007), a total of 18 questions. A 4-point scale is used, with 1 being "never" and 4 being "more than 5 times", and the higher the score is, the more cyberbullying an individual has perpetrated. In this study, the Cronbach's coefficient  $\alpha$  of the questionnaire was 0.81.

#### *Statistical analysis*

We adopted spss23.0 to analyze data statistical analysis, and the deviation-corrected percentile Bootstrap method was used to test the mediating effect. 5000 Bootstrap samples were selected to estimate the results of 95% interval of the mediating effect.

## Results

### *Descriptive statistics and correlations*

The correlation analysis of violent online games exposure, cyberbullying, cognitive empathy and emotional empathy is conducted, and the results are shown in Table 1. After the data analysis, we found that: violent online games exposure is significantly positively correlated with online bullying; There was a significant negative correlation between violent

online games exposure and cognitive/affective empathy. There was a significant negative correlation between cognitive/emotional empathy and cyberbullying.

Table 1

*Descriptive statistics and intercorrelations between variables*

Variables	M	SD	1	2	3	4
1.Violent online games exposure	15.97	12.64	1			
2.Cognitive empathy	3.91	0.57	-0.19**	1		
3.Emotional empathy	3.38	0.53	-0.27**	0.32**	1	
4.Cyberbullying	1.13	0.20	0.45**	-0.24**	-0.21*	1

(note: \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  the same below)

*Testing for the mediation model*

To further explore the role of cognitive/affective empathy in violent online games exposure and cyberbullying, SPSS macro (<http://www.afhayes.com>) compiled by Hayes (2012) was adopted. Under the conditions of controlling gender, age and grade, The effect size and confidence interval of the mediating effect of cognitive/affective empathy on the relationship between violent online games exposure and cyberbullying were estimated by extracting 5000 samples to estimate the 95% confidence interval of the mediating effect. The results of regression analysis are shown in Table 2

Table 2

*Regression analysis in mediation effect*

Regression Models				Overall fit index			Significance	
outcome	predictor			R	R <sup>2</sup>	F	B	t
Cyberbully	gender			0.51	0.27	12.00	0.02	1.41
	age						0.01	0.73
	Violent online games exposure						0.00	0.42
Cognitive empathy	Violent online games exposure						0.01	4.78***
	gender			0.25	0.06	8.24	0.06	1.30
	age						-0.03	-0.93
Emotional empathy	grade						0.01	0.23
	Violent online games exposure						-0.00	-2.62**
	gender			0.28	0.08	15.41	0.09	2.04*
Cyberbully	age						-0.02	-0.75
	grade						0.03	0.61
	Violent online games exposure						-0.01	-7.04***
Cyberbully	gender			0.54	0.29	9.19	0.02	1.78
	age						0.00	0.47
	grade						0.01	0.54
Cyberbully	Cognitive empathy						-0.04	-2.97**
	Emotional empathy						-0.03	-3.01**
	Violent online games exposure						0.01	4.56***

(Note: All variables in the model are standardized and brought into the regression equation)

Overall, violent online games exposure positively predicted cyberbullying ( $\beta=0.01$ ,  $t=4.78$ ,  $p<0.001$ ). The direct prediction effect of violent online games exposure on cyberbullying was also very significant ( $\beta=0.01$ ,  $t=4.56$ ,  $p<0.001$ ). These results suggested violent online games exposure positively predicted cyberbullying in teenagers, supporting H1. Violent online games contact directly negative predict cognitive empathy ( $\beta = 0.005$ ,  $t = 2.62$ ,  $p < 0.01$ ), emotional empathy ( $\beta = 0.01$ ,  $t = 7.04$ ,  $p < 0.001$ ); Cognitive empathy direct negative prediction network bullying ( $\beta = 0.04$ ,  $t = 2.97$ ,  $p < 0.01$ ), the emotional empathy can also directly negative prediction network bullying ( $\beta = 0.03$ ,  $t = 3.01$ ,  $p < 0.01$ ), supporting H2.

The results of the mediation effect analysis show (see Table 3) that cognitive empathy and affective empathy play a partial mediating role in the relationship between violent online games exposure and cyberbullying, and the mediation effect value is 0.005, accounting for 9.26% of the total effect (0.054). The effect size and confidence interval of the mediating effect of cognitive empathy and affective empathy on the relationship between violent online games exposure and cyberbullying were analyzed. The results showed that the indirect effect of cognitive empathy on the influence of violent online games exposure on cyberbullying was 0.002, and the Bootstrap95% confidence interval did not include 0. The results show that the mediating effect of cognitive empathy is significant. The indirect effect of affective empathy on the influence of violent online games exposure on cyberbullying is 0.003, and the Bootstrap95% confidence interval does not contain 0, indicating that the mediating effect of affective empathy is significant. The detailed path model is shown in Figure 1.

Table 3

*The analysis of the mediating effects of cognitive empathy and affective empathy*

	Indirect value	effect	Boot error	standard	Boot CI lower limit	Boot CI upper limit	Relative effect	mediating
Mediating effect	.0005		.001		.002	.008	9.26%	
Cognitive empathy	.0002		0.001		.001	.004	3.70%	
Emotional empathy	.0003		0.001		.001	.005	5.56%	

(Note: Boot standard error, Boot CI lower limit and Boot CI upper limit refer to the standard error, lower limit and upper limit of 95% confidence interval of indirect effect estimated by percentile Bootstrap method corrected by deviation)

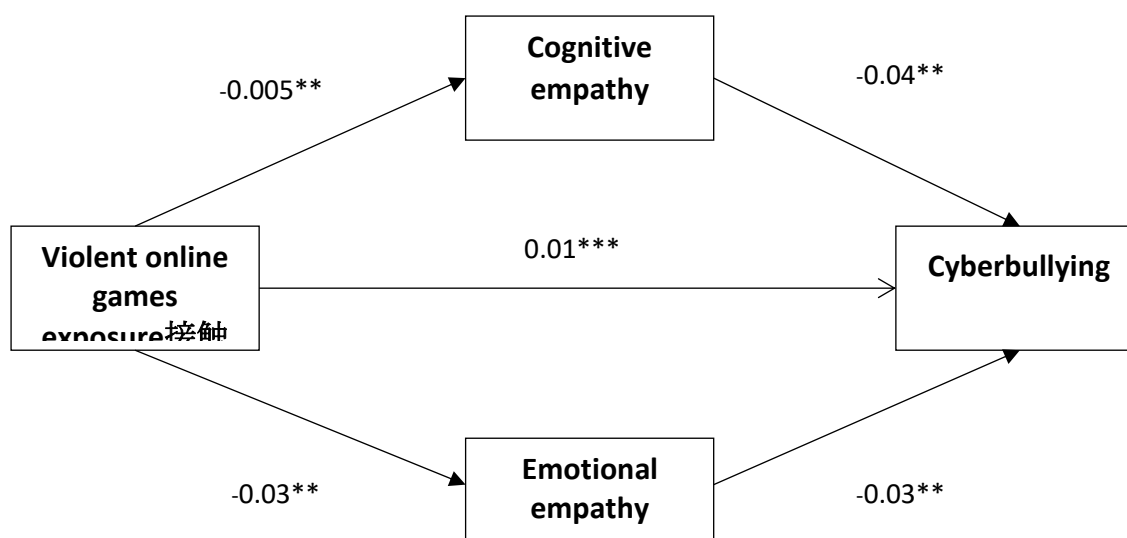


Figure 1. The mediation effect of path graph

## Discussion

This study found that violent online games exposure significantly predicted cyberbullying; The more people are exposed to violent online games, the more cyber bullying will be correspondingly, which is consistent with previous studies (Chang et al., 2015; Den & Konijn, 2015; Wang et al., 2019). According to social learning theory, players constantly attacking "others" in violent online games, and constantly receiving feedback rewards, will continue to strengthen players' violent cognition and behavior, resulting in more online bullying behavior. According to the general aggressive model theory (Anderson et al., 2010; Anderson & Bushman, 2018), repeated exposure to violent games will affect aggressive behavior from both situational and individual aspects. On the individual side, it can promote aggressive behavior by influencing aggressive belief, aggressive attitude, aggressive behavior script, hostile attribution bias, aggressive trait and so on. For example, players exposed to violent online games tend to enhance the hostile cognition of others, resulting in more hostile attribution bias, which affects the interpretation of information clues, and is more likely to show bullying behavior; In terms of situation, aggression is promoted through emotion, arousal state, and violent desensitization, which leads to bullying (Krantz et al., 2016).

This study found that violent online games exposure can not only directly predict cyberbullying, but also influence cyberbullying through the mediating effects of cognitive and affective empathy. Studies have shown that exposure to violent media can lead to desensitization of violence and decreased level of empathy, leading to more aggressive behaviors (Mruget et al., 2015; Krantz et al., 2016; Brockmyer, 2019). Empathy plays a mediating role between violent video games and junior high school students' aggressive behavior (You et al., 2015). Studies from China have found that empathy plays a mediating role between exposure to violent video games and adolescents' prosocial behavior (Zhang et al., 2020), and both cognitive empathy and affective empathy can predict cyberbullying (Fu et al., 2020). Therefore, the mediating role of the two empathic components has also been verified. In many violent online games, the characters are set up to be hostile, deceptive, and aggressive. Even if they are hurt, they do not show painful emotions, which makes the player feel that the aggression is justified and justifies their actions. In the long run, players' cognitive empathy can decrease, misunderstanding the thoughts and emotions of others, and

desensitization to violent content can lead to decreased emotional empathy and a lack of empathy for people in distress, which can increase the incidence of cyberbullying.

### Conclusion

This study provides theoretical and practical guidance for the prevention and treatment of cyberbullying, recognizing that violent online games are a risk factor for cyberbullying, and empathy plays a mediating role in it. At present, China has not implemented the rating system of violent online games, so we call for a stricter game management system to make middle school students free from the negative impact of violent online games. Compared with traditional bullying, cyberbullies tend to experience lower empathy, which requires individuals to have a higher ability to empathize, especially emotional empathy. Previous studies have found that empathy training can significantly reduce bullying behavior (Du & Feng, 2005). Schools should carry out relevant empathic training in a planned way. Finally, because of the anonymity and other characteristics of the Internet, it will facilitate the occurrence of cyberbullying. Teenagers are still in the stage of ideological and moral development, and are vulnerable to the negative impact of violent content in online games. Therefore, it is necessary to strengthen the supervision and education on the use of online games by students.

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