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Peer victimization and Internet addiction among adolescents: The role of anger rumination and social dominance orientation

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Abstract

Introduction: Internet addiction has garnered growing attention in recent years, and peer victimization plays a major contributor to adolescents' Internet addiction. However, little is known about the mediating and moderating mechanisms in the association between peer victimization and Internet addiction. Guided by cognitive behavioral model and worldview verification model, this study examined a moderated mediation model in which anger rumination at Time 1 (T1) mediated the association between peer victimization at T1 and Internet addiction at Time 2 (T2), and this mediation effect was moderated by T1 social dominance orientation (SDO).

Methods: A short-term longitudinal design was adopted, incorporating two measurement occasions (with approximately 6-month intervals). Participants were 2597 adolescents (51.5% male, $M_{\text{age}} = 13.9$, $SD = 0.60$) from seven secondary schools in Zhengzhou City, China. All participants were invited to complete the self-reported questionnaires assessing peer victimization, anger rumination, SDO at T1 (December 2015) and Internet addiction at T2 (June 2016), respectively. A short-term longitudinal moderated mediation model was conducted to analyze the association between variables.

Results: The results showed that T1 peer victimization was positively associated with T2 Internet addiction in which association was mediated by T1 anger rumination. T1 SDO moderated the associations between T1 peer victimization and T1 anger rumination and this effect was stronger with lower levels of SDO. In terms of gender differences, SDO moderated the associations between peer victimization and anger rumination only for boys.

Conclusions: Results highlight that anger rumination is a potential mechanism explaining how peer victimization is related to Internet addiction and that this relation may be moderated by SDO.

KEYWORDS

adolescents, anger rumination, gender differences, Internet addiction, peer victimization, social dominance orientation

1 | INTRODUCTION

The rapid rise of the Internet age has popularized Internet use. A meta-analysis of 28 studies involving 48,090 adolescents concluded that the prevalence of Internet addiction was 13.62% (Fumero et al., 2018). Internet addiction is defined as excessive time spent on Internet activities (e.g., using social networking sites, online gaming, and online chatting) and associated with a number of adverse outcomes, such as mental health problems (Sohn et al., 2019) and poor academic adjustment (Zhang et al., 2018). More importantly, adolescence is a tumultuous period marked by rapid biological and psychosocial changes, in which adolescents are more susceptible to maladaptive cognitions (e.g., rumination) and

impulsive behavior (e.g., Internet addiction). Thus, given the high prevalence and negative effects of Internet addiction among adolescents, it is important to understand the risk factors related to Internet addiction and the underlying mechanisms, as the findings would shed light on identifying leverage points for effective prevention and intervention strategies.

During the past two decades, many individual and environmental factors related to Internet addiction have been identified, such as family difficulties and peer problems (Fumero et al., 2018). Compared to children, adolescents become more concerned about peer evaluation and rejection (Stroud et al., 2009). The experience of peer victimization thus appears to be more salient in adolescence. Several cross-sectional studies showed a positive relation between peer victimization and Internet addiction (Hsieh et al., 2019; Jia et al., 2018). However, insufficient attention has been paid to the mechanisms and conditions under which peer victimization linking to Internet addiction using longitudinal design. Therefore, guided by the cognitive behavioral model (Davis, 2001) and worldview verification model (Major et al., 2007), the current study aimed to fill in these gaps by investigating the longitudinal associations between peer victimization and Internet addiction, and identifying the mediating role of anger rumination and moderating role of social dominance orientation (SDO) in the relation between peer victimization and Internet addiction.

1.1 | Peer victimization and Internet addiction

Peer victimization is the receipt of peer aggression or intentional harm aimed at a peer (Card & Hodges, 2008). Peer victimization plays a major contributor to adolescents' Internet addiction (Jia et al., 2018). Theoretically, the cognitive behavioral model proposed by Davis (2001) postulates that stressful life event is a necessary condition for the formation of Internet addiction. Internet addiction has been considered as a psychological escape mechanism to avoid real-world problems, such as stress (e.g., Mihajlov & Vejmelka, 2017; Young, 2007). Accordingly, the experience of victimization brings youth with more stress and in turn motivates them to go online even addict to Internet to relieve the pressures of being victimized (Jia et al., 2018). Empirically, numerous cross-sectional studies have suggested the positive relation between peer victimization and Internet addiction (e.g., Jia et al., 2018; Lo et al., 2021). For example, a cross-sectional study with a sample of Hong Kong adolescents found that adolescents who were victims had the great risk for developing Internet addiction (Lo et al., 2021).

1.2 | The mediating effect of anger rumination

Anger rumination is defined as a tendency to recall and ruminate about past experiences of anger (Sukhodolsky et al., 2001). It includes an emotional component (i.e., anger) and a cognitive component (i.e., rumination; Malamut & Salmivalli, 2021). Both anger and rumination are associated with Internet addiction (Bağatarhan & Siyez, 2020; Haddad et al., 2021). Specifically, the cognitive behavioral model proposed by Davis (2001) assumes that maladaptive cognitions (e.g., rumination) act as a proximal contributory cause of Internet addiction. Empirical studies have also indicated that rumination increases the risk of Internet addiction (Bağatarhan & Siyez, 2020; Elhai et al., 2020). In addition, anger is a common emotional response among adolescent victims (Ak et al., 2015). Adolescents who tend to ruminate always retrieve the offensive fact that caused the anger, which can undermine appraisal and decision-making abilities, and hence increase likelihood of impulsive behavior (e.g., Internet addiction; Denson, 2013).

The previous literature is clear that peer victimization is strongly associated with Internet addiction, but the extent to which intervening variables mediate this relation is relatively less studied. That is, those factors that may mediate this relation remain relatively less clear. Drawing from the cognitive behavioral model (Davis, 2001), individuals' stressful life event can be considered as a distal cause and rumination as a proximal cause of Internet addiction, and the distal factor (i.e., peer victimization) affects Internet addiction through proximal factors (i.e., rumination). That is, adolescents faced with peer victimization will think repetitively about the victimization experience and its causes, which in turn activate rumination. On the one hand, peer victimization is generally considered a robust contributor to adolescents' anger rumination (Camacho et al., 2021; Ren et al., 2021). Specifically, stress reactive model suggests that negative life event (e.g., peer victimization) renders adolescents vulnerable to rumination (Robinson, 2003). On the other hand, the detrimental consequences of rumination on Internet addiction are well documented (Bağatarhan & Siyez, 2020; Li et al., 2016). As such, it is plausible to assume that anger rumination is one promising mediator between peer victimization and Internet addiction. Most importantly, adolescents have been demonstrated to be vulnerable to rumination (Jose & Vierling, 2018) and addictive behavior (e.g., Internet addiction; Boniel-Nissim & Sasson, 2018). Thus, the current study attempted to investigate the mediating role of anger rumination in the association between peer victimization and Internet addiction.

1.3 | The moderating effect of SDO

Although peer victimization serves as a risk factor for anger rumination and Internet addiction, it seems unlikely that all adolescents are equally affected by peer victimization. Based on the Organism environment interaction theory (Wachs & Plomin, 1991), Internet addiction is determined by the interaction effect between environmental (e.g., peer victimization) and individual factors (e.g., SDO). SDO reflects a person's attitude toward hierarchy and inequality (Pratto et al., 1994, p. 742). SDO is a stable attitudinal orientation that everyone has (Pratto et al., 1994) and it influences how adolescents evaluate their own experiences. According to the worldview verification model, worldviews help individuals to appraise and respond to negative life experiences (Major et al., 2007). When the actual situation or their experience is inconsistent with the worldview, adolescents' sense of certainty and security decreases, which is harmful for their adaptive emotional and behavioral development (Xiong & Xu, 2023). In this vein, high-SDO adolescents view the world as a "competitive jungle" (Duckitt et al., 2002), may be more tolerant to aggression, and likely to engage in aggressive behavior to achieve their goals (Goodboy et al., 2016). Conversely, adolescents with low SDO hold the worldview that the world is equality (Duckitt et al., 2002); They have more moral outrage over injustice and inequality (Tan et al., 2016) and seek to reduce and attenuate injustice (Guimond et al., 2003).

Accordingly, it would be reasonable to expect that SDO might moderate the negative effects of peer victimization on anger rumination and Internet addiction. On the one hand, adolescents who endorse status-legitimizing ideologies (high SDO) are less likely to interpret victimization events as threatening, and are more likely to maintain positive views of aggressors. On the other hand, adolescents low in SDO are expected to experience more distress after experiencing peer victimization because the events are inconsistent with their worldview compared to adolescents high in SDO. That is, when experiencing peer victimization, adolescents low in SDO are more likely to have high levels of anger rumination, which further increases the risk of Internet addiction. To date, no published studies have directly examined the moderating role of SDO in the association between peer victimization, anger rumination and Internet addiction; however, the related research has provided further evidence of this possible mechanism (e.g., Wu et al., 2014; Xiong & Xu, 2023). For instance, one study based on migrant children found that high belief in a just world exacerbated the negative effect of relative deprivation on loneliness (Xiong & Xu, 2023). Another study with a sample of racial/ethnic minorities found that the mediating effect of stress on the association between bullying and rejection sensitivity was stronger among students with low SDO (Wu et al., 2014). Thus, the current study aimed to examine whether the link from peer victimization to anger rumination and Internet addiction was moderated by SDO.

1.4 | Gender differences

Results regarding gender differences in peer victimization, anger rumination, Internet addiction, and SDO are mixed. Some studies reported no gender differences in anger rumination (e.g., Maxwell, 2004) and Internet addiction (e.g., Boniel-Nissim & Sasson, 2018), whereas other studies showed that boys were more likely to experience higher levels of peer victimization (e.g., Wang & Liu, 2019), anger rumination (e.g., Yang et al., 2021), SDO (e.g., Cadamuro et al., 2022), and Internet addiction (e.g., Su et al., 2019) than girls. Given that research on correlations among peer victimization, anger rumination, Internet addiction, and SDO is scarce, little is known regarding gender differences in such correlations. Therefore, we formulated no specific hypotheses about the gender differences in the association among peer victimization, anger rumination, Internet addiction, and SDO, as our study was exploratory in nature.

1.5 | The current study

The current study attempts to examine the mediating effect of anger rumination on the association between peer victimization and Internet addiction. Besides, SDO has been considered as a moderator in the association between peer victimization and Internet addiction, as well as the association between peer victimization and anger rumination. We also investigated the gender differences in the association among peer victimization, anger rumination, Internet addiction, and SDO. A conceptual model of this study is provided in Figure 1. The present study proposed four specific hypotheses: (1) peer victimization will relate to subsequent Internet addiction; (2) anger rumination will play a mediating role in the relation between peer victimization and Internet addiction; (3) SDO would interact with peer victimization to influence anger rumination and Internet addiction; (4) gender differences will exist in the association among peer victimization, anger rumination, Internet addiction, and SDO.

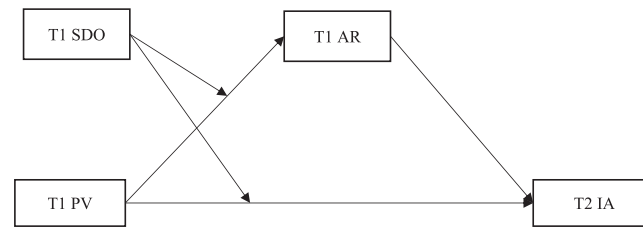


FIGURE 1 Conceptual moderated mediation model. AR, anger rumination; IA, Internet addiction; PV, peer victimization; SDO, social dominance orientation; T1, Time 1; T2, Time 2.

2 | METHODS

2.1 | Participants

Participants included 2597 students of Grade 8 (51.5% male, $M_{\text{age}} = 13.9$, $SD = 0.60$) from seven secondary schools in Zhengzhou City. Students participated in two assessments, which took place in December 2015 and June 2016, respectively. Students reported their peer victimization, anger rumination, and SDO at Time 1 (T1), as well as their Internet addiction at Time 2 (T2). At T1, data were collected from 2597 students. There was very low attrition in subsequent waves of data collection ($n = 138$) because participants were either absent from school at the time of data collection or they chose not to participate.

The missing completely at random (MCAR) test (Little, 1988) was conducted on all variables across the two waves of the study. These analyses revealed a normed χ^2/df of 2.0, which indicated that the pattern of the missing data was not materially different from a random pattern (Bollen, 1989). Full information maximum likelihood (FIML) analyses in Mplus 8.0 were applied for model estimations.

2.2 | Procedures

Before the survey was administered, the study was approved by the Ethics Committee of the Collaborative Innovation Center of Assessment toward Basic Education Quality, Beijing Normal University. We also informed students and their parents about the study and obtained student assent and parental consent before the data collection. During each assessment, self-report measures were administered to all participating students in a regular classroom environment by a trained research assistant. The participants all received identical verbal and written instructions from the assistant. The participants were allowed to take as much time as needed to complete the packet of measures, and they were allowed to withdraw from the study at any time. Data confidentiality was also guaranteed.

2.3 | Measures

2.3.1 | Peer victimization

Peer victimization was assessed using a self-report Chinese Peer Victimization Scale for Children and Adolescents (CPVSCA; Dong & Lin, 2011), adapted from the Bully/Victim Questionnaire (Olweus, 1996). It consists of seven items (i.e., “Being made fun of you,” “Being hit, kicked, or pushed you,” “Being threatened or intimidated you,” “Other students left you out of things on purpose,” “Your belongings have been vandalized,” “Being robbed or extorted for money or goods,” and “Being spoken ill by others behind”). Each item was rated on a five-point Likert scale, ranging from 0 (*Never*) to 4 (*five or more times*). Responses were averaged to produce a total peer victimization score, with higher scores indicating more peer victimization. This scale has garnered support for its reliability and validity in Chinese adolescents (Pan et al., 2020). In the present study, Cronbach's coefficient α was 0.86 (T1).

2.3.2 | Internet addiction

Internet addiction was measured using a Chinese version of Young's Diagnostic Questionnaire (YDQ) (Young, 1998). Internet addiction includes 8 items using a 2-point Likert scale (0 = “No” and 1 = “Yes”). The mean scores of Internet

addiction were calculated, with higher scores representing higher levels of Internet addiction. In the present study, Cronbach's coefficient α was 0.77 (T2).

2.3.3 | Anger rumination

Anger rumination was assessed via the Anger rumination Subscale of the Displaced Aggression Questionnaire (Denson et al., 2006). It consists of 10 relevant items (e.g., "I often find myself thinking over and over about things that have made me angry"). Each item was rated on a 7-point scale, ranging from 1 (*extremely uncharacteristic of me*) to 7 (*describes me very well*). The mean scores of the responses were calculated, with higher scores indicating greater tendency to anger rumination. In the present study, the Cronbach's coefficient α was 0.90 (T1).

2.3.4 | Social dominance orientation

Social Dominance Orientation Scale (SDO-6) was used to assess the SDO (Pratto et al., 1994). The SDO-6 consists of 16 items (e.g., "some groups of people are simply inferior to other groups."). Each item was rated on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). All responses were averaged to create a composite score of SDO-6, with higher scores indicating higher levels of social dominance beliefs. In the present study, the Cronbach's coefficient α was 0.76 (T1).

Demographic: Several demographic covariates were reported by students at T1, including students' gender (0 = boys, 1 = girls) as well as father's and mother's education. Father's and mother's education levels were assessed respectively on a scale ranging from 1 (*never attended to school*) to 8 (*graduate school*).

2.4 | Data analysis

The data analysis was subsequently divided into the following steps. First, descriptive statistics and correlations were computed using SPSS 22.0.

Second, we used path analysis to test the full hypotheses using Mplus 8.0. Specifically, we performed a mediation model to examine the mediating effects of anger rumination at T1 in the association between T1 peer victimization and T2 Internet addiction. To examine the moderation of SDO, we carried out a moderated mediation model by adding the moderator (i.e., SDO) in the aforementioned mediation model. This allowed us to examine the extent to which T1 SDO would moderate the association between T1 peer victimization and T2 Internet addiction and to examine the extent to which T1 SDO would moderate the mediation effects of T1 anger rumination. Gender, father's and mother's education levels served as the control variables for T2 Internet addiction. Further, bootstrap 95% confidence intervals (CIs) derived from 1000 bootstrap resamples were calculated to determine the significance of the (moderated) mediation effects. Wald tests were performed to conclude on the model and verify the moderating effect of SDO on the indirect effects established.

Thirdly, gender-specific analyses were carried out to examine the gender differences of the (moderated) mediation effects. When zero was not included in the 95% CI, the (moderated) mediation effects would be deemed to be tenable. The model fit was considered acceptable when the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) values were above 0.90, and when the standardized root mean square (SRMR) and root mean square error of approximation (RMSEA) were below 0.08 (Marsh et al., 2004).

3 | RESULTS

3.1 | Descriptive analyses

Means and SDs of study variables are presented in Table 1. The mean scores for the boys and girls were compared for peer victimization, anger rumination, SDO, and Internet addiction using the independent sample *t*-test. The result showed that boys reported higher levels of peer victimization, SDO, and Internet addiction than girls. No gender differences were found in anger rumination at T1.

Table 2 reported correlations for the main variables, showing that the correlations among peer victimization, anger rumination, SDO, and Internet addiction were all positive and statistically significant.

TABLE 1 Means and SDs among variables.

Variable	Total		Boys		Girls		t
	M	SD	M	SD	M	SD	
1. T1 Peer Victimization	0.54	0.74	0.64	0.83	0.42	0.62	7.50***
2. T1 Anger Rumination	2.53	1.07	2.53	1.07	2.53	1.08	0.10
3. T1 Social Dominance Orientation	2.91	0.77	3.00	0.80	2.80	0.71	6.66***
4. T2 Internet Addiction	0.33	0.28	0.37	0.29	0.30	0.27	6.27***

Abbreviations: T1, Time 1; T2, Time 2.

****p* < 0.001.

TABLE 2 Bivariate correlations among variables.

Variables	1	2	3	4	5	6
1. T1 Peer Victimization	1					
2. T1 Anger Rumination	0.24***	1				
3. T1 Social Dominance Orientation	0.13***	0.26***	1			
4. T2 Internet Addiction	0.17***	0.27***	0.15***	1		
5. Gender	-0.15***	-0.00	-0.13***	-0.13***	1	
6. Father's Education Levels	-0.06**	-0.00	-0.01	0.03	-0.01	1
7. Mother's Education Levels	-0.06**	-0.01	-0.03	0.02	-0.02	0.49***

Abbreviations: T1, Time 1; T2, Time 2.

****p* < 0.001; ***p* < 0.01.

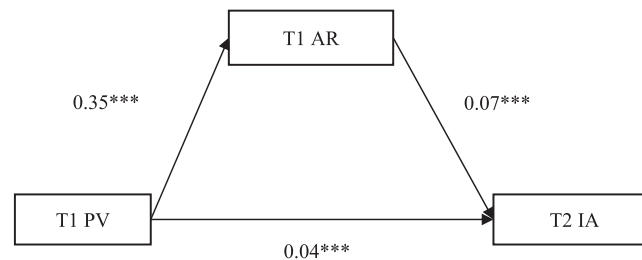


FIGURE 2 The mediation of T1 anger rumination between T1 peer victimization and T2 Internet addiction. Values shown are unstandardized coefficients. AR, anger rumination; IA, Internet addiction; PV, peer victimization; T1, Time 1; T2, Time 2. ****p* < 0.001.

3.2 | The mediation effect of T1 anger rumination in the association between T1 peer victimization and T2 Internet addiction

The mediation model fit the data well: $\chi^2 = 3.268$, *df* = 3, CFI = 1.00, TLI = 1.00, RMSEA = 0.006 (90% CI = [0.000, 0.034]). As shown in Figure 2, the association between T1 peer victimization and T2 Internet addiction was significant (*B* = 0.04, *p* < 0.001). The indirect effect (T1 peer victimization → T1 anger rumination → T2 Internet addiction) was statistically significant (unstandardized indirect effect = 0.02, *p* < 0.001, 95% CI = [0.018, 0.029]).

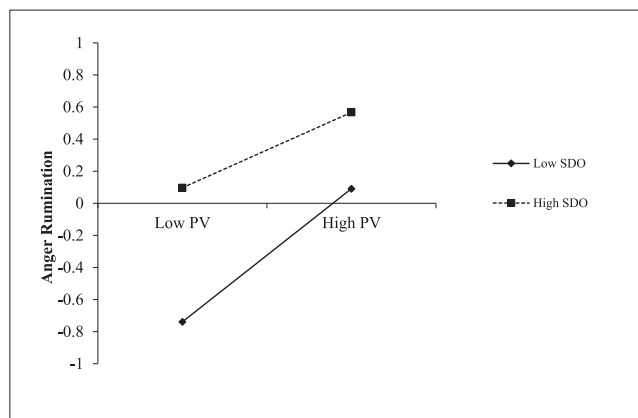
3.3 | The moderation effect of T1 SDO

On the basis of the mediation model examined above, we continued to test whether T1 SDO would moderate the association between T1 peer victimization and T2 Internet addiction as well as the mediation effects of T1 anger rumination. The moderated mediation model fit the data well: $\chi^2 = 10.253$, *df* = 3, CFI = 0.99, TLI = 0.94, RMSEA = 0.03 (90% CI = [0.012, 0.053]). As shown in Table 3, the results indicated that T1 SDO did not moderate the association between T1 peer victimization and T2 Internet addiction, but served as a significant moderator in the association between T1 peer

TABLE 3 Summary of the moderated mediation model.

Effects	T1 anger rumination			T2 Internet addiction		
	<i>B</i>	SE	<i>p</i>	<i>B</i>	SE	<i>p</i>
Variables						
T1 PV	0.33	0.03	<0.001	0.04	0.01	<0.001
T1 SDO	0.33	0.03	<0.001	0.02	0.01	0.003
T1 Anger rumination	-	-	-	0.06	0.01	<0.001
T1 PV × T1 SDO	-0.09	0.04	0.021	0.00	0.01	0.998

Abbreviations: PV, peer victimization; SDO, social dominance orientation; T1, Time 1; T2, Time 2.

**FIGURE 3** The relationship between T1 peer victimization and T1 anger rumination moderated by T1 social dominance orientation. PV, peer victimization; SDO, social dominance orientation.

victimization and T1 anger rumination. The results of follow-up simple slope test (see Figure 3) indicated that the association between T1 peer victimization and T1 anger rumination was stronger among participants who had lower levels of SDO ($B = 0.42$, $p < 0.001$) than those with higher levels of SDO ($B = 0.24$, $p < 0.001$). The mediation effect of T1 anger rumination was significant when the levels of SDO were high ($B = 0.014$, 95% CI = [0.009, 0.020]) and low ($B = 0.026$, 95% CI = [0.018, 0.033]). Further analysis showed that the mediation effect of T1 anger rumination when the levels of SDO were low is significantly higher than those with high SDO ($B_{\text{diff}} = 0.011$, 95% bootstrap CI = [0.002, 0.021]).

3.4 | Gender-specific analyses

Since our study found that boys reported significantly higher scores for Internet addiction and SDO than girls, the moderated mediation model was further tested in both boys and girls subsamples. Regarding the gender differences of the mediation effects, the results showed that the indirect effect (T1 peer victimization → T1 anger rumination → T2 Internet addiction) was statistically significant for boys (unstandardized indirect effect = 0.02, $p < 0.001$, 95% CI = [0.014, 0.027]) and girls (unstandardized indirect effect = 0.03, $p < 0.001$, 95% CI = [0.022, 0.042]), respectively. For more details on the results of the gender differences of the mediation effects, please see Section 1 in the Online Supplementary Materials.

Regarding the gender differences of the moderating effect of SDO, the results showed that T1 SDO did not moderate the association between T1 peer victimization and T2 Internet addiction for neither boys nor girls. However, SDO served as a significant moderator in the association between T1 peer victimization and T1 anger rumination for boys. For more details on the results of the gender differences of the moderated mediation effect, please see Section 2 in the Online Supplementary Materials.

4 | DISCUSSION

The current study developed a moderated mediation model to investigate the mediation effect of anger rumination and the moderating role of SDO in the association between peer victimization and Internet addiction. The results showed that peer victimization can not only directly but also, indirectly through anger rumination across gender, affect adolescents' Internet

addiction. Moreover, the indirect effect was moderated by SDO in boys, with this effect being stronger for adolescent boys with low SDO than for those with high SDO. These findings contribute to a better understanding of how and when peer victimization is associated with Internet addiction.

4.1 | Peer victimization and Internet addiction

The study revealed that peer victimization was directly associated with subsequent Internet addiction. This is consistent with previous studies in adolescents, demonstrating that peer victimization is a risk factor for adolescents' Internet addiction (e.g., Jia et al., 2018; Lo et al., 2021). Peer victimization is regarded as a major social stress for adolescents; adolescents who are victims tend to have lower social bonds, experience more negative emotion and cognitive biases for themselves, which may increase the risk for developing Internet addiction (Denson, 2013; Khantzian, 1985). Also, this finding is in line with the cognitive behavioral model (Davis, 2001), which posits that stressful life event such as peer victimization can be considered as a distal cause of Internet addiction.

4.2 | The mediating effect of anger rumination

As expected, our results revealed that anger rumination played a mediating role in linking peer victimization to Internet addiction. This finding can be interpreted through the cognitive behavioral model (Davis, 2001). This model assumes that individuals' stressful life event (e.g., peer victimization) can be considered as a distal cause and rumination as a proximal cause of Internet addiction, and the distal factor affects Internet addiction through proximal factors (i.e., rumination). That is, adolescents being victimized will think repetitively about the experience and its causes, turning to anger rumination (Malamut & Salmivalli, 2021). Additionally, anger rumination retrieves the offensive facts that caused the anger, leading to its intensification and further resulting uncontrollable addiction (e.g., Internet addiction). The current results were also similar to prior research, indicating that the distal factor (i.e., perceived stress) is associated with mobile phone addiction through rumination (Peng et al., 2022). Taken together, our finding extended the cognitive behavioral model (Davis, 2001) and highlighted the important role of maladaptive cognitions (i.e., anger rumination) in illuminating the link from peer victimization to Internet addiction (Mai et al., 2012).

4.3 | The moderating effect of SDO

Another important contribution of our findings was that the indirect path through anger rumination was moderated by SDO, with this effect being stronger for adolescents with low SDO than for those with high SDO. In line with worldview verification theory (Major et al., 2007), the experience of peer victimization is inconsistent with low-SDO adolescents' worldview that they should be treated kindly and equally. In this vein, adolescents low in SDO may experience higher anger rumination and further become addicted to Internet when peer victimization occurs. Moreover, previous studies showed that compared to high-SDO adolescents, adolescents with low SDO have more moral outrage for injustice and inequality (Tan et al., 2016). As a form of injustice (Donat et al., 2018), peer victimization brings more negative effects on adolescents with low SDO; those adolescents repeatedly think of the anger caused by the peer victimization and reflect on the reasons for peer victimization. Therefore, low SDO exacerbates the negative impact of peer victimization on anger rumination, which in turn, increases the risk of Internet addiction. By contrast, high-SDO adolescents tend to hold competitive worldviews (Duckitt, 2002) and believe that the aggressive behavior is appropriate for achieving their dominant status (Goodboy et al., 2016). As a result, high-SDO adolescents might engage in aggression to retaliate and maintain their beliefs of social hierarchies (Wang, 2022).

Notably, however, we failed to support that SDO moderated the direct relation between peer victimization and Internet addiction. One possible explanation for this result is that peer victimization is a significant risk factor for Internet addiction (Jia et al., 2018; Lo et al., 2021), but these effects cannot be moderated by SDO. Furthermore, this finding supported the self-medication hypothesis (Khantzian, 1985), which theorizes that Internet use may be a strategy by which adolescents try to self-treat in response to negative emotions from peer victimization. In other words, with the widespread popular of Internet worldwide, adolescents who are victimized are prone to immerse themselves in the cyber world to escape negative experience and seek comfort (Hsieh et al., 2019), but consequently, putting themselves at risk for Internet addiction. Nonetheless, given the moderating effect of SDO in the indirect path through anger rumination and the limited research on adolescents' SDO, it is premature to discount the importance of SDO, as further research is needed before we can draw any definitive conclusions about how SDO makes effect on adolescents' emotional and behavioral development.

4.4 | Gender differences

Consistent with previous studies (Cadamuro et al., 2022; Su et al., 2019; Wang & Liu, 2019), our results revealed that boys were more vulnerable to peer victimization, Internet addiction, and SDO compared to girls. Our results did not find the gender differences in anger rumination, supporting existing research (Maxwell, 2004; Ren et al., 2021). Moreover, our results showed the moderating effect of SDO in the indirect path through anger rumination among boys but not girls. It is likely that boys tend to have more power, obtain higher status and occupy more resources than girls through the evolutionary process (Pratto et al., 2006; Ward, 1995). Namely, the effects of SDO become more stronger among boys, compared to girls. Prior studies also illustrated that SDO exhibited stronger correlations among boys than girls (Goodboy et al., 2016). Hence, it is reasonable that the moderating effects of SDO were significant among boys. Our results also suggested that SDO appears to be a key factor against the development of peer victimization and anger rumination, especially among boys.

4.5 | Limitations

Several limitations of the present study must be noted. First, Internet addiction as a construct is highly controversial (Starcevic & Aboujaoude, 2017). In this study, we only measured general rather than specific type of Internet addiction (e.g., Internet gaming disorder). Considering that different types of Internet addiction may have various operating mechanisms, further research could deepen our understanding by measuring specific types of Internet addiction. Second, this study did not distinguish the subtypes of peer victimization (i.e., physical, verbal, and relational victimization). These subtypes of victimization may be differently associated with adolescents' Internet addiction. Future researchers can examine this possibility. Third, measures of Internet addiction were not available at T1, and it was thus not possible to control for baseline Internet addiction. Further studies would benefit from collecting data on peer victimization, anger rumination, Internet addiction, and SDO from multiple points to provide a more stringent test of mediating role of anger rumination and the temporal order of the constructs. Finally, this study relied exclusively on self-report measures. Using only one reporting method could yield problems of socially desirable responses and shared method variance (Volk et al., 2017), which could inflate the observed effects. Future research endeavors should therefore incorporate a multi-informant approach (e.g., self, peer, parent, and teacher-reports) to sharpen understanding of the association among peer victimization, anger rumination, Internet addiction, and SDO.

4.6 | Implications

Despite the aforesaid limitations, the results of this study had some important implications for the prevention and intervention of Internet addiction among adolescents. Firstly, offering prevention and intervention programs that target peer victimization may help protect adolescents from Internet addiction in the first place (e.g., Hsieh et al., 2019). Interventions to reduce victimization at both the whole-school approach targeting aggression and targeted intervention strategies are necessary for prevention and intervention. For one thing, the whole-school anti-bullying approach (e.g., A clear and strong antiaggression policy) is indispensable in tackling bullying and victimization (Chan & Wong, 2015). For another, a targeted intervention strategy is also vital to help victims escape from being bullied. For an example, the school-based Lunch Buddy program has been reported to significantly reduce peer victimization (Elledge et al., 2010). Second, the mediation of anger rumination highlights the importance to develop adaptive cognitive strategies that improve self-control to decrease impulsive and consequently Internet addiction. Cognitive reappraisal strategies (i.e., dampening anger that is induced by flashbacks of anger) are effective way to reduce anger rumination (Denson et al., 2012), which in turn increases the efficiency of the prevention and intervention of Internet addiction. Third, the findings demonstrated that individual factors (i.e., SDO) play a moderating role in the association between peer victimization and Internet addiction among boys. As such, more attention is needed to male victims with low SDO to reduce their subsequent risk of Internet addiction.

5 | CONCLUSIONS

Previous research has demonstrated that peer victimization is strongly associated with Internet addiction, but the mediating and moderating mechanisms of this relation are relatively less studied. Guided by the cognitive behavioral model and the worldview verification model, this study conducted a moderated mediation model to examine the mediating role of anger rumination and moderating role of SDO, as well as the gender differences. Our results highlight that anger rumination is a potential mechanism to explain how peer victimization is related to Internet addiction. T1 SDO moderated the associations between T1 peer victimization and T1 anger rumination and this effect was stronger with lower levels of SDO. Further, the

indirect effect through anger rumination was moderated by SDO only in boys, with this effect being stronger for adolescent boys with low SDO than for those with high SDO. These findings have implications for the prevention and intervention of Internet addiction among adolescents.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The ethical approval for this study was approved by the Institutional Review Board of Beijing Normal University. Informed consent was obtained from all individual participants included in the study.

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SUPPORTING INFORMATION

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