

Parental Attachment and Proactive-Reactive Aggression in Adolescence: The Mediating Role of Self-Control and Perspective Taking

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Introduction: Identifying risk and protective factors of aggressive behavior during adolescence is beneficial for the intervention and prevention treatments. Although studies show that attachment quality is closely related to aggression, the underlying psychological mechanisms remain unclear. This study aimed to investigate the links of parental attachment with proactive and reactive aggression and to examine the mediating role of perspective taking and self-control among Chinese adolescents.

Methods: A cluster sampling method was used to recruit participants from several high schools located in the central regions of China. A total of 2982 participants ($M_{age} = 17.28$, $SD = 0.83$, range 15~20 years; 1602 girls, 1380 boys) were included in the final analysis.

Results: Correlation analysis showed that participants possessing higher attachment security with parents were more likely to report lower levels of proactive and reactive aggression. And, self-control and perspective taking were positively associated with parental attachment, and negatively associated with both types of aggression. Moreover, structural equation models indicated that parental attachment directly, and indirectly predicted proactive and reactive aggression through self-control and perspective taking.

Discussion: Overall, this study contributes to a more comprehensive understanding of the explanatory mechanisms that link adolescent-parent attachment and aggression, and suggest that high quality of adolescent-parent interactions may promote adolescents' self-control and perspectives taking, which further reduces their aggression propensity.

Keywords: attachment, aggression, self-control, perspective taking, adolescence

Introduction

Over the past decades, the study of aggressive behaviors has emerged as a prominent area of investigation within developmental psychology and psychopathology. Early-life persistent patterns of aggressive behavior are considered as potential precursors to subsequent issues such as substance abuse, violent crime, and health problems.^{1,2} In an attempt to understand the underlying mechanisms of aggression, researchers have classified aggression into two main types: proactive and reactive aggression. This dichotomous perspective holds the promise of illuminating distinct etiological pathways of aggression.^{3,4} Proactive aggression is described as instrumental and organized behavior aimed at gaining a reward or social dominance over others, whereas reactive aggression has been characterized as a response to provocation or a perceived threat.⁵⁻⁷ Individuals exhibiting reactive aggression are more likely to react impulsively in the face of provocation, while those displaying proactive aggression tend to exhibit lower emotional reactivity and higher levels of instrumentality in their pursuit of benefits. Longitudinal research has provided evidence suggesting that proactive and reactive aggression are unique constructs with separate developmental trajectories and distinct associated factors.⁸ Identifying the risk and protective factors of both types of aggressive behavior during adolescence is crucial in recognizing the emergence and cessation of aggression, thereby informs effective intervention and

prevention strategies. Recently, abundant evidence has emphasized the significance of parental attachment in shaping aggressive behaviors. The present study aimed to investigate the associations between parental attachment and proactive and reactive aggression, while also examining the potential mediating roles of self-control and perspective taking in these relationships.

The Link Between Parental Attachment and Aggression

Parental attachment refers to the establishment of secure and nurturing bonds between children and their parents, which provides a foundation for the development of cognitive, social, and emotional competence from childhood throughout adulthood.^{9–11} According to Bowlby's attachment theory,¹² early experiences of relationships with parents shape the internal working models (ie, cognitive representations) of self and other, which are believed to influence and guide distinctive patterns of cognition, affect regulation, and behavior not only within family interactions but also in subsequent relationships with peers and close others.^{13–15} Specifically, individuals who experience caring, responsive, and trustworthy relationships with parents are presumed to develop secure working models, and therefore adopting a similarly trusting, open, and collaborative approach toward peers and partners later in life.^{16,17} On the other hand, individuals who experience neglectful, rejecting, and intrusive relationships with parents are prone to develop insecure working models, potentially leading to problematic interpersonal functioning.

Empirical evidence suggests that adolescents higher in attachment insecurity are more likely to engage in psychological aggression, physical and verbal aggression, hostility, and proactive and reactive aggression.^{10,18–22} Conversely, secure attachment may play an important role in mitigating deleterious effects and promoting adjustment in adolescence. For instance, parental attachment quality was negatively associated with proactive and reactive aggression, and mitigated the adverse effect of emotion regulation difficulty on proactive and reactive aggression.²¹ Hare et al found that attachment security moderated the association between paternal aggression and adolescent aggression, suggesting that attachment security may help attenuate the transmission of harmful conflict strategies across generations.^{20,23} Research also indicate that high-quality relationships with parents play a significant role in promoting adolescents' psychosocial adjustment and life satisfaction.^{24,25} In summary, the quality of parental attachment was assumed to be negatively associated with proactive and reactive aggression.

The Mediating Role of Self-Control

Conceptually, self-control is defined as the ability to inhibit and alter dominant impulses or responses to support the pursuit of long-term and valued goals.^{26,27} According to the self-control theory, effective parenting, including monitoring, recognition, and discipline, facilitates the development of self-control, whereas negative parenting impedes self-control development, leading to an increased risk of externalizing and deviant behaviors.²⁸ Empirical and review studies demonstrate that effective parenting practices could promote the development of emotion and behavior regulation abilities among children and adolescents.^{29–33} Specifically, warm and caring parent-adolescent relationships are positively associated with self-regulation behavior across early to late adolescence,^{34–36} whereas insensitive and harsh parenting is related to lower inhibitory self-control and executive functioning.^{31,37,38}

Both empirical and theoretical research consistently indicate that self-control serves as a vital protective factor in preventing and restraining the formation and progression of aggressive behaviors.^{39,40} Adolescents with high self-control tend to exhibit more positive coping and prosocial behaviors,^{41,42} and have lower tendency to ruminate about angry events, which further contribute to lower levels of aggression.⁴³ Furthermore, self-control may be an important mediating mechanism that explains the effect of parental attachment on adolescents' maladaptive responses and aggression. Specifically, secure parental attachment is linked to higher self-control, which in turn is associated with more prosocial behaviors and fewer rule-breaking behaviors.^{42,44} On the other hand, lower quality of adolescent-parent interactions coincides with dysfunctional self-regulation in adolescent, which in turn was associated with higher maladaptive peer relationships.^{45,46} Moreover, a cross-cultural study demonstrates that paternal attachment influenced adolescents' adjustment difficulties directly, and indirectly through self-control.⁴⁷ Therefore, it is hypothesized that parental attachment quality would be positively associated with higher self-control, and negatively associated with aggression.

The Mediating Role of Perspective Taking

Perspective taking (ie, cognitive empathy), refers to the ability to recognize and understand other people's emotions, viewpoints, and situations, and plays an important role in social adaptation and interpersonal relationship.^{48–51} Research has indicated that relationships with parents play a socializing role in the development of perspective taking abilities among adolescents.⁵² More specifically, individuals who have a secure attachment with parents tend to exhibit higher levels of perspective-taking and empathic concern than their counterparts.^{53,54} Conversely, insecure-anxious individuals tend to focus on their own unregulated emotions when exposed to others in distress.⁵⁵ Taubner et al suggested that adolescents' perspective-taking abilities play a moderating role in the relationship between psychopathic traits and proactive aggression,⁵⁶ suggesting that perspective-taking may serve as a protective factor in preventing proactive aggression in adolescence.

Perspective taking is acknowledged for its significance in comprehending the needs of others in distress and is considered a protective factor against aggression.^{57,58} Research shows that perspective taking facilitates prosocial actions and mitigates aggressive behaviors.⁵⁹ Adolescents with lower perspective taking are at a higher risk of engaging in various forms of bullying and aggressive behaviors, such as name calling, indirect bullying, and violent behaviors.⁶⁰ Indeed, children and adolescents who are more aggressive and less prosocial tend to have deficits in perspective taking and emotional empathy.⁶¹ Previous work investigating the connection between parental attachment, perspective-taking, and aggression has demonstrated that adolescents' attachment security with parents was positively associated with perspective taking, while both attachment security and perspective-taking were negatively related to aggressive tendencies.⁶² Moreover, higher levels of attachment avoidance predicted lower perspective taking, which in turn, predicted reduced altruistic behavior.⁶³ However, controversy remains in the literature regarding the relationship between perspective taking and aggression. For instance, some studies revealed a lack of association between aggression and perspective taking in adolescents.^{60,64} Batanova and Loukas found that perspective taking predicted increased relational aggression one year later.⁶⁵ Researchers suggested that individuals may utilize perspective-taking skills for aggressive behaviors in order to maintain or enhance their social status and dominance.^{64,66} Considering these mixed findings, the relationship between perspective taking and aggression should be further clarified.

In reviewing the existing literature, it is evident that few studies have delved into the relationship between parental attachment and proactive and reactive aggression. Furthermore, no research has directly investigated the role of self-control and perspective taking underlying these associations. Thus, the present study aimed to examine the associations between parental attachment and proactive and reactive aggression, while simultaneously exploring the mediating role of self-control and perspective taking. Building upon the theoretical and empirical evidence, the present study proposed that self-control and perspective taking could play a mediating role in the association between parental attachment and proactive and reactive aggression in adolescence.

Methods

Participants and Procedure

This cross-sectional study employed a cluster sampling method to recruit 3200 participants from several high schools in Henan and Hubei Province located in the central regions of China. The researcher first introduced the purpose of the study and related questionnaires to the school manager before collectively administering the questionnaires to student on a class basis. Under the guidance of trained teachers, students were presented with an introduction to the purpose of the study and the confidentiality of their answers. Subsequently, guidelines were read out to the students, explaining the relevant instructions on how to complete the questionnaire and what aspects to consider during the process. The entire survey process lasted approximately 20 minutes, and the questionnaires were collected from the participants upon completion. Demographic characteristics were also collected: age, gender, family economic incomes (1 = 1000¥ and below; 2 = 1001~3000¥; 3 = 3001~5000¥; 4 = 5000~10,000¥; 5 = 10,001~20,000¥; 6 = 20,000¥ and above), residence (ie, rural or urban area), and parent education (1 = primary school and below; 2 = middle school; 3 = high school degree or special school degree; 4 = undergraduate degree; 5 = graduate degree or above). A total of 2982 participants ($M_{\text{age}} = 17.28$, $SD = 0.83$, range 15~20 years; 1602 girls, 1380 boys) were included in the final analysis. The effective collection rate of questionnaires was 93.19%. All adolescent participants and their parents signed an informed consent document

and were offered an honorarium. Ethical approval of this study was granted by the Ethics Committee of Central China Normal University, and all procedures were in accordance with the Ethics of Declaration of Helsinki.

Measurements

Parental attachment was measured using the Inventory of Parent and Peer Attachment (36-item),⁶⁷ which includes the cognitive-affective dimensions of trust in parent and peer, and accessibility and responsiveness. Two subscales (mother and father attachment, each containing 12 items) were used to assess three key aspects of attachment: trust (eg, “My mother/father accepts me as I am”), communication (eg, “My mother/father helps me to understand myself better”), and alienation (eg, “I don’t get much attention from my father/mother”, reversed). Participants were asked to rate their agreement on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Previous research has supported the reliability and validity of the Chinese version of this inventory.^{68,69} In the present study, Cronbach’s alpha for mother attachment and father attachment was 0.85 and 0.86, respectively.

Proactive aggression and reactive aggression were assessed using a well-validated proactive-reactive aggression questionnaire,³ which consists of 23 items. Specifically, 11 items assessed reactive aggression (eg, “Reacted angrily when provoked by others”), and 12 items assessed proactive aggression (eg, “Hurt others to win a game”). All items were rated on a 3-point scale (0 = *never*, 1 = *sometimes*, and 2 = *often*), with higher scores indicating a higher level of aggression. Research has indicated that this questionnaire has good reliability and validity in Chinese children and adolescents.^{70,71} In this study, Cronbach’s alpha was 0.85 for proactive aggression, 0.81 for reactive aggression, and 0.84 for total aggression.

Self-control measured with the Trait Self-Control Scale.^{72,73} Participants were asked to indicate the extent to which they agree with on 13 items (eg “I am good at resisting temptation”) with a 5-point Likert scale (1 = *not at all like me*, 5 = *very much like me*). Items were averaged so that higher scores indicated greater self-control ability. Cronbach’s alpha of this scale was 0.82 in the present study.

Perspective taking was measured using five items from the Interpersonal Reactivity Index.⁵⁰ Respondents indicated the extent to which they agree with each item (eg, “I sometimes try to understand my friends better by imagining how things look from their perspective”) on a 5-point Likert scale (1 = *not at all like me*, 5 = *very much like me*), with higher scores indicating greater perspective taking. Items were averaged and higher scores reflect greater perspective taking. Previous research has supported the reliability and validity of this inventory in the context of Chinese culture.^{62,63} Cronbach’s alpha of this scale in this study was 0.81.

Statistical Analysis

Descriptive statistics and correlations analysis were conducted with SPSS 24.0. To assess the meditating effect of self-control and perspective taking underlying the associations between parental attachment and aggression outcomes, structural equation models were conducted using M-plus 7.0. Specifically, father attachment and mother attachment were treated as independent variables (X), self-control and perspectives taking as the mediator variables (M), and proactive aggression and reactive aggression as the separate independent variables (Y), with sex, age, income, residence, and parent education as covariates. The chi-square, comparative fit index (CFI), Tucker-Lewis Index (TLI), root-mean-square error of approximation (RMSEA), and standardized root-mean-square residual (SRMR) were used to evaluate the measurement model fit. The following criteria were used to indicate the goodness of fit: CFI \geq 0.90, RMSEA \leq 0.10, and SRMR \leq 0.10.⁷⁴

Results

Common Methods Bias Analysis

To check and test common method bias, Harman’s single-factor test using confirmatory factor analysis was conducted. A factor analysis was conducted on all items of the scales including parental attachment, self-control, perspectives taking, proactive aggression and reactive aggression, and a common factor from these items was extracted. The interpretation rate of the first factor was 16.77%, less than 40%, indicating that there was no common method bias in this study.

Descriptive Statistics and Correlation Analysis

Table 1 presents the means, standard deviations, and *t*-test results on sex differences. Girls reported higher level of attachment to parents and perspective taking than boys. Boys exhibited higher levels of both proactive and reactive aggression compared to girls.

Descriptive statistics and correlation matrix for model variables were shown in Table 2. In terms of aggressive tendencies, adolescents exhibited low to moderate levels of reactive aggression and low levels of proactive aggression. As mentioned above, proactive and reactive aggression were more prevalent in the boys. Correlation analysis showed that income and parental education were significantly and positively associated with parental attachment. Moreover, parental attachment was positively correlated with self-control and perspectives taking, and negatively correlated with proactive aggression and reactive aggression. Moreover, higher levels of self-control and perspectives taking were associated with lower proactive and reactive aggression. This suggests that participants with secure attachment to mother and father are associated with higher levels of self-control and perspectives taking, while also displaying lower levels of proactive and reactive aggressive behavior.

Mediation Analysis

As portrayed in Figure 1, the structural equation models were fitted was to examine the mediating effect of self-control with father/mother attachment as predictors and proactive and reactive aggression as outcomes. The model fit the data adequately, $\chi^2_{(9)} = 70.77$, $p < 0.001$; CFI = 0.96; TLI = 0.92; RMSEA = 0.05, 90% [CI: 0.04, 0.06]; SRMR = 0.03. As predicted, mother attachment predicted proactive aggression (direct effect coefficient = -0.11 , 95% CI [-0.157 , -0.071]) and reactive aggression (direct effect coefficient = -0.07 , 95% CI [-0.112 , -0.016]) directly, and indirectly through self-control (indirect effect coefficient = -0.002 , 95% CI [-0.004 , -0.001] for proactive aggression; indirect effect coefficient = -0.029 , 95% CI [-0.039 , -0.019] for reactive aggression). Similarly, father attachment predicted proactive aggression

Table 1 Descriptive Statistics of Sex Difference

Variables	Girl (N = 1602)		Boy (N = 1380)		t	p
	M	SD	M	SD		
Mother attachment	3.77	0.65	3.67	0.60	3.92	< 0.001
Father attachment	3.70	0.67	3.60	0.65	4.46	< 0.001
Self-control	2.68	0.56	2.70	0.59	-1.23	> 0.05
Perspectives taking	3.57	0.72	3.45	0.75	4.47	< 0.001
Proactive aggression	0.04	0.10	0.10	0.22	-10.16	< 0.001
Reactive aggression	0.59	0.32	0.62	0.35	-2.11	< 0.05

Abbreviations: N, number; SD, standard deviation.

Table 2 Descriptive Statistics and Correlations Among Variables (N = 2982)

Variables	M	SD	1	2	3	4	5	6	7	8	9
Income	3.22	1.06	—								
Mother education	1.61	0.79	0.19**	—							
Father education	1.93	0.83	0.21**	0.51**	—						
Mother attachment	3.72	0.63	0.06**	0.09**	0.08**	—					
Father attachment	3.66	0.66	0.08**	0.06**	0.07**	0.67**	—				
Self-control	2.69	0.57	-0.01	0.01	-0.01	0.32**	0.34**	—			
Perspectives taking	3.52	0.74	-0.01	0.02	0.03	0.22**	0.20**	0.25**	—		
Proactive aggression	0.07	0.17	-0.04	0.02	0.02	-0.19**	-0.18**	-0.11**	-0.14**	—	
Reactive aggression	0.60	0.33	-0.01	-0.01	-0.03	-0.23**	-0.25**	-0.40**	-0.24**	0.37**	—

Note: ** $p < 0.01$.

Abbreviations: N, number; SD, standard deviation.

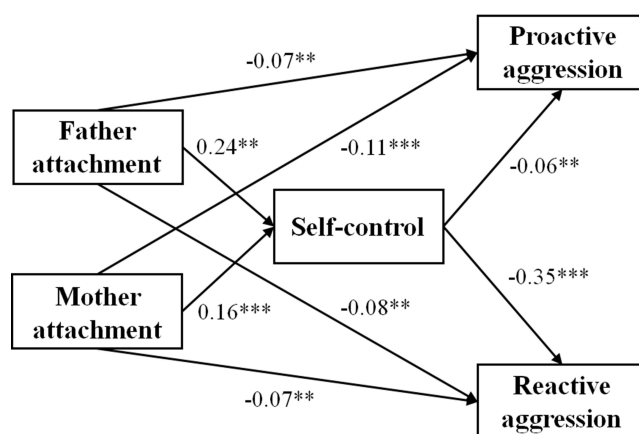


Figure 1 The model with standardized estimates is presented. ** $p < 0.01$; *** $p < 0.001$.

(direct effect coefficient = -0.07 , 95% CI [-0.113 , -0.029]) and reactive aggression (direct effect coefficient = -0.08 , 95% CI [-0.129 , -0.036]) directly, and through self-control indirectly (indirect effect coefficient = -0.003 , 95% CI [-0.006 , -0.001] for proactive aggression; indirect effect coefficient = -0.042 , 95% CI [-0.052 , -0.034] for reactive aggression). Finally, we conducted a chi-square difference test to examine the potential differences between mother and father in their contributions to aggression outcomes. Results revealed no significant differences in the mediating effect of self-control between father attachment and mother attachment (proactive aggression: $\chi^2_{(1)} = 2.39$, $p > 0.05$; reactive aggression: $\chi^2_{(1)} = 3.29$, $p > 0.05$).

A second structural equation model was established to examine the mediating effect of perspective taking with father/mother attachment as predictors and proactive and reactive aggression as outcomes (Figure 2). The model fit the data adequately, $\chi^2_{(9)} = 63.72$, $p < 0.001$; CFI = 0.95; TLI = 0.90; RMSEA = 0.04, 90% [CI: 0.04, 0.06]; SRMR = 0.03. As hypothesized, mother attachment predicted proactive aggression (direct effect coefficient = -0.11 , 95% CI [-0.153 , -0.068]) and reactive aggression (direct effect coefficient = -0.09 , 95% CI [-0.139 , -0.043]) directly, and indirectly through perspective taking (indirect effect coefficient = -0.004 , 95% CI [-0.006 , -0.002] for proactive aggression; indirect effect coefficient = -0.016 , 95% CI [-0.022 , -0.010] for reactive aggression). Meanwhile, father attachment predicted proactive aggression (direct effect coefficient = -0.08 , 95% CI [-0.116 , -0.036]) and reactive aggression (direct effect coefficient = -0.15 , 95% CI [-0.196 , -0.105]) directly, and indirectly through perspective taking (indirect effect coefficient = -0.002 , 95% CI [-0.004 , -0.001] for proactive aggression; indirect effect coefficient = -0.009 , 95% CI [-0.015 , -0.003] for reactive aggression). Results of chi-square difference test showed again revealed no significant

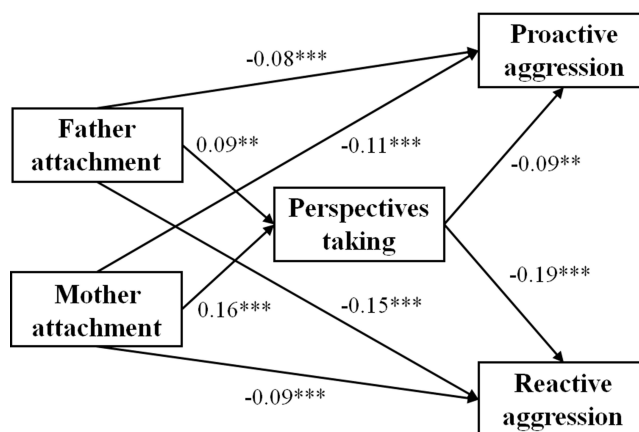


Figure 2 Second model with standardized estimates is presented. ** $p < 0.01$; *** $p < 0.001$.

differences in the mediating effect of perspective taking between father attachment and mother attachment (proactive aggression: $\chi^2_{(1)} = 2.34, p > 0.05$; reactive aggression: $\chi^2_{(1)} = 2.55, p > 0.05$).

Discussion

The present study investigated the associations between parental attachment and proactive and reactive aggression in Chinese adolescents, and further uncovered the mediating role of self-control and perspective taking. Results showed that higher attachment security in adolescents was associated with lower proactive and reactive aggression. Additionally, both self-control and perspective taking were positively associated with parental attachment and negatively associated with both types of aggression. Furthermore, parental attachment not only directly predicted proactive and reactive aggression, but also exerted an indirect effect through self-control and perspective taking. Overall, the present findings the current study enhances our understanding of the complex relationships between parental attachment, self-control, perspective taking, and different types of aggression in adolescents. The results suggest that secure attachment with parents may serve as a protective factor against various forms of aggression by fostering better self-control and perspective-taking abilities in adolescents.

Theoretically, the present findings indicate that attachment security could inhibit aggressive tendencies, and are in accordance with attachment theory, suggesting that individuals who have positive relationships with parents tend to develop secure working models and exhibit healthy interpersonal interactions with peers and partners.^{14,16} Converging evidence has indicated that securely attached adolescents experience less conflict with family and peers and demonstrate a smoother transition to high school than insecurely attached adolescents.^{75–77} Similarly, studies have revealed that adolescent who had a secure attachment were lower in aggressive behaviors compared to those who had an insecure attachment.^{18–20,22} These findings suggest that attachment security may act as a protective factor for adolescents' development of social adaptation and interpersonal relationships.

The present study adds to the existing literature on the relationship between attachment security and aggression by further highlighting the mediating role of self-control and perspective taking which elucidates the connection between parental attachment and proactive and reactive aggression. The mediating effect of self-control is in accordance with the self-control theory, which suggests that effective parenting fosters adolescents' self-control ability,^{28–30,32,33} which then contribute to lower aggressive tendency.^{39,40} Indeed, empirical studies have shown that caring and warm family relationships have positive effects on self-regulation behaviors among adolescents,^{34–36} which in turn are associated with fewer rule-breaking behaviors.⁴⁴

On the other hand, the mediating role of perspective taking is in line with the attachment theory, which proposes that the quality of the parent-child relationship shapes an individual's social development.^{14,16} Individuals who have a secure attachment with parents are more likely to exhibit greater perspective-taking and empathic concern than their counterparts.^{53,54} Although findings on the association between perspective taking and aggression were mixed,^{64,65} accumulating evidence suggests that understanding the viewpoint of others facilitates prosocial actions and mitigate aggressive behaviors.^{59,62,78–80} Conversely, children and adolescents who lack perspective taking skills are more likely to display callous-unemotional traits and aggressive behaviors.^{61,63,81} Based on existing evidence, self-control and perspective taking may be important psychological mechanisms underlying the associations between parental attachment and proactive and reactive aggression. Specifically, attachment security can promote adolescents' self-regulation and perspective taking, thereby playing a crucial role in reducing aggression.

Several limitations in this study should be acknowledged. First, the recruitment of participants solely from Chinese high schools, specifically from two provinces in the central regions, may limit the generalizability of the present findings. Future research should assess this finding in diverse samples encompassing various age groups and countries with different cultural backgrounds. For instance, one study in Polish adolescents found that attachment to father, but not attachment to mother, predicted aggressive victimization through self-control.⁸² Second, the utilization of a cross-sectional design and self-report measurements in this study present challenges to establish the causal associations among variables. Multiple forms of measurement and designs with ecological validity and predictive effect, such as third-party reports (eg, parents, teachers), experience sampling (eg, daily diary), and longitudinal tracking should be considered in future research.

Conclusions

The present study investigated the relationship between parental attachment and proactive and reactive aggression and revealed the mediating role of self-control and perspective taking in Chinese adolescents. Attachment security not only

directly predicted proactive and reactive aggression, but also indirectly predicted both types of aggression through self-control and perspective taking. This study contributes to a deeper understanding of the links between parental attachment and aggression by revealing its psychological mechanisms and suggesting that secure attachment with parents may decrease adolescent's aggression through the promotion of self-control and perspective taking. The current findings hold important implications for future research on alleviating aggression through intervention programs focused on fostering family education and relationships, as well as promoting self-control and perspective taking among adolescents.

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Disclosure

The authors report no conflicts of interest in this work.

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