


Maternal Psychological Aggression, Problem Behaviors, and the Mediating Roles of Psychological Resilience and Self-Control in Preschoolers

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Objective: This study examines the relationship between maternal psychological aggression (PA) and preschoolers' problem behaviors (PB), focusing on the mediating roles of psychological resilience (PR) and self-control (SC), and gender differences.

Methods: Mothers of 1141 preschoolers (52.9% boys, 47.1% girls; $M_{\text{age}} = 4.26$, $SD = 0.85$) participated in three waves of a longitudinal survey, each two months apart. Mothers participating in this study reported basic demographic information and PA at T1. PR and SC were reported at T2. PB of preschoolers was reported at T3. Path analysis models were employed to ascertain the relationship between PA and PB, as well as the mediating roles of PR and SC. Multiple group analyses were employed to ascertain the moderating role of gender.

Results: Maternal PA (T1) was positively associated with preschoolers' PB (T3) ($\beta=0.220$, $p<0.001$). PR (T2) and SC (T2) independently and sequentially mediated the relationship between maternal PA (T1) and preschoolers' PB (T3). Maternal PA (T1) was negatively associated with preschoolers' PR (T2) only in boys ($\beta = -0.155$, $p<0.001$), not in girls ($\beta = -0.030$, $p>0.05$).

Conclusion: This study reveals the impact and underlying mechanisms of maternal PA on preschoolers' PB and highlights gender differences. These findings underscore the importance of protective factors in fostering positive adaptive behaviors in children subjected to maternal PA. Interventions should focus on preventing maternal PA and enhancing children's PR and SC, particularly in boys, to promote healthy and positive behaviors.

Keywords: psychological aggression, problem behavior, psychological resilience, self-control, preschoolers

Introduction

In recent decades, the prevalence of problem behaviors in preschoolers has continued to rise.¹ A nationwide survey of children's hospitals conducted in 2019–2020 found that outpatient visits for children's psychological problems have been increasing at an annual rate of 10%.² Problem behaviors in preschoolers are behaviors that deviate from the normative standards of an individual's socialization process³ and generally include internalizing problem behaviors (anxiety, depression, et al) and externalizing problem behaviors (hyperactivity, aggression, conduct problems, etc).⁴ A longitudinal study shows that problem behaviors (PB) exhibit a degree of continuity and stability across different ages, with behaviors observed during adolescence often traceable back to the preschool years.⁵ The preschool period (3–6 years) is crucial for children's mental health development, as problems originating at this stage can impede the completion of life tasks during adolescence and adulthood.⁶ Children experiencing psychological or behavioral issues during the preschool period are more likely to face academic difficulties later on and may encounter adverse outcomes in adulthood, such as mental health issues, and criminal behavior.⁷ PB in preschoolers is not only a key indicator for evaluating an individual's level of physical and mental development and socialization and adjustment, but also an important variable for predicting an individual's mental health and socio-behavioral behavior in adolescence and

adulthood.⁸ Therefore, understanding the internal mechanisms underlying preschoolers' PB is essential for effective intervention and promotion of their mental health development.⁹

Ecological systems theory suggests that the family is the foundation of children's socialization and the most immediate and direct microsystem influencing their development.¹⁰ As primary caregivers, mothers' parenting behaviors significantly impact preschoolers' social, emotional, and behavioral development.¹¹ As one of the common forms of harsh discipline used by mothers, psychological aggression (PA) is operationally defined as "the use of psychological force with the intention of causing a child to experience psychological pain or fear for the purposes of correction or control of misbehavior", eg, "threatened to spank or hit".^{12,13} There are similarities between the concepts of PA and psychological control. However, psychological control refers to parental control that intrudes on the psychological and emotional development of the child.¹⁴ Whereas PA emphasizes the use of verbal or symbolic aggression such as yelling, scolding, and threats, designed to cause psychological distress or fear in the child.¹² Cuartas surveyed children experiencing violent discipline in low- and middle-income countries and found that 65.4% of preschoolers had been subjected to PA.¹⁵ This finding indicates that PA is relatively common. Preschoolers who have been subjected to PA often exhibit higher levels of aggression¹⁶ and high levels of anxiety and depression one year later.¹⁷ In recent years, the impact of PA on preschoolers' psychological and behavioral issues has attracted growing scholarly interest.^{15,18} The impact of PA on preschoolers' PB may be direct or indirect, potentially mediated by individual factors.¹⁹ Further research is needed to elucidate this relationship. Additionally, for preschool-aged children, mothers serve as their primary caregivers and primary behavioral role models.¹¹ Therefore, compared to other age groups, the negative effects of a mother's poor disciplinary methods may be more pronounced on preschoolers.^{20,21} Previous research on PA has primarily focused on school-aged children,^{22,23} with relatively few studies addressing preschoolers, who are in a critical period of psychological development.

PA and PB

PA is one of the most common forms of harsh discipline by parents.²⁴ A longitudinal study shows that PA is more destructive and has more lasting negative effects than physical aggression.²⁵ High levels of PA are associated with negative outcomes in multiple areas of preschoolers' development, including emotional, cognitive, and behavioral domains.^{18,26} According to social learning theory, children learn and adopt behaviors by observing and imitating their parents.²⁷ When mothers use verbal abuse or threats to control or stop children's inappropriate behaviors, children may adopt these aggressive behaviors as effective strategies, leading to similar behaviors in social situations.²² In addition, according to the emotional security hypothesis, mothers' use of aggressive discipline such as rejection, ridicule, and threats can disrupt the emotional bond between parent and child, increase preschoolers' psychological insecurity, and in turn lead to higher levels of internalized problem behaviors such as anxiety and depression.^{28,29} Thus, maternal PA may directly affect preschoolers' PB, with higher levels of maternal PA leading to higher incidence of preschoolers' PB.

The Mediating Role of PR

A longitudinal study suggests that psychological resilience (PR) plays a protective role in emotional and behavioral problems, and preschoolers with high levels of PR exhibit fewer anxiety and behavioral problems.³⁰ PR is the ability to overcome the negative effects of risk exposure, to successfully cope with traumatic experiences and to avoid negative trajectories associated with risk, and consists primarily of proactivity, self-regulation, and attachment.^{31,32} It begins to form during the preschool years and can be observed behaviorally from infancy.³³ As an important positive psychological resource for individuals, PR is increasingly involved in preschoolers' mental health research.^{34,35} Many researchers have suggested that maternal warmth and affection may increase preschoolers' positive psychological reserve and be positively associated with PR in preschoolers,³⁵ whereas high levels of maternal PA, such as rejection, intimidation, and threatening discipline behaviors, are associated with lower PR in children.^{36,37} Preschoolers with lower PR are unable to successfully cope with adversity or risk and are more likely to externalize and internalize problem behaviors.⁸ Some studies have shown that PR is negatively associated with depression despite significant negative life experiences in childhood.^{38,39} Numerous cross-sectional and longitudinal studies have demonstrated that PR is effective in both

reducing the incidence of PB in preschoolers and mitigating the negative impact of risk factors on preschoolers' mental health.^{8,30,34,40} Therefore, PR may mediate the relationship between maternal PA and preschoolers' PB.

The Mediating Role of SC

Self-control (SC) is the ability to regulate one's behavior, emotions, and other reactions to achieve specific goals.⁴¹ In young children, SC is usually achieved through effortful control and is defined as the ability to perform attentional tasks, including inhibiting dominant responses and/or activating subdominant responses, planning, and detecting errors.⁴² Individual differences in SC emerge in the first few years of life and develop further during childhood and adolescence.⁴³ Given that children's self-control develops through interactions with their parents,⁴⁴ negative parental discipline can hinder the development of SC in children. According to the self-control strength model, attention resources are limited.⁴⁵ When children focus on their mother's psychological aggression and their own emotional distress, they lack sufficient resources for self-control processes.⁴⁶ Due to harsh parenting behaviors, preschoolers become insensitive to the demands and opportunities of changing situations and increasingly rely on external control rather than internal SC.⁴⁷ Preschoolers with low SC have poor adaptability, low frustration tolerance, and are more easily angered and aggressive.^{41,48,49} Longitudinal studies have shown that preschoolers' SC is negatively correlated with both internalizing and externalizing PB.^{49,50} Therefore, SC may be another mediating variable between maternal PA and preschoolers' PB.

The Chain Mediating Effect of PR and SC

Based on attachment theory and the strength model of self-control, the present study further explored the chain-mediated roles of PR and SC between PA and PB. According to attachment theory, a good attachment relationship with a parent or primary caregiver is a source of security and trust for young children and facilitates the development of positive internal protective resources,⁵¹ such as PR.³⁵ Conversely, high levels of PA in mothers are associated with lower PR in preschoolers.³⁵ According to the strength model of self-control, the process of SC requires the consumption of psychological resources and these psychological resources are domain-general, PR is an important protective resource in early childhood development, and the execution of all SC behaviors consumes energy from the resource pool.^{52–54} On the one hand, psychological resources influence the execution of SC, and increased SC may be an important manifestation of PR in the mobilization of internal resources.⁵⁵ A study of children under the age of 6 years showed that higher psychological resilience children showed higher self-control.⁵⁶ On the other hand, SC may also have an impact on children's problem behaviors. Recent empirical studies support these views, such as van Prooijen's study of 107 Danish families with children between the ages of 21 and 29 months, which found that self-control in early childhood was negatively correlated with problem behaviors.⁴⁹ Zhang conducted a follow-up study on children aged 3–6 years and found that children's self-control ability was negatively correlated with children's anxiety and disciplinary aggression after 6 months.⁴⁸ In summary, maternal PA has a negative impact on preschoolers' PR. PR, as an internal resource needed for preschoolers' SC, affects the smooth process of preschoolers' SC, and SC may be a proximal factor in the effect of PR on preschoolers' PB. Thus, PR and SC may act as chain mediators between maternal PA and preschoolers' PB.

Group Differences by Gender

Research on gender differences in PR during the preschool stage yields mixed results. Some studies suggest that girls mature earlier than boys both physiologically and emotionally.⁵⁷ For instance, research conducted in Jiangsu and Fujian, China, indicated that preschool girls exhibit higher levels of PR compared to preschool boys.⁵⁸ However, other studies have found no significant differences in PR levels between preschool boys and girls.^{34,59} Regarding SC, some studies indicate that girls show significantly higher levels of SC than boys at ages 2 and 4.⁶⁰ This better development of SC skills in girls may be attributed to social gender stereotypes, where society expects girls to be obedient, prompting them to consciously control their behavior.⁶¹ In contrast, boys are often encouraged to display risk-taking behaviors associated with masculinity.^{62,63} However, other studies have found no significant differences in SC levels between boys and girls.^{64,65} These varying research findings on gender differences in PR and SC in preschoolers suggest that influencing factors may differ by gender.

In addition, the same maternal discipline may affect boys and girls differently, with boys being more susceptible than girls to the harmful effects of negative disciplinary behaviors.⁶⁶ Boys are more likely than girls to experience emotional distress in the face of harsh maternal disciplinary behaviors,⁶⁷ which can be detrimental to children's development of internal protective resources (PR, etc.), as well as hindering the development of SC and triggering internalized and externalized PB. For example, Barnett suggests that externalizing problems in preschoolers are associated with observed less positive discipline of mothers, an effect that is stronger for boys.⁶⁶ Browne suggests that although parents' reports of hostile and ineffective disciplining behaviors are associated with boys' and girls' early- to mid-childhood onset of aggression and emotional disorders increased risk, inconsistent parenting behaviors and fewer positive interactions were only associated with an increased risk of mood disorders in boys.⁶⁸ Consequently, the pathways from maternal PA to PB may vary between boys and girls.

The Current Study

As literature illustrates, the previous cross-sectional studies failed to uncover the effect of maternal PA on preschoolers' PB over time and the potential psychological mechanism between the two variables. Furthermore, despite extensive evidence supporting the impact of maternal PA on preschoolers' PB, the mediating role of children's internal factors (PR and SC) has not yet been evaluated when considering gender differences. It remains largely unclear whether the intensity of maternal PA's impact on boys' and girls' PB differs. In this sense, it is meaningful to address the aforementioned research gaps for better understanding the factors associated with preschoolers' PB and proposing effective intervention strategies. Based on this, the present study focused on the role between maternal PA, preschoolers' PR and SC, aiming at exploring the influencing factors of PB. Hence, we constructed a chain mediation model (Figure 1) and adopted a three-wave longitudinal design to verify our hypothesis as follows:

Hypothesis 1: Maternal PA is positively correlated with preschoolers' PB.

Hypothesis 2: PR and SC independently mediate the relationship between maternal PA and preschoolers' PB.

Hypothesis 3: PR and SC serve as a chain mediating mechanism between maternal PA and preschoolers' PB.

Hypothesis 4: There may be gender differences in the chain mediating effects of PR and SC; the effect sizes of the mediating effects of PR and SC may be larger in boys than in girls.

Methods

Participants and Procedure

This is a longitudinal study and data were collected using the convenience sampling method. We used the sample size formula n to calculate the sample size. A relative error of 15% was allowed, thus accepting an absolute error $\delta = 0.15\pi$ and a confidence interval of 95%. Therefore, $\mu_a = 1.96$, according to previous studies, the prevalence of emotional and

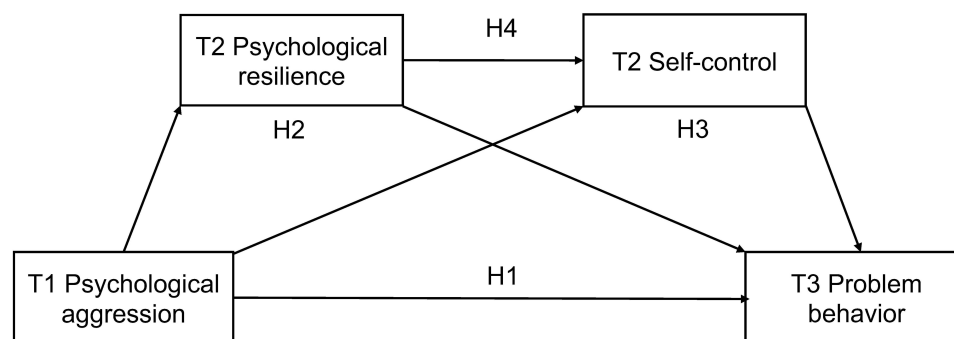


Figure 1 Hypothesized conceptual model.

behavioral problems among Chinese children was 17.6%⁶⁹ with $\pi = 17.6\%$. The minimum sample size in this study was $n = [1.962 \times 17.6\% (1 - 17.6\%)] / (0.15 \times 17.6\%)^2 \approx 799$. Considering 10% invalid responses, we expanded the minimum sample size to $n = 799 \times (1 + 10\%) \approx 879$. A total of 1451 questionnaires were distributed via the Internet to mothers of preschoolers in 29 kindergartens in the southern provinces of China. Mothers of preschoolers completed the questionnaire for their children on three occasions, each approximately 2 months apart. The exclusion criteria of the questionnaire were: 1) missing data in the recovered questionnaire; 2) a response agreement rate of more than 85% for the questions; and 3) time to complete the questionnaire was less than 5 minutes. Ultimately, 1421, 1278, and 1141 cases were included in each of the 3 time waves (attrition rates of 10.1 to 19.7%). A total of 1141 participants provided ratings at all time points from T1 to T3, constituting the final sample for this study. Missing values were assessed for nature of missingness using Little's test for data missing completely at random (MCAR) and separate variance *t*-tests. Little's test for MCAR using all quantitative variables revealed no evidence that missing PA, PR, SC and PB scores were not MCAR ($p > 0.05$). Differences in all quantitative variables between participants who were missing at T1 to T3 (missing group) and those who provided ratings at both T1 to T3 (complete group) were examined using separate variance *t*-tests. The results showed that there were no significant differences between the two groups of participants on the quantitative variables ($p > 0.05$). The average age of the preschoolers was 4.26 ± 0.85 years, with 604 boys (52.9%) and 537 girls (47.1%), see Table 1 for details.

The data for this study were collected through the Internet. With the help of kindergartens, questionnaires were distributed to the children's mothers through a WeChat group for parents of preschoolers. Before each questionnaire was filled out, mothers were asked about their willingness to participate. If mothers chose "I agree to participate in this survey" to indicate that they volunteered to participate in the study, a page for completing the questionnaire was displayed. If mothers selected "I do not want to participate in this survey" indicating that they were not will to participate, the survey was closed at this point. This study does not collect personally identifiable information from participants, but participants will be asked for a contact phone number, microphone number, or Email address to facilitate the second and third waves of data collection. Informed consent was obtained from all participating parents and their teachers, adhering to ethical principles of voluntary participation. According to the guiding principles of the Helsinki Declaration, the Research Ethics Committee of Guangzhou University approved the ethical review of this study (Ethics of Guangzhou University [2024] No. 027).

Measures

PA

Maternal PA was assessed using the Psychological Aggression subscale of the Parent-Child Conflict Tactics Scales (CTSPC) at T1.²⁴ The original scale was utilized to assess child maltreatment and was developed by Straus et al.⁷⁰ This subscale contains five items (eg, "shouted at the child" or "called the child stupid or lazy"). Mothers were asked to assess the frequency of these behaviors over the past year using a 7-point scale. Higher scores indicate more severe maternal

Table 1 Social Demographic Features of Participants (N=1141)

Variables		N	Percentage
Gender	Boys	604	52.9%
	Girls	537	47.1%
Age	3~4	256	22.4%
	4~5	431	37.8%
	5~6	454	39.8%
Total annual household income	< 5000RMB	146	12.8%
	5000 ~ 10,000RMB	206	18.0%
	10,000 ~ 50,000RMB	221	19.4%
	50,000 ~ 100,000 RMB	291	25.5%
	> 10,000 RMB	277	24.3%

PA. The scale has shown satisfactory reliability and validity in the Chinese population.¹³ The scale demonstrated satisfactory internal consistency in the context of the current study ($\alpha=0.84$).

PR

Devereux Early Childhood Assessment for Preschoolers, Sec. Edition (DECA-P2) was used to measure preschoolers' PR at T2.⁷¹ The DECA-P2 serves as a measurement tool designed to assess a range of protective factors that are essential for optimal social and emotional health and resilience. It is also used to identify problem behaviors. The scale consists of 38 items covering three protective dimensions and one screening dimension for problem behaviors. Higher protective dimension scores represent better PR in preschoolers. This study utilized the three protective dimensions of attachment/relationship, initiative, and self-regulation to measure preschoolers' PR. Mothers were asked to assess the frequency of their children's behaviors over the past month using a 5-point scale. The scale has been widely used in Chinese preschool populations with satisfactory reliability and validity.³⁴ In the context of the current study, the scale demonstrated satisfactory internal consistency for both the total scale and the dimensions ($\alpha =0.88 \sim 0.96$).

SC

The Chinese version of the Brief Self-control Scale was used to measure preschoolers' SC at T2.⁴⁸ Tangney et al developed the original scale to assess an individual's SC abilities.⁷² Zhang et al translated the scale into Chinese and adapted the items for parent reporting. The scale includes 13 items (eg, "he/she can resist temptation well", "he/she would refuse things harmful to themselves"). Mothers used a 5-point scale to assess the frequency of their children's behavior over the past month. Higher scores on this scale are indicative of greater SC. The scale has shown satisfactory reliability and validity in a population of Chinese preschoolers.⁴⁸ The scale demonstrated satisfactory internal consistency in the context of the current study ($\alpha =0.91$).

PB

The Problem Behavior subscale of the Social Skills Improvement System Rating Scales (SSIS-RS; Parent version) was used to measure preschoolers' PB at T3.⁷³ The scale consists of 33 items across five dimensions: externalizing problems, bullying problems, hyperactivity problems, internalizing problems, and autism problems. Mothers used a 4-point scale to assess the frequency of their children's behavior over the past month. Higher total scores are indicative of more severe PB in preschoolers. The scale has shown satisfactory reliability and validity in a population of Chinese preschoolers.⁷⁴ In the context of the current study, the scale demonstrated satisfactory internal consistency for both the total scale and the dimensions ($\alpha =0.80 \sim 0.95$).

Covariates

Children's sociodemographic characteristics were included as covariates in the data analysis: gender (1 = male; 2 = female), age, and annual household income.

Data Analysis

Pearson correlation analysis was performed to describe the relationships among PA, PR, SC, and PB. Independent samples t-tests were employed to ascertain whether there were any statistically significant differences in the means of these variables between boys and girls. A structural equation model (SEM) was constructed and tested in Amos 26.0 using maximum likelihood estimation to examine the hypotheses proposed. First, confirmatory factor analysis (CFA) was performed to test the measurement model. Next, the direct and indirect effects of PA on PB were examined. Sampling was repeated 5000 times through the Bootstrap program of Amos, and 95% confidence intervals were calculated for indirect effect significance tests. The moderating role of gender was tested by constructing Multi-group SEM, which compared the proposed chain mediation model between boys and girls. Finally, critical ratios for differences (CRD) were used to determine whether the structural paths differed significantly between boys and girls. A CRD absolute value exceeding 1.965 is suggestive of a notable discrepancy at the $p < 0.05$ level. Given the sensitivity of the chi-square (χ^2) statistic to sample size, additional fit indices were also employed to assess model fit, including the comparative fit index (CFI), Tucker-Lewis fit index (TLI), root mean square error of approximation (RMSEA), and standardized root mean

square residual (SRMR). The model fit is deemed acceptable when CFI and TLI exceed 0.90, and RMSEA and SRMR are below 0.08.^{75,76}

Results

Common Method Bias

All data for this study were obtained through mother-reported questionnaires, which could have led to common method bias affecting the results. To mitigate this potential bias, the present study took measures such as ensuring anonymity, reversing items, and emphasizing data confidentiality. In addition, the Harman single factor test was utilized for a post-statistical test.⁷⁷ The results indicated that 13 factors had a value greater than 1, with the maximum factor variance explained of 21.55% (<40%). Therefore, the data in the study were not significantly affected by common method biases.

Preliminary Analyses

Means, standard deviations, and bivariate correlations for T1 maternal PA, T2 child PR, SC, and T3 PB are shown in Table 2. As expected, T1 PA was significantly negatively correlated with T2 PR ($r = -0.096, p < 0.01$), and significantly positively correlated with T2 SC ($r = -0.333, p < 0.001$) and T3 PB ($r = 0.321, p < 0.001$). T2 PR was significantly negatively correlated with T2 SC ($r = 0.215, p < 0.001$) and T3 PB ($r = -0.246, p < 0.001$). T2 SC was significantly negatively correlated with T3 PB ($r = -0.386, p < 0.001$).

Descriptive statistics for boys and girls and the results of the independent sample t-tests are shown in Table 3. The results showed significant differences between boys and girls in T1 PA, T2 PR and T3 PB. Specifically, boys exhibited higher levels of T1 PA ($t = 3.922, p < 0.001$) and T3 PB ($t = 4.222, p < 0.001$) and lower levels of T2 PR ($t = -2.126, p < 0.05$) compared to girls. No significant difference was found in T2 SC between boys and girls ($t = -1.356, p > 0.05$).

Measurement Model Testing

The measurement model was tested using confirmatory factor analysis (CFA) and the model fit indices was: $\chi^2 = 258.459$, $df = 19, p < 0.001$, CFI = 0.968, TLI = 0.953, RMSEA = 0.076, SRMR = 0.043, which is acceptable. All observed variables had significant loadings on their respective latent constructs. The factor loadings for the T2 PR and T3 PB latent variables ranged from 0.859 to 0.945 and 0.821 to 0.866, respectively. The findings indicate that latent variables can be well represented by their corresponding observed variables.

Table 2 Correlation Analysis Among Major Variables

	M	SD	1	2	3	4
1. T1 Psychological aggression	2.760	2.055	I			
2. T2 Psychological resilience	2.607	1.095	-0.096**	I		
3. T2 Self-control	3.319	0.703	-0.333***	0.215***	I	
4. T3 Problem behavior	0.422	0.317	0.321***	-0.246***	-0.386***	I

Notes: ** $p < 0.01$, *** $p < 0.001$.

Abbreviations: M, Means; SD, Standard Deviations.

Table 3 Descriptive Statistics for Boys and Girls

	Boys (N=604)		Girls (N=537)		t
	M	SD	M	SD	
1. T1 Psychological aggression	2.983	2.196	2.508	1.855	3.922***
2. T2 Psychological resilience	2.542	0.746	2.680	1.383	-2.126*
3. T2 Self-control	3.293	0.718	3.350	0.685	-1.356
4. T3 Problem behavior	0.459	0.341	0.381	0.283	4.222***

Notes: * $p < 0.05$, *** $p < 0.001$.

Abbreviations: M, Means; SD, Standard Deviations.

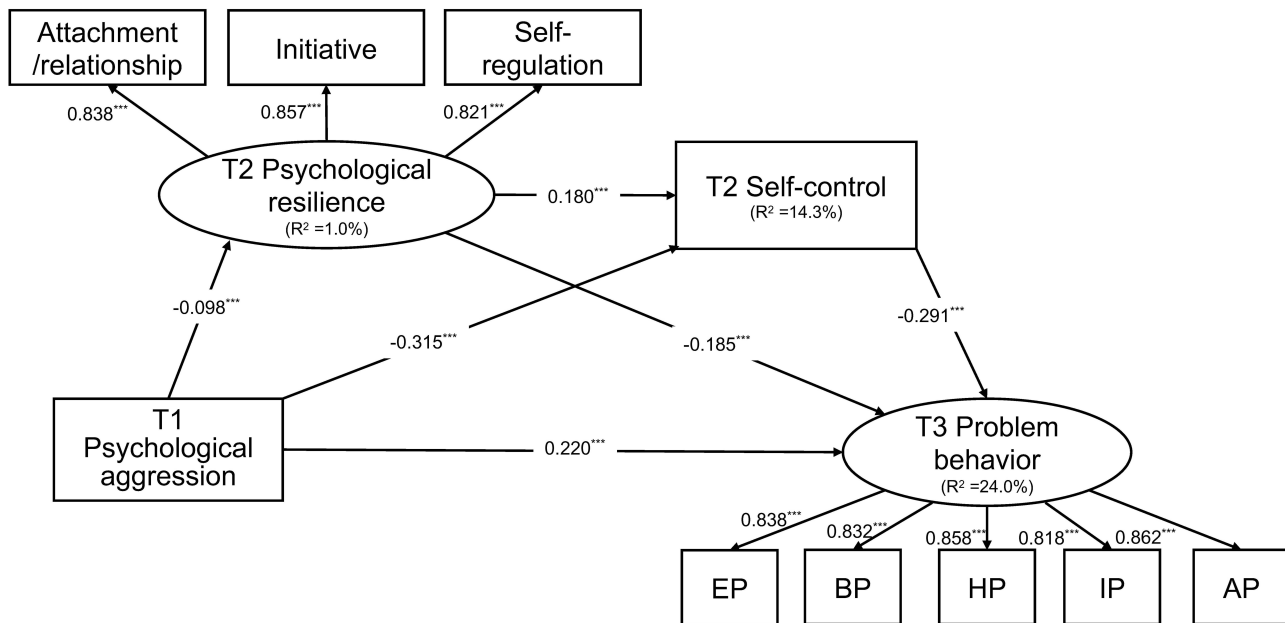


Figure 2 Structural equation model (Full sample).

Note: *** $p < 0.001$.

Abbreviations: EP, externalizing problems; BP, bullying problems; HP, hyperactivity problems; IP, internalizing problems; AP, autism problems.

Structural Equation Model Testing

The hypothesized structural equation model included T1 PA as the exogenous variable and T2 PR, T2 SC, and T3 PB as endogenous variables (see Figure 2). Given the significant differences in T3 PB by children’s age ($F = 3.064, p = 0.027 < 0.05$), age was included as a control variable to reduce the interference of irrelevant variables. The model fit indices was: $\chi^2 = 166.571, df = 23, p < 0.001, CFI = 0.978, TLI = 0.965, RMSEA = 0.074, SRMR = 0.021$, which is acceptable. As shown in Figure 2 and Table 4, in the full-sample model, T1 PA ($\beta = 0.220, p < 0.001$) significantly positively predicted children’s T3 PB, and negatively predicted children’s T2 PR ($\beta = -0.098, p < 0.001$) and SC ($\beta = -0.315, p < 0.001$). T2 PR ($\beta = -0.185, p < 0.001$) and T2 SC ($\beta = -0.291, p < 0.001$) significantly negatively predicted children’s T3 PB. T2 PR significantly positively predicted children’s T2 SC ($\beta = 0.180, p < 0.001$). The bootstrap method with 5000 samples at a 95% confidence interval was used to test the significance of indirect effects. The bootstrap results, shown in Table 5, indicated that T1 PA had significant indirect effects on children’s T3 PB through T2 PR ($B = 0.016, 95\% CI [0.006, 0.031]$) and T2 SC ($B = 0.079, 95\% CI [0.056, 0.109]$). Additionally, PA had a significant indirect effect on children’s T3 PB through the chain mediation of T2 PR and T2 SC ($B = 0.004, 95\% CI [0.002, 0.009]$). These results indicate that T2 PR and T2 SC partially mediated the relationship between T1 PA and children’s T3 PB, and T2 PR and T2 SC also served as a chain mediation mechanism between T1 PA and children’s T3 PB. Age, as a control variable, did not significantly predict children’s T3 PB. Overall, the full-sample model explained 1% of the variance in T2 PR, 14.3% of the variance in T2 SC, and 24.0% of the variance in T3 PB.

Table 4 Structural Equation Model Results for Full Sample and Subgroups

Model paths	Full sample				Boy subgroup				Girl subgroup			
	B	β	SE	CR	B	β	SE	CR	B	β	SE	CR
T2 PR<-T1 PA	-0.085***	-0.098	0.025	-3.382	-0.125***	-0.155	0.033	-3.841	-0.027	-0.030	0.038	-0.718
T2 SC<-T2 PR	0.210***	0.180	0.031	6.707	0.182***	0.148	0.044	4.184	0.226***	0.202	0.045	5.045
T2 SC<-T1 PA	-0.315***	-0.315	0.028	-11.440	-0.356***	-0.359	0.037	-9.564	-0.265***	-0.261	0.041	-6.425
T3 Problem behavior<-T2 SC	-0.250***	-0.291	0.026	-9.736	-0.248***	-0.290	0.035	-7.045	-0.258***	-0.296	0.037	-6.877
T3 Problem behavior<-T1 PA	0.189***	0.220	0.025	7.572	0.167***	0.197	0.034	4.871	0.208***	0.236	0.037	5.638
T3 Problem behavior<-T2 PR	-0.186***	-0.185	0.027	-6.772	-0.225***	-0.215	0.038	-5.860	-0.141***	-0.144	0.039	-3.592

Notes: B = unstandardized coefficient; β = standardized coefficient; *** $p < 0.001$.

Abbreviations: PA, Psychological aggression; PR, Psychological resilience; SC, Self-control; SE, standard error; CR, critical ratio.

Table 5 Direct and Indirect Effects and 95% Confidence Intervals (CI)

Model pathways	Full sample			Boy subgroup			Girl subgroup		
	Estimated	95% CI		Estimated	95% CI		Estimated	95% CI	
		Lower	Upper		Lower	Upper		Lower	Upper
Direct effect									
T1 PA → T3 Problem behavior	0.189	0.129	0.251	0.167	0.089	0.259	0.208	0.124	0.288
Indirect effect									
T1 PA → T2 PR → T3 Problem behavior	0.016	0.006	0.031	0.028	0.010	0.056	0.004	-0.006	0.022
T1 PA → T2 SC → T3 Problem behavior	0.079	0.056	0.109	0.088	0.054	0.135	0.068	0.041	0.106
T1 PA → T2 PR → T2 SC → T3 Problem behavior	0.004	0.002	0.009	0.006	0.002	0.012	0.002	-0.003	0.008

Abbreviations: PA, Psychological aggression; PR, Psychological resilience; SC, Self-control; CI, confidence interval.

Group Difference Testing

Multi-group SEM was used to determine group differences by gender. First, the measurement invariance of the model was evaluated and the results demonstrated that the measurement model was metric-level invariant ($p > 0.05$). This result suggested that the factor loadings in the measurement model were equivalent across boys' and girls' groups. Then, structural equation models were constructed separately for boys and girls. The model fit indices for the boys' model were: $\chi^2 = 126.459$, $df = 23$, $p < 0.001$, CFI = 0.970, TLI = 0.953, RMSEA = 0.076, SRMR = 0.027. The model fit indices for the girls' model were: $\chi^2 = 61.258$, $df = 23$, $p < 0.001$, CFI = 0.986, TLI = 0.980, RMSEA = 0.056, SRMR = 0.018. Both the boys' and girls' models demonstrated good fit and were acceptable for cross-group comparison. The unconstrained structural model allowing structural paths to vary by gender was compared with the constrained model that restricted factor loadings, covariances, weights, and residuals to be equal across boys and girls. The results indicated a significant difference between the unconstrained ($\chi^2 = 187.711$, $df = 46$) and constrained models ($\chi^2 = 213.522$, $df = 60$), $p < 0.01$. The critical ratios for differences (CRD) test indicated a significant difference in the structural path from T1 PA to T2 PR between boys and girls (CRD = 1.969, $p < 0.05$). As shown in Figure 3 and Table 4, T1 PA negatively predicted boys' T2 PR ($\beta = -0.155$, $p < 0.001$), but did not significantly affect girls' T2 PR ($\beta = -0.030$, $p > 0.05$). These

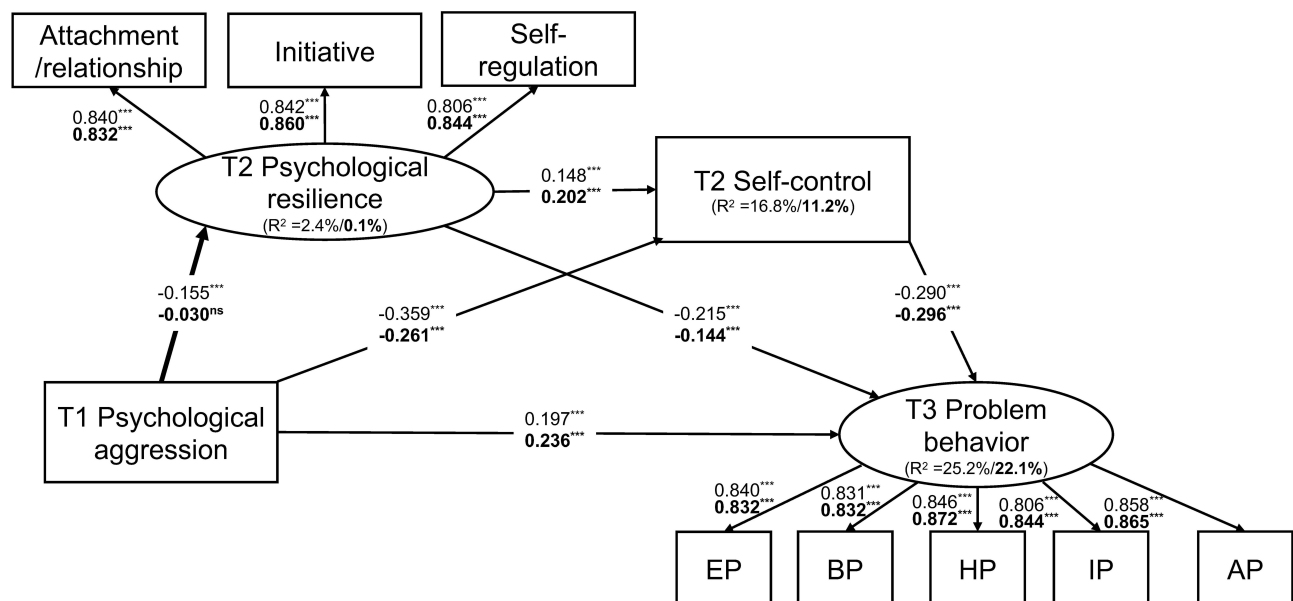


Figure 3 Standardized structural equation model (Boys' and girls' samples).

Notes: Path coefficients and R^2 for the girls' sample are shown in bold. The paths in bold yield significant differences between the two groups. *** $p < 0.001$, ns = non-significant.

Abbreviations: EP, externalizing problems; BP, bullying problems; HP, hyperactivity problems; IP, internalizing problems; AP, autism problems.

results indicate that gender moderated the relationship between T1 PA and children's T2 PR, with T1 PA having a greater impact on boys' T2 PR. In the boys' group, T1 PA affected children's T3 PB through three pathways: (1) T1 PA → T2 PR → T3 problem behavior; (2) T1 PA → T2 SC → T3 problem behavior; (3) T1 PA → T2 PR → T2 SC → T3 problem behavior. In the girls' group, T1 PA affected children's T3 PB through one pathway: T1 PA → T2 SC → T3 problem behavior. Table 5 summarizes the direct and indirect effects for the boys' and girls' models.

Discussion

This study explored the impact of maternal PA on preschoolers' PB, with a focus on the mediating roles of PR and SC and gender differences. The full-sample model reveals that maternal PA was positively associated with preschoolers' PB, with PR and SC independently and sequentially mediating this relationship. There were gender differences in the above relationships, with maternal PA significantly affecting boys' resilience but not girls' resilience. The results and implications are discussed below.

Maternal PA and PB

This study found a notable link between maternal PA and problematic behaviors in preschoolers. Elevated levels of maternal PA correlate with an increased likelihood of PB in children, aligning with previous findings,^{17,18} thereby supporting Hypothesis 1. Maternal PA, eg, "threatened to beat the child", "said to the child he/she will be sent away", and other such threats may lead to anxiety in preschoolers by making them always worry that something bad (eg, spanking) will happen to them. Also, children may imitate these behaviors and develop similar aggressive behaviors in other social situations.²⁷ In addition, effective socialization requires children to internalize moral as they learn how to communicate effectively and social norms.⁷⁸ However, this process is disrupted when children are subjected to PA by their mothers, who simply use behaviors such as yelling at the children or threatening to kick it out of the house to discipline the children's behaviors without explaining to the children why the behaviors are inappropriate.¹¹ As a result, when children struggle to interact effectively with others, they may be rejected by their peers, making their life at school increasingly difficult with problems of social maladjustment or symptoms of depression and anxiety.^{13,17} This also emphasizes the fact that PA can have spillover effects on other domains of a child's life and may seriously threaten the child's life later in life.

The Mediating Role of PR

This study demonstrates that PR mediates the relationship between maternal PA and preschoolers' PB, confirming Hypothesis 2. This finding is consistent with the dynamic model of resilience, suggesting that an individual's access to positive external developmental resources promotes the formation and development of internal psychological resources such as PA,⁷⁹ which in turn promotes the healthy growth of the individual. In contrast, threatening behaviors such as mothers "threatened to beat the child" and "said the child that he/she will be sent away" can increase preschoolers' insecurity. Preschoolers who suffer from PA from their mothers are unable to establish a warm and intimate relationship with their mothers and are unable to access positive external developmental resources, which can hinder the formation and development of internal resources such as PR,⁸⁰ leading to lower PR in children. Children with low PR lack the resources to cope with stress and adversity and have diminished problem-solving abilities, making it challenging for them to adapt flexibly to setbacks, stress, or adverse environments.³⁴ Consequently, they are more likely to exhibit social withdrawal, aggressive behaviors, and emotional issues following negative life events.^{40,81}

The Mediating Role of SC

Findings indicate that SC mediates the relationship between maternal PA and preschoolers' PB, supporting Hypothesis 2. This is in line with the SC strength model, which posits that attentional resources are finite.⁴⁵ Maternal PA induces emotional distress in children, depleting their attentional resources and leaving insufficient resources for SC processes. Moreover, harsh discipline such as maternal PA make children increasingly dependent on external control rather than internal self-regulation.⁸² Children with low SC struggle to shift their attention from negative emotions, thoughts, or environmental cues to more positive ones, making them more susceptible to internalizing problems such as depression and anxiety.⁴⁹ Additionally, according to social learning theory,²⁷ maternal PA may model poor SC behaviors for

children, leading them to observe and imitate their parents' impulsive actions, thereby increasing the likelihood of externalizing PB.

The Chain Mediating Effect of PR and SC

Results indicate that PR and SC chain mediated the relationship between maternal PA and preschoolers' PB in the full sample, confirming Hypothesis 3 and broadening the scope of research on preschoolers' mental health. High levels of maternal PA, including rejection, intimidation, and threats, impede the development of psychological resources like self-esteem and perceived control of the environment, which are essential for high PR.⁸³ PR serves as an internal resource needed for SC in preschoolers and influences the smooth functioning of SC in preschoolers. Individuals with high levels of PR are able to maintain a positive attitude in the face of problems and have more general SC resources.⁵⁵ Thus, PR can enhance an individual's pool of resources, buffer the exhaustion of SC resources, and increase the capacity for SC,⁵⁵ thereby reducing problem behavior. Conversely, preschoolers with low PR do not recover well from stressful situations such as PA by their mothers. Prolonged stress continuously depletes SC resources and leads to adaptive issues.⁸⁴

Group Differences by Gender

The comparison between boys and girls revealed valuable insights. As anticipated, boys experienced higher levels of PA, lower resilience, and more severe PB than girls. This is consistent with the findings of Barnett and Scaramella, who noted that boys receive more negative and less positive parenting behaviors compared to girls.⁶⁶ The socialization transactional model posits that mothers react to their children's behaviors and characteristics (eg, gender and social behaviors).⁸⁵ In interactions with their mothers, girls may be more adept at using language, and thus they may be more actively involved in parenting interactions than boys,⁸⁶ thus reducing mothers' use of negative forms of discipline, such as PA. Additionally, girls mature earlier than boys, both physiologically and emotionally,⁵⁷ adapt better to their surroundings, and demonstrate higher PR. As a result, girls are better equipped to utilize internal resources to manage stress flexibly, while boys are more likely to express anger and aggression in stressful situations.

The multi-group analysis of structural equation modeling indicated that the pathway from maternal PA to children's problem behavior was significantly different among boys and girls. Maternal PA significantly impacted boys' PR but had no significant effect on girls' resilience. In the context of Chinese culture, the Chinese forefathers attached great importance to the role of mothers in family education, and although the specifics of motherhood education have changed over the ages, the basic concept of "Motherhood is about teaching, and teaching girls is essential" has remained unchanged. One of the reasons why the forefathers believed that it was far more important to teach girls than boys was that "a virtuous daughter has a virtuous mother. A virtuous daughter today will be a virtuous mother tomorrow." This concept is not only accepted by most adults but also influences children's thinking. Thus, when confronted with maternal PA, girls were more likely to respond by internalizing their reactions, tending to see PA as a sign of engagement, concern, and love, as the Chinese proverb states, "scolding is a sign of love", and interpreting the purpose of their mothers' actions as motivating them to reach higher social and moral goals. Boys, on the other hand, may more strongly perceive parental discipline as rejection,⁶⁶ which increases their insecurity and tends to express anger and display aggressive or oppositional behavior. Aggressive or oppositional behavior may lead to higher levels of harsh parental discipline,¹¹ which can severely damage parent-child relationships and reduce preschoolers' positive psychological reserves and decrease their PA. Similar results have been found in other cultural contexts as in the Chinese context; for example, Barnett found that the same parental discipline behavior had fewer negative effects on girls in the African American sample.⁶⁶

Limitations

There are several limitations to this study. Firstly, the measures of PA, resilience, SC, and PB were based on maternal reports, which might introduce bias. Future research may choose the multi-subject reporting method or a combination of measurement and experimental methods to synthesize and validate the results of this study. Secondly, this study solely examined the impact of family and individual factors on preschoolers' problematic behaviors, without addressing other environmental systems that influence these behaviors, such as kindergartens and communities. Future research should investigate the mechanism of action of the aforementioned related factors. Thirdly, although this study utilized

a longitudinal research design, it lacked control for autoregressive effects. Due to practical constraints, the three data collections in this study were separated by only two months, which would constrain the directional path in the model. Therefore, the results of this study need to be generalized with caution. Future studies could add controls for autoregressive effects and appropriately increase the time interval for data collection. Finally, due to practical constraints, the sample for this study was not randomly selected, but followed a fairly convenient sampling procedure. Despite this, every effort was made to diversify the participants in our study to include kindergartens from different cities, kindergartens from both urban and rural areas, and kindergartens with different reported problem behavior profiles.

Theoretical and Practical Implications

Despite these limitations, this study has valuable theoretical and practical implications. This study validates both the independent and chain mediating roles of PR and SC between maternal PA and preschoolers' PB. It provides theoretical and educational insights for preventing and intervening in preschoolers' PB. Theoretically, by focusing on individual internal developmental resources (PR and SC), this study elucidates the mechanisms linking maternal PA and preschoolers' PB, confirming the applicability of social learning theory, the Model of Three Mental Resilience System mechanisms, and self-control resource theory to preschoolers. The resource model of SC was also enhanced. The model assumes that the execution of all SC process consumes psychological resources and that such psychological resources are domain general. This study extends the application of the resource model of SC by innovatively suggesting that PR can be used as an internal resource required for preschoolers' SC when coping with stressful situations, such as PA from their mothers, to ensure that the preschoolers' SC process goes smoothly and to prevent the emergence of PB due to the failure of SC. Previous research often examined gender differences in factors influencing PB, such as boys having lower PR than girls. However, significant gender differences may not manifest as average differences between boys and girls, but rather as differences in the relationship patterns between variables. Therefore, this study also explored the group differences in structural equation models between boys and girls, finding that maternal PA significantly affects boys' PR but not girls'. This provides valuable theoretical references for promoting the healthy development of preschoolers.

Based on our empirical research findings, several practical implications for improving children's PB are proposed. First, this study found that maternal PA is positively correlated with preschoolers' PB. Therefore, interventions targeting children's PB should not be limited to the children themselves but should also involve their families. Kindergartens should conduct more home-school cooperation activities, which are not limited to offline parent-teacher conferences. Positive child discipline can also be transmitted to mothers through online channels such as WeChat, short video platforms, and other channels where parents are the main recipients of information to reduce the PA of mothers in order to prevent high levels of PB in children. Secondly, this study confirmed the mediating roles of PR and SC between PA and PB, highlighting the importance of fostering internal developmental resources in children. Interventions targeting children's PB can include activities aimed at enhancing PR and SC, such as storybook interventions focused on these themes. Preschool teachers should also focus on cultivating children's PR and SC abilities in their daily teaching activities. Lastly, this study found that maternal PA significantly affects boys' PR but not girls'. This finding suggests that gender differences should be considered when intervening in children's PB. For boys, particular attention should be given to fostering their ability to adapt positively under stressful situations to prevent them from responding to maternal PA with aggressive or oppositional behaviors, which could escalate parent-child conflicts.

Conclusions

This study aimed to elucidate the mechanisms and gender-specific effects of maternal PA on preschoolers' PB within the context of Chinese culture. The full-sample model reveals that maternal PA was positively associated with preschoolers' PB, with PR and SC independently and sequentially mediating this relationship. There were gender differences in the above relationships, with maternal PA significantly affecting boys' resilience but not girls' resilience. This study provides some theoretical basis for the prevention and intervention of preschoolers' PB in the Chinese context, as well as insights for the development of educational policies.

Data Sharing Statement

The data used to support the findings of this study are available from the first author upon request.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors of this article confirm that there are no conflicts of interest either among themselves or with their institution.

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