



## Effects of harsh maternal discipline on adolescents' externalizing problem behaviors

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Within the framework of Patterson et al.'s (1989) antisocial developmental model, this study explored the associations between harsh maternal discipline and adolescents' externalizing problem behaviors. We investigated the independent mediating effects of inhibitory control and deviant peer affiliation as well as the chain mediating effect of these variables. Participants were 367 adolescents who completed validated scales assessing maternal discipline, inhibitory control, deviant peer affiliation, and externalizing problem behaviors. The results showed that harsh maternal discipline affected adolescents' externalizing problem behaviors through the chain intermediary effect of inhibitory control and deviant peer affiliation. These findings facilitate understanding of the pathway of harsh maternal discipline on adolescents' externalizing problem behaviors. It is important to avoid harsh maternal discipline, establish harmonious parent-child relationships, avoid deviant peer affiliations, and achieve healthy physical and mental development of adolescents.

### Keywords

harsh maternal discipline,  
inhibitory control, deviant  
peer affiliation, externalizing  
problem behaviors,  
adolescents

### Article Highlights

- Inhibitory control played a mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problem behaviors.
- Deviant peer affiliation played a mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problem behaviors.
- Inhibitory control and deviant peer affiliation played a chain mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problem behaviors.

*Externalizing problem behavior* refers to an individual's explicit adverse behavioral reaction to the environment outside themselves due to a lack of self-control (Achenbach & Rescorla, 2001). Externalizing problem behavior, as an aggressive or rebellious abnormal behavior that is not allowed by social ethics, hinders young people's physical and mental development, and negatively affects family, school, and social stability (Belhadj Kouider et al., 2014). A recent survey of 12,244 Chinese adolescents from Grades 7–12 showed that the prevalence of externalizing problem behaviors is as

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high as 35.1% (Chi & Cui, 2020). Although many studies have explored factors that influence externalizing behavior (Steege et al., 2017; Van Heel et al., 2020), there are limitations. First, few studies have discussed adolescents' externalizing problem behaviors from the perspective of the individual factor of inhibitory control and the environmental aspect of deviant peers. Second, previous studies that have examined the relationship between parenting styles and externalizing problem behaviors have focused primarily on children. In contrast, only a few studies have focused on adolescents, especially Chinese adolescents. According to the antisocial developmental model (Patterson et al., 1989), poor discipline and supervision by parents in early childhood quickly leads to a lack of self-control regarding children's behavior and emotions, which may lead to the rejection of typical peers and the acceptance of deviant peers, resulting in antisocial behavior in adolescence. On the basis of this theoretical framework, this study explored the relevant factors affecting adolescents' externalizing problem behaviors.

*Harsh discipline* refers to corporal punishment or intense negative emotional expression by parents in response to their children's misconduct (Erath et al., 2009). According to control theory (Hirschi, 1969), parents' severe punishment is an important factor that influences adolescents' externalizing problem behaviors. This theory states that strict discipline and lack of supervision destroy the parent-child relationship, such that parents and children cannot reach consistency in conduct and values. Hence, children cannot develop internal control. From the perspective of social interaction, when parents force their child to behave in a desired way by means of beating or attacking them, they strengthen children's externalizing problem behaviors, so children eventually learn to control other family members or peers through coercive means. Numerous studies have shown that harmful parenting, including harsh punishment and poor parenting, is associated with externalizing problem behaviors in children (Beijers et al., 2013; Gao et al., 2013; Morgan et al., 2019). For example, Wang and Liu (2018) found that both paternal and maternal use of corporal punishment significantly predicted externalizing problem behaviors of children and adolescents. As the main socializers, mothers train and regulate their children's behavior and generally have a closer and more direct relationship with children than fathers do (E. K. Holmes et al., 2013). Therefore, this study analyzed the association between harsh maternal discipline and adolescents' externalizing problem behaviors, which is of practical significance for establishing harmonious family relationships and promoting the healthy development of adolescents.

*Inhibitory control* is the individual's ability to achieve self-regulation and self-control by suppressing disturbances and impulsive responses, and may play a mediating role in the impact of parenting on externalizing problems. It is a crucial element of advanced cognitive ability and a core module of executive function. The development of inhibitory control helps shape healthy social interactions and is critical for emotional regulation and corresponding behavioral adjustment (Fanti & Kimonis, 2012). According to the theoretical model of social information processing, the lack of profound cognitive ability can easily interfere with the process of information processing and lead to abnormal social behaviors, such as attack, conflict, and hostile interpretation (Zelazo & Carlson, 2012). Many studies have shown that inhibitory control is closely related to individuals' externalizing problems (e.g., O'Donnell et al., 2012). For example, low inhibitory control is a risk factor for externalizing problem behaviors, such as self-harm and aggression (Sallum et al., 2013). It is also associated with psychopathological conditions, including hyperactivity disorder, schizophrenia, and autism spectrum disorder (Jurado & Rosselli, 2007; Willcutt et al., 2005). A 32-year follow-up study showed that individuals who exhibited high inhibitory control between the ages of 3 and 11 years were less likely to engage in delinquent behaviors, such as dropping out of school, smoking, or drug use during adolescence, and grew up with a greater sense of well-being and physical and mental health (Moffitt et al., 2013). Inhibitory control not only directly affects adolescents' externalizing problem behaviors but is also a critical intermediary variable for other factors that affect individual problem behavior (Niu et al., 2015). Therefore, inhibitory control may mediate the link between harsh parental discipline and adolescents' externalizing problematic behaviors.

Deviant peer affiliation is also a risk factor for aggressive behavior in adolescents. Harris' group socialization theory suggests that peers play a crucial role in adolescent development and socialization, and that adolescents are largely influenced by their peers (Harris, 1995). During adolescence, peer groups become an essential source for them to obtain social support, understand love-related information, and learn the pattern of relating to people of other genders. Ellis and Zarbatany (2007) found that poor peer interactions significantly influence adolescents' aggressive behavior, and Lee (2011) found that this increases the possibility of teenagers' antisocial behavior. This is also in line with Sutherland's

(1947) differential association theory, which holds that criminal behavior is learned. People imitate the code of conduct required by the culture in which they live, and teenagers are more likely to develop deviant beliefs and rules when interacting with unfavorable peers, thus increasing the opportunity to engage in negative behavior. Research has shown that deviant peer interactions have a significant direct impact on adolescent aggression (Carlo et al., 2014), and adolescents with poorly behaved peers are more likely to engage in antisocial behavior than are those without poorly behaved peers (Farrington, 2004). In addition, researchers have paid much attention to the mediating role of deviant peer affiliation in the association between family factors and adolescent aggressive behavior. The results have shown that deviant peer affiliations mediate the link between parents' marital conflict and junior high school students' aggressive behavior (Su et al., 2017), and that deviant peer affiliations partially mediate the influence of parental supervision on teenagers' problem behaviors (Wu & Chen, 2016). Therefore, deviant peer affiliation may be a mediating factor between harsh maternal discipline and adolescents' externalizing problem behaviors.

Harsh maternal discipline, inhibitory control, and deviant peer affiliation work together to have a close and complex impact on the externalizing problem behaviors of teenagers. According to ecosystem theory (Bronfenbrenner, 1979), families, individuals, and peers are all essential microsystems that affect the development and adaptation of young people, and they jointly affect personal development. Previous studies have shown that harsh parental discipline negatively predicts preschool children's working memory and inhibitory control ability (Xing et al., 2018). Inhibitory control negatively indicates the externalization of children's family situation 1 year later (Bai et al., 2022), and has a specific predictive effect on peer relationships. A cross-lagged study found that inhibitory control predicts subsequent peer relationship problems (rejection and aggression) in childhood and adolescence, but not vice versa (C. J. Holmes et al., 2016). Deviant peer affiliations also play a mediating role in the influence of parental supervision on adolescent problem behaviors (Wu & Chen, 2016). Combined with the perspective of the antisocial development model, we predicted that inhibitory control and deviant peer affiliations would play a chain mediating role between harsh maternal discipline and adolescents' externalizing problem behaviors, as shown in Figure 1.

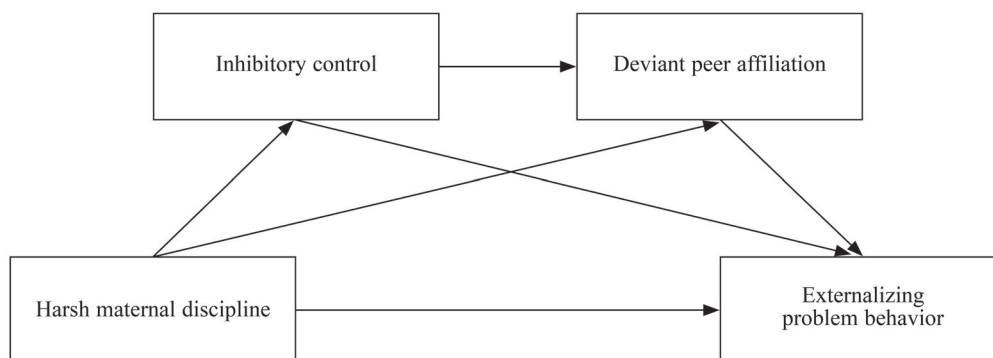


Figure 1. *Conceptual Model*

In sum, we proposed the following hypotheses:

**Hypothesis 1:** Harsh maternal discipline will directly and negatively affect adolescents' externalizing problem behaviors.

**Hypothesis 2:** Inhibitory control will play a mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problem behaviors.

**Hypothesis 3:** Deviant peer affiliation will play a mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problem behaviors.

**Hypothesis 4:** Inhibitory control and deviant peer affiliation will play a chain mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problematic behaviors.

## Method

### Participants and Procedure

We used the cluster sampling method to distribute 374 paper questionnaires to senior students from a vocational middle school in Shandong Province, China. We obtained 368 valid respondents from 108 (29.4%) boys and 259 (70.6%) girls. The mean age of the participants was 17.20 years ( $SD = 1.01$ , range = 15–24) and there were 127 (34.60%) grade 10 students and 240 (65.40%) grade 11 students.

With the informed consent of the school leaders and students themselves, the test was conducted on a class basis. We trained undergraduate students majoring in applied psychology to administer the questionnaire. They told participants the purpose of the study and affirmed that they could withdraw at any time, then asked them to read the questions carefully. They also clarified the answer requirements and emphasized maintaining test discipline, such as remaining quiet. After the test, questionnaires were collected and the answers were preliminarily reviewed. Finally, the participants were given a keychain worth 5 RMB (USD 0.73) as a gift.

### Measures

#### **Harsh Maternal Discipline**

We used one dimension from the Egna Minnen av Barndoms Uppfostran scale, a parental rearing style scale that was originally developed by Perris et al. (1980) and revised for use with Chinese participants by Yue et al. (1993). The revised scale has 66 items and its reliability and validity are good. The full scale tests the father's parenting style with 58 items divided across six dimensions and the mother's parenting style with 57 items divided across five dimensions. To meet the aims of this study, we used only the strictness and punishment dimension of the mother's parenting style subscale. It includes nine items (e.g., "When I was young, my mother used to beat me or scold me in front of others" and "My mother punished me for no reason"), which participants respond to using a 4-point Likert scale (1 = *never*; 4 = *always*). Cronbach's alpha was .90 in this study, indicating the questionnaire was reliable.

#### **Inhibitory Control**

The Behavior Rating Inventory of Executive Function scale was developed by Gioia et al. (2000). We used the inhibitory dimension of the Chinese version of this scale, which has been found to be effective and reliable in the context of Chinese culture (Li et al., 2012). This dimension comprises 11 items (e.g., "I often leave my seat at the wrong time" and "Compared with my friends, I am more likely to lose control"), and participants respond to each item using a 3-point Likert scale (1 = *not applicable or never*; 3 = *very much or often*). To facilitate interpretation of the results, we scored all scale items inversely, with higher scores indicating higher levels of inhibitory control. Cronbach's alpha was .83 in this study, indicating it was reliable.

#### **Deviant Peer Affiliation**

The peer interaction level of secondary vocational school students was measured with the poor peer self-assessment questionnaire used by Jiang et al. (2015), which was compiled with reference to a previously published 10-item questionnaire (Fergusson & Horwood, 1999). Participants were asked how many of their friends had engaged in behaviors such as fighting, lying, and stealing in the past 6 months. In addition, we added three aggressive behaviors (bullying, gossiping, spreading rumors) to reflect the high incidence of these problem behaviors among Chinese students (Zhang, 2002). An example question is, "How many of your friends have bullied others in the past 6 months?" Participants respond to each item on a 4-point Likert scale (1 = *no friends are like this*, 4 = *almost all friends are like this*). Cronbach's alpha was .84 in this study, indicating the questionnaire was reliable.

#### **Externalizing Problem Behavior**

We used the Youth Self-Report scale, compiled and revised by Achenbach and Rescorla (2001), to measure externalizing problem behavior. This scale is a self-report version of the Achenbach Child Behavior Checklist, which is

applied to children and adolescents aged 6–18 years (Achenbach & Rescorla, 2001). We used the revised Chinese version of the scale, which has been shown to be effective and reliable in the context of Chinese culture (Wang et al., 2013). The scale includes four dimensions: aggression, rule-breaking behavior, anxiety/depression, and withdrawal/depression. However, we used only two dimensions (32 items) to measure externalizing problem behaviors: aggression and rule-breaking behavior. The aggression dimension includes 17 items (e.g., “I like to argue with others” and “I bully, tease, or blame others”), and the rule-breaking behavior dimension contains 15 items (e.g., “I drink without my parents’ consent” and “I don’t feel guilty after doing something wrong”). Participants respond to items using a 3-point Likert scale (1 = *not at all or never*, 3 = *very much or often*). Cronbach’s alpha was .87 in this study, indicating the questionnaire was reliable.

## Results

### Common Method Bias Analysis

We used Harman’s single-factor test to identify common method deviation that may have resulted from use of the questionnaire method. Principal components analysis showed that there were 17 factors with eigenvalues greater than 1, and the amount of variance explained by the first factor was 18.99%, which is less than the critical value of 40% (Deng et al., 2018). Thus, the effect of common method bias was negligible.

### Descriptive Statistics

Harsh maternal discipline was significantly and negatively correlated with inhibitory control, and significantly and positively correlated with both deviant peer affiliation and externalizing problem behavior. Inhibitory control was significantly and negatively associated with both deviant peer affiliation and externalizing problem behavior. Deviant peer affiliation was significantly and positively associated with externalizing problem behavior (see Table 1). Finally, gender was significantly correlated with harsh maternal discipline, deviant peer affiliation, and externalizing problem behavior. Young men were more likely than young women were to experience harsh maternal discipline, interact with deviant peers, and show externalizing problem behaviors. Therefore, gender was used as a control variable in subsequent analyses.

Table 1. *Correlation Analysis of Study Variables*

	<i>M ± SD</i>	1	2	3	4	5
1. Gender	0.70 ± 0.46	1				
2. Harsh maternal discipline	1.43 ± 0.53	-.16**	1			
3. Inhibitory control	2.62 ± 0.36	.03	-.31***	1		
4. Deviant peer affiliation	1.53 ± 0.44	-.23***	.26***	-.33***	1	
5. Externalizing problem behavior	1.35 ± 0.24	-.15**	.40***	-.65***	.44***	1

Note. *N* = 367. Gender: 0 = boy, 1 = girl.

\*\* *p* < .01. \*\*\* *p* < .001.

### Chain Mediation Effects Analysis

We used Mplus 7.4 for mediation effects analysis. A chain mediation model was established with gender as a control variable, harsh maternal discipline as an independent variable, inhibitory control and deviant peer affiliation as mediating variables, and externalizing problem behavior as a dependent variable. The model showed a satisfactory fit to the data, chi square ( $\chi^2$ ) = 23.02, degrees of freedom (*df*) = 3, *p* < .001, root mean square error of approximation = .14, comparative fit index = .97, standardized root mean square residual = .03, Tucker–Lewis index = .85. Thus, Hypothesis 1 was supported.



Table 2 shows that harsh maternal discipline significantly predicted inhibitory control; harsh maternal discipline and inhibitory control significantly predicted deviant peer affiliation; and harsh maternal discipline, inhibitory control, and deviant peer affiliation significantly predicted externalizing problem behavior.

**Table 2. Results of Chain Mediation Effects Analysis**

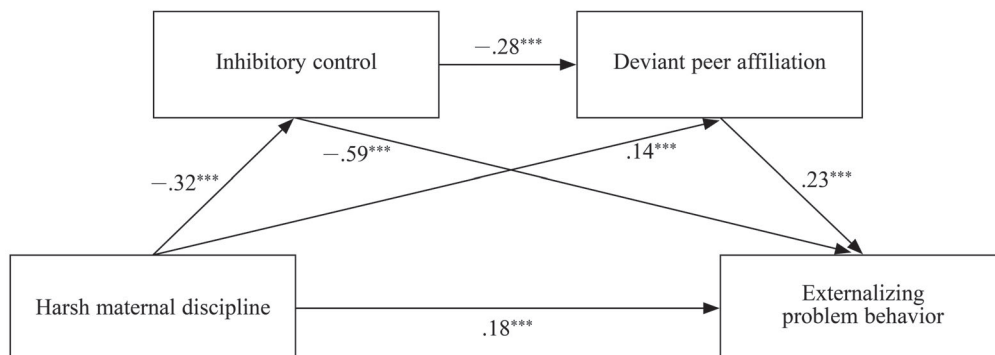
Outcome variable	Predictive variable	$R^2$	$\beta$	$SE$	$t$	95% CI
Inhibitory control	Harsh maternal discipline	.10	-.32	0.06	-5.75***	[-0.42, -0.20]
	Gender		-.02	0.05	-0.43	[-0.13, 0.08]
Deviant peer affiliation	Harsh maternal discipline	.18	.14	0.06	2.42*	[0.02, 0.26]
	Inhibitory control		-.28	0.06	-4.96***	[-0.39, -0.17]
	Gender		-.20	0.05	-3.93***	[-0.30, -0.10]
Externalizing problem behavior	Harsh maternal discipline	.62	.18	0.05	3.51***	[0.08, 0.29]
	Inhibitory control		-.59	0.05	-11.86***	[-0.68, -0.49]
	Deviant peer affiliation		.23	0.06	4.20***	[0.13, 0.34]
	Gender		-.06	0.05	-1.32	[-0.16, 0.03]

Note.  $N = 367$ . Gender: 0 = boy, 1 = girl. CI = confidence interval.

\*  $p < .05$ . \*\*\*  $p < .001$ .

After adding inhibitory control and deviant peer affiliation, harsh maternal discipline still significantly predicted externalizing problem behavior, indicating that inhibitory control and deviant peer affiliation play a partial mediating role in this relationship. Thus, Hypotheses 2 and 3 were supported.

The model diagram in Figure 2 shows that harsh maternal discipline was significantly and negatively correlated with inhibitory control and with deviant peer affiliation, and was significantly and positively correlated with externalizing problem behavior. Inhibitory control was significantly and negatively correlated with deviant peer affiliation and with externalizing problem behavior. Deviant peer affiliation was significantly and positively correlated with externalizing problem behavior.



**Figure 2. Chain Mediation Effects Model**

\*  $p < .05$ . \*\*\*  $p < .001$ .

We used the bootstrapping method to resample the data 5,000 times and calculate 95% confidence intervals. Results revealed that both inhibitory control and deviant peer affiliation played an intermediary role between harsh maternal discipline and externalizing problem behavior, and the total mediating effect size was .42 (see Table 3). Inhibitory control and deviant peer affiliation had a significant chain mediating effect on the relationship between harsh maternal discipline and externalizing problem behavior. The direct effect of harsh maternal discipline on externalizing problem behavior accounted for 44.33% of the total effect, and the indirect effects of inhibitory control, deviant peer affiliation, and its chain mediation path accounted for 44.05%, 7.86%, and 4.76% of the total effect, respectively. Thus, Hypotheses 2, 3, and 4 were supported.

**Table 3. Bootstrapping Analysis Results for Mediation Effects**

Model	Path	Effect	SE	95% CI		Relative effect
				LL	UL	
X → M1 → M2 → Y	Total effect	.42	0.06	0.30	0.53	
	Direct effect	.18	0.05	0.08	0.29	43.33
	Total indirect effect	.24	0.04	0.16	0.32	56.67
	X → M1 → Y	.19	0.04	0.12	0.26	44.05
	X → M2 → Y	.03	0.02	0.01	0.08	7.86
	X → M1 → M2 → Y	.02	0.01	0.01	0.04	4.76
	C1			0.14	0.31	
	C2			0.09	0.21	
	C3			-0.14	-0.04	

*Note.* X = harsh maternal discipline; M1 = inhibitory control; M2 = deviant peer affiliation; Y = externalizing problem behavior; C1 = X → M1 → Y minus X → M2 → Y; C2 = X → M1 → Y minus X → M1 → M2 → Y; C3 = X → M2 → Y minus X → M1 → M2 → Y.

By defining the subtraction statement between paths in Mplus, we evaluated whether there were significant differences between these paths. In the bootstrapping analysis results, if the 95% confidence interval does not contain 0, the difference is significant. The results showed that there was a significant difference between path X → M1 → Y and path X → M2 → Y, between path X → M1 → Y and path X → M1 → M2 → Y, and between path X → M2 → Y and path X → M1 → M2 → Y (see Table 3).

Finally, we used the equivalence test to examine whether there were gender differences in the chain mediating effect of inhibitory control and deviant peer affiliation on the relationship between harsh maternal discipline and externalizing problem behavior. The results showed no significant influence of gender on this relationship,  $\Delta\chi^2 = 8.56$ ,  $df = 6$ ,  $p > .05$ .

## Discussion

### Theoretical Contributions

The correlation analysis showed that harsh maternal discipline was negatively correlated with inhibitory control, and positively correlated with deviant peer affiliation and externalizing problem behaviors. In contrast, deviant peer affiliation was positively correlated with externalizing problem behaviors. These results indicate that harsh discipline has negative impacts on teenagers' externalizing problem behaviors and deviant peer affiliation, which is consistent with existing research (Gao et al., 2013). This study also found that inhibitory control is significantly and negatively correlated with deviant peer affiliation and externalizing problem behaviors, which is also consistent with previous research results (O'Donnell et al., 2012). Thus, we can conclude that individuals with high inhibitory control tend to have better emotional regulation ability and more robust social adaptability, will not make bad companions, and experience fewer externalizing problem behaviors.

We found that harsh maternal discipline significantly predicts externalizing problem behavior and that inhibitory control plays a mediating role in this relationship. These results are consistent with those of Niu et al. (2015), who found that inhibitory control plays a mediating role in the relationship between harsh maternal discipline and adolescents' externalizing problems. During family upbringing, harsh maternal discipline tends to result in teenagers relying on a high degree of external control. In contrast, a lack of internal control weakens an individual's ability to inhibit and control, leading to more aggressive, disciplinary and other externalizing problem behaviors.

Our results are also consistent with those of E. K. Holmes et al. (2013), who found that harsh maternal discipline increases the risk of teenagers interacting with deviant peers, which leads to the possibility of adolescents' externalizing problem behaviors. Adolescence is a period of rapid development of individual self-consciousness, and adolescents are eager to shed their parents' constraints and seek personal independence. At this time, harsh discipline by a mother may cause individuals to develop contradictory rebellious psychology (E. K. Holmes et al., 2013). Alienation in the parent-child relationship may result in teenagers choosing unfavorable companions for emotional understanding and support.

The chain mediation effects analysis further reveals the influence and action path of inhibitory control and deviant peer affiliation between harsh maternal discipline and adolescents' externalizing problem behaviors. This means adolescents with low inhibitory control ability tend to be adventurous, impulsive, and easily affected by situations, which may lead to the emergence of externalizing problem behaviors.

## Practical Implications

In sum, when seeking to understand and prevent adolescents' externalizing problem behaviors, it is essential to focus on family-rearing patterns, adolescent inhibitory control, and deviant peer affiliation. On the one hand, inhibitory control is a crucial individual factor for intervening in adolescents' externalizing problem behaviors. Parents and academic researchers can improve adolescents' inhibitory control by conducting related training. On the other hand, it is important to avoid harsh maternal discipline, establish harmonious parent-child relationships, avoid deviant peer affiliations, and achieve healthy physical and mental development of adolescents. Schools should create a positive environment in which problems in inhibitory control and peer interaction of adolescents can be identified and corrected promptly to improve their social adjustment.

## Limitations and Directions for Future Research

Finally, this study has the following limitations: First, we used a cross-sectional research design with externalizing problem behavior as the outcome variable; however, externalizing problem behavior may also be a cause of harsh maternal discipline. Follow-up studies could examine the causal relationships between variables. Second, we mainly analyzed the influence of harsh maternal discipline on externalizing problem behaviors from the rational perspective of individual advanced cognitive function inhibitory control, without considering the impact of irrational factors such as emotions. Future studies could further explore these issues.

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