

## Original Paper

# The Influence of Harsh Parenting on Adolescent Anxiety: The Sequential Mediating Roles of Interpersonal Sensitivity and Ego-Depletion

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### Abstract

*Harsh parenting, characterized by punitive and controlling behaviors, has been increasingly linked to the development of anxiety disorders in adolescents. This study explores the mechanisms through which harsh parenting contributes to adolescent anxiety, focusing on the sequential mediation of Interpersonal Sensitivity (IS) and ego depletion. Drawing on the Emotion Dysregulation Model of Anxiety (EDMA), we propose that harsh parenting disrupts emotional regulation by fostering heightened IS, which, in turn, depletes self-control resources, exacerbating anxiety. Using a chain mediation model, we hypothesize that (1) harsh parenting positively correlates with adolescent IS, (2) ego depletion mediates the relationship between harsh parenting and anxiety, and (3) IS and ego depletion sequentially mediate this relationship. By examining these interconnected pathways, the study aims to provide insights into the underlying processes contributing to adolescent anxiety and offer valuable directions for early interventions aimed at improving mental health outcomes in adolescents.*

### Keywords

*harsh parenting, adolescent anxiety, interpersonal sensitivity, ego-depletion, mental health outcomes*

## 1. Introduction

In recent years, it has become increasingly common in many cultures for parents to criticize or even verbally punish adolescents for issues like poor academic performance or Internet addiction. At the same time, the detection rate of adolescent anxiety disorders has been steadily rising (Dong et al., 2020). In 2020, the detection rate of anxiety disorders among adolescents reached 27.1% (Zhao et al., 2020). Anxiety is a prevalent mental health disorder, often characterized by persistent feelings of

tension, unease, and irritability (Zhuang et al., 2020). Adolescents are particularly vulnerable to anxiety, which disrupts daily life and is linked to other problems, such as Internet addiction, sleep disturbances, and academic difficulties. Prolonged anxiety can lead to physiological changes in the brain, further exacerbating anxiety and depression. In severe cases, it may result in self-harm or suicidal behaviors (Crowe & Spiro-Levitt, 2021; Marsh et al., 2017). Ideally, families should provide emotional support to help adolescents cope with these challenges. However, in many cases, despite their intentions to offer such support, parents may inadvertently contribute to adolescent anxiety through harsh and punitive behaviors.

### *1.1 Harsh Parenting and Adolescent Anxiety*

Harsh parenting, characterized by punitive and controlling behaviors, is common, particularly in Chinese families. This style of parenting is deeply influenced by Confucian values, which emphasize respect for authority and adherence to social norms (Chao & Tseng, 2002). Within this cultural framework, parents often view their children's academic performance as a reflection of family honor (Lin & Fu, 1990; Simon, 1998). As a result, they may adopt more punitive measures when their children fall short of expectations, increasing the likelihood of harsh parenting. Chao (1994) describes this practice as "guan", meaning strict control paired with care. However, this care is often not overtly expressed, which can lead to emotional neglect and increased anxiety in children. Compared to Western parents, Chinese parents tend to express less emotional warmth and rely more heavily on harsh disciplinary practices (Wu et al., 2002). These harsh behaviors may disrupt adolescents' emotional regulation, making them more vulnerable to anxiety.

### *1.2 The Potential Mediation Role of Interpersonal Sensitivity*

Interpersonal Sensitivity (IS) is a psychological trait characterized by heightened awareness and reactivity in social interactions, particularly regarding criticism or rejection (Davidson et al., 1989; Masillo et al., 2018). Individuals with high IS are often preoccupied with interpersonal relationships, vigilant to the behaviors and moods of others, and tend to modify their behavior to meet others' expectations (Boyce & Parker, 1989). Research has shown that family environmental factors, including parental rearing, play a significant role in the development of IS. Parental rearing is typically conceptualized along two dimensions: parental demand (e.g., control) and parental response (e.g., warmth) (Wolfradt et al., 2003). Dysfunctional parental rearing, such as harsh parenting, may increase susceptibility to mental health issues like IS.

### *1.3 The Potential Mediation Role of Ego-depletion*

The theory of ego depletion suggests that individuals' self-control resources become depleted after prolonged engagement in activities that require self-control. Parental emotional neglect can trigger ego depletion in adolescents. First, emotional neglect induces stress, consuming psychological resources, leading to negative self-esteem and hopelessness (Shah et al., 2021). Negative self-evaluation and a lack of positive psychological attributes further exacerbate ego depletion (Rahman et al., 2019). Second,

parental emotional neglect can also elicit negative emotions, such as depression and anxiety, which have been found to be positively associated with ego depletion (Shmueli & Prochaska, 2012).

Research has shown that ego depletion can intensify feelings of anxiety, as individuals struggle to manage their emotional responses when their self-control resources are diminished (Alharbi et al., 2020; Bertrams et al., 2013). For instance, Alharbi et al. (2020) found a positive correlation between ego depletion and general anxiety among university students, indicating that as self-control resources decline, anxiety tends to increase (Alharbi et al., 2020). Similarly, Bertrams et al. (2013) demonstrated that self-control strength plays a crucial role in mitigating anxiety during cognitive tasks, suggesting that ego-depleted individuals may find it harder to cope with anxiety-inducing situations.

#### *1.4 The Potential Chain Mediating Roles of Interpersonal Sensitivity and Ego-depletion*

There is evidence to suggest that interpersonal sensitivity and ego depletion are interrelated. Alharbi et al. (2020) found that individuals with high interpersonal sensitivity are more susceptible to ego depletion, particularly when they set excessively high personal standards that are difficult to achieve. This can lead to negative emotional outcomes, including anxiety, particularly in social contexts where individuals feel they are falling short of expectations. Additionally, Muraven et al. (1998) posited that ego depletion, which results from the exhaustion of self-control resources, makes individuals more vulnerable to emotional dysregulation and interpersonal sensitivity. Consequently, depleted individuals may react more strongly to perceived social threats, further increasing their anxiety and interpersonal sensitivity.

Based on these findings, this study hypothesizes that interpersonal sensitivity and ego depletion jointly mediate the impact of harsh parenting on adolescent anxiety through a sequential pathway. Understanding how these interconnected mediators contribute to anxiety could provide valuable insights for developing early interventions aimed at preventing and mitigating anxiety in adolescents.

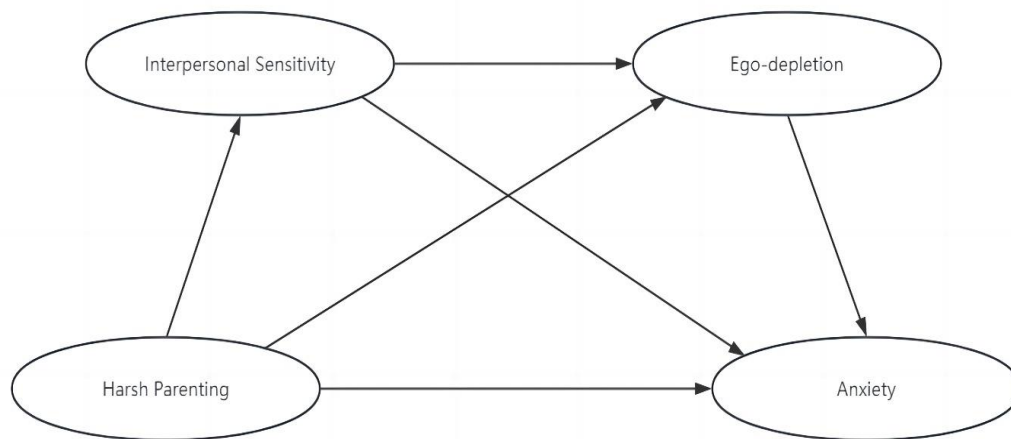
#### *1.5 The Present Study*

Synthesizing these findings, the current study aims to examine a chain mediation model (see Figure 1) concerning the cognitive influence of harsh parenting on adolescent anxiety, specifically testing the following hypotheses:

Hypothesis 1: Harsh parenting is negatively correlated with adolescent interpersonal sensitivity.

Hypothesis 2: Ego depletion mediates the relationship between harsh parenting and adolescent anxiety.

Hypothesis 3: Interpersonal sensitivity and ego depletion sequentially mediate the link between harsh parenting and adolescent anxiety.



**Figure 1. A Chain Mediation Model of Harsh Parenting, Interpersonal Sensitivity, Ego-depletion and Anxiety**

## 2. Method

### 2.1 Participants

Adolescents were selected from five middle schools in central China using convenience cluster sampling. The initial sample comprised 1,176 students from 7th to 11th grades. The surveys were conducted with consent from the parents, teachers, and school principals of the participants (see declarations: Ethics approval and consent to participate). Participants completed paper-based questionnaires, which were distributed and collected during school hours. 91 participants were excluded because they did not respond or provided ratings outside the legal range on at least one item as missing data. An additional 89 participants were also excluded because their scores were more than four standard deviations from the mean on any scale were identified as outliers (Hair, 2009). This resulted in a final sample of 996 adolescents (56.8% female), aged between 12 and 18 years (mean age = 15.18, standard deviation = 1.357). The grade distribution was as follows: 13.8% in seventh grade, 13.7% in eighth grade, 53.9% in tenth grade, and 18.7% in eleventh grade. Among the participants, 30.7% ( $n = 306$ ) were left-behind adolescents, and 48.3% ( $n=481$ ) were living in rural areas. The demographic distribution of the final respondents is shown in Table 1.

**Table 1. Biographical and Demographic Data of Respondents**

Variable	Category	Frequency	Percentage (%)
Gender	Female	659	57.2
	Male	492	42.7
Age	12	33	2.9
	13	146	12.7
	14	155	13.5
	15	214	18.6
	16	447	38.8
	17	149	12.9
	18	7	0.6
Grade	7	166	14.4
	8	172	14.9
	10	627	54.5
	11	186	16.2
Area of Residence	Town	529	46.0
	Rural	622	54.0
Status of left-behind	Yes	327	28.4
	No	824	71.6

## 2.2 Measurements

### 2.2.1 Harsh Parenting

It was assessed by the Harsh Parenting Scale, which was developed by (Wang & Qi, 2017) and adapted into Chinese by Wang and colleagues (Simons et al., 1991). The Chinese version of the scale (Simons et al., 1991) includes eight items, with four items each evaluating harsh fathering and harsh mothering. It is rated on a five-point Likert scale (1 = never, 5 = often), with higher scores indicating more frequent harsh parenting (Li et al., 2023; Liu & Hu, 2020). One item states, “When I make a mistake, my mom gets angry or even yells at me”. It has been widely used in studies on Chinese adolescents (Liu & Wang, 2018; Tang et al., 2018; Wang, 2019). It had a Cronbach’s alpha coefficient of 0.881 in our survey.

### 2.2.2 Interpersonal Sensitivity

This section is derived from the interpersonal sensitivity dimension of the Symptom Checklist-90 (SCL-90) and consists of 9 items. Each item is rated on a 5-point Likert scale, with response options ranging from 1 (“none”, indicating no perceived issue) to 5 (“severe”, indicating a high frequency and intensity of the symptom). Intermediate options include “very mild” (the issue is perceived but has no

or minimal impact), “moderate” (the symptom is present and causes some impact), and “significant” (the symptom is perceived and has a considerable impact). The total score ranges from 9 to 45, with scores below 18 classified as within the normal range, while scores exceeding 27 suggest the presence of pronounced interpersonal sensitivity symptoms. The internal consistency of this scale, as measured by Cronbach’s  $\alpha$ , was 0.806 in the present study.

### 2.2.3 Ego-depletion

It was assessed by this short version of the Self-Depletion Scale, which was first developed by Lanaj et al. (2014) and adapted into Chinese by Lin and Johnson (Lin & Johnson, 2015). The scale consists of five items, e.g., “I need to spend much energy to concentrate”. Respondents were instructed to rate each item based on how well it described their current state along a 7-point scale ranging from “Strongly disagree (1)” to “Strongly agree (7)”. Higher scores indicated more severe ego-depletion. The scale has demonstrated good reliability and validity in the Chinese context (Wang et al., 2021; Wang et al., 2022). In the present study, its Cronbach’s alpha coefficient was 0.877.

### 2.2.4 Anxiety Scale

The anxiety subscale of the DASS-21 was used in our study to examine adolescents’ depressed moods in the past week (e.g., “I felt that life was meaningless”). The DASS-21 scale was developed by Lovibond (Lovibond & Lovibond, 1995) and translated into Chinese by Taouk et al. (2001). The scale has also been widely used in studies on Chinese adolescents and adults (Liu et al., 2016; Wu et al., 2021). The depression subscale contains seven items on a four-point scale from 0 (never) to 3 (completely), with higher scores indicating more severe depression. In our study, the Cronbach’s alpha coefficient of the depression subscale was 0.843.

## 2.3 Data Processing

We first assessed the normality of data distribution, descriptive statistics, and correlations using SPSS 24.0. We then used Mplus 8.3 (Hayes, 2013) to examine the hypothesized chain mediation model. Given the large number of items in the scales and to reduce model complexity, we conducted the SEM analysis using parceling, following the recommendations of Bandalos and Finney (2001). For model fit evaluation, we used several indices, including the Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Additionally, Amos 20.0 (Moloodi et al., 2021) was specifically employed to derive the Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI). A good model fit is indicated when GFI, AGFI, CFI, and TLI are all greater than 0.90 (Browne & Cudeck, 1992), and RMSEA and SRMR are less than 0.08 (Arbuckle, 2011). To test the significance of the effects, we used bias-corrected bootstrapping with 5,000 samples; effects were considered significant if the 95% Confidence Interval (CI) did not include zero (Moloodi et al., 2021). These criteria collectively suggested an acceptable fit between the hypothesized model and the data.

### 3. Results

#### 3.1 Common Method Bias

Confidentiality was emphasized throughout the investigation process. The Harman's single-factor test was used to assess common method bias in the four constructs, namely harsh parenting, interpersonal sensitivity, ego-depletion, and anxiety (Podsakoff et al., 2003). The analysis resulted in seven factors and the first factor accounted for 23.398% of the total variance. It was below the 40% threshold suggested by Podsakoff et al. (2003) and indicated no significant common method bias. The single-factor model ( $\chi^2 = 6876.133$ ,  $df = 377$ ,  $RMSEA = 0.122$ ,  $SRMR = 0.117$ ,  $CFI = 0.456$ ,  $TLI = 0.414$ ) and the bi-factor model ( $CFI = 0.804$ ,  $TLI = 0.780$ ) assessed by Mplus both demonstrated extremely poor fit, providing additional evidence that common method bias did not substantially impact the data.

#### 3.2 Descriptive Statistics and Correlation Analysis

The descriptive and correlational analyses are summarized in Table 2. The skewness and kurtosis suggested acceptable normality of data distribution in harsh parenting, interpersonal sensitivity, ego-depletion, and anxiety (see Table 2) (i.e., skewness  $< |3|$  and kurtosis  $< |10|$ ; Kline, 2016). There was a significant positive correlation among harsh parenting, ego-depletion, and anxiety (all  $ps < 0.01$ ), while interpersonal sensitivity was positively correlated with all three variables (all  $ps < 0.01$ ).

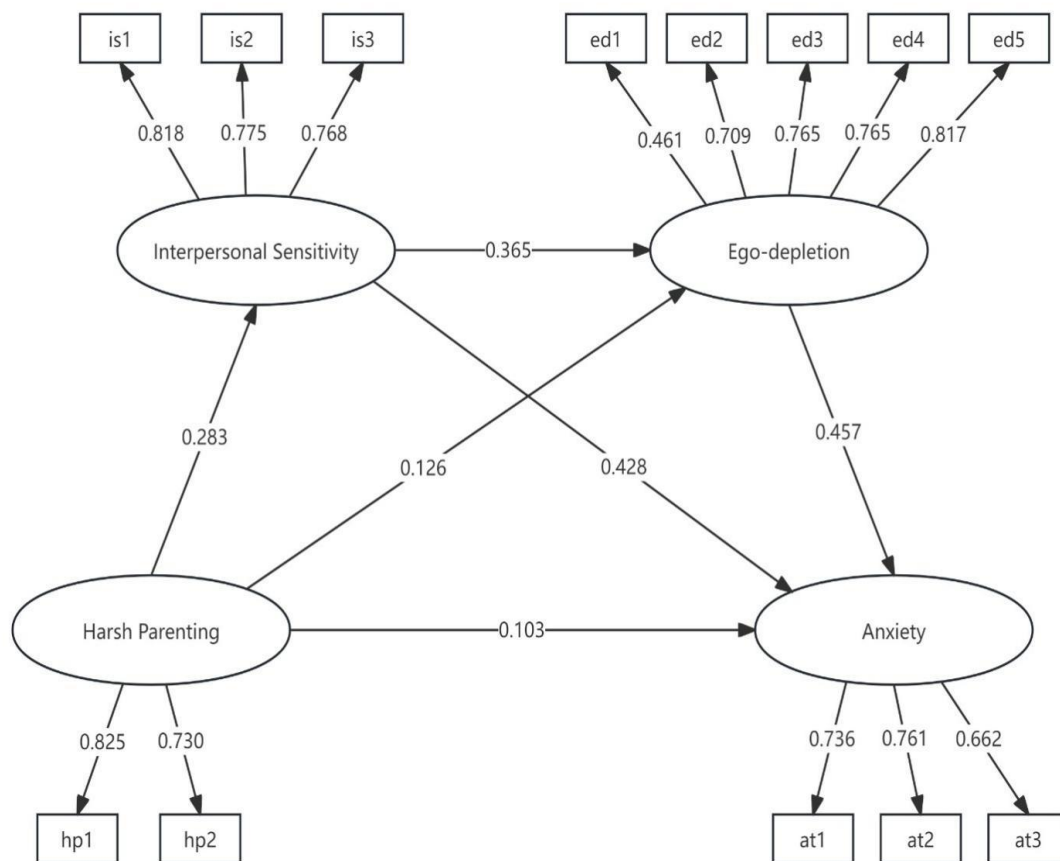
**Table 2. Descriptive Statistics and Correlations among Variables**

Variable	M	SD	Skewness	Kurtosis	1	2	3	4	5	6
1. Gender	1.56	0.49	-0.25	-1.91	1					
2. Age	15.19	1.35	-0.56	-0.56	0.020	1				
3. Harsh Parenting	12.93	4.87	1.18	0.75	-0.173*	-0.089*	1			
4. Interpersonal Sensitivity	22.36	6.19	0.19	-0.05	-0.020	0.020	0.224*	1		
5. Ego-depletion	12.11	4.14	-0.06	-0.88	0.017	0.108*	0.171*	0.345*	1	
6. Anxiety	5.852	3.62	0.53	-0.14	-0.037	-0.003	0.249*	0.497*	0.510*	1

### 3.3 Chain Mediation Model Test

The chain mediation model demonstrated an acceptable fit to the data, as evidenced by the following metrics:  $\chi^2/df = 5.205$ , RMSEA = 0.060, SRMR = 0.035, CFI = 0.958, TLI = 0.944, AGFI = 0.939, GFI = 0.960. The analysis unraveled that harsh parenting positively predicted interpersonal sensitivity ( $b = 0.283$ ,  $SE = 0.039$ ,  $t = 7.263$ , 95% CI = [0.206, 0.357],  $p < 0.001$ ) and anxiety ( $b = 0.103$ ,  $SE = 0.035$ ,  $t = 2.972$ , 95% CI = [0.034, 0.171],  $p < 0.01$ ). Ego-depletion positively predicted anxiety ( $b = 0.457$ ,  $SE = 0.034$ ,  $t = 13.291$ , 95% CI = [0.390, 0.524],  $p < 0.001$ ). Interpersonal sensitivity positively predicted ego-depletion ( $b = 0.365$ ,  $SE = 0.036$ ,  $t = 10.250$ , 95% CI = [0.296, 0.435],  $p < 0.001$ ).

In the bias-corrected bootstrap test, the indirect effect of interpersonal sensitivity in the association between harsh parenting and anxiety was 0.121 ( $SE = 0.020$ , 95% CI = [0.084, 0.163]), contributing 36% of the total effect. Similarly, the indirect effect of ego-depletion in the relationship between harsh parenting and anxiety was 0.058 ( $SE = 0.017$ , 95% CI = [0.026, 0.094]), representing 17% of the total effect. Importantly, the chain mediation effect was observed ( $b = 0.047$ ,  $SE = 0.008$ , 95% CI = [0.034, 0.065]), where harsh parenting influenced anxiety via both interpersonal sensitivity and ego-depletion. This accounted for 14% of the total effect.



**Figure 2. Multiple Mediating Effects of Interpersonal Sensitivity and Ego-depletion**

#### 4. Discussion

The findings of this study provide important insights into the complex mechanisms by which harsh parenting contributes to adolescent anxiety, highlighting the sequential mediating roles of Interpersonal Sensitivity (IS) and ego depletion. The results support the proposed chain mediation model, confirming that harsh parenting increases adolescent anxiety through heightened interpersonal sensitivity and depleted self-control resources.

As hypothesized, harsh parenting was significantly associated with adolescent anxiety. This aligns with previous research suggesting that punitive and controlling parenting practices undermine emotional regulation, making adolescents more vulnerable to anxiety disorders (Lewis-Morrarty et al., 2012). The cultural context, particularly the Confucian emphasis on strict control and family honor, may intensify the psychological impact of harsh parenting, as adolescents experience increased pressure to meet parental expectations (Lau & Yeung, 1996). The emotional neglect associated with harsh parenting likely exacerbates this, depriving adolescents of the emotional support needed to cope with stressors, thus increasing the risk of anxiety.

This study confirms the role of interpersonal sensitivity as a mediator between harsh parenting and anxiety, consistent with previous findings (Nakazawa et al., 2021). Adolescents exposed to harsh parenting are more likely to develop heightened interpersonal sensitivity, which makes them hyper-aware of social feedback, particularly criticism or rejection. This heightened sensitivity leads to increased anxiety, as adolescents struggle with feelings of inadequacy in social contexts. The findings underscore that the emotional neglect inherent in harsh parenting not only undermines self-esteem but also fosters an excessive preoccupation with others' opinions, which can perpetuate anxiety symptoms. Ego depletion was also found to mediate the relationship between harsh parenting and anxiety. This supports theories that prolonged emotional stress depletes self-control resources, making it harder for adolescents to regulate their emotional responses (Bertrams et al., 2013; Shah et al., 2021). Harsh parenting, by inducing stress and emotional strain, exhausts the self-control capacity of adolescents, making them more susceptible to anxiety. The study's results are consistent with ego depletion theory, which posits that depleted individuals are less able to manage their emotional responses, leading to heightened vulnerability to anxiety (Alharbi et al., 2020; Baumeister et al., 2018).

The findings of this study extend previous research by demonstrating the sequential mediating roles of interpersonal sensitivity and ego depletion in the relationship between harsh parenting and adolescent anxiety. The sequential pathway highlights how harsh parenting first disrupts social functioning, leading to heightened interpersonal sensitivity, which then depletes self-control resources, exacerbating anxiety. Adolescents with high interpersonal sensitivity are more prone to ego depletion as they expend more cognitive and emotional resources in social interactions, trying to meet perceived expectations (Cheng et al., 2022; Xu et al., 2012). This leads to a downward spiral where heightened sensitivity and diminished self-control feed into each other, intensifying anxiety symptoms.

These findings have important implications for developing early interventions to mitigate adolescent anxiety. Interventions should aim to reduce harsh parenting practices by educating parents on the psychological impact of punitive and controlling behaviors. By fostering emotionally supportive environments, parents can help reduce adolescents' interpersonal sensitivity and preserve their self-control resources, thus lowering their risk of anxiety. Furthermore, interventions aimed at bolstering adolescents' self-regulation skills, particularly in the context of social interactions, could help break the cycle of sensitivity and ego depletion.

While the study provides valuable insights into the mediating mechanisms of adolescent anxiety, it has some limitations. First, the cross-sectional nature of the study limits our ability to infer causality. Future longitudinal research is needed to confirm the directionality of the relationships between harsh parenting, interpersonal sensitivity, ego depletion, and anxiety. Second, the study focuses primarily on the Chinese cultural context, where strict control in parenting is more prevalent. Future studies could examine whether these findings generalize to other cultural settings with different parenting norms. Additionally, exploring the role of other potential mediators, such as self-esteem or emotional regulation strategies, could provide a more comprehensive understanding of how harsh parenting affects adolescent mental health.

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