

Could a Growth Mindset Attenuate the Link Between Family Socioeconomic Status and Depressive Symptoms? Evidence from Chinese Adolescents

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Purpose: The alleviating effects of a growth mindset on depression are promising. However, whether a growth mindset can attenuate the effect of low family socioeconomic status (SES) on depressive symptoms among adolescents remains unknown. Based on the Family Stress Model, the current study explores whether a growth mindset could moderate the associations between family SES, interparental conflict, and adolescent depressive symptoms.

Methods: The participants were 1572 Chinese adolescents ($M_{age} = 13.35$ years, $SD = 1.16$, 51.84% female). They completed the family SES questionnaire, Children's Perceptions of Interparental Conflict scale, Growth Mindset scale, and Center for Epidemiologic Studies Depression scale. We tested the moderation, mediation, and moderated mediation models using the SPSS macro program PROCESS.

Results: A growth mindset moderated the association between family SES and depressive symptoms. Family SES was significantly related to depressive symptoms in adolescents with a lower growth mindset, but not in those with a higher growth mindset. After incorporating the mediating effect of interparental conflict, the growth mindset did not exert a significant moderating influence on the direct path; however, it significantly moderated the mediating effect of interparental conflict on depressive symptoms. Specifically, while a lower growth mindset in adolescents was associated with an increased risk of depressive symptoms due to interparental conflict, those with a higher growth mindset showed a less pronounced effect.

Conclusion: A growth mindset attenuates the link between family SES and depressive symptoms among adolescents. These findings highlight the benefits of a growth mindset on mental health, especially for low-SES adolescents.

Keywords: growth mindset, socioeconomic status, depression, adolescent, interparental conflict

Introduction

Depression is one of the primary contributors to illness and functional impairment.¹ It is a psychiatric disorder and is characterized by low mood, anhedonia, feelings of tiredness, and impaired daily functioning.² Depression often begins in adolescence, a life period that is characterized by drastic physical, emotional, and social changes.^{3,4} The current state of mental health among adolescents does not present a promising outlook.^{5,6} A recent meta-analysis showed that 34% of adolescents are at risk of developing clinical depression.⁷ Depressive disorder can profoundly affect schoolwork and even lead to suicide.^{8,9} Given the increasing rates of depression and its unfavorable outcomes, identifying the risk and protective factors for depression has significant implications for mental health, especially among adolescents.

Family Socioeconomic Status (SES) and Depressive Symptoms

Family SES is an indicator of a family's capacity to access resources, which includes both material resources, indexed by income, and non-material resources, such as parents' educational attainment and occupation.¹⁰ As an environmental factor that significantly impacts mental health, substantial evidence suggests a positive correlation between low family SES and increased susceptibility to depression among adolescents.^{11–14} For instance, based on a nationally representative sample in China, a correlation was observed between a decline in family income and an increased likelihood of depressive symptoms among adolescents.¹⁵ In a longitudinal study, family SES was a significant predictor of mental health issues among adolescents.¹⁴ Additionally, evidence from meta-analyses confirms that adolescents with low SES have higher odds of developing depression than those with high SES.^{16,17} Taken together, low family SES is a well-established risk factor for adolescents' depressive symptoms.

The Family Stress Model (FSM) provides a seminal framework to help explain how family SES influences adolescent depression.^{18,19} Although the FSM's focus is on financial difficulties, it also reflects educational and occupational differences in SES.¹⁹ Low SES or financial problems can lead to adverse consequences for families—including parents' psychological distress, interparental conflicts, and disrupted parenting—which in turn increase children's vulnerability to mental health problems.²⁰ Evidence suggests that a negative family climate, replete with interparental conflicts and harsh parenting, is linked to a greater risk of adolescent depression.^{21,22} According to the FSM, low SES affects children via the impact of financial stress on their parents. Parental aspects of family stress processes serve as a channel through which low SES exerts influence on adolescent mental health.

However, the indirect effect from family SES to child outcomes does not necessarily lead to an identical level of hardship for all children. Researchers have noted that individual, family, and community factors may have a buffering or intensifying effect on the adverse outcomes linked to low family SES for children.^{10,19,20} For example, Şengül-İnal et al investigated the moderating role of child negative emotionality in the association between family income and behavior problems.²³ They found that the association between family income and behavior problems was larger for children with higher negative emotionality. In another study, neighborhood collective support has been found to mitigate the stress associated with financial constraints, which can decrease the likelihood of adverse child outcomes.²⁴ Although empirical studies have begun to explore these moderating effects, the current body of research remains relatively limited, particularly regarding child-level moderators.²³ Previous studies on child-level characteristics have highlighted the active role that children might play in family processes.^{23,25} In this study, we extend the research to encompass the growth mindset, examining its potential as a buffer against the effects of family SES on depressive symptoms in adolescents.

The Moderating Role of the Growth Mindset

A growth mindset is defined as the belief that human attributes (eg, intelligence and personality) are malleable.²⁶ Previous studies have largely concentrated on the correlation between a growth mindset and academic achievement. Recently, researchers have begun to focus on the potential use of a growth mindset to alleviate psychological distress.^{27–30} Research exploring the extension of mindset effects within the context of mental health has yielded promising preliminary findings. For instance, a higher growth mindset was found to be associated with reduced depressive symptoms among adolescents.³¹ A meta-analysis indicated that adolescents with a growth mindset have fewer mental health issues, including depression.²⁷ Furthermore, interventions aimed at cultivating a growth mindset help to alleviate depressive symptoms. For instance, Schleider and Weisz³² found that a growth mindset intervention reduced both parental and self-reported levels of depressive symptoms in high-risk adolescents, and the effects persisted for nine months. In a large-scale replication trial performed during the COVID-19 pandemic, an online growth mindset intervention targeting adolescents effectively reduced depressive symptoms from baseline to a 3-month follow-up compared with the control group.³³

Studies have explored why a growth mindset is beneficial to mental health. Yeager and Dweck²⁹ suggested that mindset creates a meaning system for interpreting challenges and adversity. Individuals with a growth mindset perceive challenges as opportunities for learning and consider them to be temporary obstacles. In contrast, individuals with a fixed mindset often consider setbacks and stressors as reflections of their own inadequacies and perceive difficulties as unchangeable circumstances. Overall, a growth mindset has a more positive meaning system, while a fixed mindset

exhibits a more negative meaning system. The negative meaning system contributes to cognitive vulnerability, which increases the risk of depression. Indeed, research has shown that among adolescents, a fixed mindset is related to internalizing symptoms through fixed attributions about oneself and threat appraisals.³⁰ Existing research also showed that a growth mindset intervention reduced both negative event-focused appraisals and negative response-focused appraisals when youths faced stress.³⁴ Moreover, mindsets impact the stress response. Those with a stronger growth mindset are more likely to adopt adaptive coping strategies than those with a fixed mindset, who lean toward passive coping mechanisms such as avoidance.^{27,29} For example, a recent meta-analysis indicated that a growth mindset is positively linked to active coping and treatment value.³⁵ A higher growth mindset encourages individuals to handle challenges adaptively, thereby potentially preventing or reducing mental health issues.

Low family SES can be considered an adversity or challenge for adolescents. A growth mindset has demonstrated the potential to mitigate the adverse impact of disadvantaged circumstances on adolescents' developmental outcomes.^{26,36} In the academic realm, a study examined the moderating role of a growth mindset in the association between SES and learning engagement.³⁷ The SES-learning engagement association was larger for those with a low growth mindset than those with a higher growth mindset. However, whether a growth mindset can attenuate the adverse effect of low family SES on depressive symptoms remains unknown. To address this gap, the current study tested whether a growth mindset moderates the association between family SES and adolescent depressive symptoms. Moreover, we are interested in how a growth mindset interacts with SES within the framework of the FSM, leading us to incorporate one of the family stress processes—interparental conflict—as a mediating variable.

The Mediating Role of Interparental Conflict

According to the FSM, economic pressure related to low SES will lead to more emotional distress for parents, and then increase couple conflicts. Conflict between parents exacerbates disruptions in parenting, which is subsequently associated with adolescent maladjustment.^{19,20} Within the family stress framework, interparental conflict acts as a mediator of the relationship between family SES and adolescent development. Interparental conflict may have a more profound negative effect on adolescents than on younger children, as adolescents are more aware of the presence of conflict.³⁸ This impact pathway is well-supported by a substantial body of empirical research. For example, Wadsworth and Compas³⁹ found that parental conflict partially mediated the relationship between economic pressure and adolescent adjustment. Using longitudinal data, Kavanaugh and colleagues⁴⁰ found that financial strain was related to conflict among couples, which was associated with depressive symptoms in adolescents. According to Emotional Security Theory, children and adolescents have an inherent requirement for a sense of safety and security within their parents' relationship.⁴¹ Consequently, exposure to harmful marital disputes is identified as a principal factor leading to children's emotional insecurity.⁴² In addition, perceiving interparental conflict as a personal or familial threat, or attributing blame to oneself for the conflict, poses a heightened risk to the depression of adolescents.^{43–45} Taken together, emotional insecurity and cognitive appraisals are considered important mechanisms in understanding how such conflicts can lead to depression for adolescents.

While empirical studies have supported the mediating role of interparental conflict between SES and adolescent depressive symptoms, this mediating model has not been verified within the Chinese adolescent population. Therefore, one of our objectives is to examine whether interparental conflict serves as a mediator between SES and depressive symptoms among Chinese adolescents.

Purpose and Hypothesis

Guided by the FSM, we sought to investigate how a growth mindset interacted with family SES to influence depressive symptoms with Chinese adolescents. First, we examined whether a growth mindset moderated the association between family SES and depressive symptoms. Our second objective is to examine the mediating role of interparental conflict in the association between family SES and depressive symptoms among Chinese adolescents. We then explored the mechanisms underlying the interaction effects by incorporating interparental conflict as a mediating factor.

As mentioned earlier, a growth mindset can lead to more positive appraisals of challenges and prompt more resilient coping responses.²⁹ Hence, adolescents with higher levels of a growth mindset may perceive a reduced threat when faced

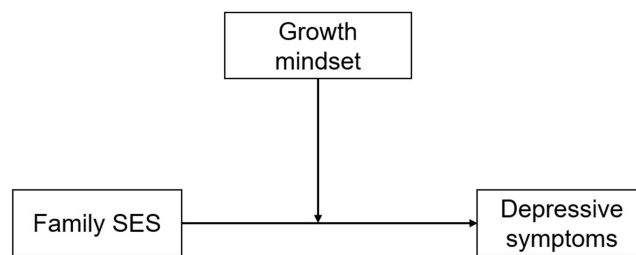


Figure 1 Conceptual moderated model of growth mindset in the association between family SES and depressive symptoms.

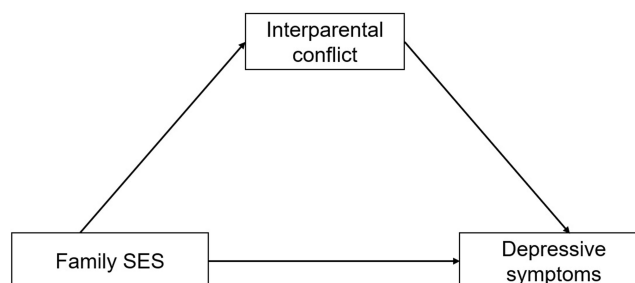


Figure 2 Conceptual mediation model of interparental conflict in the association between family SES and depressive symptoms.

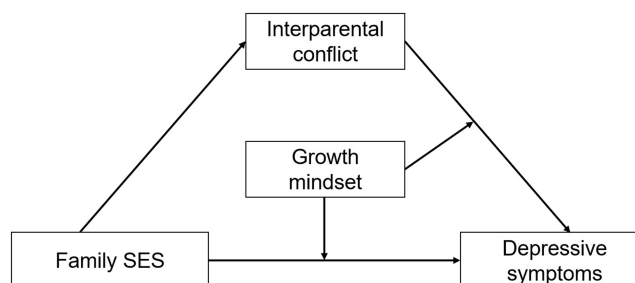


Figure 3 Conceptual moderated mediation model of the association between family SES and depressive symptoms.

with low family SES and interparental conflicts and respond with greater resilience, thereby reducing symptoms of depression. As such, we posit the following hypotheses.

(1) A growth mindset moderates the effect of family SES on adolescents' depressive symptoms, with the negative effect of low SES on depressive symptoms being stronger for individuals with a lower level of a growth mindset.

(2) Interparental conflict mediates the relationship between family SES and depressive symptoms.

(3) A growth mindset moderates the effect of interparental conflict on depressive symptoms, with the negative effect of interparental conflict being more pronounced for individuals with a lower level of a growth mindset.

Combining these hypotheses, we yielded a moderation model (Figure 1), a mediation model (Figure 2), and a moderated mediation model (Figure 3).

Methods

We conducted a cross-sectional study to test the proposed models by measuring family SES, interparental conflict, depressive symptoms, and growth mindset.

Participants and Procedure

The Institutional Review Board of the School of Educational Science at Ludong University approved this study. Five secondary schools in Shandong Province of China were chosen using a convenience sample technique. We secured the

school principals' approval after explaining the study's purpose. Students were asked about their willingness to engage in the survey. Those who agreed were then required to furnish written informed consent from their parents or legal guardians. The participants completed the survey during the free study period at school. Undergraduate and graduate students majoring in psychology, who had been trained for the role, served as the research assistants. They introduced the purpose of the study and the important considerations to the participants, as well as handled the distribution and collection of the survey questionnaires. All participants were notified that their participation was completely voluntary and that they could opt out without facing any negative consequences. In total, 1,750 adolescents in grades 6, 7, and 8 were recruited. The questionnaires of participants who did not respond seriously (incorrect answers to test questions or regular answers) were excluded. Due to the use of listwise deletion in calculating family SES, participants with missing data in any component of the family SES were excluded from the analysis. Table 1 presents the characteristics of the participants and the group differences between the excluded sample and the analytical sample. The final analyses included the data of 1,572 adolescents (51.84% female), aged 11 to 16 years ($M = 13.35$, $SD = 1.16$). There were 479 participants (30.47%) from single-child families, and 812 participants (51.65%) lived in urban areas. The final sample size ($N = 1,572$) makes it possible to detect an effect size as small as $r = 0.10$ at the significance level of $\alpha = 0.05$ (two-tailed) with a power of $1-\beta = 0.95$.

Measures

Family SES

The most commonly used SES indicators are income, education level, and occupational prestige. Adolescents reported the monthly family income received from their parents, ranging from 1 (¥2,000 and below) to 6 (¥10,000 and above). They also reported the education level and occupation of both parents, ranging from 1 (primary education and below) to 7 (PhD) for educational level, and from 1 (national and social administrators) to 10 (unemployed) for occupation.⁴⁶ We used a principal component analysis (PCA) to create family SES indices.⁴⁷ PCA conducted on these five components revealed that there is one principal component with an eigenvalue greater than one, accounting for 48.58% of the total variance. Then, the factor scores of this principal component were calculated to synthesize the index of SES. The formula for this synthesis is: $SES = 0.51 \times \text{Household Income} + 0.75 \times \text{Father's Education Level} + 0.73 \times \text{Mother's Education Level} + 0.76 \times \text{Father's Occupational Prestige} + 0.70 \times \text{Mother's Occupational Prestige}$, where the coefficients represent the component loadings. Values range from -1.94 to 3.84 , with higher values indicating higher family SES. PCA employed listwise deletion; hence, cases missing on any of the components were excluded from the analysis. A total of 19 participants exhibited missing data across the five components. Little's missing completely at random test showed that the pattern of missing data was completely missing at random ($\chi^2(11) = 9.12$, $p = 0.61$), suggesting that deletion did not significantly influence the results.

Table 1 General Characteristics of the Participants (N=1750)

Characteristic	Classification	Analytical Sample n (%)	Excluded Sample n (%)	p value
Gender	Male	757 (48.16%)	116 (65.17%)	< 0.001
	Female	815 (51.84%)	62 (34.83%)	
Age	11–12	387 (24.62%)	49 (27.53%)	0.24
	13–14	931 (59.22%)	94 (52.81%)	
	15–16	254 (16.16%)	35 (19.66%)	
Grade	6	430 (27.35%)	51 (28.65%)	0.56
	7	620 (39.44%)	75 (42.13%)	
	8	522 (33.21%)	52 (29.21%)	
Residence	Urban	812 (51.65%)	94 (52.81%)	0.83
	Rural	760 (48.35%)	84 (47.19%)	
Single-Child	Yes	479 (30.47%)	63 (35.39%)	0.21
	No	1093 (69.53%)	115 (64.61%)	

Interparental Conflict

To assess participants' perception of parental conflict, we used the Chinese version of the Children's Perceptions of Interparental Conflict scale (CPIC).^{48–50} The Chinese version of CPIC includes 38 items with three subscales: Conflict Properties, Perceived Threat, and Self-Blame.⁵⁰ The subscale of Conflict Properties was used here to reflect objective features of interparental conflict. This subscale consists of 19 items that assess the frequency, intensity, and resolution of interparental conflict (eg, "My parents get really mad when they argue", "When my parents have an argument, they usually work it out"). Response options were presented on a 4-point scale, ranging from 1 (*almost never*) to 4 (*almost always*). Responses across the 19 items were averaged, with higher values indicating more conflict between parents from the adolescent's perspective. The Chinese version of the CPIC is reliable and valid among adolescents.⁵¹ In this study, Cronbach's α was 0.916.

Growth Mindset

We assessed growth mindset using the 8-item Growth Mindset scale,⁵² of which four items measure growth mindset (eg, "You can always greatly change how intelligent you are"), and four items gauge fixed mindset (eg, "You have a certain amount of intelligence, and you cannot really do much to change it"). Participants rated their level of agreement with these statements using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Four items for fixed mindset were coded in reverse. Consequently, a higher score on the scale reflects a greater endorsement of a growth mindset. The Chinese version of the Growth Mindset scale has good reliability and validity.⁵³ In the current study, Cronbach's α was 0.818.

Depressive Symptoms

We utilized the 20-item Center for Epidemiologic Studies Depression scale (CES-D) to measure adolescent depressive symptoms.⁵⁴ The validity of this scale among Chinese adolescents has been well-established.¹⁵ The participants were asked to indicate their mood over the previous week on a scale from 0 (*little or none*) to 3 (*most of the time*). Responses to all items were averaged with higher scores indicating more severe depressive symptoms. The Cronbach's α was 0.914 in this study.

Data Analysis

We analyzed the data using SPSS 22.0 software and the PROCESS macro program.⁵⁵ The missing data (< 1%) were processed using mean substitution. As the participants self-reported all data, we employed Harman's single-factor test to check for common method bias (CMB). We conducted the test for four main variables (ie, family SES, interparental conflict, growth mindset, and depressive symptoms). The first factor accounted for 21.27% of the overall variability, which is below the 40% mark, meaning that we did not observe any significant CMB. Given that cluster sampling was used in the present study, we calculated the intraclass correlation (ICC) at the class-level. The ICC value is 0.042 (< 0.05), indicating that multilevel analyses are not necessary here.⁵⁶ Next, we performed descriptive statistics and correlational analyses with the main variables. To examine the moderating effect of a growth mindset on the association between family SES and depressive symptoms, we tested the moderation model using Hayes' PROCESS macro (Model 1). Model 1 of PROCESS macro is used to estimate a simple moderation model. Then, we tested the mediation model to examine the mediating role of interparental conflict between family SES and depressive symptoms. Model 4 of PROCESS macro is used to estimate a simple mediation model. The mediation effect size was calculated using the adjusted ν measure.⁵⁷ ν represents the variance in the outcome explained indirectly by a predictor through a mediator, and the adjusted ν is an estimator of ν that adjusts for bias associated with sample size.⁵⁷ The value of ν ranges from 0 (no explained variance) to 1 (perfect explained variance). Finally, we investigated the moderating effect of a growth mindset on the indirect relationship between family SES and depressive symptoms via interparental conflict using a moderated mediation model (Model 15 in PROCESS macro). Model 15 could test the moderated mediation of a single mediator and moderator for direct and indirect effects. Moderation of the indirect effect in Model 15 results from the moderating effect of the mediator on dependent variables by the moderator. To evaluate the significance of the effects, we employed bootstrapping to derive robust standard errors for estimating the parameters.⁵⁵ By performing 5,000

resamples of the data, the bootstrapping method generated bias-corrected confidence intervals at the 95% level. Owing to evidence that they are depression predictors, gender, age, and only-child were added as control variables.^{58,59}

Results

Descriptive Statistics and Correlation of the Variables

Table 2 presents the means, standard deviations, and correlations between the two variables. Family SES was negatively related to interparental conflict and depressive symptoms, but positively associated with a growth mindset. Interparental conflict showed a positive correlation with depressive symptoms, but a negative correlation with a growth mindset. Growth mindset and depressive symptoms were negatively correlated.

Testing for the Moderation Effect

To determine whether a growth mindset could moderate the effect of family SES on depressive symptoms, we used Model 1 of PROCESS macro. The moderation effect of growth mindset was indicated by the significant family SES \times growth mindset interaction, $\beta = 0.06$, $t = 2.49$, $p < 0.05$ (see Table 3 for details). Simple slope analysis showed that family SES was significantly related to depressive symptoms in adolescents with lower levels of a growth mindset, $b_{simple} = -0.12$, $t = -3.49$, $p < 0.01$ (see Figure 4). For adolescents with a higher growth mindset, the effect of family SES on depressive symptoms was not significant, $b_{simple} = 0.001$, $t = 0.04$, $p > 0.05$. Thus, a growth mindset attenuates the link between family SES and adolescent depressive symptoms.

Testing for the Mediation Effect

We used Model 4 of PROCESS macro to test the mediating role of interparental conflict. Table 4 outlines the results. Family SES was negatively associated with depressive symptoms, $\beta = -0.07$, $t = -2.79$, $p < 0.01$ (total effect). Further, family SES was negatively associated with interparental conflict, $\beta = -0.12$, $t = -4.82$, $p < 0.001$, 95% bootstrap CI = $[-0.17, -0.07]$. Lastly, interparental conflict was positively related to depressive symptoms, $\beta = 0.45$, $t = 19.78$, $p < 0.001$, 95% bootstrap CI = $[0.39, 0.50]$, and the direct association between family SES and depressive symptoms was no

Table 2 Descriptive Statistics and Correlations for the Main Variables

Variables	M	SD	1	2	3	4
1. Family SES	0.00	1.00	—			
2. Interparental Conflict	2.02	0.57	-0.12***	—		
3. Growth Mindset	3.29	0.74	0.06*	-0.24***	—	
4. Depressive Symptoms	0.70	0.55	-0.06*	0.45***	-0.33***	—

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

Table 3 Testing the Moderating Effect of Growth Mindset

Predictors	Model (Depressive Symptoms)				
	β	SE	t	BootLLCI	BootULCI
Gender	0.11	0.05	2.34*	0.02	0.21
Age	-0.07	0.02	-3.32***	-0.11	-0.03
Only-child	-0.05	0.05	-0.92	-0.16	0.06
Family SES	-0.06	0.02	-2.38*	-0.11	-0.01
Growth mindset	-0.34	0.02	-14.08***	-0.39	-0.29
SES \times Growth mindset	0.06	0.02	2.49*	0.01	0.12
R^2	0.13				
F	37.89***				

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

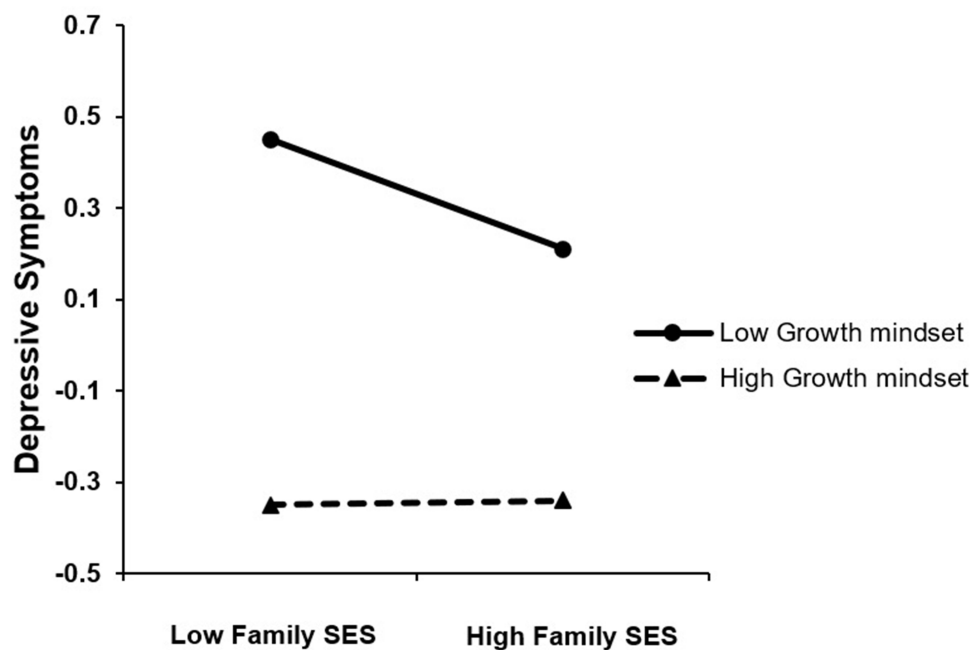


Figure 4 The Moderating Role of Growth Mindset in the Association of Family SES and Depressive Symptoms.

longer significant, $\beta = -0.02$, $t = -0.69$, $p > 0.05$, 95% bootstrap CI = $[-0.06, 0.03]$. Hence, interparental conflict fully mediated the association between family SES and depressive symptoms (indirect effect = -0.056 , $SE = 0.01$, 95% bootstrap CI = $[-0.08, -0.03]$). The ratio of indirect effect (-0.056) to total effect (-0.072) was 77.78%. The adjusted η^2 effect size estimate was 0.003 (95% bootstrap CI $[0.001, 0.006]$).

Testing for the Moderated Mediation Effect

To examine the role of a growth mindset in this mediation model, we tested the moderated mediation model with Model 15 in PROCESS macro. The index of moderated mediation was 0.01, and the 95% confidence interval based on 5000 bootstrap samples did not include zero (0.003 to 0.017), indicating the moderated mediation model was a valid construct. For depressive symptoms, the family SES \times growth mindset interaction was not significant, $\beta = 0.03$, $t = 1.54$, $p > 0.05$, while the interparental conflict \times growth mindset interaction was significant, $\beta = -0.07$, $t = -3.84$, $p < 0.01$ (see Table 5 for details). As illustrated in Figure 5, the simple slope analysis indicated that interparental conflict was positively predictive of depressive symptoms in adolescents with a lower growth mindset, $b_{simple} = 0.46$, $t = 16.09$, $p < 0.001$. This

Table 4 Testing the Mediation Effect of Interparental Conflict on Depressive Symptoms

	Depressive Symptoms		Interparental Conflict		Depressive Symptoms	
	β	t	β	t	β	t
Gender	0.18	3.48***	0.16	3.28**	0.10	2.24*
Age	-0.04	-1.75	-0.02	-1.01	-0.03	-1.45
Only-child	-0.03	-0.45	-0.08	-1.35	0.01	0.18
Family SES	-0.07	-2.79**	-0.12	-4.82***	-0.02	-0.69
Interparental conflict					0.45	19.78***
R^2	0.01		0.02		0.21	
F	5.74**		8.83***		84.02***	

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Each column is a regression model that predicts the dependent variable at the top of the column.

Table 5 Testing the Moderating Role of Growth Mindset in the Mediation Model

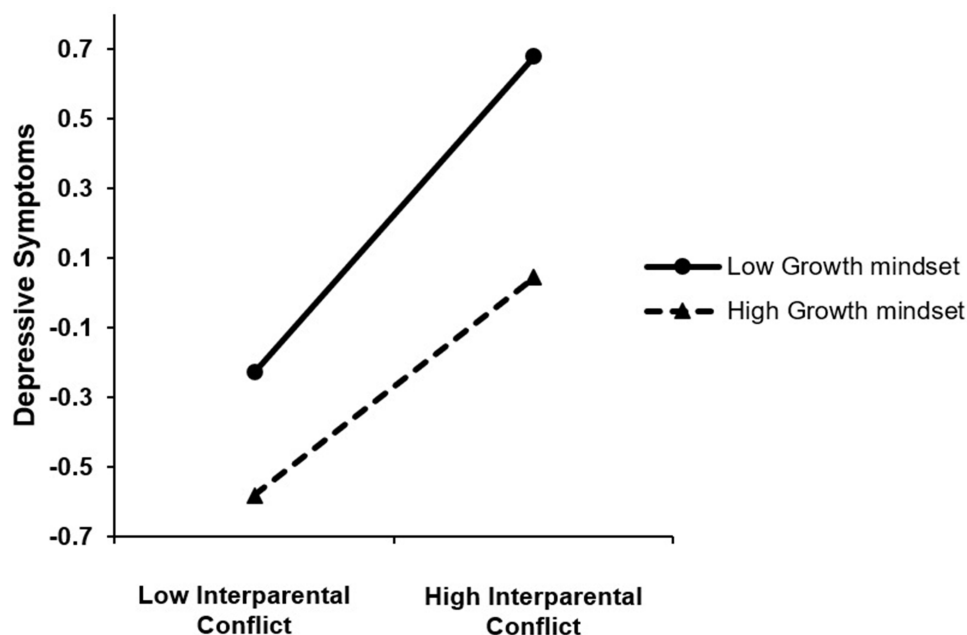
Predictors	Model (Depressive Symptoms)				
	β	SE	t	BootLLCI	BootULCI
Gender	0.07	0.05	1.50	-0.02	0.15
Age	-0.05	0.02	-2.70**	-0.09	-0.02
Only-child	-0.01	0.05	-0.28	-0.11	0.08
Family SES	-0.01	0.02	-0.50	-0.06	0.03
Interparental conflict	0.39	0.02	17.15***	0.34	0.44
Growth mindset	-0.25	0.02	-11.03***	-0.30	-0.20
SES \times Growth mindset	0.03	0.02	1.54	-0.02	0.09
Growth mindset \times Interparental conflict	-0.07	0.02	-3.84**	-0.12	-0.03
R^2	0.28				
F	74.30***				

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

positive effect was weaker for those with a higher level of growth mindset, $b_{simple} = 0.31$, $t = 10.09$, $p < 0.001$, suggesting that growth mindset buffers the effect of interparental conflict on depressive symptoms. Collectively, these results suggest that a growth mindset moderates the effect of family SES on depressive symptoms, primarily by moderating the effects of interparental conflict on depressive symptoms.

Discussion

This study explored the role of a growth mindset in the association between family SES and adolescents' depressive symptoms. Findings from our sample of Chinese adolescents demonstrate that a growth mindset serves as a moderator, mitigating the impact of family SES on depressive symptoms among these youth. In addition, a growth mindset moderated the effect of family SES on depressive symptoms, primarily by moderating the effects of interparental conflict on depressive symptoms. These findings provide additional empirical support for the potential benefits of a growth mindset in lowering depressive symptoms in the Chinese context.

**Figure 5** The Moderating Role of Growth Mindset in the Association of Interparental Conflict and Depressive Symptoms.

We found significant interaction effects between growth mindset and family SES on adolescent depressive symptoms. While family SES was significantly related to depressive symptoms in adolescents with a lower growth mindset, for adolescents with a higher growth mindset, the relation was not significant. This interaction effect implies that a growth mindset can buffer the adverse effects of low family SES on adolescent depressive symptoms. Consistent with existing research,^{27,29} our findings support the notion that a growth mindset benefits adolescents' mental health. Moreover, our results highlight the role of a growth mindset in protecting the mental health of adolescents from families with lower SES. Youths from socioeconomically disadvantaged backgrounds are more prone to encountering challenges and adversity; however, those with a growth mindset demonstrate greater resilience. Indeed, an intervention study showed that a growth mindset fostered resilient responses when adolescents faced challenges, mitigating the impact of stressors on their mental health.³⁰

The results of the moderated mediation model indicated that after incorporating the mediating effect of interparental conflict, the growth mindset did not exert a significant moderating influence on the direct path. However, it significantly moderated the mediating pathway between interparental conflict and depressive symptoms. Specifically, interparental conflict was a positive predictor of depressive symptoms in adolescents with a lower growth mindset, and this positive effect was weaker in those with a higher growth mindset. These results imply that a growth mindset can decrease the effect of interparental conflict on adolescent depression. As previously stated, conflicts between parents can lead children to develop negative thoughts and emotions, such as feeling threatened or blaming themselves. However, a growth mindset can reduce the inclination to perceive stressors as threats, resulting in fewer negative emotional responses.³⁰ Accordingly, a growth mindset may help adolescents respond more resiliently to interparental conflict.

Our findings also suggest that the presence of a growth mindset mitigates the impact of family SES on depressive symptoms, primarily by attenuating the influence of interparental conflict. According to the bioecological model,⁶⁰ the family is a microsystem that directly influences adolescents, whereas family SES is an exosystem that exerts an indirect influence. Thus, compared with family SES, interparental conflict had a greater impact on adolescent depression. Indeed, a meta-analysis indicated that SES had a significant but small effect on adolescents.⁶¹ Therefore, regarding the association between family SES and adolescent depressive symptoms, a growth mindset plays a regulatory role—primarily through the essential mediator of interparental conflict.

Our findings corroborate the FSM, demonstrating that family SES indirectly impacts adolescents' depressive symptoms through interparental conflict.^{19,20} More importantly, our research indicated that child-level factor, such as growth mindset, plays a moderating role in this process. FSM researchers advocate for the consideration of the child effect in discussions on family SES and child development.^{19,20,23} They propose that child characteristics can alter the pathways from family stress to developmental outcomes. Our study confirms this by demonstrating the moderating role of adolescent growth mindset, thereby laying a theoretical groundwork for additional research.

Researches have found that a growth mindset is positively related to academic achievement. However, contrary to common findings, several studies have showed that a growth mindset does not predict higher achievement among Chinese students.⁶² The PISA survey data indicates that mainland Chinese students dedicate an average of 57 hours per week to studying, ranking second-highest globally.⁶³ This raises the possibility that a growth mindset might not be able to further augment the number of study hours or test scores when there is already a cultural imperative to work that hard. It is worth noting that while no consensus has been reached on the benefits of a growth mindset for the academic performance of Chinese students, the benefits of a growth mindset for the mental health of Chinese students seem clearer. Our results corroborate the findings of Huang et al,⁶⁴ who found that a high growth mindset is positively predictive of lower levels of depression, anxiety, and stress among Chinese university students. This suggests that a growth mindset is still valuable for Chinese teenagers. As noted by Yeager and Dweck,⁶⁵ "a growth mindset does not predict higher achievement does not mean mindset has no effect". Adolescents in China are increasingly experiencing depression.⁶⁶ Additionally, mainland China has the greatest correlation between a fixed mindset and fear of failure, a risk factor for poor mental health, among all the OECD countries.⁶³ This implies that cultivating a growth mindset could potentially greatly contribute to the well-being of adolescents in China.

Although there have been many studies on SES and mindset, most have been conducted in parallel. Researchers who focus on mindset have rarely examined the influence of structural factors such as SES. Ignoring the broader societal

context may convey misleading information to decision-makers and foster a “blaming the victim” attitude.⁶⁷ Hence, it is crucial to maintain awareness of socioeconomic factors and how they interact with mindset. To the best of our knowledge, this study represents the first attempt to explore how a growth mindset interacts with SES to predict mental health in adolescents. This study may offer key implications for mindset researchers. It might be more beneficial to examine how mindsets interact with a larger socioeconomic setting and acknowledge the significance of considering both individual views and the socio-structural context, rather than contrasting mindsets with structural variables.⁶⁷ Given the ambiguous interaction between SES and growth mindset in the academic domain, as well as the limited research on their interplay in the field of mental health, further investigations are warranted to elucidate their intricate relationship.

Limitations

This study has some limitations. First, the data collected in this research is cross-sectional, thereby precluding any causal inferences. Thus, researchers should consider using a longitudinal design in future. Second, adolescents self-reported family income, which may differ from real data. Future studies should obtain these data from parents to improve accuracy. Third, we used a growth mindset in the domain of intelligence. Although previous studies have shown that mindset is generally associated with mental health regardless of the specific domain,^{27,68} there are also findings suggesting that emotion mindset may have a stronger correlation with mental health.³⁵ Thus, further investigation is needed to explore the impact of growth mindset in the domain of emotion on adolescents’ mental health. Fourth, despite our attempts to control for known confounders such as gender and age, it is possible that there are other unmeasured variables (eg, parent-child conflict, resilience, social support) that could influence the observed association. These overlooked variables might introduce bias and impact the accuracy of our findings. Therefore, future studies that include a broader range of variables may be necessary to obtain a more holistic view of the associations observed in this study.

Conclusions

Taken together, this study revealed that a growth mindset can attenuate the link between family SES and depressive symptoms among Chinese adolescents. This effect was primarily achieved by moderating the effects of interparental conflict on depressive symptoms. Examining how a growth mindset interacts with family SES provides insight on its combined influence on the risk of adolescent depression. By recognizing these dynamics, policymakers, educators, and parents can collaborate to create supportive environments that foster positive mental health outcomes for adolescents.

Abbreviations

CMB, common method bias; CPIC, children’s perceptions of interparental conflict; FSM, family stress model; ICC, intraclass correlation; PCA, principal component analysis.

Ethics Statement

All procedures conducted within this study complied with the Declaration of Helsinki. The Institutional Review Board of the School of Educational Science at Ludong University approved the study protocol. Informed consent was obtained from all students and their parents.

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Disclosure

The authors report no conflicts of interest in this work.

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