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Parental psychological control and depressive symptomatology in Chinese junior middle school students: a moderated mediation model

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Abstract

Background This study examines the mechanisms linking parental psychological control and depressive symptomatology among Chinese junior middle school students, focusing on the mediating role of psychological resilience and the moderating role of school climate.

Method A questionnaire survey was conducted among 1991 middle school students using a depressive symptomatology scale, the psychological control sub-questionnaire, the Chinese version of the Connor-Davidson Resilience Scale, and the Perceived School Climate Scale. Data analysis included descriptive statistics, correlation analysis, and tests of the moderated mediation model.

Results (1) parental psychological control positively predicts depressive symptomatology ($\beta = 0.34$, $p < 0.001$), with psychological resilience mediating this relationship ($\beta = 0.02$, 95% Bootstrap CI= [0.01, 0.04]); (2) in the mediation model, school climate moderates the first and second half pathways ($\beta_{parental\ psychological\ control \times school\ climate} = -0.03$, 95% Bootstrap CI= [-0.07, -0.00]; $\beta_{psychological\ resilience \times school\ climate} = -0.08$, 95% Bootstrap CI= [-0.11, -0.05]) and the mediating effect. Specifically, under a high-level school climate, the effect of parental psychological control on psychological resilience, and the effect of psychological resilience on depressive symptomatology were significantly stronger than those in a low-level school climate. The indirect effect of psychological resilience was also stronger in a high-level than a low-level school climate (Contrast $_{high\ minus\ low\ level} = 0.03$, 95% CI [0.01, 0.05]. Psychological resilience could not moderate the psychological control–depressive symptomatology relationship.

Conclusion Parental psychological control indirectly affects depressive symptomatology through psychological resilience, with school climate moderating the mediating effect. The findings show how family and school environments, along with individual traits, collectively influence adolescents' depressive symptomatology. The study has the following application implications. Interventions such as the resilience-building program and the mindfulness program could improve parents' educational styles and students' psychological resilience respectively. Educators

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can strengthen school climate through learning guidance and game activities and so on. Courses such as teacher training should incorporate methods of family-school collaboration. Further longitudinal studies could explore the development of the relationships between the main variables. Objective measurements could also be incorporated for more accurate measurement.

Keywords Parental psychological control, Depressive symptomatology, Psychological resilience, School climate

The *Report on the Development of National Mental Health in China (2021–2022)* indicates a high incidence of depression among teenagers during the junior middle school years, coupled with an increasing detection rate. This situation highlights the prevalence of depressive symptomatology at a young age and the necessity to investigate its underlying mechanisms. The bioecological model suggests that individual development is influenced by a series of environmental factors such as family, school, and peers, and these factors interact with individual psychological factors. Based on the model, the family microsystem has a sustained impact on adolescent mental health, among which parental psychological control is one of the important factors [1]. Research has demonstrated the predicting effect of the negative parenting style characterized by psychological control on depressive symptoms in adolescents [2–5]. However, the specific mechanisms of the effect warrant further investigation.

According to the diathesis–stress model [6], individual characteristics could help teenagers buffer from negative environmental factors. Psychological resilience is one such individual characteristic [7] that is closely related to both parental psychological control and adolescent depressive symptomatology [8–10]. Thus, psychological resilience may act as a mediating or moderating factor in the relationship between parental psychological control and depressive symptomatology among junior middle school students. In addition, school climate could also protect teenagers from depression [11–13]. Adolescents attending schools with a positive climate often experience sufficient interpersonal support and resources, making them less susceptible to depressive symptomatology than their peers in less positive environments.

No studies have explored the combined effects of parental psychological control, school climate and individual psychological resilience on adolescents' depressive symptomatology. Therefore, the study investigated the effect of school climate in moderating the relationship between parental psychological control and depressive symptomatology via the role of psychological resilience.

Relationship between psychological control and depressive symptomatology

Parental psychological control is characterized as a detrimental parenting style in which parents invade and manipulate their children's emotions and behaviors to satisfy their own desires. This control can manifest in various forms, such as inducing guilt, withholding love, and exercising arbitrary authority [14, 15]. According to self-determination theory, junior middle school students are navigating a stage of "separation-individualization" in which they seek independent growth and strive to liberate themselves from parental constraints. Excessive parental interference can hinder teenagers' quest for autonomy, often resulting in negative emotional states [16]. Numerous studies have shown a positive predictive effect of parental psychological control on depressive symptomatology [3–5, 17]. Additionally, meta-analysis research has confirmed a significant positive correlation between parental psychological control and depression [2].

Noted that the impact of parental psychological control on individuals may be influenced by cultural factors [18]. In contrast to the individualistic cultures of developed Western countries, the collectivist culture in China often perceives psychological control as a form of parental care, accepted by Chinese parents and children [19, 20]. Consequently, conformity and filial piety are also regarded as traditional virtues within Chinese society. Thus, among middle school students in collectivist China, parental psychological control does not appear to significantly affect the level of depressive symptomatology. However, the divide between China and Western countries has gradually diminished in recent decades, and traditional Chinese parenting methods may no longer predominate [21]. Evidence suggests that parental psychological control exerts a detrimental effect in Western cultures and China [22–24]. Therefore, parental psychological control could be a positive predictor of depressive symptomatology in Chinese children.

Role of psychological resilience in the relationship between parental psychological control and depressive symptomatology

Several studies have indicated that parental psychological control can affect mental health through mediating variables, such as basic psychological needs, emotional regulation, and self-concept [25–27]. According to the diathesis–stress model, depression is caused by the combined effects of stress events and individual quality factors. External environmental factors could impact mental health through individual vulnerability to influence adolescent behavior [6]. Theory of psychological suzhi holds the same view with the diathesis–stress model.

Psychological suzhi, rooted in the Chinese language and broadly translating to psychological diathesis, is a fundamental trait shaped by a combination of heredity and environmental factors [28, 29]. This trait can serve as a mediating factor between external influences and psychological results [7, 29]. Psychological resilience, defined as the ability to recover from setbacks [30], is a form of mental health diathesis that may also mediate the relationship between parental psychological control and depressive symptomatology.

Empirical studies also supported the mediating role of psychological resilience in the relationship between parental psychological control and depressive symptomatology. The research has demonstrated a negative association between parental psychological control and psychological resilience [8–10]. This association likely stems from the fact that adolescents raised by parental psychological control style often struggle to effectively mobilize their resources in the face of setbacks. Consequently, their ability to regulate emotions and cope with stress is hindered, ultimately impeding the development of psychological resilience. Furthermore, psychological resilience has been found to correlate closely with levels of depression. Individuals exhibiting high psychological resilience are typically endowed with substantial psychological resources, including life satisfaction, optimism, and emotional stability [31]. Consequently, people are better significantly positioned to navigate stressful situations and manage challenges, thereby mitigating symptoms of depression [32–35].

A previous study involving university students in Tbilisi established that parental psychological control might predict depression through its effects on psychological resilience [9]. Nonetheless, some researchers contend that the effects of parental psychological control could vary based on cultural contexts as mentioned [18]. In China, a predominantly collectivist culture, no studies have investigated the potential influence of parental psychological control on the psychological development of teenagers via psychological resilience. Given the robust connections among psychological resilience, parental psychological control, and depression [8, 34], psychological resilience may significantly mediate the relationship between parental psychological control and depressive symptomatology among Chinese adolescents.

The diathesis–stress model also proposed the potential moderating role of psychological resilience, as resilient teenagers may be less likely than others to have depressive symptomatology in the face of risk environmental factors. Some empirical studies have shown that psychological resilience could mitigate the link between negative life experiences and adverse outcomes [36–38]. No studies have examined the moderating effect of psychological resilience in the relationship between parental psychological control and depressive symptomatology, which is explored in the present study.

Moderating role of school climate in the mediation between parental psychological control and depressive symptomatology via psychological resilience

Ecological systems theory holds that the multiple systems (e.g., home and school) could have interactions to influence child development [1]. Developmental contextualism theory proposes that situational factors could have an interactive effect on depression [39, 40]. Theory of individual-situation interaction also suggests that situational factors (e.g., parent–child, teacher–student, peer relationships) may interact with personal factors (e.g., self-esteem) to influence adolescent behavior [41]. Family dynamics and school climate have been identified as significant contributors to individual depression, consistent with theories [12, 42–45]. It is also reasonable that school climate may moderate the mediation model from parental psychological control on depressive symptomatology through psychological resilience.

School climate refers to the overall quality and character of the educational experience, including the emotional and academic support provided by teachers and peers, as well as opportunities for autonomy within the classroom [46, 47]. A positive school climate can enhance socialization, which is recognized as a protective factor for adolescents' mental health [12, 48]. The reason is that strong connections among individuals, peers, and teachers can provide adolescents with essential social support, enabling them to considerably navigate stressors and reduce the incidence of maladaptive psychological behaviors [49–52].

We propose that school climate could moderate the relationship between parental psychological control and resilience and that between psychological control and depression (i.e., the first half and the direct path of the hypothesized mediating model). School climate could be critical to teenagers' psychological resilience and emotional state. Given that Chinese middle school students spend most time in schools, the positive relationship with their peers and teachers could be important interpersonal support and encourage them to effectively face difficulties. Thus, a positive school climate could help foster teenagers' psychological resilience (53, 54, 55). A positive school environment was also shown as an important factor alleviating students' depressive symptoms in a longitudinal study [12]. Although parental psychological control is likely to impede teenagers' resilience and amplify depressive symptomatology, a positive school climate may mitigate the negative effect of parental psychological control. Therefore, a reasonable idea is that in the relationships between parental psychological control and resilience, as well as in that between psychological

control and depressive symptomatology, school climate could play a significant moderating role.

In addition, school climate may influence the relationship between psychological resilience and depressive symptomatology (i.e., the second half path of the mediating model). School climate can provide interpersonal and emotional resources that individuals with psychological resilience can leverage to alleviate depression [12, 42, 44, 45, 56]. In particular, a negative school climate can lead to diminished interpersonal support and impaired coping abilities for individuals [28, 50, 57]. In such circumstances, individuals with psychological resilience, despite their internal strengths, may encounter challenges in effectively managing difficulties, thereby increasing their susceptibility to depression. Conversely, a positive school climate fosters adherence to social expectations, encourages the pursuit of academic success [28, 58], and bolsters self-concept [51]. The availability of abundant cognitive, emotional, and interpersonal resources may empower individuals with psychological resilience to effectively regulate their emotions and cope with stress, thereby alleviating depressive symptomatology.

Considering the protective role of school climate in resilience and depression, school climate might also moderate the mediating effect of resilience in the overall hypothesized mediation model.

Present study

The detrimental effects of parental psychological control have been consistently highlighted in Western cultures [22, 23]. However, the relationship between parental psychological control and depressive symptomatology remains unclear. No studies have explored how parental psychological control, resilience, and school climate interact to influence depressive symptomatology in a collectivist context using moderated mediation models. To address this gap, the current study aims to examine the mechanisms through which parental psychological control impacts adolescent depressive symptomatology in China by considering family, school, and individual characteristics. This research specifically focuses on the mediating role of psychological resilience in the relationship between parental psychological control and depressive symptomatology among junior middle school students, as well as the moderating role of school climate in this mediating process (Fig. 1). Considering the protective effects of psychological resilience and school climate on depression [12, 31], we also examined the interactive moderating effect of psychological resilience and school climate in the parental psychological control–depressive symptomatology relationship.

The following hypotheses are formulated. H1: Parental psychological control has a positive relationship with adolescents' depressive symptomatology. H2: Resilience could mediate the aforementioned relationship. H3: School climate could moderate the relationship via psychological resilience. For the interacted moderating effects of psychological resilience and school climate in the relationship, this study only conducted an exploratory analysis without formulating specific hypotheses. The reason is that few studies have focused on the interaction among parental psychological control, psychological resilience and school climate.

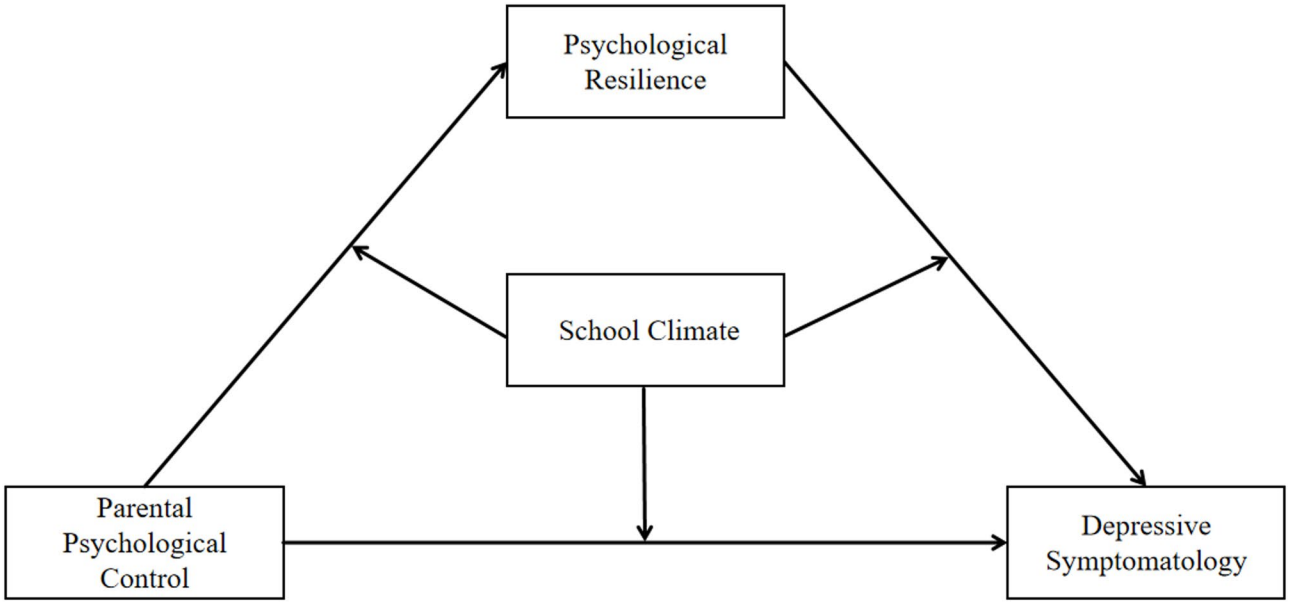

Fig. 1 Hypothetical model of the moderated mediating effect

Method

Participants

A questionnaire survey was conducted among junior middle school students who were randomly selected from 19 middle schools with random cluster sampling method. A total of 1991 valid questionnaires were collected, comprising 1,025 from boys (51.5%) and 966 from girls (48.5%).

Measurements

Depressive symptomatology scale

The self-report scale developed by Zhang and colleagues in 2024 [59], specifically designed for the Chinese youth population, was adopted. The scale includes cognitive, emotional, and physical symptoms associated with depressive symptomatology. Following pretest results, a final set of 30 items was established. The scale demonstrated a high internal consistency reliability of 0.92. Confirmatory factor analysis (CFA) indicated acceptable construct validity for depressive symptomatology (GFI = 0.92, NFI = 0.88, CFI = 0.92, TLI = 0.91, RMSEA = 0.06, SRMR = 0.04). The correlation between this depression scale and the Depression Scale of the Center for Epidemiologic Studies [60] was 0.58, indicating relatively good criterion-related validity.

Parental psychological control scale

The self-report psychological control questionnaire was originally developed in English. Wang et al. [61] employed standard translation and back-translation procedures to create a Chinese version, which exhibited adequate reliability. The scale comprises three dimensions: guilt induction, love withdrawal, and arbitrary control. It consists of 18 items, scored on a 5-point scale reflecting the level of parental psychological control. This scale has been widely used in domestic research, yielding an internal consistency coefficient of 0.83–0.85. CFA analysis demonstrated a good fit for the measurement model: CFI > 0.94, TLI > 0.90, RMSEA < 0.06.

The Chinese version of the connor-davidson resilience scale (CD-RISC)

Yu and Zhang [62] translated the self-report CD-RISC items into Chinese employing a translation and back-translation process, which enhanced readability through minor modifications. We utilized this revised Chinese version of the CD-RISC scale, which includes three dimensions: resilience, strength, and optimism. The scale consists of 25 items and employs a five-point scoring method. A higher total score reflects greater psychological resilience in the face of negative events. The internal consistency coefficient for the scale was 0.88. Construct validity for the Chinese version of the CD-RISC was supported by significant correlations with self-esteem ($r = 0.49$), life satisfaction ($r = 0.48$), and five personality subscales ($|r| = 0.27–0.64$).

Perceived school climate

Jia et al. [46] revised the self-report Perceived School Climate measure, which was based on two original school climate assessments written in English. The modified measure demonstrated good reliability for each subscale in a Chinese sample, leading to its use in the current study to assess the school climate for Chinese adolescents. The questionnaire comprises three dimensions—teacher support, classroom autonomy, and peer support—with a total of 25 items, seven of which are reverse scored. A four-point scoring method is utilized, with higher scores indicating a positive and harmonious school climate. The internal consistency reliability of the questionnaire was 0.85. In studies involving participants from both China and America, the measurement model exhibited an acceptable fit to the data, with CFI = 0.94, NFI = 0.93, and RMSEA < 0.08. Furthermore, a two-group model test indicated measurement invariance across the two countries ($\Delta\chi^2(18, N_{\text{Nanjing}} = 706/N_{\text{New York City}} = 709) = 25.81$, $p > 0.05$). These findings suggest that the Chinese-version school climate measure possesses strong validity.

Control variables

A variety of variables were controlled for, including gender, region, academic performance, and parental education level, as potential factors influencing depressive symptomatology. First, gender may influence depression, as previous research indicated that females reported a higher prevalence of depressive symptomatology compared to males [63]. Additionally, region can impact mental health. For instance, residents in rural areas often face challenges such as economic hardship and limited access to mental health services, increasing their risk of developing depression [64]. A strong correlation exists between academic performance and mental health as well. A longitudinal study found that poor academic performance can lead to low self-esteem and anxiety in adolescents, potentially resulting in depression [65]. Finally, the education level of parents can also affect children's mental health [23]. This relationship may stem from the fact that higher parental education often correlates with greater family resources and stronger social support networks, which may mitigate the risk of depression [66]. Due to our focus on middle school students, their grade differences are relatively small, and we did not use their age as a control variable.

Procedures

At the onset of cross-sectional data collection, trained research assistants provided instructions on the

questionnaires, after which students independently completed the paper-and-pencil tests in quiet classrooms during regular school hours. To alleviate concerns about students concealing their depressive emotions, we ensured anonymity in questionnaire completion. Additionally, students were informed that they could withdraw from the study at any time by raising their hand. Research assistants oversaw the questionnaire filling process and addressed any questions from students. Upon completing the questionnaires, students received small gifts. These procedures adhered to the Declaration of Helsinki and received approval from the University's Research Ethics Committee. Informed consent was obtained from all participants, as well as their parents and teachers, prior to testing.

Data analysis

Descriptive statistics and correlation analyses were conducted using SPSS 26.0. Prior to conducting the mediation and moderation analyses described below, all variables included in these models were standardized by converting them to *Z*-scores. Structural equation model verification was performed utilizing Models 4 and 59 from the PROCESS plug-in program developed by Hayes [67]. Initially, Model 4 (the mediating model) was employed to assess the mediating effect of psychological resilience between parental psychological control and depressive symptomatology.

Next, Model 59 was used to investigate the potential moderating role of school climate throughout the mediation process. This analysis specifically evaluated whether school climate moderated three distinct paths: (a) the effect of parental psychological control on psychological resilience (path a), (b) the effect of psychological resilience on depressive symptomatology (path b), and (c) the direct effect of parental psychological control on depressive symptomatology (path c').

Finally, an alternative moderation model using Model 3 was adopted to examine whether psychological resilience and school climate jointly moderated the direct association between parental psychological control and depressive symptomatology.

Results

Descriptive results

The results of the descriptive statistics and correlation analysis were presented in Table 1. Descriptive statistics and Pearson correlation coefficients for all core study variables were presented in Table 1. Results indicated that parental psychological control was significantly positively correlated with adolescent depressive symptomatology ($r = 0.36$, $p < 0.01$) and was significantly negatively correlated with psychological resilience (r = -0.11, $p < 0.01$). Furthermore, psychological resilience demonstrated a significant negative correlation with depressive symptomatology (r = -0.37, $p < 0.01$).

Additionally, school climate did not have a significant correlation with parental psychological control (r = -0.03, $p > 0.05$), but exhibited significant positive correlation with psychological resilience ($r = 0.47$, $p < 0.01$) and significant negative correlation with depressive symptomatology (r = -0.25, $p < 0.01$).

Finally, most control variables (i.e., gender, region, academic performance, parental education level) showed significant correlations with the core variables (see Table 1). Consistent with findings from previous research [23, 63–66], these results highlighted the necessity of controlling for these demographic variables in the subsequent analyses.

Effects of control variables on depressive symptomatology

Table 2 provided the influence of the controlled variables on depressive symptomatology. First, independent samples t-test results revealed significant gender differences in depressive symptomatology. Females ($M = 1.90$, $SD = 0.53$) reported significantly higher scores than males ($M = 1.70$, $SD = 0.46$), t (1989) = -8.86, $p < 0.001$, Cohen's d = -0.40. Similarly, region significantly influenced depressive symptomatology, with urban adolescents ($M = 1.78$, $SD = 0.52$) reporting significantly lower scores compared to rural adolescents ($M = 1.84$, $SD = 0.46$), t (1989) = -2.24, $p < 0.05$, Cohen's d = -0.11. Second, one-way analysis of variance (ANOVA) indicated a significant main effect of academic performance on depressive symptomatology scores, F (2, 1988) = 26.60, $p < 0.001$, $\eta_p^2 = 0.03$. Parental

Table 1 Descriptive and correlation analysis results ($N = 1991$)

Variable	*M* ± *SD*	1	2	3	4	5	6	7	8
1 Gender	1.49 ± 0.50	1.00							
2 Region	1.30 ± 0.46	0.08**	1.00						
3 Academic Performance	1.59 ± 0.72	0.01	0.07**	1.00					
4 Parents' education level	1.93 ± 0.75	0.001	-0.27**	-0.13**	1.00				
5 Parental psychological control	2.53 ± 0.93	-0.06*	-0.01	0.14**	-0.05*	1.00			
6 Psychological Resilience	3.09 ± 0.66	-0.16**	-0.17**	-0.29**	0.17**	-0.11**	1.00		
7 School climate	2.69 ± 0.37	-0.04	-0.10**	-0.18**	0.05*	-0.03	0.47**	1.00	
8 Depressive symptomatology	1.80 ± 0.50	0.20**	0.05*	0.16**	-0.06**	0.36**	-0.37**	-0.25**	1.00

Note: For gender, 1 represents male and 2 represents female. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 2 The effects of controlled variables on depressive symptomatology ($N = 1991$)

Variable		Depressive symptomatology($M \pm SD$)	*T* value	*F* value	Effect Size
1 Gender	Male	1.70 ± 0.46	-8.86***		Cohen's d = -0.40
	Female	1.90 ± 0.53			
2 Region	City	1.78 ± 0.52	-2.24*		Cohen's d = -0.11
	Rural	1.84 ± 0.46			
3 Academic Performance	Above Average	1.73 ± 0.47[a]		26.60***	$\eta_p^2 = 0.03$
	Average	1.86 ± 0.52[b]			
	Below Average	1.94 ± 0.54[c]			
4 Parents' education level	Junior High School or Below	1.85 ± 0.53[a]		4.26*	$\eta_p^2 = 0.004$
	High School	1.78 ± 0.49[b]			
	Junior College or Above	1.77 ± 0.50[b]			

Note: Means with different superscript letter (a, b, c) within a variable vary significantly at $p < 0.05$. Means sharing a common superscript letter (a, b, c) within a variable are not significantly different at $p < 0.05$. Post-hoc comparisons using LSD. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 3 Results of the mediation model (Model 4)

	Effect	SE	BootLower 95% CI	BootUpper 95% CI	Relative mediation effect
Total effect	0.36	0.02	0.00	0.32	
Indirect effect	0.02	0.01	0.01	0.04	5.56%
Direct effect	0.34	0.02	0.00	0.30	94.44%

education level also had a significant effect on depressive symptomatology, F (2, 1988) = 4.26, $p < 0.05$, $\eta_p^2 = 0.004$.

Mediation effect test

Following the procedures recommended by Wen and Ye [68] and Hayes [67], we first employed Model 4 of the PROCESS macro to test the mediating role of psychological resilience in the association between parental psychological control and depressive symptomatology. After controlling for gender, region, academic performance, and parental education level, the results indicated that parental psychological control significantly negatively predicted psychological resilience (β = -0.07, $p < 0.001$), and psychological resilience significantly negatively predicted depressive symptomatology (β = -0.31, $p < 0.001$). Meanwhile, parental psychological control played a significant positive prediction on depressive symptomatology ($\beta = 0.34$, $p < 0.001$). The finding verified Hypothesis 1.

Moreover, psychological resilience partially mediated the relationship between parental psychological control and depressive symptomatology. The indirect effect was estimated at 0.02 (95% CI [0.01, 0.04]), accounting for 5.56% of the total effect (0.36). The direct effect (0.34) accounted for 94.44% (see Table 3). Hypothesis 2 was verified.

However, as this analysis solely addressed simple mediation, further examination was required to test the hypothesized moderated mediation model.

Moderated mediation effect test

Results from the moderated mediation analysis (PROCESS Model 59) indicated that parental psychological control negatively predicted psychological resilience (β = -0.07, $p < 0.001$). The interaction between parental psychological control and school climate also significantly negatively predicted psychological resilience (β = -0.03, $p < 0.05$, 95% CI [-0.07, -0.001]). Parental psychological control positively predicted depressive symptomatology ($\beta = 0.34$, $p < 0.001$). However, the interaction between parental psychological control and school climate did not significantly predict depressive symptomatology (β = -0.03, $p = 0.07$, 95% CI [-0.06, 0.003]). Furthermore, psychological resilience significantly negatively predicted depressive symptomatology (β = -0.25, $p < 0.001$), and the interaction between psychological resilience and school climate significantly negatively predicted depressive symptomatology (β = -0.08, $p < 0.001$, 95% CI [-0.11, -0.05]).

Therefore, school climate moderated both the first stage (path a: parental psychological control → psychological resilience) and the second stage (path b: psychological resilience → depressive symptomatology) of the mediation model. The direct effect (path c': parental psychological control → depressive symptomatology) was not significantly moderated by school climate (see Table 4; Fig. 2). This result generally validated the hypothesized paths except the direct path (path c') in Hypothesis 3.

To further probe the moderating effects of school climate on the first and second stages of the mediation, simple slopes analyses were conducted (see Figs. 3 and 4). First, regarding the moderation of the first-stage path (parental psychological control → psychological resilience), Fig. 3 illustrated that for adolescents experiencing low school climate ($M - 1SD$), the prediction of parental psychological control on psychological resilience was not statistically significant (β = -0.04, t = -1.42, $p = 0.15$, 95% CI [-0.09, 0.01]). However, for adolescents experiencing

Table 4 Results of the moderated mediation model (Model 59)

Predictive variable	Model 1 (Psychological resilience)		Model 2 (Depressive symptomatology)	
	β	*t*	*β*	*t*
Gender	-0.29	-7.67***	0.33	8.44***
Region	-0.17	-3.94***	-0.03	-0.62
Academic Performance	-0.26	-9.65***	0.03	1.17
Parents' education level	0.14	5.48***	0.00	0.12
Parental psychological control	-0.07	-3.69***	0.34	17.50***
School climate	0.42	21.81***	-0.12	-5.52***
Parental psychological control × School climate	-0.03	-2.02*	-0.03	-1.81
Psychological resilience			-0.25	-10.78***
Psychological resilience × School climate			-0.08	-4.81***
R^2	0.31		0.29	
F	127.80***		89.98***	

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

high school climate (M + 1*SD*), the negative prediction of parental psychological control on psychological resilience was significantly more potent (β = -0.10, t = -4.18, $p < 0.001$, 95% CI [-0.15, -0.05]). This indicates that while the detrimental effect of parental psychological control on psychological resilience was not statistically significant in a low school climate, it became significant in a high school climate.

Second, concerning the moderation of the second-stage path (psychological resilience → depressive symptomatology), Fig. 4 showed that for adolescents in low school climate environments (*M* − *1SD*), psychological resilience significantly negatively predicted depressive symptomatology (β = -0.17, $SE = 0.03$, t = -5.76, $p < 0.001$, 95% CI [-0.23, -0.11]). For adolescents in high school climate environments (*M* + 1*SD*), the negative prediction of psychological resilience on depressive symptomatology was even more potent (β = -0.32, $SE = 0.03$, t = -12.15, $p < 0.001$, 95% CI [-0.38, -0.27]). This suggested that under high school climate conditions, resilience's negative predictive effect was more substantial.

Furthermore, to test whether school climate moderated the indirect path from parental psychological control → psychological resilience → depressive symptomatology, we examined the conditional indirect effects at different levels of school climate using bootstrapping analysis (see Table 5). The indirect effects in low-level, average-level and high-level school climates were as follows: $\beta_{low-level} = 0.01$, 95% CI = [-0.004, 0.02]; $\beta_{average-level} = 0.02$, 95% CI = [0.01, 0.03]; $\beta_{high-level} = 0.03$, 95% CI = [0.02, 0.05]. Further contrast tests showed that the indirect effect under high school climate was significantly more potent than that under low school climate (Contrast = 0.03, 95% CI [0.01, 0.05]) and that under average school climate (Contrast = 0.02, 95% CI [0.003, 0.03]). Moreover, the indirect effect under an average school climate was significantly more potent than that under a low school climate (Contrast = 0.01, 95% CI [0.003, 0.02]). Thus, as the level of school climate increased, the indirect effect of parental psychological control on depressive symptomatology via psychological resilience became progressively stronger.

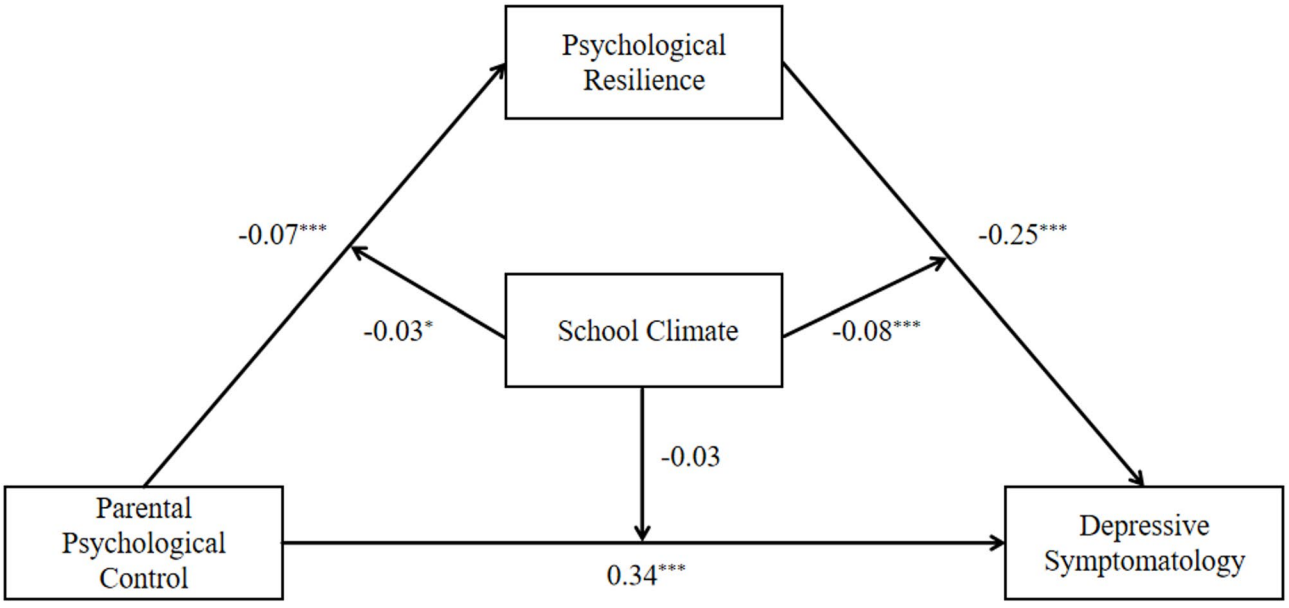

Fig. 2 Moderated mediating model with Standardized Coefficients for paths

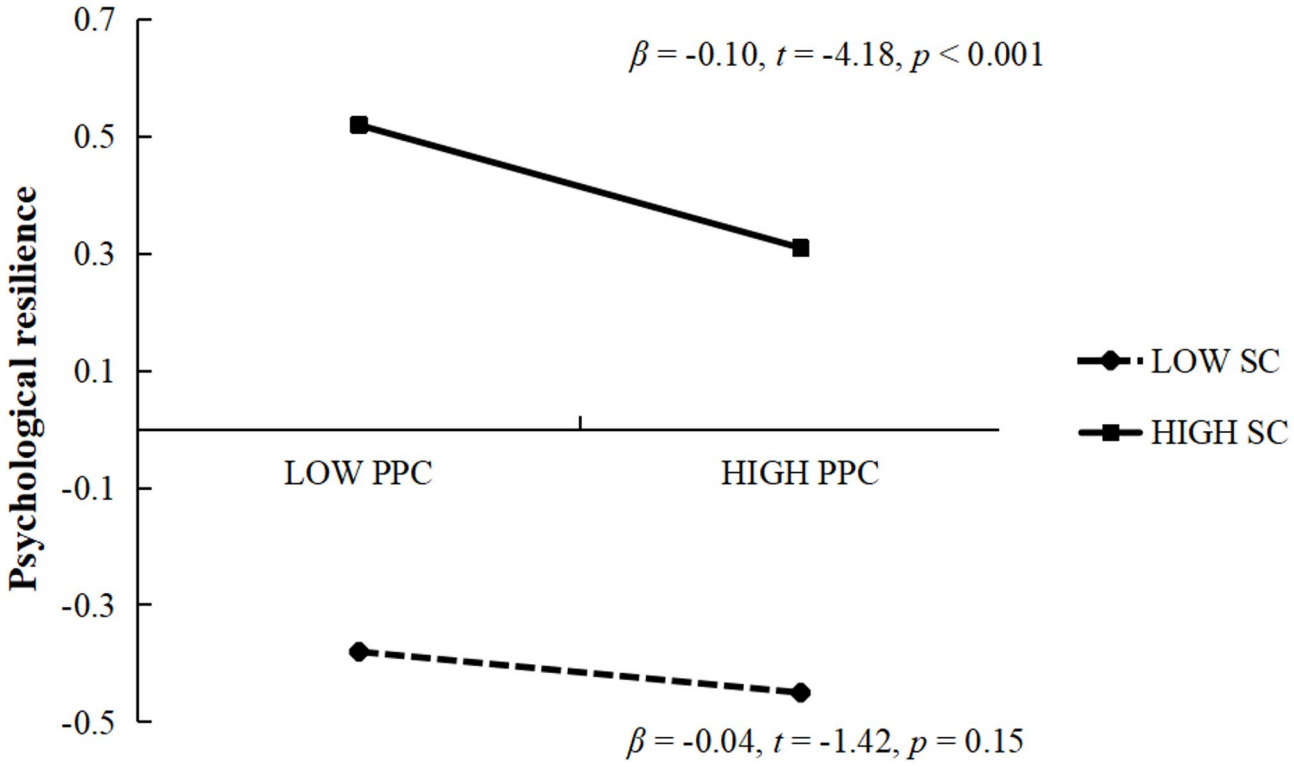

Fig. 3 The moderating effect of school climate on the relationship between parental psychological control and psychological resilience. Note: SC = School climate; PPC = Parental psychological control

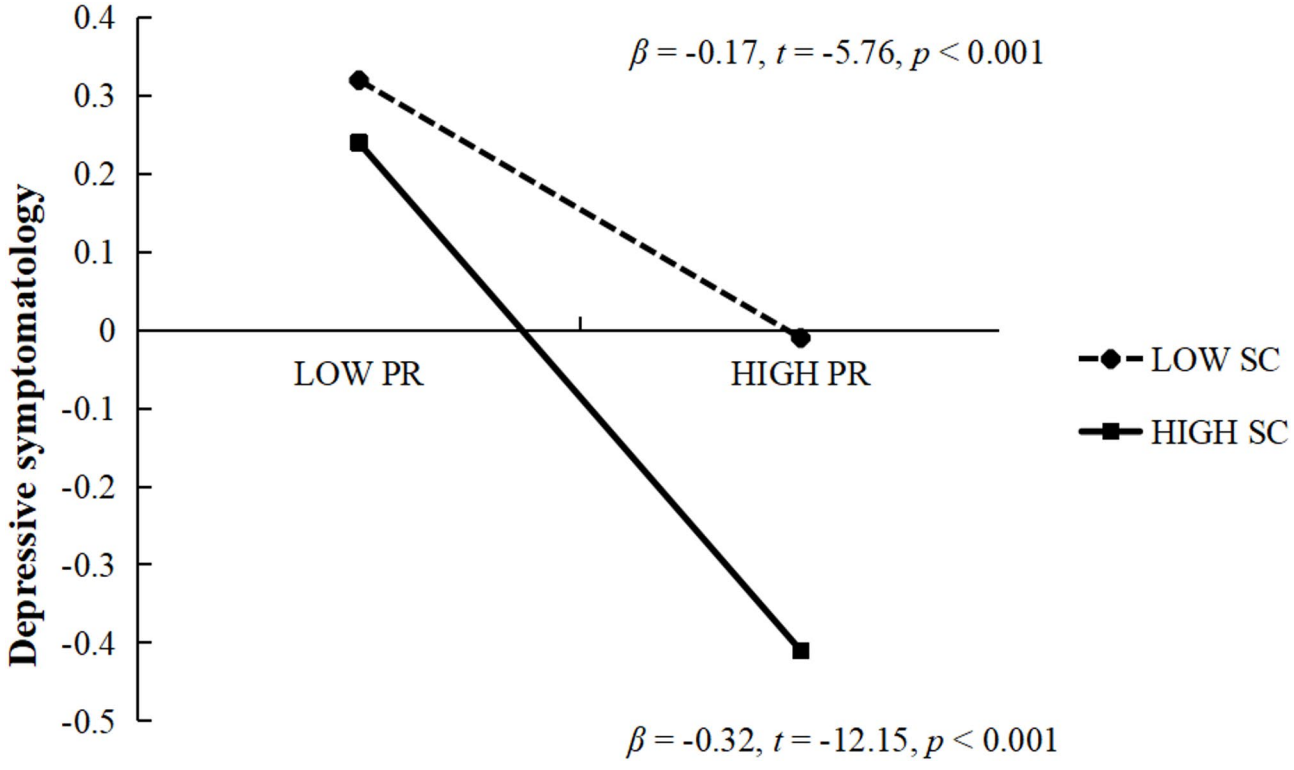

Fig. 4 The moderating effect of school climate on the relationship between psychological resilience and depressive symptomatology. Note: SC = school climate; PR = Psychological resilience

Table 5 Results of the moderating effect of school climate in the indirect mediating effect

School climate	Effect	SE	BootLower 95% CI	BootUpper 95% CI
M-SD	0.01	0.01	-0.004	0.02
M	0.02	0.01	0.01	0.03
M + SD	0.03	0.01	0.02	0.05

Table 6 Results of moderated moderation (Model 3)

	Moderated Moderation (Model 3)	
	β	t
Constant	-0.47	-4.15***
Gender	0.32	8.35***
Region	-0.03	-0.61
Academic Performance	0.03	1.22
Parents' education level	0.001	0.04
Parental psychological control	0.34	16.20***
Psychological resilience	-0.24	-10.63***
School climate	-0.12	-5.63***
Parental psychological control × Psychological resilience	-0.04	-1.75
Parental psychological control × School climate	-0.01	-0.76
Psychological resilience × School climate	-0.08	-4.83***
Parental psychological control × Psychological resilience × School climate	0.001	0.03

Note: $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$

Alternative model test

As shown in Table 6, psychological resilience could not significantly moderate the direct effect of parental psychological control on depressive symptomatology ($\beta_{parental\ psychological\ control\ \times\ \text{psychological resilience}}$ = -0.04, t = -1.75, $p>0.05$). The three-way interaction effect of parental psychological control × psychological resilience × school climate on depressive symptomatology was also not significant ($\beta=0.001$, $t=0.03$, $p>0.05$). The present study failed to provide empirical support for the alternative hypothesized model wherein psychological resilience acts as a moderator of the relationship between parental psychological control and depressive symptomatology.

Discussion

This study aims to investigate the impact of parental psychological control, psychological resilience, and school climate on depressive symptomatology among Chinese junior middle school students. The findings are largely in line with our hypotheses. Results indicate that parental psychological control is a significant predictor of depressive symptomatology, with psychological resilience serving as a mediating factor in this relationship. In addition, school climate is found to moderate the mediating effect and the first and second half paths of the "parental psychological control → psychological resilience → depressive symptomatology" mediation model.

These results highlight the combined influence of family dynamics, educational settings, and individual psychological traits on mental health. These findings also support the bioecological model [1], the developmental contextualism theory [50] and the theory of individual-situation interactions [39, 41].

Parental psychological control significantly predicts depressive symptomatology

The analysis of the mediation model first reveals that parental psychological control exerts a positive influence on depressive symptomatology. Hence, Hypothesis 1 was confirmed. A higher degree of parental psychological control is associated with increased severity of depressive symptomatology among junior middle school students, aligning with previous research [2, 4, 27]. In contrast to Western cultures, traditional Chinese parenting often emphasizes discipline through criticism, punishment, and authority. Although parental psychological control may be intended as a form of love and care in China [20, 69], this negative parenting approach can hinder children's overall development and contribute to negative emotional states. Furthermore, junior middle school students are particularly vulnerable to issues of self-awareness, as highlighted by self-determination theory. Parental psychological control undermines their autonomy and independence, resulting in internal conflicts and subsequent negative emotions [16, 70]. Consistent with previous studies [23], these results demonstrate that parental psychological control also affects depressive symptomatology among middle school students in the cultural context of China.

Mediating role of psychological resilience in the relationship between parental psychological control and depressive symptomatology

The mediating model results indicate that psychological resilience significantly mediates the relationship between parental psychological control and depressive symptomatology, thereby confirming Hypothesis 2. Parental psychological control is detrimental to the development of psychological resilience because it fails to meet adolescents' need for independence and diminishes the quality of parent–child communication and family intimacy [8, 10]. In addition, individuals with low psychological resilience tend to utilize negative coping mechanisms, such as external control, to manage stress while avoiding social support and effective emotional regulation, which increases their risk of depressive symptomatology [32–34].

Previous research has demonstrated that psychological resilience can mediate the relationship between negative life events, such as excessive parental intervention, interpersonal distress, and psychological abuse, and

depression [9]. Researchers have suggested that individuals internalize external stimuli to cultivate adaptive psychological qualities, including psychological resilience, which subsequently influences mental health outcomes [29]. These findings further support theory of individual–-situation interaction and the diathesis–stress model, positing that negative familial pressures exacerbate depression in junior middle school students by impacting their psychological vulnerabilities.

Moderating role of school climate in the mediation model

This study reveals that school climate significantly moderates the mediating effect and the first and second half paths of the proposed model linking parental psychological control to depressive symptomatology via psychological resilience. A positive school climate, compared with a negative one, could aggravate the negative effect of parental psychological control on psychological resilience. A positive school climate also enhances the protective impact of psychological resilience in mitigating depressive symptomatology. Furthermore, the indirect effect of parental psychological control on depressive symptomatology through psychological resilience is strengthened. These findings are consistent with Hypothesis 3.

For the first half path of the mediation model, school climate plays a significant moderating role. In particular, when the school climate is more positive, parental psychological control has a more negative effect on psychological resilience. The result may appear surprising because school climate has a protective effect on teenagers' mental health. The possible reason for the result may be that the quality of home–school coordination is important for adolescent mental health. The ecological systems theory proposes that, as the microsystems, homes and schools are the places where children spend the most time. Family–school interactions include the parents–teachers relationships, communication quality between parents and teachers, and the match between family–school attitudes and cultural values [71, 72].

When parents exert psychological control over their children but schools adopt a positive democratic approach to education, these inconsistent education styles may make students feel conflicted in stressful situations, thereby preventing them from developing good psychological resilience. Some studies have shown that when family and school environments match in terms of rules, expectations, and values, children are helped in adjusting to school life [73]. When the family and school share similar beliefs, cultural values, customs, behaviors, and expectations of interaction, children are more likely to adapt successfully to the school environment than those whose family and school views are at odds with each other [74]. Studies on home–school cooperative intervention have also found that cooperative intervention can help reduce their externalizing behavior and improve their social skills [75]. The present result reminds parents and educators that they need to focus considerably on communication between home and school, not only to focus on students' academic performance, but also to maintain consistent educational attitudes.

School climate could also moderate the second half of the mediation model. In particular, school climate amplifies the protective influence of psychological resilience on depressive symptomatology, thereby providing an additional layer of support. The moderating role of school climate may lie in the idea that adolescents with psychological resilience are better equipped to utilize interpersonal and emotional resources to mitigate depressive symptomatology in a positive school environment compared with a negative one. Psychological resilience, defined as individuals' stable psychological disposition, enables them to effectively manage stress and reduce depressive symptomatology by leveraging resources such as emotional regulation and interpersonal support. Given that students spend a substantial amount of time in school and that education is universally accessible, the school environment's influence on students' resilience and mental health is vital [12, 53]. In a positive school climate, individuals benefit from a range of resources, including support from peers and teachers. In contrast to a negative school climate, this favorable interpersonal environment may empower resilient individuals to seek social support, cope proactively with situational pressures, and recover from adverse psychological states [42, 76, 77].

The moderating effect of school climate corresponds with the promotion hypothesis rather than the exclusion hypothesis within the protective factor–protective factor model [58, 78]. Previous studies have supported this assertion and shown that a positive school environment enhances the protective effects of psychological resilience and parent–child relationships on mental health. Chen et al. [78] discovered that school connectedness and psychological resilience interact to mitigate psychotic experiences among college students. Zhang et al. [79] found that positive teacher–student and parent–child relationships synergistically enhance subjective well-being and peer connections.

For the direct path between parental psychological control and depressive symptomatology, the moderating effect of school climate was not significant. That is, the positive predictive effect of parental psychological control on depressive mood was not affected by the level of school climate. We suggest that the possible reason is due to the fact that parenting style is a key influencing factor in adolescent depression [80, 81]. Therefore, depression in adolescents may be significantly influenced by

parental psychological control, regardless of the degree of school climate. Even if peers become important during adolescence, many studies have shown that parenting style remains a significant source of influence throughout adolescence [80, 82]. Empirical evidence shows that family factors affect the onset and maintenance of adolescent depression [83]. Wang et al. [84] indicated that family relationships require special consideration among possible risk factors for depression, given that such factors as parenting style and family dynamics can influence how children grow up. During this period, the family remains a fundamental source of confidence. Parents are still considered an important source of social support for adolescents.

These findings indicate that the environmental factor of family, school, and the individual traits of psychological resilience jointly predict adolescents' depressive symptomatology, thereby reinforcing the principles of individual-situation interaction theory and the diathesis–stress model.

Psychological resilience and school climate could not jointly moderate the psychological control–depressive symptomatology relationship

Psychological resilience and school climate help protect adolescents from negative events [12, 31, 32, 48]. Previous research has shown that psychological resilience and school climate could play significant moderating roles in the relationship between adverse factors and negative psychological outcomes [36, 37, 78, 79]. In the present relationship between parental psychological control and depressive symptomatology, the moderating effect of psychological resilience was not significant, nor was the interaction between paychological resilience and school climate. We think that the possible reason is that parental psychological control has a relatively strong influence on adolescent depression. Among the risk factors, family variables, such as the parent–child relationship, are especially important [84], considering that family is the first microsystem for children and has immense influence on their psychological development.

The effect of resilience may not be considerably strong when it comes to family risks. Although the moderating effect of resilience was not significant, its indirect effect from parental psychological control on depressive symptomatology suggests that depression can be prevented by fostering teenagers' psychological resilience.

Implications and limitations

In recent years, there has been an increased focus on adolescent depressive symptomatology. However, few studies have thoroughly examined the impact of family, school, and individual factors on this issue. This study aims to fill this gap by investigating the interaction between parental psychological control, resilience, and school climate concerning depressive symptomatology in junior middle school students. The findings indicate that parental psychological control can predict depressive-symptomatology in these students, while psychological resilience and school climate function as protective factors. Furthermore, the study reveals a synergistic effect between parental psychological control andschool climate in affecting psychological resilience, as well as a combined effect of psychological resilience and school climate in reducing depressive symptomatology. These results provide empirical support for the bioecological model, the theories related to individual-situation interaction, the diathesis-stress model, and developmental contextualism.

The current study also has several practical implications. First, given that parental psychological control can independently predict depressive symptomatology, it is essential to inform parents about the detrimental effects of psychological control and to encourage them to minimize its use as much as possible. Programs such as the family education classes should be promoted to educate parents to avoid psychological control such as guilt-inducing strategy. Additionally, since resilience acts as a mediator between parental psychological control and depressive symptomatology, students should focus on enhancing their psychological resilience to mitigate the negative impact of parental psychological control on their mental health. Parents, educators, and mental health professionals can implement mindfulness programs and cognitive reappraisal training to enhance students' psychological resilience.

Moreover, considering the moderating effect of school climate in the first and second half paths and its moderating role in the mediation model, educators should strive to harness the positive influence of the school's microsystem environment and actively foster a harmonious school climate. A supportive school environment can enhance the protective effects of individual psychological resilience against depressive symptomatology and improve the mediating effect of resilience between parental psychological control and depressive symptomatology. Given the influence of parenting style, school climate, and individual traits on adolescent depressive symptomatology, the findings further support the feasibility of implementing a home-school cooperation policy in China to promote mental health among youth. For example, the in-service teacher preparation curricula could incorporate training about family-school partnerships.

There are several limitations to this study. First, due to the narrow grade range of the participants, we did not measure the age of the participants, nor did we use age as a control variable in the moderated mediation model, which may introduce some deviations to the results.

Further research should collect the information of participants' age. Second, participants were drawn from a junior high school in a third-tier city in China. Given the influence of cultural and economic factors on depressive symptomatology, it is unclear whether our findings can be generalized to different cultures and clinical populations. Additionally, the study focused exclusively on junior middle school students with specific characteristics; therefore, the results may not be applicable to other age groups. Future research should aim to include a broader age range of adolescents (e.g., primary school students, junior middle school students, and senior middle school students) and a larger sample from various geographic regions (e.g., northern, central, and southern regions) to assess the robustness and applicability of the findings. Third, this study examined school climate as the sole school-related variable. To more accurately assess the impact of school-related factors on adolescent depressive symptomatology, subsequent research should also explore other variables, such as teacher-student relationships, peer relationships, and school connections, in addition to school climate. Fourth, the cross-sectional design of the study limits our ability to draw causal inferences about the relationships among variables. Future studies should employ longitudinal designs to capture the developmental trajectories of the variables and to better predict the directionality of their relationships.

Moreover, potential biases associated with self-report measures and the inherent limitations of a cross-sectional design in inferring causality are critical issues to address. The study relied on self-report measures, which may be less accurate than other-report measures or objective assessments. Future research could incorporate objective or alternative measures to further investigate the primary research questions. The cross-sectional mediation analysis in the present study left open the possibility of reverse causation or spurious relationships, since all variables were measured simultaneously, the fundamental requirement of temporal precedence in mediation (X→M→Y) cannot be verified [85]. Lastly, it is important to consider that in both Chinese and Western cultures, parents and children may endorse varying degrees of parental psychological control. Factors related to this psychological control, such as family expectations and filial piety, may influence the results observed in this study. Future research should account for these factors to provide a more nuanced understanding of the impact of parental psychological control on adolescent depressive symptomatology.

Conclusion

To gain a comprehensive understanding of depression among junior middle school students, this study examined the predictive effects of parental psychological control, psychological resilience, and school climate on depressive symptomatology within this demographic. The findings indicate that parental psychological control significantly contributes to the development of depressive symptomatology, while psychological resilience serves as a mediating factor between the two variables. Furthermore, school climate is found to moderate this mediating relationship. In more positive school climates, the indirect effect of parental psychological control on depressive symptomatology through psychological resilience is specifically stronger, the negative effect from psychological control on resilience is strengthened, and the negative predictive impact of psychological resilience on depressive symptomatology is also enhanced. Moreover, this research highlights the notion that parental psychological control can exacerbate depressive symptomatology in junior middle school students by undermining the protective effects of psychological resilience. The inconsistency between negative parental psychological control style and positive school climate is not conducive to the development of students' psychological resilience. Lastly, fostering a positive school environment can enhance the protective factors associated with psychological resilience, thereby benefiting students' mental health.

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Author contributions

Hailun Liu, Lili Fu, Xianqi Liang and Junhua Zhang contributed to conception and design of the study. Hailun Liu and Junhua Zhang administered the data collection. Lili Fu and Xianqi Liang performed the statistical analysis. Hailun Liu wrote the first draft of the manuscript. Lili Fu and Jiayi Zhao refined the language of the first draft. Lili Fu, Xianqi Liang, Li Zhang and Youhua Zhai made important contributions to the revision of the manuscript. All authors contributed to manuscript read, edition and approved the submitted version.

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The ethical approval committee of Yancheng Teachers University approved this study and confirmed that the study has no side effects on the participants of the study. All of the procedures were performed in accordance with the Declaration of Helsinki and relevant policies in China. Informed consent to participate was obtained from all the participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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