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The relationship between borderline personality features and self-efficacy: the mediating role of school adjustment and the moderating role of social support

Tengfei Yu¹, Xiaodi Niu¹, Liran Fu¹ and Liju Qian^{1*}

Abstract

Background Adolescents with low self-efficacy may exhibit borderline personality features. This study aimed to investigate the role of school adjustment and social support in the association between self-efficacy and borderline personality features among adolescents.

Methods Questionnaires were distributed to 2369 adolescents to collect data including general demographic characteristics, borderline personality features, social support, school adjustment, and self-efficacy.

Results (1) Adolescents' school adjustment and self-efficacy were negatively associated with borderline personality features. (2) The relationship between borderline personality features and self-efficacy was partially mediated by school adjustment. (3) The relationships among borderline personality features, school adjustment, and self-efficacy were moderated by social support. High levels of social support were associated with a stronger negative correlation between borderline personality features and self-efficacy.

Conclusions School adjustment is a crucial link between borderline personality features and self-efficacy. Although social support can mitigate this relationship to some extent, adolescents with borderline personality features may still face challenges in developing a strong sense of self-efficacy, even in supportive environments.

Keywords Adolescents, Social support, School adjustment, Borderline personality, Self-efficacy

Background

Features of Borderline Personality Disorder (BPD) are crucial for mental health, although the diagnosis of BPD in adolescents is controversial [11, 12]. BP features include emotional dysregulation (such as frequent anger, depression, anxiety, and negative affect), impulsive and risk-taking behaviors, recurrent non-suicidal self-injury

or suicide attempts, interpersonal difficulties, conflicts, and an unstable sense of identity [26, 36]. Emotional dysregulation means adolescents have unstable emotion state, including intensive and dysphoric affects, such as anxiety, depression, or irritability [28]. These negative affects can lead to conflict with peers, self-harm, or even suicide attempts, particularly due to impaired impulse control, a common challenge during adolescence [22, 42, 56]. Besides, adolescents with BP features often exhibit maladaptive self-perceptions and negative views of others, characterized by self-loathing and attributions of malicious intent [5, 62]. In turn, these negative views give rise to interpersonal difficulties for them [62]. BP features are prevalent in adolescence ($\leq 3\%$) and lead to

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severe mental illness and poor psychosocial and occupational functioning, including bad school achievement, poor peer and teacher relationship, self-stigma [27, 36, 65]. These results suggest that BP features in adolescent are prevalent and clinically significant. Nonetheless, the importance and related psychosocial function impacts of these features have not been explored in Chinese adolescents.

First, BP features may negatively impact the development of self-efficacy during adolescence [79]. Self-efficacy (SE) refers to an individual's belief in their own ability to manage challenges and adopt adaptive behaviors in various situations [1, 2]. Receiving validation and reinforcement are positive factors that contribute to the development of strong self-efficacy [1, 2, 54]. However, adolescents with BP features often lack these positive experiences from two aspects. Firstly, these adolescents may have difficulty receiving positive information due to their challenges in forming stable positive relationships with others. Individuals with BPD have been shown to exhibit greater instability in relationship satisfaction, particularly with frequent interaction partners. Additionally, they may distance themselves from closet relationships [7, 43, 44, 52, 60]. Secondly, a key characteristic of individuals with BP features is their difficulty in accepting positive feedback, even in the form of social support [43, 44, 52]. On the contrary, they are sensitive to rejection [81]. Thus, adolescents with borderline personality features are likely to recognize invalidation instead of reinforcement. These adverse experiences can affect their self-efficacy negatively. Consequently, BP features may be negatively related to self-efficacy.

Furthermore, Bronfenbrenner's ecological model highlights the significant influence of mesosystem factors, like family and school environments, on adolescent psychosocial development [4, 9]. School settings provide opportunities for positive experiences, including reinforcement and success, which can boost self-efficacy [2, 55]. Successful school adjustment can foster the development of essential skills like personal competence, self-awareness, and self-assessment [55]. School adjustment refers to the efforts by an individual to cope with stress from several aspects such as school regulations, procedures, relationships with friends and teachers [4, 55]. Therefore, good school adjustment enables the adolescents to form positive peer-student relationships, and achieve academic success, all of which promote their self-awareness and self-efficacy [54]. Conversely, poor school adjustment is often negatively correlated with self-efficacy. Previous researches indicate that adolescents who experience difficulties with academic adjustment and peer conflicts are more likely to encounter self-doubt and exhibit lower levels of self-efficacy [58, 63]. Based on this background, we

hypothesized that good school adjustment may be associated with high level of self-efficacy among adolescents.

Secondly, BP features are associated with poor school adjustment. According to Bronfenbrenner's ecological model, at the microsystem level, adolescents' interactions with their peers directly influence school adjustment [9]. This highlights the importance of social skills such as emotion regulation and conflict resolution in achieving successful school adjustment [59]. However, adolescents with BP features are bad at emotion regulation (poor impulse control, irritability, aggressive behavior) and conflicts resolution [50, 52, 60], leading them under the risk of poor adjustment in school [39]. Longitudinal studies have indicated that borderline symptoms in adolescence are predictive of lower academic and occupational attainment, reduced partner involvement, and fewer attained adult developmental milestones [8, 75]. Besides, adolescents with pronounced BP features often experience intense stress and negative emotions [21] and show limited effort in managing these events or regulating their emotions [22, 50]. They also have difficulty completing tasks on their own and achieving a sense of accomplishment due to emotional dysregulation and impulsive behaviors [22]. Therefore, we hypothesize that adolescents with borderline personality features may struggle with school adjustment.

In summary, BP features are negatively associated with self-efficacy and school adjustment. School adjustment is positively associated with self-efficacy. Currently, it is unclear whether school adjustment can moderate the relationship between BP features and self-efficacy. Low self-esteem can be a consequence of BP features, highlighting the intricate relationship between social support and personality traits in shaping self-worth [40, 49, 58].

The question of whether different types of social support are associated with distinct trajectories of psychosocial functioning among adolescents exhibiting borderline personality features remains unanswered, even though social support is widely recognized as a vital factor in the healthy development of young people [17, 53]. Many studies demonstrate that adolescent with BP features can have a better function under sufficient support, and worse function is associated with low social support. Consistent support can significantly improve the emotional regulation and behavioral skills of individuals with BPD [66, 77]. The study by Crowell et al. [19] suggested that the association between emotion dysregulation and self-injury becomes stronger under non-supportive social contexts. However, some studies have reported opposite opinions that high level social support may not be beneficial to adolescents with BP features. Their self-evaluation and capacity for adjustment get worse no matter how others support them. Another study proposed that when

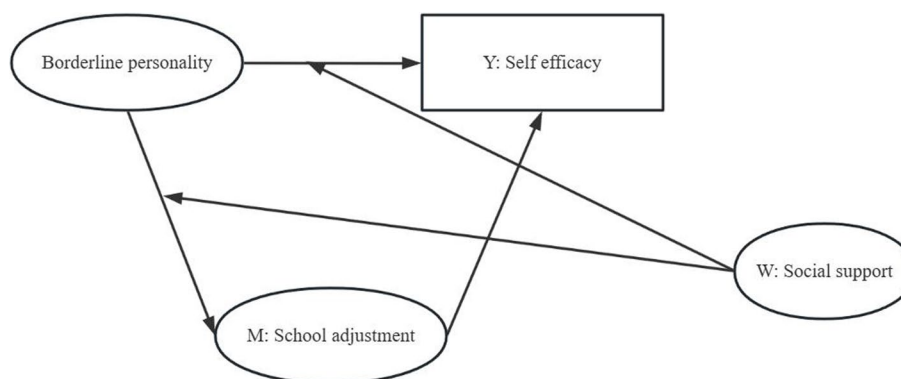


Fig. 1 Hypothesis model

people with negative self-views make positive self-statements, it affects their mood and self-esteem negatively [76]. Moreover, BPD patients feel high levels of shame when they receive positive feedback [34]. Lastly, Hessels et al. [31] pointed that supportive interactions were not related to BPD symptoms in adolescents. Therefore, it is unclear whether adolescents with BP features can promote SE and school adjustment from high social support.

The relationship between BP features, social support, and psychosocial functioning is complex and remains unclear, with conflicting findings in the literature. On the one hand, high levels of social support can enhance school adjustment and self-esteem [10, 15, 41, 48]. On the other hand, adolescents with BP features exhibit significant impairments in processing social information, in particular, social feedback about the self [37, 72, 74]. Thus, they may have more negative self-views, severe interpersonal difficulties and negative feelings [62]. Even when situated in environments with high levels of social support, they may still experience negative emotions [34]. However, whether social support can act as a buffer against the negative effects of BP features has not been clarified.

In conclusion, adolescents exhibiting borderline personality features, such as emotional dysregulation, may have diminished self-efficacy, poor adjustment, and difficulties in perceiving social support. From an ecological perspective, school adjustment and social support are crucial factors influencing self-esteem. However, the precise mechanisms underlying the relationship between borderline personality features and psychosocial functioning remain unclear. Based on previous research, we anticipate one of two outcomes. Firstly, school adjustment may mediate the relationship between BP features and SE. Alternatively, social support can moderate the relationship between BP features and SE (Fig. 1), and therefore, it should not be ignored.

Method

Participants

The study sample comprised 2,369 Chinese adolescents aged 11 to 18, selected using convenience sampling. Exclusion criteria included: individuals over 18 years of age, those unwilling to participate or who declined to sign the informed consent, individuals with a prior diagnosis of schizophrenia, bipolar disorder, or attention deficit hyperactivity disorder (ADHD) by a psychiatrist or specialist, and participants currently taking psychotropic medications that could impact their cognition and ability to understand or complete the questionnaire. The participants were informed of the main context and aim of the study as well as how to fill the questionnaires. All participants signed informed consent forms to participate and were informed that their participation was voluntary with no financial compensation. In total, 1185 (50.02%) participants were male, 1184 (49.99%) were female, and the average years of education was 9.73 ± 1.65 years. The age of participants was in the range of 11 to 18 years ($M = 15.39$; $SD = 1.28$).

Measurement

School Adjustment Scale

The School Adjustment Questionnaire for Middle School Students (Chinese version) was developed by Cui in 2008 [20]. It has been extensively applied in China to evaluate the school adjustment of middle school students. The questionnaire consists of 5 dimensions—school emotion and attitude, peer relationships, teacher–student relationships, academic adaptation and routine adaptation—with a total of 27 questions (e.g. “I will be proactive in planning my study program and time”, “My classmates were not friendly to me”). The questionnaire is scored on a 5-point Likert scale (from 1 not at all to 5 completely). Higher scores represent better school adjustment. The Chinese version of the school adjustment has good reliability and

validity [20]. The total McDonald omega for the scale was 0.825.

Borderline Personality features Scale (BPFS-C)

The Borderline Personality Features Scale for Children (BPFS-C) was developed by Crick et al. in 2005 and was translated into Chinese and revised by Li and Wu [18, 45]. BPFS-C is mainly used to measure borderline personality features in children and adolescents in China. The BPFS-C has been widely applied to evaluate the borderline personality features in children and adolescents ages 8–18 years. BPFS-C consists of 6 items for each domain, including affective instability, identity problems, negative relationships, and self-harm [47]. The items are scored on a 5-point Likert scale (from 1 to less than 5). Higher scores represent stronger BP features. The scale is reliable and valid for measuring borderline personality features in children and adolescents [45]. The total McDonald omega for the scale was 0.863.

Adolescent Social Support Scale (ASSS)

The Adolescent Social Support Scale (ASSS) was established by Ye to measure the perceived support from different sources among adolescents [78]. ASSS is one of most commonly used instruments for measuring social support for adolescents in China. It consists of 3 dimensions. Subjective support (e.g., “I can turn to my families and friends for help when I am in trouble”), objective support (e.g., “Most of my classmates care about me”), and utilization of support (e.g., “I will try to talk with my families and friends for help when I am in trouble”). This scale includes 17 items, and is scored on a 5-point Likert scale (from 1 to 5), with higher scores indicating greater social support received by adolescents. The total McDonald omega for the scale was 0.929.

The General Self-Efficacy Scale (GSES)

The General self-efficacy scale (GSES) was developed by Schwarzer et al. The GSES is used to measure general self-efficacy, which consists of 10 questions on a 4-point Likert scale. Higher scores represent better self-efficacy. The Chinese version of the self-efficacy questionnaire has good reliability and validity [73, 80]. The total McDonald omega for the scale was 0.830.

Data processing

Given that the data were obtained using a self-report questionnaire, common method variance (CMV) was checked before further analyses. Subsequently, data analysis was conducted in three steps using SPSS (version 26.0) and Mplus (version 8.3). 1) Descriptive statistics and Pearson's correlations were summarized and

calculated. 2) Mplus was utilized to test the mediating role of school adjustment in the relationship between BP features and SE. 3) Moderated mediation model was conducted by Mplus to test whether the indirect relationship and the direct association between BP features and SE and school adjustment was moderated by social support (Shown in Fig. 2).

To ensure accurate analysis, all variables were standardized, and interaction terms were computed. The robustness of our findings was assessed using the bias-corrected percentile bootstrap method to calculate 95% CIs. An effect was deemed statistically significant if the 95% CI did not include zero. Moreover, simple slope analysis was conducted to assess the moderating effects. To examine the moderating effect of social support, we plotted the relationship between BP features and self-efficacy at both high and low levels of social support, defined as one standard deviation above and below the mean. In addition, demographic variables (i.e., gender, age) were controlled during the analyses. A p -value of <0.05 was considered to be statistically significant.

Ethics

The study procedures were performed according to the tenets of the Declaration of Helsinki. The Institutional Review Board of the Ethics Committee of the Daizhuang Hospital of Jining Medical University approved the study and consent was obtained from each participant.

Results

Common method variance

Results of the common method variance test using Herman's one-factor method identified 12 factors with eigenvalues exceeding 1, and the first factor explained 24.54% of the variance, which is less than the 40% criterion. The results of the common method variance test indicated that there was no significant variance in the data collected for this study.

General demographic information

The demographic characteristics of the 2,369 adolescents are shown in Table 1. Complete data were collected from 2,369 students, including information on grade, residence, whether they belonged to a one-child family.

Correlation analysis

The dimensions of borderline personality features were significantly negatively correlated with school adjustment, social support, and self-efficacy. The remaining factors were significantly positively correlated with each other (Table 2).

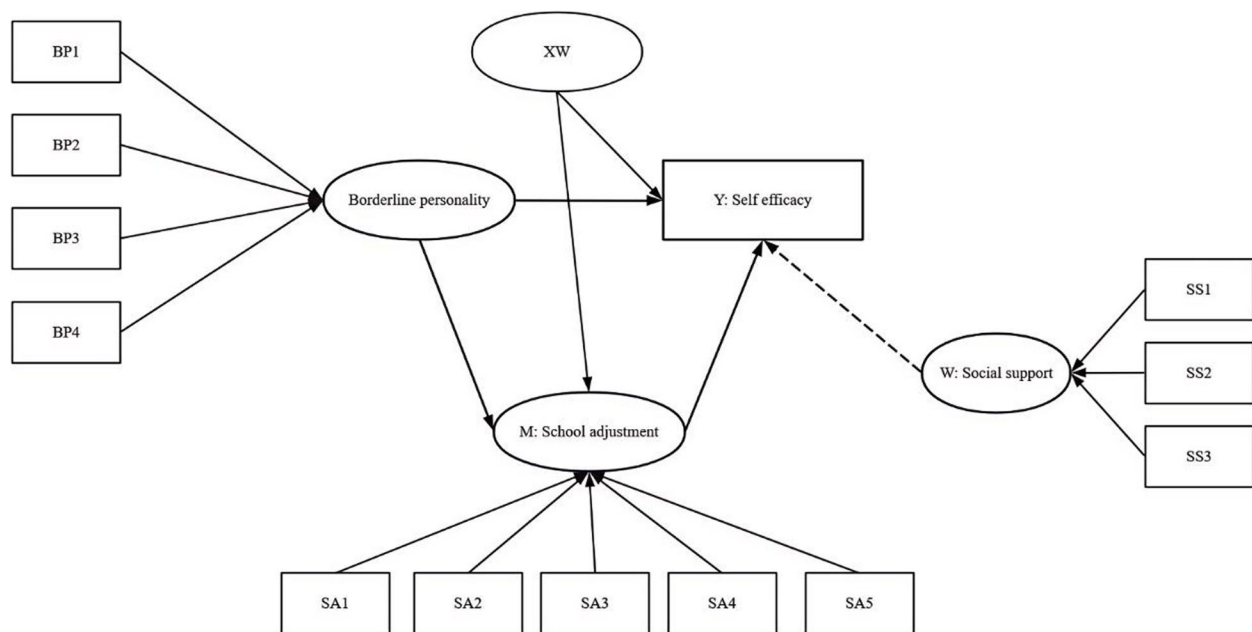


Fig. 2 the model of confirmatory factor analysis. BP: borderline personality; SA: school adjustment; SS: social support. XW: the interaction of BP and SS

Table 1 General demographic information of the participants

Variables	N	%	NA	M + SD
Sex			2369	
Male	1185	50.0		
Female	1184	50.0		
Age			2369	15.39 ± 1.28
< 15	576	24.3		
15–16	1454	61.4		
17–18	339	14.3		
Residence			2369	
City	1070	45.2		
Villages	602	25.4		
Countryside	697	29.4		
Only one child			2369	
Yes	794	33.5		
No	1575	66.5		

Table 2 Analysis of variable means and correlations between variables (n = 2639)

	M (SD)	1	2	3	4
1 BP features	55.99 (17.56)	1.000	-0.551**	-0.408**	-0.259**
2 school adjustment	104.61(16.62)		1.000	0.539**	0.306**
3 social support	65.92(14.22)			1.000	0.270**
4 general self-efficacy	2.30(0.67)				1.000

* represents $P < 0.05$ and ** represents $P < 0.01$

school adjustment ($\beta = -0.698, P < 0.001$) and self-efficacy ($\beta = -0.142, P < 0.001$). Moreover, school adjustment significantly positively predicted adolescent self-efficacy ($\beta = 0.238, P < 0.001$). In addition, school adjustment was a significant mediating factor (53.90%) on the relationship between borderline personality features and self-efficacy (Table 3 and Table 4).

Mediation model

In the first step, path analysis was conducted with self-efficacy as the dependent variable, borderline personality features as the independent variable (Model 0), and school adjustment as the mediator factor (Model 1). Analysis of model 0 revealed that borderline personality features could significantly negatively predict adolescent self-efficacy ($\beta = -0.306, SE = 0.023, P < 0.001$). In model 1, borderline personality features negatively predicted

Moderated mediation model

The moderated mediation model was analyzed using Mplus, with self-efficacy as the dependent variable, borderline personality features as the independent variables, school adjustment as the mediating variable, and social support as the moderating variable. According to results, social support can significantly positively predicted school adjustment ($\beta = 0.339, P < 0.001$) and self-efficacy ($\beta = 0.114, P < 0.001$). The interaction term between

Table 3 Model indicators

	β	SE	χ^2	RMSEA	CFI	TLI	SRMR
Model 0			55.72***	0.065***	0.985	0.969	0.019
Effect	-0.306***	0.023					
Model 1			385.76***	0.067***	0.956	0.941	0.034
Total effect	-0.308***	0.023					
Indirect effect	-0.166***	0.033					

*** represents $p < 0.001$; χ^2 : Chi-square; RMSEA Root Mean Square Error of Approximation, CFI Comparative Fit Index, TLI Tucker-Lewis Index

borderline personality features and social support was significant in predicting adolescent SE ($\beta = -0.072$, $P < 0.001$). However, the interaction term between borderline personality features and social support could not significantly predict school adjustment ($\beta = -0.001$, $P = 0.0965$) (Table 5). The hypothesis 2 was partially proved. Results of the finally model for the association between borderline personality features and self-efficacy are presented in Fig. 3.

The conditional mediation effect (Table 6) demonstrated that the direct effect of borderline personality features on self-efficacy significantly increased with the increase of social support ($P < 0.001$). However, the indirect effect did not change with the different levels of social support.

Discussion

This study demonstrates the following: (1) Borderline personality features are negatively associated with both school adjustment and self-efficacy. (2) School adjustment partially mediates the relationship between borderline personality features and self-efficacy. (3) Social support moderates the impact of borderline personality features on self-efficacy. This study sheds new light on the complex relationship between borderline personality traits and self-efficacy.

Borderline personality features and adolescents' self-efficacy

This study found that BP features were significantly associated with low SE among adolescents, indicating that

adolescents with BP features may have low self-efficacy. Several studies have demonstrated that BP features are associated with SE. Moreover, people with personality dysfunction (PD) experienced higher invalidation and felt less self-efficacious [30].

This phenomenon can be explained by several studies. Borderline personality features have been linked to negative self-assessment. Specifically, research has indicated that adolescents exhibiting borderline personality features frequently experience severe mood fluctuations, which can adversely affect their self-evaluation [50, 52, 60]. Secondly, identity problems are associated with self-loathing, which related to less confidence about self-ability [35]. Moreover, participants with BPD tended to evaluate their social skills, performance, appearance, and physical abilities more negatively than healthy individuals [24, 57]. Conversely, borderline personality features may be associated with negative social feedback. Adolescents exhibiting these traits often struggle to form stable interpersonal relationships and effectively resolve conflicts with peers [52, 60]. These difficulties may be associated with low social support, which in turn causes lower self-efficacy [16].

Research has demonstrated a significant association between borderline personality traits and low self-efficacy in adolescents. Therefore, it is essential to assess adolescents for these traits and implement targeted interventions that address both borderline personality features and self-efficacy. Preventive measures and tailored treatments are essential for addressing these issues effectively.

Table 4 Mediating role of school adjustment on the associations between borderline personality features and self-efficacy

	Dependent variable	Independent variable	β	SE	95%CI
Model 0	Self-efficacy	Borderline personality features	-0.306***	0.023	[-0.349, -0.257]
Model 1	Self-efficacy	Borderline personality features	-0.142***	0.041	[-0.214, -0.053]
		School adjustment	0.238***	0.045	[0.155, 0.330]
	School adjustment	Borderline personality features	-0.698***	0.019	[-0.735, -0.658]

CI Confidence Intervals; *** represents $P < 0.001$

Table 5 Coefficient of moderated mediating model

Dependent variable	Independent variable	β	SE	95%CI	P
Self-efficacy	Borderline personality features	-0.137	0.032	[-0.200, -0.074]	< 0.001
	School adjustment	0.178	0.034	[0.110, 0.245]	< 0.001
	Social support	0.114	0.028	[0.060, 0.168]	< 0.001
	XW	-0.072	0.014	[-0.100, -0.044]	< 0.001
School adjustment	Borderline personality features	-0.525	0.019	[-0.561, -0.489]	< 0.001
	Social support	0.339	0.021	[0.298, 0.379]	< 0.001
	XW	-0.001	0.015	[-0.030, 0.029]	0.965

CI Confidence Intervals; ***represents $P < 0.001$; XW interaction of borderline personality features and social support

The mediating role of school adjustment between borderline personality features and self-efficacy

Our research confirms that school adjustment plays a crucial role in the link between bipolar features and self-esteem. Adolescents with bipolar features are more likely to face difficulties in school, which can negatively impact their self-worth. adjust However, if they could adjust to school with good relationship and academic performance, they would experience good SE [1, 2, 54].

School adjustment was negatively correlated with BP features. This result is consistent with several other studies that have indicated emotional and behavioral dysregulation among individuals with BPD [52, 60], which can lead to challenges in forming stable relationships and adapting to the school [13, 52]. In contrast, adolescents with less BP features including self-control, emotion regulation, and social-emotional skills exhibited enhanced ability to establish peer relationships, obtain higher achievements and adapt to school life [13, 51, 64].

This finding can be explained by attention bias(sensitive toward negative clues and away from positive clues) in adolescents with BP features. A study found adolescents

with BPD show hyper activation of the superior temporal gyrus to negative social clue and less response to positive social clues [23, 44]. And they are less sensitive to receive positive reinforcement and feedback from their peers [37, 72, 74]. Consequently, adolescents exhibiting BP features are more prone to reporting negative interaction with peers and families, as well as negative self-views [31, 61]. Both the constant negative feelings and the absence of positive reinforcement are associated with low SE [3, 58]. Thus, interventions aimed at improving school adjustment in adolescents could be beneficial [67]. Overall, this study highlights that the negative relationships among borderline personality features and school adjustment, self-efficacy. Moreover, good school adjustment exhibits a positive relationship to SE among adolescents.

The moderating role of social support

The present findings revealed that social support moderated the association between borderline personality features and self-efficacy. Specifically, high level of social support increased the negative effect of borderline personality features on self-efficacy. In contrast, social

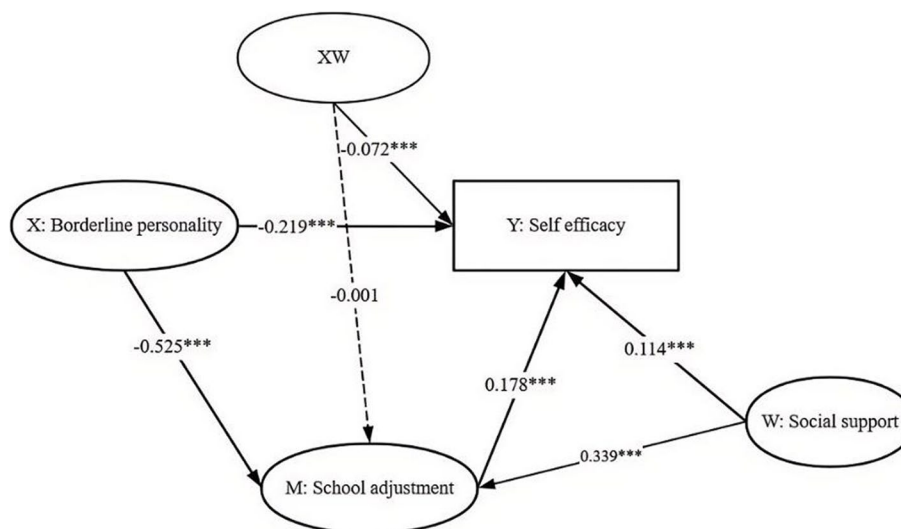


Fig. 3 Tested model. *** represents $P < 0.001$

Table 6 Conditional mediation effect

	Indirect effect	95% CI	Direct effect	95% CI	Total effect	95% CI
Low Social support	-0.016(0.003)	[-0.023, -0.010]	-0.011(0.006)	[-0.023, -0.001]	-0.028(0.006)	[-0.039, -0.017]
Mean Social support	-0.016(0.003)	[-0.023, -0.010]	-0.024(0.006)	[-0.036, -0.012]	-0.041(0.006)	[-0.052, -0.029]
High Social support	-0.017(0.004)	[-0.024, -0.010]	-0.037(0.007)	[-0.051, -0.023]	-0.053(0.007)	[-0.067, -0.040]

CI Confidence Intervals

support did not moderate the relationship between borderline personality features and school adjustment.

The results suggested that high levels of social support may amplify the impact of borderline personality traits on self-efficacy. Findings on this topic are controversial. Recent studies found that adolescents receiving support from family and friends have a better capacity to cope with stress and have a more optimistic better outlook for the future [29, 32]. On the contrary, other studies found that social support may be helpless in psychosocial functioning of adolescents with BPD. This can be because BPD patients have difficulties sensing social support, which can be divided into three types [37, 61, 62]. A primary characteristic of BPD is a preference for negative feedback rather than supportive comments. Studies have shown that individuals with negative self-esteem tend to solicit negative feedback and may prefer relationships with those who hold a negative view of them [62, 69, 71]. Second, BPD patients are more sensitive to negative information and less sensitive to supportive information. Studies showed that BPD patients seem to focus more on negative feedback, such as rejection [37, 61, 81]. Furthermore, individuals with BPD tend to exhibit diminished sensitivity to social support, and may have difficulty recognizing support from their closest relationships [43, 52, 61, 62, 81]. A study shows that adolescents with BPD perceive their caregivers to be less supportive and more invalidating than did controls without BPD [6]. Similar investigations have suggested that people with BPD perceive lower social support than in the general population [66]. Third, BPD patients feel negative about positive feedback. For instance, research has shown that positive self-affirmations can have negative effects on individuals with negative self-views, potentially worsening mood and self-esteem [76]. Another study pointed that BPD patients showed high shame when they receive positive feedback [34]. Consequently, these divergent perceptions of social support result in lower perceived social support among adolescents exhibiting borderline features. A study showed that low perceived social support may enhance negative affect and promote nonsuicidal self-injury (NSSI) among adolescents with BP features [33]. Therefore, the current findings

may be explained by the different perception of social support, which could amplify the negative impact of BP traits on self-efficacy.

The question remains: Why do adolescents with borderline features perceive social support differently? Insecure attachment, negative self-views, and experiential avoidance may contribute to this unique perspective. Individuals with BP features were raised in unstable families characterized with frequent conflicts and invalidation, they tend to form insecure attachment as well as negative sense of self [38, 46]. Consequently, when they perceive themselves to be in a supportive relationship, they may experience familiar feelings of frustration (such as shame), which in turn diminish their self-efficacy [34]. In such cases, social support ceases to function as a protective factor and instead becomes a risk factor [14, 25]. Research suggests a link between borderline features and increased experiential avoidance (EA), even in adolescents who don't meet the full criteria for BPD. Two studies [68, 70] have shown that the more severe the borderline features, the higher the levels of EA. The interaction between social support and borderline personality features has not been sufficiently studied, and hence, our findings are groundbreaking.

This study has the following limitations. First, this is a cross-sectional study. Therefore, we could not make clear conclusions regarding the causality in our study. Second, all variables were measured using self-report questionnaires. The measurement outcomes may be significantly biased by recall issues associated with borderline personality traits. For example, self-reported data on school adjustment and self-efficacy may be skewed due to a negative recall bias. Besides, the BP features were measured from one questionnaire. Thirdly, due to the intricate nature of borderline features, an interview-based assessment is recommended for a more precise evaluation. To further strengthen the credibility and validity of our model, a longitudinal research design or experimental laboratory studies would be advantageous.

In summary, the findings of this study highlight a negative correlation between BP traits and self-efficacy in adolescents. Consequently, enhancing self-efficacy should be a central focus in prevention and treatment strategies for adolescents with prominent BP features.

Conclusion

(1) Adolescents' school adjustment and self-efficacy were negatively affected by borderline personality characteristics. (2) The relationship between borderline personality features and self-efficacy was partially mediated by school adjustment. (3) The relationships among borderline personality features, school adjustment, and self-efficacy were moderated by social support. High levels of social support were associated with a stronger negative effect of borderline personality features on self-efficacy.

Abbreviations

BP	Borderline personality
BPD	Borderline Personality Disorder
RMSEA	Root Mean Square Error of Approximation
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index
SE	Self-efficacy
NSSI	Nonsuicidal Self-Injury
EA	Experiential avoidance

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Authors' contributions

YTF contributed to the study conception, performed the data acquisition and the statistical analysis, and wrote the first draft of the manuscript. NXD contributed to the study conception, the data acquisition, and the manuscript revision. FLR assisted with data preparation, data acquisition and statistical analysis. QLJ planned and supervised the study conception, the data acquisition and the statistical analysis and writing of this article. All authors reviewed the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

All procedures were permitted by the local psychological ethics committee of the DZH (Daizhuang Hospital). Furthermore, the authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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