

The Effect of Psychological Distress on Adolescents' Academic Engagement: The Roles of Social-Emotional Competence and Teachers' Caring Behavior

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Purpose: The relationship between psychological distress (PD) and academic engagement (AE) in adolescents is widely recognized. However, there is a lack of research on the mechanisms behind this correlation, especially in COVID-19 pandemic policy liberalization. This study proposed a moderated mediation model to determine the mediating role of social-emotional competence (SEC) between PD and AE and the moderating role of teachers' caring behavior (TCB).

Patients and methods: The moderated mediation model was tested by PROCESS macro developed based on SPSS with Chinese adolescents aged 13–18 years ($n = 8625$; male 50.5%) as survey respondents. Multiple scales, including the 6-item Kessler PD Scale, SEC Scale, TCB Scale, and AE Scale, were used in this test.

Results: Adolescent PD negatively predicted AE. In addition, SEC partially mediated the relationship between adolescent PD and AE. TCB moderated the direct and indirect relationships between PD and AE, which mitigated the negative effect of PD on AE and enhanced the positive effect of SEC on AE.

Conclusion: Adolescent SEC and TCB are essential in mediating PD and AE. This study provided instructions for schools and teachers to intervene in adolescents' PD and academic problems, such as improving SEC and engaging in TCB in an adequate and timely manner. In addition, these findings provided vital references for adolescent mental health interventions in future large-scale public health events.

Keywords: psychological distress, academic engagement, social-emotional competence, teachers' caring behavior, adolescents, COVID-19 policy liberalization

Introduction

The psychological impact of COVID-19 on the population globally is far more substantial than its physical impact.^{1–3} Compared to the general population, the impact of COVID-19 on vulnerable groups, such as adolescents, was more profound.^{4–7} In December 2022, the Chinese government officially formulated the “Yi Lei Yi Guan” policy to manage COVID-19 with measures against Class B infectious diseases instead of Class A infectious diseases.⁸ However, the three years of strict pandemic control have resulted in significant changes in learning and lifestyle practices among adolescents, leading to severe psychological distress (PD), learning difficulties,^{9,10} and fragile mental health.^{11,12} Policy liberalization eventually restored normalcy throughout the country. However, the subjective fear of real exposure to the novel CoV, the ongoing difficulties in adapting to online learning, and the resulting high-frequency conflicts with parents exacerbated their negative emotions, such as anxiety and depression. These unfavorable factors limited the post-traumatic psychological recovery and growth of adolescents.^{13,14}

PD, one of the assessment criteria for mental health,^{15,16} exhibits a positive correlation with poor mental health.¹⁷ Some studies on adolescents have also demonstrated the correlation between academic engagement (AE) and mental health, suggesting that situational factors could play an essential role in this relationship.^{18,19} As influential individuals in the primary social support system for adolescents, teachers' impact on their mental health development cannot be ignored.²⁰ Previous research results have shown that if adolescents are unable to participate actively in school-assigned relevant tasks, their psychological and social adaptability will be reduced, which will have a negative impact on their mental health.^{21,22} TCB can help students overcome difficulties and actively engage in learning.^{23,24} Meanwhile, SEC is critical in regulating emotions and improving adolescent performance.^{25,26} Research results have shown that SEC can play a crucial role as a protective factor in the development of adolescent behavior.²⁷ However, most studies on COVID-19-related psychological problems among adolescents in the last three years were conducted during the pandemic.^{28–31} Therefore, this study aimed to investigate the effects of PD on AE in adolescents and the intervention mechanisms after policy liberalization. The findings of this study provided realistic guidelines for schools and teachers to intervene in adolescents' PD and academic problems and proposed interventions for adolescent mental health following future large-scale public health events, such as COVID-19.

The COVID-19 pandemic has brought about unprecedented challenges, impacting various facets of individuals' lives, including education. As we navigate through these trying times, it becomes crucial to examine the intersection of psychological distress and adolescents' academic engagement. The abrupt shift to remote learning and the pervasive uncertainty surrounding the pandemic have likely contributed to heightened psychological distress among adolescents. This research explores the intricate relationship between psychological well-being and academic engagement in COVID-19. By identifying the specific challenges and stressors faced by adolescents during this period and understanding their implications on academic involvement, we aspire to shed light on potential interventions and support systems that can mitigate the adverse effects of psychological distress on the educational experiences of this vulnerable population. The investigation into these dynamics is imperative not only for comprehending the immediate impact of the pandemic but also for informing long-term strategies to foster adolescents' resilience and academic success in the face of future unforeseen challenges. Therefore, this study examined whether PD will significantly impact AE and what role SEC and TCB play in their relationship.

Before proposing research hypotheses, we will provide an overview of the literature on relevant variables in this study, presented in Section Two. Subsequently, a hypothesis model was established based on the research hypotheses. The validation results and analysis of the research hypotheses were presented in the third part of the article. Finally, conclusions were drawn and discussed in the fourth part of the article based on the research results. Finally, the fifth part of the article proposes future research prospects.

Literature Review

PD and AE

PD, a general concept of maladaptation of psychological functioning to stressful life events,³² is an unpleasant emotional experience caused by tension, stress, and distress, including psychological (cognitive, behavioral, and affective) and social dimensions.³³ Several studies on different groups of adolescents with PD highlighted the importance of effective reduction of PD in coping with academic stress, adapting to different learning environments, and improving AE.^{34–36} As a positive state, AE includes vitality, dedication, and focus on learning.³⁷ AE is the behavior of learners in the classroom and is a crucial prerequisite factor influencing student achievement strengths and weaknesses.³⁸ In addition, PD experiences may affect AE differently at different stages³⁹ and are one of the reasons for academic achievement gaps.⁴⁰

According to life course theory, every individual has critical developmental points, wherein "unpredictable points" such as major socio-historical events and the resulting social changes can impact an individual's cognition and psychology, causing them to deviate from their typical developmental trajectory.^{41,42} The psychological impact of worldwide large-scale public health events, such as the COVID-19 pandemic, on adolescents does not disappear with the end of policy control. Negative factors, including maladaptation to social order, learning environment, and lifestyle after policy liberalization and persistent fear of the novel CoV, can perpetuate PD to a certain extent, potentially affecting

their AE and mental health. Thus, after COVID-19 policy liberalization, the PD suffered by adolescents will affect their AE, thus impairing their academic achievement and even their mental health. Therefore, the first hypothesis is as follows:

Hypothesis 1: Adolescent PD is significantly negatively associated with AE.

The Mediating Role of SEC

SEC, a concept derived from social-emotional learning, is an important and valuable research indicator of adolescent development.⁴³ It has established links to the formation and development of both short- and long-term positive outcomes⁴⁴ and plays a key role in changing adolescent behavior.²⁷ Halberstadt Denham and Dunsmore created an affective social competence model that emphasizes the processes inherent in adolescent SEC.⁴⁵ This event involves emotional awareness of self, peers, and adults, recognizing complex and changing social environments, and mandatory management measures and systems. Thus, adolescents' emotions, relationships with peers and adults, school assignments, and work schedules are all important factors that influence adolescent SEC.²⁵ Successful and independent interactions between adolescents and their peers are among the most important mental health and well-being predictors.⁴⁶ Adolescents' regulation of their own emotions, interpersonal relationships, and socialization are often key skills in school life⁴⁷ and sole predictors of academic success.^{26,48} Thus, SEC can act as a protective factor influencing the relationship between individual risk factors and developmental outcomes.²⁷ In particular, SEC can serve as a mediating variable between PD and AE. In adolescents with PD, interventions can be made through SEC, including emotional regulation, relationship skills, and academic programs developed by the school to enhance their AE level. Therefore, the second hypothesis is as follows:

Hypothesis 2: Adolescents' SEC mediates the relationship between PD and AE.

The Moderating Role of TCB

TCB refers to a combination of teacher behaviors, such as caring for and accommodating students and performing their teaching duties to the best of their ability, creating a good teacher–student relationship and teaching atmosphere.⁴⁹ TCB is the most relevant characteristic index associated with effective teaching and improving students' academic achievement.⁵⁰ The entire American educational community adopted Noddings' theory of care as one of the mandatory courses for developing their teachers' professional competence.⁵¹ Similarly, the Chinese government included “caring for students” as an essential ethical requirement for teachers in the “Code of Professional Ethics for Primary and Secondary School Teachers”.⁵²

As a “caring profession”,⁵³ teachers significantly impact adolescent mental health development in the school microsystem.²⁰ TCB, an important affective environmental variable, must be internalized by students before exerting its effect.⁵⁴ A good teacher–student relationship can promote adolescents' AE (behavioral engagement), cultivate their optimistic attitudes toward the curriculum and learning tasks (affective engagement), and assist them in the psychological construction of solving complex tasks (cognitive engagement).⁵⁵ These processes mitigate negative emotions and behaviors, such as depression and anxiety, and promote mental health development.^{23,56} Adolescents tend to actively learn to explore their potential and continue to improve themselves when they perceive their teachers' caring (one of the “significant others” in their primary social support system) and encouraging attitudes toward their behavior.²⁴ Therefore, TCB can enhance students' degree of AE,⁵⁷ thus boosting their sense of self-efficacy.²⁰ In the post-pandemic era, TCB toward adolescents with PD can soothe the latter to a certain extent and motivate them to be more involved in their academics. In particular, more intense care teachers provide helps adolescents regulate their emotions, thus enabling harmony with their peers and enhancing their own AE. Therefore, the third hypothesis is as follows:

Hypothesis 3: TCB moderates adolescents' direct and indirect relationships between PD and AE.

Model Construction

This study investigated the relationship between PD and AE in adolescents and the mediating and moderating roles of SEC and TCB after the COVID-19 pandemic policy liberalization in China. Three hypotheses were proposed based on the above literature review: hypothesis 1, PD influences AE; hypothesis 2, SEC mediates the relationship between PD and AE; and hypothesis 3, TCB moderates the direct and indirect relationships between PD and AE. In addition, a moderated mediation model was constructed to validate these hypotheses (Figure 1).

Methods

Participants and Procedure

The study applied the purposive sampling approach in selecting the participants for this study. A total of 9078 adolescents aged 13–18 years in the Jiangsu-Zhejiang-Shanghai region, China, were included in this survey, which began in May 2023. The research subjects were all from ordinary middle and high schools in Jiangsu, Zhejiang, and Shanghai. Before the investigation begins, the head teachers shall explain the content and purpose of the investigation, ensuring that students are aware that the investigation is anonymous and have the right to stop it at any time. After removing 207 incomplete and 246 invalid questionnaires, 8625 valid samples were obtained, including 4352 males (50.5%) and 4273 females (49.5%). Adolescents aged 13–15 (middle school students; $n = 4118$) and 16–18 (high school students; $n = 4507$) comprised 47.7% and 52.3% of the total participants, respectively. This is an easy sample to analyze statistically.⁵⁸ All participants have experienced online learning and policy-based isolation during the last three years of the ongoing pandemic. The study was approved by the Research Ethics Committee of Jiangsu University, and informed consent was obtained from the adolescents and their parents. The link to the questionnaire was sent to the parents' cell phones by the local education administration through the head of each school. Participants were informed that this survey was voluntary, confidential, and terminable at any time. All the participants completed the questionnaire online.

Measures

Psychological Distress Scale (K6)

The 6-item Kessler Psychological Distress Scale, which can assess the degree and frequency of PD, was used to detect PD in adolescents following policy liberalization.⁵⁹ The scale includes two dimensions: anxiety and depression. It consists of six items, such as “How often did you feel nervous?” and “How often did you feel restless or fidgety?” Participants were asked to answer questions based on their living status in the past 30 days. A 5-point Likert scale was used in this study, ranging from 1 (never) to 5 (all the time), where a higher score indicates a higher degree of PD. The scale was originally Cronbach's alpha. It is 0.950, and the retesting coefficient in this study is 0.971.

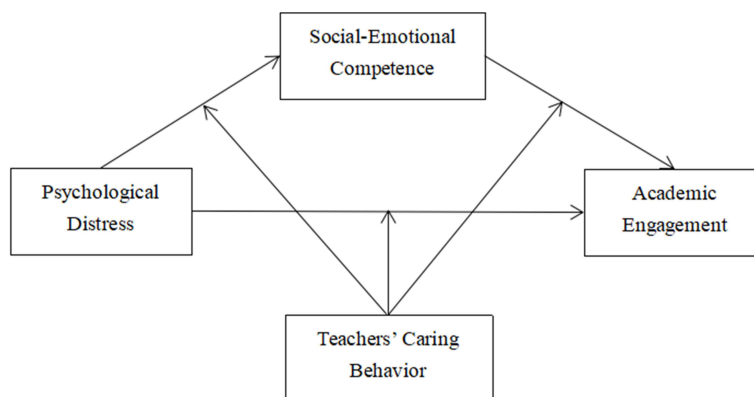


Figure 1 Hypothetical model.

Social-Emotional Competence Scale (SECS)

According to Eriksen and Bru,⁶⁰ adolescents' SEC was measured in terms of emotional regulation,⁵⁰ relationship skills,⁶¹ and academic planning⁶² to test their emotion regulation capacity, ability to relate to others, and academic plans, respectively. The SEC scale contains 19 items, such as "I control my emotions by changing the way I think about the situation I am in" (ER), "I get to know others easily", "I get in touch with others quickly" (RS), and "I try to come up with a strategy about what to do" (PS). A 5-point Likert scale ranged from 1 (do not do this at all) to 5 (always do this). In addition, Cronbach's alpha coefficient for original scales are 0.83, 0.91, and 0.83, respectively, and this study conducted Cronbach's alpha coefficient on all sub-scales are 0.951, 0.923 and 0.952, respectively, and the total quantity scale's coefficient is 0.951.

Teachers' Caring Behavior Scale (TCBS)

The TCB scale developed by Strait was used in this study.⁶³ This scale integrates cognitive and affective elements of teaching and learning and measures the subjects' feelings in a learning-centered and learner-centered manner. The scale consists of 11 items, such as "Wants students to learn/succeed" and "Offers multiple learning opportunities". All items are scored on a 5-point Likert scale, ranging from 1 (usually not at all) to 5 (usually often). The Cronbach's alpha coefficient of the scale was measured, and the result was 0.969. Subsequently, a factor load analysis was conducted on all items of the scale, and the results showed that the factor load of each item was greater than 0.7. This result ensured the normal distribution of the data and the good reliability and validity of the scale.

Academic Engagement Scale (AES)

Skinner et al developed a scale to measure AE, which consists of 8 items and 2 subfactors—behavioral and emotional engagement.⁶⁴ Some items are "I am working hard to do well at school" and "I like doing schoolwork". To determine students' perceptions, all items were scored on a 5-point Likert scale, ranging from 1 (usually not at all) to 5 (usually often). Cronbach's alpha coefficient of the original scale is 0.87. In this study, the retesting Cronbach's alpha coefficient of the scale was 0.968. Meanwhile, Cronbach's alpha coefficient of the two sub-factors of behavioral engagement and emotional engagement coefficients are 0.951 and 0.972, respectively.

Analytical Procedures

Research data were analyzed using Amos, SPSS 27.0, and PROCESS 4.2 plug-in. First, all study variables were subjected to descriptive statistical analysis (including mean [M] and standard deviation [SD]). Subsequently, factor loading analysis was performed to ensure normal distribution and good reliability of the data. Correlations between variables were explored through Pearson's correlation analysis. Furthermore, using Amos to establish four comparative models for CFA structural validation of the discriminant validity of the four variables "PD/AE/TCB/SEC". The results showed that the fitting effect of the four-factor model was significantly better than the other three competitive models; confirmatory factor analysis structural verification of the hypothetical model was conducted, with verification results of $\chi^2/df = 4.879$, goodness-of-fit index = 0.978, comparative fit index = 0.979, and root mean square error of approximation = 0.074. According to Thompson's recommendation, the model fit was acceptable⁶⁵, and the four variables have good discriminant validity, representing four different constructs. At the same time, this analysis result also confirms that there is no significant common method bias in the data of this study. Based on the hypothetical model, the mediating role of the SEC was first verified. Subsequently, 5000 repeated sample tests were conducted using Model 4 of the PROCESS plug-in, and the 95% confidence interval (CI) was used to determine whether the SEC mediation role was valid. On this basis, the moderating role of TCB was verified using Model 59 of the PROCESS plug-in. Finally, simple slope plots were drawn.

Results

Descriptive and Pearson's Correlation Analysis

All variables were subjected to correlation analysis using SPSS (Table 1). PD was significantly positively correlated with AE ($\beta = 0.085, p < 0.01$) and SEC ($\beta = 0.185, p < 0.01$) but significantly negatively correlated with TCB ($\beta = -0.064, p < 0.01$). In addition, AE was significantly positively correlated with TCB ($\beta = 0.529, p < 0.01$) and significantly positively correlated with SEC ($\beta = 0.669, p < 0.01$).

Table 1 Descriptive and Pearson's Correlation Analysis

Variables	M	SD	1	2	3	4	5	6
1.Gender	1.50	0.50	–					
2.Age group	1.52	0.50	–0.008	–				
3.PD	2.65	1.32	–0.075**	0.027*	–			
4.AE	3.94	0.97	–0.121**	–0.043**	0.085**	–		
5.SEC	3.89	0.80	–0.165**	–0.021	0.185**	0.669**	–	
6.TCB	4.54	0.72	–0.062**	–0.070**	–0.064**	0.529**	0.577**	–

Notes: N = 8625. **p<0.01, *p<0.05.

Abbreviations: PD, Psychological Distress; AE, Academic Engagement; SEC, Social-Emotional Competence; TCB, Teachers' Caring Behavior.

Paths Analysis

First, all variables were standardized. Subsequently, path validation and analysis were performed using Model 4 in PROCESS macro 4.2 (Table 2). PD negatively affected AE ($\beta = -0.040, p < 0.001$), validating H1. Path test for the mediating effect on SEC showed ($\beta = 0.125, p < 0.001$) a 95% CI of [0.109, 0.142]. In addition, the interval does not include 0, indicating that the mediating effect holds and validates H2. The mediating effect is partial-mediating, as the path from PD to AE is significant. The research results indicate that SEC can be a mediating variable influencing the relationship between PD and AE. This means that although PD affects AE, the negative impact is reduced due to the addition of SEC, thereby enhancing AE.

Moderating Analyses

Based on the above pathway analysis, the moderating role of TCB was analyzed (Table 3). According to the mediator model test results, PD directly negatively affected AE. Furthermore, the moderating effect of TCB was verified using Model 59 in the regression analysis plug-in PROCESS for SPSS. TCB significantly negatively affected the relationship between PD and AE ($\beta = -0.062, p < 0.001$), suggesting that TCB could mitigate the negative effect of PD on AE. To further characterize the moderating role of TCB, the effects of high (+1SD) and low (–1SD) TCB levels on the relationship between PD and AE were explored and visualized using simple slope plots (Figure 2). Specifically, when TCB is involved in the process via which PD affects AE, it reduces the adverse effects of PD and thus enhances AE. That is to say, the active participation of teachers will encourage students to better participate in learning activities.

Similarly, while PD and SEC were significantly positively correlated ($\beta = 0.221, p < 0.001$), PD × TCB exhibited no significant correlation ($\beta = 0.016, p > 0.05$). Therefore, TCB did not moderate the relationship between PD and SEC but moderated the relationship between SEC and AE (Table 3). SEC significantly and positively affected AE ($\beta = 0.547, p < 0.001$). Moreover, SEC × TCB exhibited a significant positive correlation ($\beta = 0.025, p < 0.001$). Thus, we conclude that TCB plays a positive moderating role in the relationship between SEC and AE. This indicates that teachers' behavior participation can not only buffer the negative impact of PD but also enhance AE by enhancing SEC. To better understand the moderating effect of TCB herein, simple slope plots were applied to test the interaction from both high (+1SD) and

Table 2 The Mediated Model of SEC

Paths	Estimate	95% CI		p	S.E.
		Lower	Upper		
PD→SEC	0.185	0.165	0.206	0.000	0.011
SEC→AE	0.677	0.661	0.693	0.000	0.008
PD→AE	–0.040	–0.056	–0.024	0.000	0.008
PD→SEC→AE	0.125	0.109	0.142	0.000	0.008

Note: N = 8625.

Abbreviations: PD, Psychological Distress; AE, Academic Engagement; SEC, Social-Emotional Competence; TCB, Teachers' Caring Behavior.

Table 3 The Moderated Mediation Model

Model/Effect	β	S.E.	t	p	LLCI	ULCI
Model for predicting SEC						
Constant	0.001	0.008	0.124	0.902	-0.016	0.018
PD	0.221	0.009	25.754	0.000	0.204	0.238
TCB	0.591	0.008	69.593	0.000	0.574	0.607
PD × TCB	0.016	0.008	1.947	0.052	0.000	0.033
Model for predicting AE						
Constant	-0.018	0.009	-2.127	0.033	-0.035	-0.001
PD	0.007	0.008	0.861	0.389	-0.009	0.023
TCB	0.243	0.012	20.546	0.000	0.528	0.566
PD × TCB	-0.062	0.008	-7.782	0.000	-0.078	-0.047
SEC	0.547	0.010	55.402	0.000	0.219	0.266
SEC × TCB	0.025	0.006	4.179	0.000	0.013	0.036
Conditional effect analysis (direct)						
M - 1SD	0.069	0.012	5.649	0.000	0.045	0.093
M + 1SD	-0.033	0.009	-3.640	0.000	-0.050	-0.015
Conditional effect analysis (indirect)						
M - 1SD	0.522	0.012	44.958	0.000	0.050	0.545
M + 1SD	0.563	0.010	53.789	0.000	0.542	0.583

Note: N = 8625.

Abbreviations: PD, Psychological Distress; AE, Academic Engagement; SEC, Social-Emotional Competence; TCB, Teachers' Caring Behavior.

low (-1SD) TCB levels (Figure 3). The simple slope test found that TCB enhanced the positive effect of SEC on AE. In summary, TCB moderated both the direct and indirect relationships between PD and AE, validating H3. However, TCB only moderated the second half of the mediating effect, ie, the relationship between SEC and AE.

Discussion and Conclusions

Relationship Between PD and AE Among Adolescents

The empirical results from the study revealed that PD has a negative and significant effect on AE among adolescents. The findings of this study supported the hypothetical model. This study explored the relationships among adolescent PD,

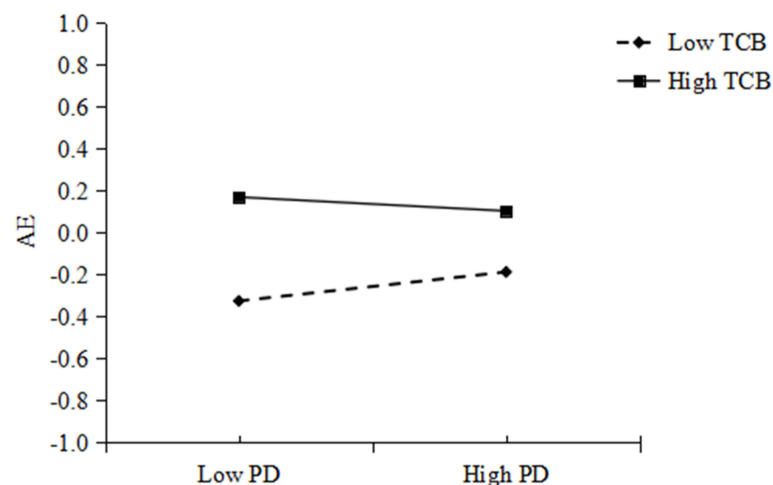


Figure 2 Moderating analysis of PD on AE.

Abbreviations: PD, Psychological Distress; AE, Academic Engagement; TCB, Teachers' Caring Behavior.

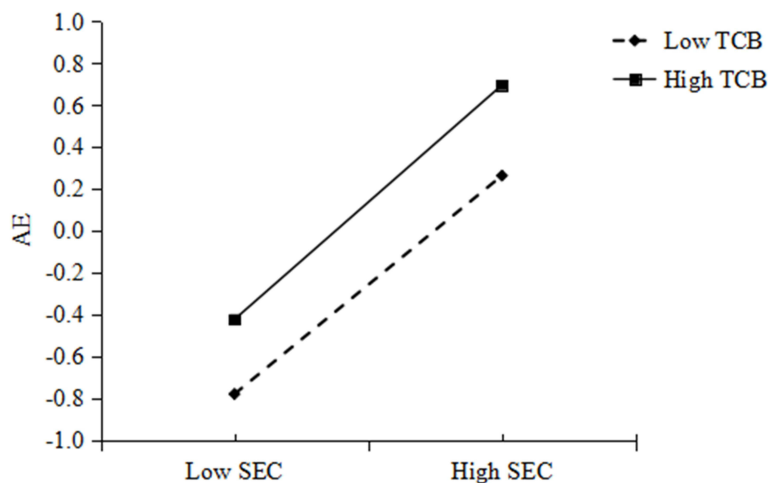


Figure 3 Moderating analysis of SEC on AE.

Abbreviations: AE, Academic Engagement; SEC, Social-Emotional Competence; TCB, Teachers' Caring Behavior.

SEC, TCB, and AE after COVID-19 policy liberalization. In addition, a moderated mediation model was constructed to elucidate the mechanism of the effect of PD on AE in adolescents. Path analysis demonstrated a direct negative effect of adolescent PD on their AE, consistent with the results of previous studies.^{15,18} PD following worldwide public health events, such as the COVID-19 pandemic, can have a direct negative impact on adolescent AE. Therefore, it is recommended that schools and teachers take an active interest in learning problems and mental health conditions resulting from adolescents' emotional changes following large-scale public health events and take timely and effective interventions accordingly.

The Mediating Role of SEC

It has been found through this study that SEC partially mediated the association between PD and AE. PD can directly influence SEC in adolescents, which is consistent with previous findings.^{26,46} SEC can positively influence AE, consistent with established findings.³⁹ These findings further confirm the correlation between PD, SEC, and AE. Specifically, the COVID-19 pandemic objectively exacerbated adolescents' psychological anxiety and depression and greatly influenced their environment and significant others. In addition, the subjective willingness to relieve anxiety and depression contributed to the adolescents' SEC, including their emotional regulation, relationship skills, and academic planning, thus enhancing AE. As the results suggested, the adolescents' enhanced PD led to enhanced SEC and AE. Overall, these findings emphasized the critical mediating role of SEC in the effects of PD on AE. Thus, schools and teachers should remain attentive to changes in students' moods and promote adolescents' emotional regulation, relationship skills, and academic planning through various means, especially after a significant public health event. For example, group activities such as psychological counseling and thematic lectures actively organized on a school or classroom basis can further promote teacher–and student–student exchanges. Teachers should also pay in-depth attention to adolescents' group development and individual differences to assist them in optimizing their academic planning. All these measures can help enhance adolescents' SEC and thus promote AE enhancement.

The Moderating Role of TCB

Previous studies on academic achievement and mental health primarily considered TCB as an independent variable,^{20,57} contrary to our study, which regarded TCB as a moderating variable. The results also show that TCB moderated the direct and indirect associations between PD and AE. Specifically, the moderating effect of TCB mitigated the negative effect of PD on AE and increased the positive effect of SEC on AE. First, TCB can mitigate the negative effects of PD on AE. Given that teachers' thoughtful care for adolescents can potentially alleviate their PD and enhance their degree of AE, they should pay constant attention to the changes in adolescents' mental status and emotions and ensure that the

adolescents are given adequate care to enhance their AE. In this study, TCB moderated the indirect relationship between PD and AE. However, only the relationship between SEC and AE was moderated, ie, TCB enhanced the positive effect of SEC on AE. Therefore, TCB can enhance the effect of SEC on AE during school instruction when adolescents seek to soothe their PD by moderating their emotions and improving their interpersonal relationships.

In the teaching–learning process in schools, teachers should focus on the emotional and psychological state of adolescents and take adequate and effective interventions at the right time, particularly mental health related to PD and AE. For example, when teachers establish that students have PD, they can adopt positive and prominent caring behaviors to help students restore their state as soon as possible and actively participate in the classroom and school life. When adolescents begin to regulate their emotions and other problems actively, TCB can reinforce such regulation, enhance students' level of AE, and restore their confidence in completing tasks. As instructional administrators, schools should pay more attention to issues such as PD and AE that are related to mental health. Setting teachers' care for adolescents as one of the essential indicators of teacher evaluation and positively creating a favorable atmosphere for teacher–student interactions can promote a more profound understanding between both parties. In addition, schools should provide sufficient organizational, personnel, and financial guarantees for relevant organizations and activities. These measures will increase adolescents' academic participation, enhance academic achievement, and ensure psychological well-being.

Limitations and Future Prospects

This study examined the impact of an intervention framework integrating PD, SEC, TCB, and AE in Chinese adolescents after COVID-19 policy liberalization. It provided an intervention program to address psychological problems after a worldwide public health crisis. Overall, these findings can promote adolescents' psychological well-being and academic achievement. However, both the mediating role of SEC and the moderating role of TCB are based on the assumptions of this study, ie, in the school context. Moreover, essential factors such as social and family life could influence adolescents' AE, and possible intervention mechanisms were not investigated. Therefore, future research is warranted to delve deeper into the objective factors that may influence adolescents' psychological and academic relationships, such as differences in family income or geographic location. In addition, in the school background, factors other than teachers that may affect the teaching process or teaching effectiveness, like policy and others, may be essential factors that AE or PD can be explored in future studies.

Data Sharing Statement

The data can be obtained by contacting the corresponding author for reasonable requests.

Ethical Approval

The study is in accordance with the Declaration of Helsinki, and this research was approved by the Research Ethics Committee of Jiangsu University.

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Disclosure

The authors report no conflicts of interest in this work.

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