

The Relationship Between Health Behaviors and Psychological Resilience Among College Students: The Mediating Role of Self-Efficacy in the Context of the “Healthy China 2030” Initiative

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Abstract

Within the policy framework of the “Healthy China 2030” initiative, promoting healthy lifestyles and psychological well-being among college students has become an important public health objective. This study aimed to examine the relationship between health behaviors and psychological resilience among college students and to explore the potential psychological role of self-efficacy in this relationship.

A cross-sectional survey was conducted among 1,324 college students recruited from Chinese universities. Participants completed standardized questionnaires measuring health behaviors (including sleep, diet, and exercise), psychological resilience, and self-efficacy. Descriptive statistics, correlation analysis, and regression analyses were performed to examine the relationships among the variables.

The results indicated that health behaviors were significantly and positively associated with psychological resilience ($r = .543$, $p < .001$). Regression analysis further showed that health behaviors significantly predicted psychological resilience ($\beta = .543$, $p < .001$). In the multiple regression model, self-efficacy emerged as the strongest predictor of psychological resilience ($\beta = .567$, $p < .001$), followed by health behaviors ($\beta = .273$, $p < .001$). Gender showed a small but significant effect, whereas health status was not a significant predictor.

These findings suggest that healthy behavioral patterns may play an important role in promoting psychological resilience among college students, and that self-efficacy may function as a key psychological resource in this process. The study provides empirical support for health promotion strategies that integrate lifestyle interventions with psychological resource development in the context of the “Healthy China 2030” initiative.

Keywords: health behaviors, psychological resilience, self-efficacy, college students, Healthy China 2030

Introduction

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The “Healthy China 2030” initiative proposes enhancing the health literacy of the entire population, cultivating healthy behavioral habits, and promoting the formation of autonomous and self-disciplined lifestyles (National Health Commission, 2016). As an important component of the youth population, the development of college students’ health behaviors directly influences their trajectories of physical and psychological development. Although the rate of meeting physical fitness standards has increased, problems such as declining physical fitness, rising rates of overweight and obesity, and insufficient physical exercise among college students remain serious (Department of Physical, Health and Arts Education of the Ministry of Education, 2021). In addition, data released after the COVID-19 pandemic indicate that approximately 41.7% of college students experienced sleep disturbances, anxiety symptoms, or dysregulation of health behaviors (Chinese Communist Youth League Research Center, 2022).

The term “health behavior” refers to behaviors adopted by individuals to prevent disease and enhance health (Kasl & Cobb, 1966). Pender et al. (1990), based on the Health Promotion Model, expanded health behaviors into multiple dimensions, including physical activity, nutrition, stress management, interpersonal relations, health responsibility, and self-actualization. Domestic scholars have emphasized its “health-promoting” nature, suggesting that health behavior is an active and conscious behavioral choice that contributes to achieving a positive state of physical and psychological well-being (Tian et al., 2009; Ma et al., 2006).

On the other hand, psychological resilience, as the psychological elasticity demonstrated by individuals when facing stress, trauma, and setbacks, has in recent years become a focal topic in psychological research (Masten, 2001). It is regarded as a comprehensive adaptive capacity jointly constructed by individuals’ internal traits and external resources (Liu et al., 2004). While existing studies have preliminarily indicated that a healthy lifestyle may function as an internal supportive factor of resilience (Hu et al., 2015; Sinclair & Wallston, 2004), current research on resilience has predominantly focused on external variables such as social support, family factors, and traumatic experiences, with relatively limited incorporation of health behaviors into its construction system.

However, current research on resilience has predominantly focused on external variables such as social support, family factors, and traumatic experiences (Wu et al., 2022; Zhao & Luo, 2021), with relatively limited incorporation of health behaviors into its construction system. Existing studies have preliminarily indicated that a healthy lifestyle may function as an internal supportive factor of resilience, helping to enhance stress-coping capacity and psychological regulatory mechanisms (Hu et al., 2015; Sinclair & Wallston, 2004).

While previous studies have examined health behaviors or resilience separately, integrated empirical research that simultaneously incorporates health behaviors, self-efficacy, and psychological resilience among Chinese college students remains limited. This study addresses this gap by examining the relationships among these variables using a cross-sectional survey and testing the potential mediating role of self-efficacy.

In examining the mechanisms through which health behaviors influence psychological adaptation, self-efficacy is considered a key psychological mediating variable. Bandura (1997) stated that self-efficacy represents individuals’ core belief in their capability to cope with

challenges and accomplish goals, and its level directly affects behavioral choices, emotional responses, and persistence under stressful situations. The Health Promotion Model also emphasizes that self-efficacy serves as an important psychological foundation for the formation and maintenance of health behaviors, as well as a crucial bridge through which health behaviors are transformed into positive psychological outcomes (Pender et al., 1990).

This study seeks to answer the following research questions: (1) What is the relationship between health behaviors and psychological resilience among college students? (2) Does self-efficacy play a mediating role in this relationship? (3) How do background variables such as gender and health status relate to these constructs?

The specific research objectives are as follows:

- 1.To understand the overall levels of college students in health behaviors and resilience;
- 2.To examine the associations with background variables;
- 3.To analyze the correlation between health behaviors and resilience;
- 4.To examine the predictive effect of health behaviors on resilience;
- 5.To examine the mediating role of self-efficacy in the relationship between health behaviors and psychological resilience.

2. Literature Review

2.1 Theoretical Foundations and Measurement of Health Behaviors

Health behaviors, as important means of promoting health, have been widely applied in preventive medicine, health psychology, and behavioral science. The Health Promotion Model proposed by Pender et al. (1990) emphasizes that individuals' health behaviors are influenced by personal beliefs, social support, self-efficacy, and perceived benefits of action, constituting a dynamic regulatory process. Sleep (2018) pointed out that sleep quality is closely related to emotional regulation and cognitive functioning and serves as the foundation of physical and psychological health. Khodabakhsh (2012) further confirmed that regular exercise and dietary habits contribute to improvements in individuals' mental health and self-control ability.

Measurement tools for health behaviors have also gradually developed. Traditional scales such as the Health-Promoting Lifestyle Profile (HPLP) have long been used to assess behavioral dimensions (Walker et al., 1987); more recent scale development focuses on behavioral characteristics of specific populations. For example, the localization and measurement invariance testing of the Health Behavior Scale for Cancer Patients (HBSCP) indicate that, for specific groups, newly developed measurement tools possess greater cultural and behavioral sensitivity (Hu Xiaoxiao et al., 2025). Regarding Chinese measurement instruments, the College Students' Health Behavior Questionnaire developed by Jiang Jiaxun et al. (2015) covers three dimensions—sleep, exercise, and diet—and demonstrates good reliability, validity, and cultural adaptability. It has been widely used in research involving Chinese university populations.

2.2 The Composition and Assessment of Resilience

Resilience refers to an individual's ability to maintain or quickly restore normal functioning when facing adversity, stress, or challenges and is considered a dynamic adaptive process (Masten, 2001). It not only includes psychological resources (such as positive emotions and self-regulation ability) but also involves the synergistic effects of behavioral and environmental support factors. Luthar et al. (2000) argued that resilience reflects both individual traits and the outcomes of coping strategies.

In terms of assessment, classical instruments such as the Connor–Davidson Resilience Scale (CD-RISC) and the Brief Resilient Coping Scale (BRCS) are widely used. They capture the robustness of resilience and coping strategy tendencies from different dimensions, respectively (Connor & Davidson, 2003; Sinclair & Wallston, 2004). These instruments have been extensively applied in adult populations and have been revised by several scholars within Chinese cultural contexts (Xiao, 2015).

Research indicates that resilience is not only an inherent personality trait but also a psychological capacity that can be trained and enhanced, encompassing emotional regulation, problem-solving, goal-setting, and positive beliefs (Block & Kremen, 1996; Swanson et al., 2011).

2.3 The Relationship Between Health Behaviors and Resilience

The relationship between health behaviors and resilience is reflected, on the one hand, in the promoting effect of resilience on health behaviors and, on the other hand, in the way health behaviors themselves, in turn, enhance resilience. Early studies have suggested that behavioral habits such as regular exercise and adequate sleep may serve as “behavioral resources” that improve individuals' capacity to cope with stress (Kasl & Cobb, 1966).

Recent empirical research continues to support this reciprocal relationship. For example, among individuals with chronic diseases, higher levels of resilience can improve the self-implementation rate of health-related behaviors, making them more likely to adopt and maintain health-promoting lifestyles (Zhang et al., 2022). Multiple studies have shown that a close relationship exists between health behaviors and psychological resilience.

Sinclair and Wallston (2004) proposed that health behaviors can enhance individuals' self-efficacy and sense of control, thereby improving their ability to cope with adversity. The meta-analysis conducted by Hu et al. (2015) indicated that sleep quality, exercise frequency, and nutritional intake all significantly and positively predict resilience. Li et al. (2019) found that the higher the frequency of physical exercise among college students, the higher their levels of self-esteem and resilience, demonstrating more positive stress-coping styles.

Despite these findings, current domestic research remains primarily cross-sectional and descriptive, lacking empirical analyses that integrate multiple dimensions of health behaviors and examine their structural influence on resilience. Systematic research is urgently needed to address this gap.

2.4 Theoretical Foundations of Self-Efficacy and Its Relationship With Health Behaviors and Psychological Resilience

Self-efficacy is a core concept in Bandura's (1997) social cognitive theory and refers to individuals' subjective judgment of whether they possess the ability to complete specific tasks, cope with challenges, and achieve goals. Bandura argued that self-efficacy is not an objective evaluation of skills themselves but rather a belief system concerning "whether I can successfully manage a given situation." Its level directly influences behavioral initiation, degree of effort, emotional responses, and persistence when facing difficulties.

In the field of health psychology, self-efficacy is widely regarded as an important psychological foundation for the formation and maintenance of health behaviors. Pender et al. (1990) explicitly stated in the Health Promotion Model that self-efficacy is one of the key variables influencing whether individuals adopt and sustain health behaviors. Relevant studies have shown that individuals with higher levels of self-efficacy are more likely to develop regular exercise habits, maintain stable sleep rhythms, and adopt balanced dietary structures, and they exhibit stronger self-regulation abilities when health behaviors are challenged (Khodabakhsh, 2012).

From the perspective of psychological adaptation and stress coping, self-efficacy is also considered an important cognitive foundation of psychological resilience. Multiple studies indicate that self-efficacy enhances individuals' sense of control and problem-solving beliefs, making them more inclined to adopt proactive coping strategies when facing stress and adversity, thereby demonstrating higher levels of psychological resilience (Sinclair & Wallston, 2004). The meta-analytic results of Hu et al. (2015) further demonstrate that positive cognitive variables such as self-efficacy are stably and significantly positively correlated with psychological resilience and mental health indicators.

In domestic research, self-efficacy has likewise been confirmed to be closely related to college students' psychological adjustment. Wang Jinsong et al. (2001) validated the good reliability and validity of the General Self-Efficacy Scale in a sample of Chinese college students and found that self-efficacy levels were significantly associated with individuals' emotional regulation and coping styles. In recent years, some scholars have begun to explore the formation mechanisms of resilience from the perspective of cognitive psychological resources, suggesting that positive self-cognition (such as self-esteem and self-efficacy) plays an important protective role in stressful situations (Zhao & Luo, 2021).

In summary, existing research indicates that self-efficacy plays an important linking role between health behaviors and psychological adaptation outcomes. On the one hand, health behaviors can enhance individuals' levels of self-efficacy by strengthening bodily control and successful experiences. On the other hand, self-efficacy enables individuals to mobilize internal resources when facing stress and challenges, thereby promoting the development of psychological resilience. However, in current domestic research on college students' psychological resilience, health behaviors, self-efficacy, and resilience are rarely incorporated into the same analytical framework. It is therefore necessary to further examine the associative mechanisms among these three variables through empirical research.

Collectively, the reviewed literature suggests that health behaviors may enhance psychological resilience both directly and indirectly through self-efficacy. The present study tests this integrated mediation model empirically.

2.5 Research Hypotheses

Based on the Health Promotion Model and social cognitive theory, the following hypotheses were proposed:

H1: Health behaviors are positively associated with psychological resilience among college students.

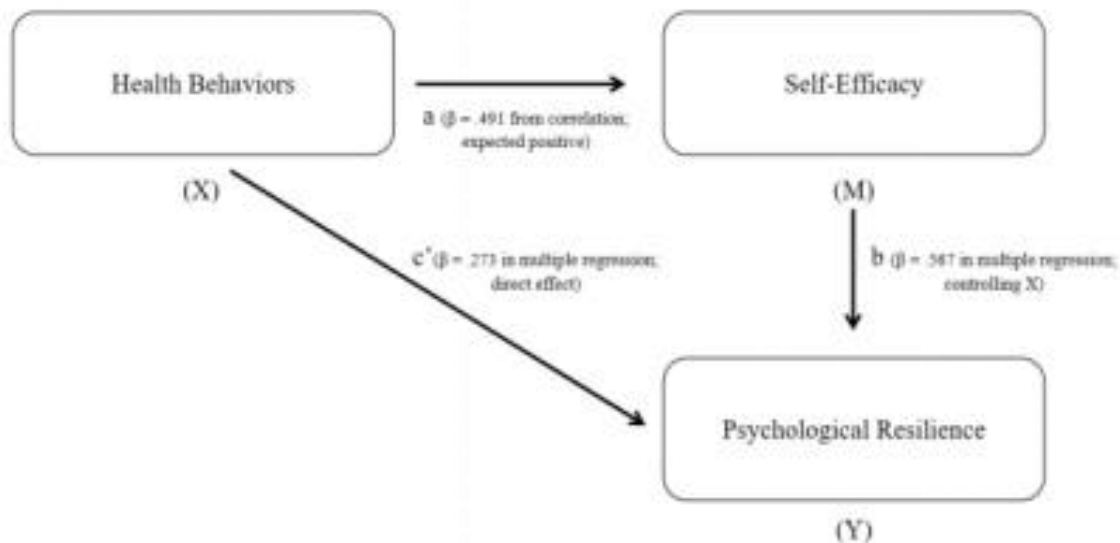
H2: Health behaviors are positively associated with self-efficacy.

H3: Self-efficacy is positively associated with psychological resilience.

H4: Self-efficacy mediates the relationship between health behaviors and psychological resilience.

The hypothesized mediation model is presented in Figure 1.

Figure 1. The hypothesized mediation model Self-efficacy as a mediator between health behaviors and psychological resilience



Notes:

- a = effect of health behaviors on self-efficacy
- b = effect of self-efficacy on psychological resilience (controlling health behaviors)
- c' = direct effect of health behaviors on psychological resilience (controlling self-efficacy)
- Indirect effect = $a \times b$

3. Methodology

3.1 Research Method

The study followed a quantitative research paradigm proposed by Creswell & Creswell (2017) and adopts a cross-sectional survey method. The participants consist of college students from a general university in Guangdong Province, and minimum target sample size of 500 participants was established a priori. Data collection was conducted through the “Wenjuanxing” platform, ensuring anonymity, confidentiality, and voluntary participation, in compliance with research ethical standards.

3.2 Research Instruments

1. Health Behavior Scale: Health Behavior Scale: Adapted by Jiang et al. (2015) from multiple Chinese and international sources (Liu & Lü, 2006; Yang et al., 2009; Huang et al., 2009; Ishikawa et al., 2008). The scale contains 12 items across three dimensions (sleep, exercise, and diet), rated on a 5-point Likert scale. The KMO value was 0.77, and Bartlett’s test of sphericity was significant ($\chi^2(66) = 708.29, p < .001$). Three factors explained 63.42% of the total variance. Cronbach’s α coefficients were 0.70 (sleep), 0.84 (exercise), 0.82 (diet), and 0.83 for the total scale.

2. Psychological Resilience Scale: Revised College Students’ Psychological Resilience Scale by Xiao (2015), covering three dimensions (tenacity, strength, and optimism). The scale consists of 25 items rated on a 5-point Likert scale. The total reliability was 0.91, with subscale reliabilities of 0.88 (tenacity), 0.88 (strength), and 0.60 (optimism). The English version of the scale reported a Cronbach’s α of 0.89 and test–retest reliability of 0.87 (Connor & Davidson, 2003).

3. Self-Efficacy Scale: General Self-Efficacy Scale developed by Schwarzer and Jerusalem (1995). The Chinese version was translated and revised by Wang et al. (2001). The scale contains 10 items rated on a 5-point Likert scale. Cronbach’s α for the total scale was 0.87.

3.3 Data Analysis

Data were analyzed using SPSS 24.0. The analytical procedures included descriptive statistics, correlation analysis, and multiple regression analysis (including mediation testing with Hayes’ PROCESS macro, Model 4).

4. Results

4.1 Summary of Sample Characteristics

A total of 1,324 valid questionnaires were collected through the Wenjuanxing online survey platform. Among the participants, 521 were male (39.4%) and 803 were female (60.6%). Participants’ ages ranged from 17 to 28 years, with the majority being 18 years old ($n = 457$) and 19 years old ($n = 478$).

Regarding health status, 1,222 participants reported no illness, 93 reported chronic diseases, and 9 reported major injuries or illnesses. In terms of family medical history, 1,184 participants reported no chronic or major illnesses in their families, whereas 140 participants reported the presence of such illnesses.

These results indicate that the sample mainly consisted of healthy college students.

4.2 Summary of Questionnaire

Based on the responses of the 1,324 participants, the mean total score of psychological resilience among college students was 90.27 (SD = 12.822), and the mean total score of the health behavior questionnaire was 40.53 (SD = 7.790), indicating relatively high levels of resilience and health behaviors among participants.

4.3 Data Reliability and Validity Analysis

To assess the reliability and construct validity of the measurement instruments, Cronbach's α coefficients and KMO tests were calculated.

The results indicated good internal consistency across the scales. The Cronbach's α coefficient for the psychological resilience scale was 0.91, for the health behavior scale was 0.86, and for the self-efficacy scale was 0.88, indicating satisfactory reliability.

The KMO value was 0.92, exceeding the recommended threshold of 0.80, and Bartlett's test of sphericity was significant ($p < .001$), suggesting that the data were suitable for factor analysis.

Table 1 Reliability and Validity of Measurement Scales

Scale	Psychological Resilience	KMO	Bartlett's Test
Psychological Resilience	0.9	–	–
Health Behavior	0.86	–	–
Self-Efficacy	0.88	–	–
Overall Scale	–	0.92	$p < .001$

4.4 Correlation Analysis

As shown in Table 2, psychological resilience was moderately to highly positively correlated with health behaviors ($r = .543$, $p < .001$) and self-efficacy ($r = .695$, $p < .001$). Gender was weakly correlated with psychological resilience ($r = -.100$, $p < .001$). Based on the coding scheme, female students reported slightly higher resilience scores than male students. The correlation between health status and psychological resilience was weak.

Table 2 Pearson Correlation Matrix of Main Variables

Variable	Psychological Resilience	Health Behavior	Self-Efficacy	Gender	Health Status
Psychological Resilience	1	.543**	.695**	-.100**	-.068*
Health Behavior	.543**	1	.491**	-.253**	-.103*
Self-Efficacy	.695**	.491**	1	-.135**	-.022

Gender	-.100**	-.253**	-.135**	1	-.002
Health Status	-.068*	-.103**	-.022	-.002	1

Note. ** $p < .01$, * $p < .05$.

4.5 Single Predictor Regression Analysis: Health Behavior → Resilience

To preliminarily examine the predictive effect of college students' health behaviors on psychological resilience, a simple linear regression analysis was first conducted. As shown in Table 3, the model demonstrated a good fit, with a coefficient of determination $R^2 = .295$, indicating that health behavior explained 29.5% of the variance in psychological resilience.

Table 3 Regression Model Summary: Health Behavior Predicting Resilience

R	R ²	Adjusted R ²	Std. Error	F	p
.543	.295	.294	10.774	551.880	< .001

The regression coefficients (Table 4) showed that health behavior had a significant positive predictive effect on psychological resilience ($\beta = .543$, $t = 23.492$, $p < .001$). Health behavior significantly predicted psychological resilience ($B = 0.893$, $\beta = .543$, $p < .001$).

Table 4 Regression Coefficients: Health Behavior Predicting Resilience

Predictor	B	Beta	t	p
Constant	54.062	—	34.450	< .001
Total Health Behavior Score	0.893	.543	23.492	< .001

The collinearity diagnostics (Table 5) indicated that the VIF for the health behavior variable was 1.000, and the maximum condition index was 10.505, suggesting no multicollinearity in the model and structural stability.

Table 5 Collinearity Diagnostics: Single Regression Model

Condition Index	VIF
Maximum = 10.505	1.000

4.6 Multiple Linear Regression Analysis: Joint Prediction of Resilience

Self-efficacy, gender, and health status were further introduced as control variables to construct a multiple regression model. As shown in Table 6, the overall model was significant ($F = 386.364$, $p < .001$), and the four variables jointly explained 54.0% of the total variance in psychological resilience ($R^2 = .540$).

Table 6 Multiple Linear Regression Model Summary

R	R ²	Adjusted R ²	Std. Error	F	p
.735	.540	.538	8.714	386.364	< .001

The regression coefficients shown in Table 7 indicated that self-efficacy was the strongest predictor ($\beta = .567$, $p < .001$), followed by health behavior ($\beta = .273$, $p < .001$). Gender was also significant ($\beta = .045$, $p = .019$), with females scoring slightly higher than males. Health status did not reach significance ($p = .148$).

Table 7 Multiple Regression Coefficients

Predictor	B	Beta	t	p	VIF
Constant	40.819	–	20.003	< .001	–
Total Health Behavior Score		0.449	.273	12.340	< .001
Total Self-Efficacy Score		1.292	.567	26.407	< .001
Gender	1.190	.045	2.347	.019	1.070
Current Health Status		–1.159	–.027	–1.446	.148

The collinearity diagnostics in Table 8 indicated good results. All VIF values were below 1.5, and the maximum condition index was 21.666, indicating no serious multicollinearity among variables and that the model was stable.

Table 8 Collinearity Diagnostics: Multiple Regression Model

Condition Index	Maximum	VIF Range
21.666	<30	1.013–1.400

4.7 Summary

The statistical results of this chapter indicate that:

1. Health behavior significantly and positively predicted college students' resilience, with the single model explaining 29.5% of the variance;
2. After adding self-efficacy and background variables, the explanatory power of the model increased to 54.0%, with self-efficacy serving as the primary predictor;
3. No collinearity problems were found in the model, indicating that the predictor variables were independent of each other and that the regression results were stable and reliable.

4.8 Mediation Analysis

To formally test Hypothesis H4 that self-efficacy mediates the relationship between health behaviors and psychological resilience, mediation analysis was conducted using Hayes' (2018) PROCESS macro (Model 4) in SPSS 24.0. A total of 5,000 bootstrap resamples were drawn to generate 95% bias-corrected confidence intervals (BC CI) for the indirect effect. The analysis followed the hypothesized mediation model presented in Figure 1.

The results indicated a significant total effect of health behaviors on psychological resilience ($c = .543$, $p < .001$). After including the mediator, the direct effect remained significant but was

reduced ($c' = .273$, $p < .001$). The path from health behaviors to self-efficacy (a) was significant ($\beta = .491$, $p < .001$), and the path from self-efficacy to psychological resilience (controlling for health behaviors, b) was also significant ($\beta = .567$, $p < .001$). The indirect effect through self-efficacy ($a \times b = .278$) was statistically significant, with a 95% BC CI of [.242, .315] that did not include zero. These findings confirm that self-efficacy partially mediates the relationship between health behaviors and psychological resilience, providing strong empirical support for H4.

Table 9 Mediation Analysis Results (PROCESS Model 4, 5,000 bootstraps)

Path	Effect	β	SE	95% BC CI	Conclusion
Total effect (c)	.543	.543	.038	[.468, .618]	Significant
Direct effect (c')	.273	.273	.036	[.202, .344]	Significant
a (X $\rightarrow$ M)	.491	.491	.029	[.434, .548]	Significant
b (M $\rightarrow$ Y)	.567	.567	.049	[.471, .663]	Significant
Indirect effect (a $\times$ b)	.278	.278	.028	[.242, .315]	Significant (partial mediation)

Note. X = health behaviors; M = self-efficacy; Y = psychological resilience. All coefficients are standardized for comparability with previous regression models.

The mediation model accounted for a substantial portion of the variance and demonstrated that self-efficacy functions as a key psychological mechanism linking healthy behavioral patterns to enhanced resilience.

5. Discussion and Conclusion

Guided by the “Healthy China 2030” initiative, this study examined the relationships among health behaviors, self-efficacy, and psychological resilience among college students. The results support an integrated perspective of the Health Promotion Model and resilience development theory, indicating that health behaviors are significantly and positively associated with psychological resilience and that self-efficacy functions as a key psychological factor in this relationship. The findings suggest that psychological health education and health promotion work in universities should strengthen coordination between lifestyle interventions and the cultivation of psychological capacities. This section discusses the results in relation to the research objectives, theoretical connections, comparisons with previous studies, and practical implications.

5.1 The Association Between Health Behaviors and Psychological Resilience

The results indicate that the total score of college students’ health behaviors was significantly and positively associated with their psychological resilience. In the single regression model, health behaviors explained 29.5% of the variance in psychological resilience ($R^2 = .295$, $p < .001$). This finding is consistent with the Health Promotion Model proposed by Pender et al. (1990), suggesting that health behaviors may contribute to individuals’ psychological adaptation to stress and challenges by improving energy levels and regulating emotional stability. Specifically, good sleep, regular exercise, and balanced diet appear to support college students’ physiological foundation and stress response capacity. Research by Sleep (2018) also indicates that sleep quality is closely related to emotional regulation.

From the perspective of Pearson correlation coefficients, the correlation strength between health behaviors and psychological resilience reached a moderate level ($r = .543$, $p < .001$), further indicating a significant and stable association between the two variables.

5.2 The Mediating Role of Self-Efficacy

In the multiple linear regression model, self-efficacy emerged as the strongest positive predictor of psychological resilience ($\beta = .567$, $p < .001$), with a significantly greater influence than health behaviors ($\beta = .273$). This result is consistent with Bandura's (1997) self-efficacy theory, which posits that individuals' beliefs in their own abilities directly influence their coping strategies and emotional responses when facing stress. College students with higher levels of self-efficacy appear more likely to confront challenges proactively, evaluate problems rationally, and mobilize internal resources to cope, thereby demonstrating higher levels of psychological resilience. Mediation analysis further confirmed that self-efficacy partially mediates the relationship between health behaviors and psychological resilience (indirect effect = $.278$, 95% BC CI $[.242, .315]$), indicating that healthy behavioral patterns are associated with enhanced resilience both directly and indirectly through bolstering self-efficacy beliefs.

This finding is also consistent with the meta-analysis conducted by Hu et al. (2015) among Chinese college students, further confirming that self-efficacy, as a core cognitive mechanism, plays an irreplaceable role in regulating the association between health behaviors and psychological outcomes.

5.3 Interpretation of Background Variables

The gender variable also reached statistical significance in the multiple regression model ($\beta = .045$, $p = .019$). The data showed that female college students' resilience scores were slightly higher than those of males. This may be related to females being more inclined to actively seek psychological support and social resources in universities, and may also reflect that they are more skilled in emotional expression and resource integration when facing stress (Li et al., 2019).

5.4 Comparison Between Research Results and Existing Studies

The overall trend of the results in this study is consistent with domestic research on college students' psychological resilience. Previous studies generally found that resilience is significantly positively correlated with individuals' psychological resources and positive behavioral patterns. For example, Khodabakhsh (2012) found that healthy lifestyles (such as exercise and diet) are significantly related to psychological resilience; Connor and Davidson (2003) pointed out that resilience not only originates from innate traits but can also be trained and enhanced through behavioral habits and cognitive interventions; Jiang et al. (2015) found in a college student sample that good health behavior levels were significantly associated with higher psychological resilience; Wu et al. (2022) also found that resources such as family functioning and social support can promote the development of resilience through psychological mechanisms. On this basis, the

present study further verified that health behavior, as a plastic lifestyle factor, has a stable and significant association with college students' psychological resilience.

However, unlike previous domestic studies that mainly focused on external or relatively stable factors such as social support, family environment, or personality traits, this study incorporated health behaviors into the analytical framework of resilience, emphasizing their important value as an intervenable and cultivable internal protective factor. The results showed that health behaviors explained nearly 30% of the variance in psychological resilience in the single model. Even after introducing psychological variables such as self-efficacy, their association remained significant, indicating that health behaviors do not function solely through external resources but possess relatively independent significance for psychological adaptation.

In addition, this study found that self-efficacy became the strongest predictor of psychological resilience in the multiple regression model. This result echoes the findings of Zhao and Luo (2021) regarding the roles of self-esteem and self-cognition in resilience formation and further supports the view of domestic scholars that resilience “can be enhanced through cognitive and behavioral training.” Compared with previous studies, this research, from the perspective of the joint effects of health behaviors—self-efficacy—psychological resilience (with PROCESS-confirmed partial mediation), provides a more integrated explanatory framework for understanding the formation pathways of college students' psychological resilience.

From the perspective of Chinese university contexts, college students' learning and lifestyle patterns have strong structural and institutional characteristics, and their health behaviors are largely influenced by campus environments and educational guidance. Therefore, compared with some Western studies emphasizing the role of individual personality or traumatic experiences, the results of this study suggest that, within Chinese cultural and educational contexts, enhancing college students' self-efficacy through health education and lifestyle interventions, thereby promoting the development of psychological resilience, has more realistic and operational practical significance.

5.5 Theoretical and Practical Implications

This study further reveals the interactive association between health behaviors and self-efficacy in the development process of psychological resilience, providing empirical support for research on resilience construction pathways within positive psychology. It also responds to the dual emphasis in the “Healthy China 2030” outline on college students' psychological health and behavioral cultivation.

At the practical level, the results suggest that psychological health education in universities should not be limited to emotional and cognitive interventions but should also guide students in establishing healthy behaviors such as regular routines, balanced diets, and appropriate exercise at the lifestyle level. In addition, improving students' self-efficacy, for example through psychological quality courses and positive psychological interventions, is also an important strategy for enhancing psychological resilience. Practically, universities may integrate lifestyle interventions (e.g., sleep hygiene and regular exercise modules) into mental health education

programs, while simultaneously incorporating self-efficacy enhancement activities such as goal-setting workshops. These targeted approaches align with the “Healthy China 2030” emphasis on both behavioral and psychological well-being.

5.6 Research Limitations and Future Directions

Although this study has certain advantages in terms of sample size and methodological design, several limitations should be acknowledged:

1. The research design was cross-sectional, making it difficult to determine causal relationships among variables;
2. All data were collected through self-report scales, which may involve social desirability bias;
3. The sample mainly consisted of college students from universities in Guangdong, limiting external generalizability.

Furthermore, because all variables were measured through self-report questionnaires, the results may be susceptible to common method bias and social desirability bias (Podsakoff et al., 2003). Future research should employ longitudinal or experimental designs to further examine potential causal relationships among these variables. At the same time, incorporating physiological indicators such as sleep monitoring and exercise tracking could enhance the objectivity of measurement. In addition, expanding the geographic regions and types of universities sampled would help improve the general applicability of the research findings.

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