



Growth mindset and satisfaction with life among Chinese college students: Gender moderation and self-efficacy and meaning in life mediation

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Abstract: The present study examined the mediating roles of self-efficacy and meaning in life in the relationship between growth mindset and satisfaction with life among college students, as well as the moderating role of gender. Participants were 1791 Chinese college students (female = 52.31%, mean age = 19.31 years, SD = 1.14 years). They completed the Growth Mindset Scale (GMS), the General Self-Efficacy Scale (GSES), the Meaning in Life Questionnaire (MLQ), and the Satisfaction with Life Scale (SWLS). Correlation analyses results showed that a growth mindset was significantly and positively related to satisfaction with life among Chinese college students. Structural equation modeling results revealed that self-efficacy, searching for meaning, and presence of meaning played a chain mediating role in the relationship between growth mindset and satisfaction with life. Gender moderated the relationship between growth mindset and satisfaction with life, with the association being stronger among male students. These findings extend Social Cognitive Theory by incorporating a growth mindset as a key personal factor within the triadic reciprocal determinism framework and by revealing gender-differentiated pathways to satisfaction with life. The results suggest that interventions aimed at enhancing college students' satisfaction with life should foster a growth mindset while considering gender differences. Overall, this study provides preliminary empirical evidence to promote the well-being and mental health of college students.

Keywords: Chinese college students; satisfaction with life; growth mindset; self-efficacy; meaning in life

Introduction

Satisfaction with life, defined as an individual's cognitive–judgmental evaluation of their overall quality of life (Diener et al., 1999), promotes mental health and shapes the life spaces of college students (Peng et al., 2023; Padmanabhanunni et al., 2023). It also supports the development of a growth mindset, just as a growth mindset can enhance individuals' satisfaction with life. A growth mindset refers to an individual's basic belief about intelligence or ability, specifically the belief that intelligence or ability can continuously develop and change through experience and learning (Dweck, 2015). There may be cultural differences in gendered growth mindsets related to satisfaction with life, as the meanings of these constructs differ between collectivistic and individualistic cultures. Moreover, individuals' self-efficacy—or their sense of who they are and what they can do (Bandura, 1977)—as well as their perceived meaning in life, may help explain their openness to learning in pursuit of the satisfaction with life they desire. However, few studies have examined college students' satisfaction with life through gender differences in mediating effects, making it difficult to clarify the fundamental mechanisms of satisfaction with life. In addition, the dimensions of meaning in life represent distinct psychological needs and value orientations (Wang et al., 2016), which may play unique roles in different gender groups. Despite this, few studies have explored gendered growth mindsets and satisfaction with life in collectivistic cultures such as China, highlighting the need for the present study.

Growth mindset and satisfaction with life

People with a growth mindset have more positive cognitive, emotional, and physiological responses when faced with sudden changes (Dweck, 2015). Previous studies have found that students' growth mindset is also negatively correlated with depression and anxiety (Xiong & Xu, 2009; Jiang et al., 2025), and positively correlated with positive emotions of well-being, engagement, interpersonal relationships, and achievement (Wihartati et al., 2026). More importantly, high growth mindset enhances college students' mental health by fostering optimism and subjective well-being (Van Tongeren & Burnette, 2018; Yu & Lian, 2019), ultimately improving satisfaction with life (Zhao et al., 2021; Zhao & Chang, 2024).

The mediating role of self-efficacy

Self-efficacy is one's judgment of their capabilities to organize and execute the courses of action required to achieve given attainments (Bandura, 1977). High self-efficacy is positively correlated with many health-related factors, such as self-esteem, adaptive coping, positive emotions and pro-social behavior tendencies (Wang et al., 2001; Cattelino et al., 2023). Individuals with high self-efficacy tend to regard difficulties and setbacks as challenges, and are more proactive in seeking solutions to cope with stressful situations (Cattelino et al., 2023). By contrast, people with low self-efficacy are positively correlated with problematic behaviors such as depressive moods, eating disorders, and internet addiction (Chng & Fassnacht, 2016; Berte et al., 2021). Previous studies have also found that growth



mindset improves subjective well-being by promoting college students' self-efficacy (Wihartati et al., 2026). Therefore, college students with high self-efficacy are more likely to experience success after hard work, thus improving self-confidence and making greater progress, and then feel more satisfaction with life (Usán Supervía et al., 2023; Ekinçi & Koç, 2023; Czyżowska & Gurba, 2021).

The mediating role of meaning in life

Meaning in life refers to people's understanding and feeling of the meaning of life, as well as the awareness that life has a clear goal, mission, or purpose (Wang et al., 2016). It is widely recognized as a critical mental health factor (Fang & Fu, 2025; Huda et al., 2023). Compared to individuals with higher meaning in life, those with lower exhibit insufficient problem-solving abilities and confidence, leading to increased negative emotions and problematic behaviors (He et al., 2025; Ho et al., 2010). A higher meaning in life is associated with learning behavior, optimistic attitude, psychological resilience, happiness, and satisfaction with life (Wolfram, 2023; Peng et al., 2023). Meaning in life is conducive to healthy behavior (He et al., 2025; Ho et al., 2010), and successful management of negative life events, happiness, and satisfaction with life (Fang & Fu, 2025; Huda et al., 2023).

The chain-mediated effect of self-efficacy and meaning in life

Previous studies reveal that self-efficacy is significantly positively correlated with meaning in life (Yang, 2022; Zhao et al., 2023b). From this, it can be seen that if individuals can handle tasks and challenges correctly, they can enhance their experience of success and deepen their trust in their own abilities. This trust will further encourage individuals to maintain an optimistic attitude when facing difficulties and actively seek solutions (Bandura, 1977). Through this virtuous circle, they can find the value of growth and the deep meaning of life from the summary of each challenge process, which not only strengthens the individual's perception of meaning in life but also promotes the pursuit of meaning in life (Fang & Fu, 2025).

Gendered living

Many studies show that there may be significant differences between men and women in satisfaction with life (Zhou et al., 2019; Joshanloo & Jovanović, 2020). It is worth noting that previous studies on the relationship between gender and satisfaction with life have shown different results. Some studies found that women's satisfaction with life was significantly higher than men's, while others found that men's satisfaction with life was higher. A study on gender differences in satisfaction with life of global and different population groups (1,801,417 participants from 166 countries) shows that gender differences in individual satisfaction with life have even reversed in different countries, regions, economic development levels, and cultural backgrounds (Joshanloo & Jovanović, 2020).

Theoretical foundations

Steger proposed two conceptual models to illustrate the relationship between searching for meaning and presence of meaning: the "Experience → Searching" model posits that people seek meaning only when they feel that life is meaningless, suggesting a negative correlation between experience and seeking; the "Searching → Experience" model argues that people experience more meaning in life through searching for meaning, indicating a positive correlation between seeking and experience. Research has shown that in Eastern cultures (such as China and Japan), there is a positive correlation between seeking and experience, supporting the "Searching → Experience" model (Steger et al., 2008; Wang et al., 2016). Further research findings indicate that the presence of meaning may also be enhanced by searching for meaning, thus improving satisfaction with life (Zhou et al., 2019).

Gender differences in mediating effects

The Chinese context. According to data from the International Student Assessment Program (PISA) of the Organization for Economic Cooperation and Development (OECD) in 2015 and 2018, the satisfaction with life of Chinese college students is lower than the average level of OECD countries (Chang et al., 2024). A study on social mentality in China also found that 53.8% of college students have a moderate to low level of satisfaction with life (Song & Wang, 2017). It is worth noting that, in Chinese traditional culture, boys are endowed with more social expectations and responsibilities (Yang, 2022). They tend to pursue personal growth to cope with challenges (e.g., Chinese proverb: Constant dripping wears the stone; The Great Wall wasn't built in a day.) and adapt to negative environments (Even if a humble room, but with my noble character makes it fragrant.), which helps to enhance their sense of value and promote their perception of the meaning of life (Zhao et al., 2023a; Zhao et al., 2023b).

They usually enjoy more personal privileges, are more willing to understand and treat themselves, and hold a higher ability growth concept (Wang & Xu, 2022). Girls, on the other hand, place greater emphasis on interpersonal relationships and are encouraged to express pro-social emotions such as warmth and gratitude. They will pay more attention to the needs of others than men, which may mean that girls are unlikely to treat themselves with a tolerant and caring attitude (Yarnell et al., 2015), thus affecting satisfaction with life (Yu & Lian, 2019).

The present study examined the following hypotheses:

H1: A growth mindset is associated with higher satisfaction with life.

H2: Males have a higher growth mindset and satisfaction with life.

H3: Self-efficacy plays a mediating role between growth mindset and satisfaction with life for higher satisfaction with life, controlling for meaning in life.

H4: Presence of meaning plays a mediating role between growth mindset and satisfaction with life for higher satisfaction with life.

H5: Searching for meaning and the presence of meaning play a chain mediating role between growth mindset and satisfaction with life.

Methods

Participants and setting

Participants were 1791 college students aged between 17 and 23 years old ($M \pm SD$: 19.31 ± 1.14 years old); Among them, there were 854 male students (47.68%) and 937 female students (52.31%); 562 freshmen (31.4%), 483 sophomores (27.0%), 394 juniors (22.0%), and 352 seniors (19.7%); 766 people (42.8%) in science and engineering majors, 704 people (39.3%) in cultural and historical majors, and 321 people (17.9%) in other majors (arts and sports); 1097 people (61.3%) are from rural areas and 694 people (38.7%) are from urban areas.

Measures

Growth mindset scale-Chinese version

Growth Mindset was measured using the GMS-C, which was developed by Dweck (2006) and translated and revised by Zhai (2018). The scale contains 6 items. Each question ranges from 1 to 6 points (“Strongly disagree” to “Strongly agree”), with a score of 6 points (e.g., “you can always greatly change your intelligence”). The higher the score, the more growth mindset the individual has. Confirmatory factor analysis was conducted on the scale, and the results indicate that the model fits well: $\chi^2/df = 3.08$, CFI = 0.994, TLI = 0.991, RMSEA = 0.034, SRMR = 0.008. In this study, the Cronbach’s alpha for GMS-C was 0.87.

General self-efficacy scale-Chinese version

Self-Efficacy was measured using the GSES-C (Wang et al., 2001). It comprises 10 items on a 4-point Likert scale (1 “Not at all true”~4 “Completely true”) (e.g., “For me, it is easy to adhere to the ideal and achieve the goal”), the higher the individual’s self-efficacy. Confirmatory factor analysis was conducted on the scale, and the results showed that the model fits well: $\chi^2/df = 3.98$, CFI = 0.986, TLI = 0.976, RMSEA = 0.041, SRMR = 0.019. In this study, the Cronbach’s alpha for GSES-C was 0.86.

Meaning in life questionnaire-Chinese version

The MLQ-C was used to assess individuals’ perception and pursuit of the meaning of their own lives (Wang et al., 2016). The MLQ-C comprises 10 items to measure two dimensions of presence of meaning (MLQP) and searching for meaning (MLQS), with 5 items each. Items are scored at 7 points (“Strongly disagree” to 7 = “Strongly agree”) (e.g., “I have found a life purpose that satisfies me”). The higher the total questionnaires, the stronger the individual’s meaning in life. Confirmatory factor analysis was conducted on the total questionnaires and its sub-questionnaires, and the results showed that the model fits well: $\chi^2/df = 3.69$, CFI = 0.991, TLI = 0.982, RMSEA = 0.039, SRMR = 0.022. The Cronbach’s alpha for MLQ-C and its sub-scales were 0.82, 0.83 and 0.81, respectively.

Satisfaction with life scale-Chinese version

The SWLS-C was developed by Diener et al. (1999) and translated and revised by Xiong and Xu (2009). It comprises 5 items rated on a 7-point scale (1 = “Strongly disagree” to 7 = “Strongly agree”) (e.g., “My life is generally in line with my ideals”). Higher scores indicate

greater satisfaction with life. Confirmatory factor analysis was conducted on the scale, and the results showed that the model fits well: $\chi^2/df = 4.99$, CFI = 0.993, TLI = 0.983, RMSEA = 0.047, SRMR = 0.013. In this study, the Cronbach’s alpha for SWLS-C was 0.87.

Procedure

The study was approved by the Ethical Committee of Anhui Business College. This study involved human participants. Informed consent was obtained from all participants prior to their participation in the study, in accordance with ethical guidelines and institutional review board (IRB) requirements. All procedures adhered to the ethical standards of the responsible committee on human experimentation and the principles of the Helsinki Declaration.

Statistical analysis

The present study used SPSS 27.0 and Mplus 7.4 for statistical analysis of the data. Preliminary analyses were conducted in SPSS. Descriptive statistics (means and standard deviations) and Pearson correlation coefficients were computed for all variables.

The primary mediation and moderation hypotheses were tested using SEM in Mplus. First, item parceling was used in the present study, growth mindset, self-efficacy, searching for meaning, presence of meaning, and satisfaction with life were each parceled into two indicators (Matsunaga, 2008). Then the overall fit of the 5-factor measurement model was evaluated. Second, to examine gender as a moderator within the model, a multi-group SEM framework was adopted. We conducted measurement invariance across gender. The invariance was supported if changes in the comparative fit index (ΔCFI) were less than 0.01 and changes in the root mean square error of approximation ($\Delta RMSEA$) were less than 0.015, justifying further cross-group structural comparisons (Chen, 2007). Third, we compared an unconstrained model (M1) with a constrained model (M2). The chi-square difference test ($\Delta \chi^2$) was adopted to test the gender difference of the mediation model. Finally, the significance of the mediating effects were assessed using the bias-corrected percentile bootstrap method with 5000 resamples and a 95% confidence interval (CI). A mediating effect was considered significant if the CI did not include 0.

Results

Descriptive statistics and correlation analysis

Table 1 shows the results of descriptive statistics and correlation analysis. The correlation analysis indicated that growth mindset was significantly positively correlated with college students’ self-efficacy, presence of meaning, searching for meaning, and satisfaction with life; Self-efficacy, presence of meaning, searching for meaning, and satisfaction with life were significantly positively correlated; Presence of meaning and searching for meaning were significantly positively correlated with satisfaction with life. The results supported the testing of subsequent hypotheses.

Table 1. Descriptive statistics and correlation analysis results ($N = 1791$)

Variables	$M \pm SD$	1	2	3	4	5	6	7
1 Gender	0.48 ± 0.50	1						
2 Age	19.31 ± 1.14	–	1					
3 Growth Mindset	3.60 ± 0.94	0.06*	–0.01	1				
4 Self-Efficacy	3.48 ± 0.39	0.05*	–0.04	0.43***	1			
5 Presence of meaning	4.68 ± 0.99	–0.06*	0.01	0.39***	0.38***	1		
6 Searching for meaning	5.10 ± 0.86	0.05*	0.04	0.18***	0.23***	0.28***	1	
7 Satisfaction with Life	4.98 ± 0.89	0.06*	0.02	0.52***	0.46***	0.46***	0.20***	1

Note. * $p < 0.05$, *** $p < 0.001$; M = mean; SD = standard deviation; Gender, Female = 0, Male = 1.

Table 2. Model fit statistics and invariance testing across gender ($N = 1791$)

Models	χ^2/df	CFI	TLI	SRMR	RMSEA [90% CI]	ΔCFI	$\Delta RMSEA$
Growth Mindset							
Configural invariance	2.76	0.997	0.991	0.011	0.044 (0.027, 0.063)		
Metric invariance	6.70	0.996	0.993	0.021	0.039 (0.024, 0.055)	0.001	0.005
Scalar invariance	2.37	0.995	0.993	0.021	0.039 (0.025, 0.053)	0.001	0.001
Strict invariance	2.64	0.992	0.992	0.062	0.043 (0.031, 0.055)	0.003	0.004
Self-Efficacy							
Configural invariance	3.62	0.974	0.957	0.027	0.054 (0.046, 0.062)		
Metric invariance	3.31	0.974	0.963	0.042	0.051 (0.043, 0.059)	0.001	0.003
Scalar invariance	3.10	0.973	0.966	0.041	0.048 (0.041, 0.056)	0.001	0.003
Strict invariance	3.42	0.966	0.961	0.077	0.052 (0.045, 0.059)	0.007	0.004
Searching for Meaning							
Configural invariance	3.94	0.985	0.974	0.027	0.059 (0.045, 0.074)		
Metric invariance	3.95	0.984	0.973	0.032	0.063 (0.047, 0.079)	0.001	0.004
Scalar invariance	4.78	0.980	0.969	0.039	0.062 (0.048, 0.076)	0.004	0.001
Strict invariance	4.79	0.977	0.963	0.047	0.069 (0.056, 0.083)	0.003	0.008
Presence of Meaning							
Configural invariance	5.64	0.982	0.966	0.020	0.058 (0.048, 0.069)		
Metric invariance	5.97	0.981	0.962	0.035	0.064 (0.047, 0.080)	0.001	0.006
Scalar invariance	5.74	0.976	0.965	0.045	0.063 (0.051, 0.073)	0.005	0.001
Strict invariance	7.11	0.968	0.961	0.058	0.069 (0.051, 0.090)	0.008	0.006
Satisfaction with Life							
Configural invariance	3.93	0.990	0.975	0.018	0.057 (0.037, 0.079)		
Metric invariance	3.60	0.982	0.977	0.033	0.054 (0.039, 0.069)	0.008	0.003
Scalar invariance	3.20	0.989	0.981	0.031	0.050 (0.033, 0.068)	0.007	0.004
Strict invariance	2.96	0.982	0.983	0.046	0.047 (0.034, 0.061)	0.007	0.003

The mediating effects

The measurement model fit was good: $\chi^2/df = 3.84$, CFI = 0.989, TLI = 0.980, RMSEA = 0.040, SRMR = 0.016. Table 2 shows the changes of fitting index (ΔCFI and $\Delta RMSEA$) are both less than 0.01, supporting full measurement invariance (Chen, 2007), thereby justifying the subsequent analyses.

First, after controlling gender and age, we examined the direct effect of growth mindset on college students' satisfaction with life, and found that the path coefficient was significant ($\beta = 0.47$, $t = 15.82$, $SE = 0.03$, $p < 0.001$), **H1** was supported. Second, the mediator variables and dependent variable were added to the model to get the path model shown in Figure 1. The results showed that all path coefficients reached a statistically significant level

($p < 0.001$), and the model fit was good: $\chi^2/df = 3.48$, CFI = 0.987, TLI = 0.975, RMSEA = 0.037, SRMR = 0.016.

Finally, the bias-corrected percentile bootstrap method was used to examine the mediating effect. The results showed that self-efficacy (indirect effect = 0.104, 95% CI: [0.070, 0.139]), searching for meaning (indirect effect = 0.017, 95% CI: [0.013, 0.021]) and presence of meaning (indirect effect = 0.079, 95% CI: [0.059, 0.101]) played a partial mediating role between growth mindset and satisfaction with life, and self-efficacy → searching for meaning (indirect effect = 0.010, 95% CI: [0.003, 0.016]), self-efficacy → presence of meaning (indirect effect = 0.029, 95% CI: [0.019, 0.049]), searching for meaning → presence of meaning (indirect effect = 0.010, 95% CI: [0.002, 0.017]) and self-efficacy → searching → presence of meaning (indirect effect = 0.006, 95% CI: [0.001, 0.012]) played a chain mediating role (see Figure 1), the

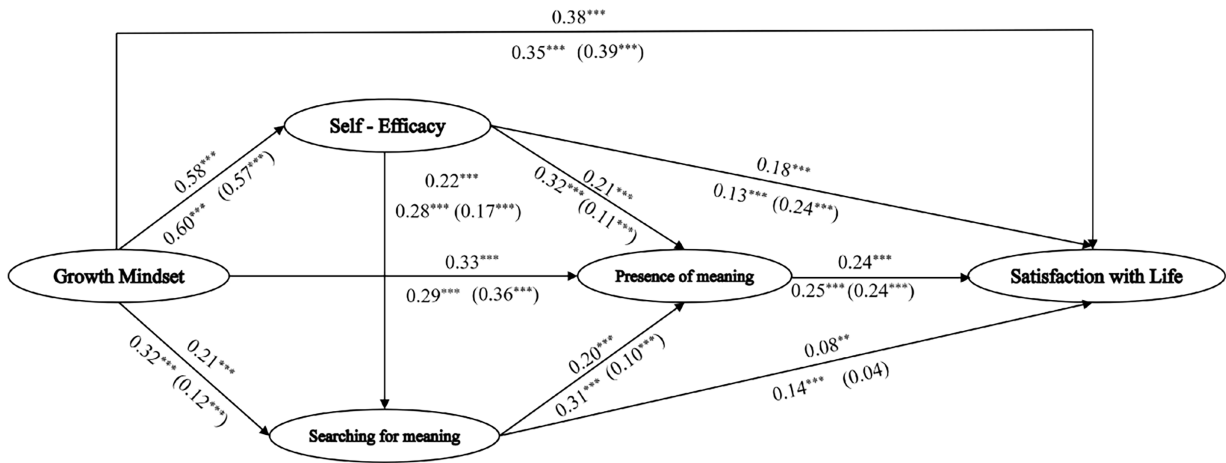


Figure 1. Mediation model and gender differences ($N = 1791$, Male = 854, Female = 937). Note. ** $p < 0.01$, *** $p < 0.001$, the same applies below; standardized path coefficients; Overall sample is displayed in bold at the top, with males outside parentheses and females inside parentheses, and the same below.

Table 3. Multi-group comparisons of mediating models

Models	χ^2	df	CFI	TLI	SRMR	RMSEA 95% CI
Model Male($N=854$)	91.77	30	0.980	0.963	0.022	0.049 (0.038, 0.061)
Model Female($N=937$)	71.71	30	0.988	0.978	0.018	0.039 (0.027, 0.050)
M1 Freestimationmodel	256.83	100	0.976	0.960	0.022	0.042 (0.036, 0.048)
M2 Constrainedpathmodel	293.34	110	0.972	0.957	0.027	0.043 (0.037, 0.049)

total indirect effect accounts for 40.16%. Hence **H3–H5** were supported.

Gender differences moderation

Table 3 presents the fitting indices of unconstrained and constrained models for multiple groups of SEM. The fitting results of M1 and M2 showed that $\Delta\chi^2 = 36.28$, $\Delta df = 10$, $p < 0.001$. It reveals that gender difference emerges in the overall mediation model. By comparing the structural equation model of male and female, there is a significant gender difference in the path analysis, as shown in Figure 1. In the male model, searching for meaning significantly predicts satisfaction with life ($\beta = 0.14$, $t = 4.97$, $SE = 0.02$, $p < 0.001$). In the female model, searching for meaning does not significantly predict satisfaction with life ($\beta = 0.04$, $t = 0.89$, $SE = 0.05$, $p = 0.331$). The results indicate that gender moderates the mediation model. Hence **H2** was supported.

Self-efficacy and meaning in life mediation

Table 4 presents the mediating effects in the male and female models. For male, all the mediating effects were significant (all 95% confidence intervals didn't include 0). For female, the mediating effect of searching for meaning was not significant; the chain mediation effect of self-efficacy and searching for meaning between growth mindset and satisfaction was not significant. Furthermore, self-efficacy, searching for meaning and presence of meaning play a chain mediating role between growth mindset and satisfaction with life (the 95% confidence intervals didn't include 0).

Discussion

The present study examined the effects of a growth mindset on college students' satisfaction with life. Consistent with previous research results (Van Tongeren & Burnette, 2018; Yu & Lian, 2019), the growth mindset is associated with higher satisfaction with life. It is worth noting that a growth mindset can enable individuals to accept their inner feelings from a balanced perspective (e.g., Chinese proverb: Don't be arrogant if you win, don't be discouraged if you lose), and look at their negative situation (Even if a humble room, but with my noble character makes it fragrant.). They tend to regard difficulties or failures as opportunities for growth (Turn inward and examine yourself; glad to have one's errors pointed out.), rather than judging your personality, potential or value, so that they can be more calm and optimistic in their study and life, and have higher satisfaction with life on the basis of objective evaluation of themselves (Yu & Lian, 2019; Jiang et al., 2025).

The university phase is a critical development period for the consolidation of core values and worldview formation, and mindset will have an important impact on college students' mental health and behavior. Individuals' mindset orientations differentially shape their tripartite cognitive-affective-behavioral responses when facing success, failure, and challenges, subsequently influencing learning behavior and mental health (Dweck, 2015; Wiharati et al., 2026). It can be seen that cultivating a growth mindset is of positive significance to individual growth and development. A growth mindset can help college students correctly view setbacks and pressures in learning and life,

Table 4. Gender differences in the mediated effects ($N = 1791$)

Path analysis	Male			Female		
	Indirect effect	Effect ratio	95% CI	Indirect effect	Effect ratio	95% CI
GMS→GSES→SWLS	0.078	11.84%	(0.043, 0.116)	0.137	21.14%	(0.082, 0.195)
GMS→MLQP→SWLS	0.073	11.08%	(0.039, 0.109)	0.086	13.27%	(0.059, 0.140)
GMS→MLQS→SWLS	0.045	6.83%	(0.024, 0.065)	0.005	0.77%	(−0.003, 0.013)
GMS→GSES→MLQP→SWLS	0.048	7.28%	(0.028, 0.069)	0.015	2.31%	(0.002, 0.031)
GMS→GSES→MLQS→SWLS	0.026	3.95%	(0.011, 0.040)	0.004	0.62%	(−0.004, 0.013)
GMS→MLQS→MLQP→SWLS	0.025	3.79%	(0.009, 0.042)	0.003	0.46%	(0.001, 0.006)
GMS→GSES→MLQS→MLQP→SWLS	0.013	1.97%	(0.007, 0.020)	0.002	0.31%	(0.001, 0.004)
Total indirect effect	0.308	46.74%	(0.277, 0.342)	0.252	38.89%	(0.214, 0.281)
Total effect	0.659	100%	(0.587, 0.732)	0.648	100%	(0.583, 0.724)

Note. GMS, Growth Mindset Scale; GSES, General Self-Efficacy Scale; MLQS, Meaning in Life Questionnaire—Searching for Meaning; MLQP, Meaning in Life Questionnaire—Presence of Meaning; SWLS; Effect Ratio = (Indirect Effect/Total Effect); SWLS, Satisfaction with Life Scale.

and have higher satisfaction with life on the basis of an objective evaluation of themselves (Yu & Lian, 2019).

Mediating effect of self-efficacy and meaning in life

Self-efficacy plays a partial mediating role between a growth mindset and satisfaction with life. Consistent with previous findings (Wihartati et al., 2026; Usán Supervía et al., 2023; Ekinci and Koç, 2023). Individuals with a high growth mindset believe abilities can be constantly developed through deliberate practice and continuous learning. The belief makes them more proactive when facing challenges and improves their self-efficacy. Then the high self-efficacy will, in turn, strengthen individuals' positive evaluation of life and further promote the improvement of satisfaction with life (Czyżowska & Gurba, 2021).

The presence of meaning was found to partially mediate the relation between growth mindset and satisfaction with life. Furthermore, searching for meaning and presence plays the chain mediating role. The results are consistent with the previous (Zhou et al., 2019; Wolfram, 2023). The growth mindset can help to enhance the internal self-worth of college students, such as self-esteem, self-identity, and so on (Zhao et al., 2023a; Zhao et al., 2023b), thus improving college students' sense of mastery and meaning of life, urging individuals to search for meaning of life. According to the "Searching → Experience" model (Steger et al., 2008; Wang et al., 2016), people's presence of meaning can be effectively achieved through searching for meaning, thus promoting satisfaction with life. The confirmed chained mediation effect indicates that a growth mindset contributes to searching for meaning, which in turn promotes the presence of meaning, thus increasing satisfaction with life.

In addition, the results also further found that self-efficacy and meaning in life played a chain mediating role between growth mindset and satisfaction with life. This is consistent with the previous research results of self-efficacy promoting the meaning of life (Zhang et al., 2020; Yang, 2022; Zhao et al., 2023b). It shows that the individuals' meaning in life promoted by self-efficacy also laid a solid foundation for the improvement of their satisfaction with life, making satisfaction with life improved. In addition, the meaning in life itself, as an internal power

source (Wang et al., 2016), can guide individuals to set clear goals and be hopeful about the future (e.g., Chinese proverb: Constant dripping wears the stone; The Great Wall wasn't built in a day.), which further promotes the improvement of their satisfaction with life. Therefore, for college students, cultivating a growing mindset, improving self-efficacy and strengthening meaning in life may all promote satisfaction with life.

Gender differences in mediation models

There emerged a significant gender difference in the chain mediation model of the pathway "searching for meaning → satisfaction with life". It may be because the dimensions of the meaning in life represent different psychological needs and value orientations (Wang et al., 2016). Presence of meaning is more related to individuals' positive feelings and emotional connection to life, while searching for meaning tends to reflect individuals' pursuit of goal exploration and deep understanding. This difference may make males and female build their own psychological state based on different internal driving mechanisms when facing satisfaction with life. It shows that a growth mindset can promote males' satisfaction with life through self-efficacy, searching for meaning and self-efficacy → searching for meaning, while female cannot promote their satisfaction with life only by improving searching for meaning. On the one hand, just like "a man who can bend and stretch" as stated in famous Chinese proverbs, males who grew up in the context of Chinese culture are endowed with more social expectations and responsibilities. This means that they have more rights and resources to face failures and setbacks. On the other hand, girls may prefer to build satisfaction with life through positive self-cognition and emotional connection (Zhou et al., 2019). It means that females are encouraged to attribute their failures to internal factors. This may damage their self-efficacy, making it difficult for them to significantly promote satisfaction with life by simply improving their searching for meaning, even if they have a growth mindset when facing challenges.

Implications and limitations

The present study deepens the understanding of the social cognitive theory and the two-dimensional model of meaning in life. The results will expand the overall investigation of meaning in life from the single component of meaning in life to the discussion of a two-dimensional model. Furthermore, the results extend social cognitive theory by incorporating a growth mindset as a key personal factor within the triadic reciprocity framework.

At the practical level, results enriched the research in the field of positive psychology of college students, and provided effective empirical evidence and intervention suggestions to promote their satisfaction with life, so as to treat the physical and mental health problems of college students scientifically and reasonably. The research is conducive to improving college students' growth mindset, self-efficacy, meaning in life, and satisfaction with life in their mental health practice. Specifically, educators should pay attention to the gender differentiated performance of students' mindsets and design personalized intervention programs for students of different genders.

The current study also has some shortcomings that need to be further improved in future research. Firstly, the study adopted a cross-sectional research design. Although previous theoretical and empirical evidence provided a solid foundation for this research, it is difficult to infer causal relationships between variables. In the future, further investigation and verification through experiments and longitudinal studies are needed to reveal the mechanisms of action between variables in more depth. Secondly, all data in this study were obtained from self-reports of college students. There may be a social approval effect leading to dishonest responses. Future research can attempt to collect data from multiple sources of information.

Conclusion

We examined the influence of growth mindset on college students' satisfaction with life and its gender difference. The results show that self-efficacy and meaning in life play a mediating role. Besides, the gender differences emerged in the mediating pathways linking growth mindset, self-efficacy, satisfaction with life, searching for meaning and presence of meaning. That is, the promotion effect of searching for meaning on satisfaction with life is only significant among male students. The results provide a new perspective for intervention measures and research on satisfaction with life among college students.

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Ethics Approval: The study was approved by the Ethical Committee of Anhui Business College. This study involved human participants. Informed consent was obtained from all participants prior to their participation in the study, in accordance with ethical guidelines and institutional review board (IRB) requirements. All procedures adhered to the ethical standards of the responsible committee on human experimentation and the principles of the Helsinki Declaration.

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