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Building better learners: exploring positive emotions and life satisfaction as keys to academic engagement

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Purpose: This study investigates the relationships between positive emotions, life satisfaction, and academic engagement (absorption, vigor, and dedication) among undergraduates. Drawing on the broaden-and-build theory, the research aims to clarify how positive emotions influence academic engagement, both directly and indirectly, through enhanced life satisfaction.

Methods: A total of 335 university students (197 female, 138 male) from four universities in southern Sichuan, China, participated in the research. Data were collected through three online self-report questionnaires measuring positive emotions, life satisfaction, and academic engagement.

Findings: The results demonstrate that positive emotions have significant direct effects on life satisfaction and academic engagement. Furthermore, life satisfaction mediated the relationship between positive emotions and academic engagement, highlighting crucial roles in enhancing student involvement.

Significance: Examine how positive emotions affect academic engagement in Chinese universities, underscoring the importance of cultivating positive atmosphere for both personal wellbeing and academic success. The findings also reinforce the Broaden and Build theory, showing that roles of positive emotions as essential resources for life satisfaction and academic development.

KEYWORDS

academic engagement, life satisfaction, positive emotions, undergraduates, higher education

1 Introduction

In recent years, the role of psychological wellbeing in educational settings has gained increasing attention, particularly for its impact on students' academic engagement and success. Academic engagement, characterized by dimensions such as absorption, dedication, and vigor, is a critical predictor of motivation, persistence, and performance (Casuso-Holgado et al., 2013). Academic engagement has been identified as a significant predictor of success, retention and perseverance in higher education (Denovan et al., 2020). Consequently, Kuh (2009) proposes engagement as a proxy indicator of educational quality. Although academic engagement has been widely studied through behavioral and cognitive frameworks, the role of psychological wellbeing - especially positive emotions and life satisfaction - remains less explored (Datu and Bernardo, 2020; Usán Supervía and Salavera Bordás, 2019).

Academic settings are often marked by significant challenges and stressors that often affect students' mental health and academic achievements (Li, 2017). In China, the transition to university life represents a period of adjustment to the intersection of academic and social

spheres, and undergraduates are undergoing a pivotal transitional phase (Wang et al., 2014). The pressures of rigorous academic demands, adapting to new living environments, financial burdens, and a competitive job market have rendered college students a high-risk group for mental health issues. For example, the highly competitive educational environment is characterized by an intense focus on exams and rankings, creating a high-pressure context where students often feel compelled to outperform their peers (Zhang et al., 2022). Therefore, psychological issues such as anxiety, depression, sleep disorders, and self-harm are prevalent among Chinese college students, though detection rates vary across studies. Specifically, a meta-analysis revealed that the prevalence of anxiety is 13.7%, depression is 20.8%, and sleep problems are 23.5% (Guo-liang, 2021). These statistics highlight the urgency of addressing these issues is vital to fostering psychological wellbeing (positive emotions and life satisfaction), which in turn enhances lifelong learning, improves time management, and optimizes academic potential (Dong et al., 2024; Lei et al., 2016; Zhao, 2024).

Universities play a pivotal role in creating supportive environments that prioritize students' psychological wellbeing. Such environments can help students thrive academically and contribute meaningfully to society. Research has shown that a supportive educational environment promotes wellbeing, which subsequently enhances academic engagement (Lum et al., 2019; Tharani et al., 2017). In China, where academic success is often viewed as a familial and societal responsibility, students face intense pressure to perform, which can impact their emotional wellbeing and academic engagement (Deng et al., 2022). Increasingly, educational researchers have explored how psychological factors—specifically positive emotions and life satisfaction—can enhance students' academic engagement, a key factor in maintaining motivation, persistence, and overall academic performance (Sun and Liu, 2023).

2 Theoretical rationale and hypotheses

Positive emotions are foundational to the Broaden and Build Theory (B&B Theory), which posits that positive emotional states expand individuals' cognitive and behavioral resources, fostering resilience, creativity, and psychological growth (Li et al., 2020; Pekrun et al., 2017). In academic settings, positive emotions enhance focus, cognitive flexibility, and problem-solving abilities—critical components for engaged learning (Derakhshan and Yin, 2024). By promoting an open mindset, positive emotions facilitate deeper learning processes, allowing students to approach academic challenges with enthusiasm and perseverance. Most importantly, over time, these positive emotions can aggregate into significant resources with the potential to effect profound changes in individuals' lives, forecasting valued outcomes (Cohn et al., 2009).

H1: Positive emotions significantly influence life satisfaction.

Researchers measured undergraduate students' emotions daily for 1 month and life satisfaction at the beginning and end of the month. Their results showed that positive emotions (not negative emotions) predicted increases in life satisfaction (Cohn et al., 2009). A further study of 8,557 participants from 46 countries demonstrated that positive emotions were more strongly associated with life satisfaction

than the absence of negative emotions (Kuppens et al., 2008). According to the B&B theory, the broadened cognitive scope induced by positive emotions enables individuals to build enduring personal resources, such as optimism, social connections, and coping mechanisms (Fredrickson, 2001). These resources contribute to higher life satisfaction, as individuals experience greater self-efficacy, positive relationships, and a sense of purpose (Liu et al., 2024). Thus, positive emotions are not transient experiences but foundational contributors to sustained life satisfaction.

H2: Positive emotions significantly influence academic engagement (absorption, dedication, and vigor)

Positive emotions enhance intrinsic motivation, fostering students' dedication to learning tasks and increasing their vigor and absorption in academic activities (Schaufeli et al., 2002). Emotionally positive students exhibit higher persistence, creativity, and problem-solving abilities, which are essential for sustained academic engagement (Derakhshan and Yin, 2024). Numerous studies have demonstrated that students who frequently feel positive emotions may achieve higher academic grades (Datu, 2018), demonstrate better self-regulation (Villavicencio and Bernardo, 2016), and better academic engagement (King et al., 2015).

H3: Life satisfaction positively influences academic engagement (absorption, dedication, and vigor).

Life satisfaction reflects a cognitive evaluation of one's overall quality of life and is closely linked to psychological wellbeing (Demirezen and Ötken, 2022). Students who are satisfied with their lives tend to have better mental health, greater resilience, and stronger social support systems—all of which enhance their capacity to engage academically (Turan, 2021). According to Datu, students who report high levels of life satisfaction exhibit higher levels of academic achievement and engagement (Datu, 2018). More specifically, research suggests that greater life satisfaction is linked to increased cognitive, behavioral, and emotional engagement (Heffner and Antaramian, 2016).

H4: Life satisfaction mediates the relationship between positive emotions and academic engagement (absorption, dedication, and vigor).

It is commonly thought that positive emotions can directly influence academic engagement (Shen et al., 2024). Besides, it has also been consistently observed positive emotions showing a significant association with life satisfaction (Cohn et al., 2009). Additionally, satisfaction is a crucial aspect of student achievement, life satisfaction can provide incremental validity over affective states in predicting student engagement (Heffner and Antaramian, 2016). Therefore, considering the mediation role of life satisfaction between positive emotions and engagement is crucial for providing a nuanced understanding of how emotional wellbeing translates into academic success.

By investigating these hypotheses (see Figure 1) through a quantitative approach and structural equation modeling, this study aims to contribute to the literature on the interplay between positive emotions, life satisfaction, and academic engagement. The findings will offer insights for educational practices and institutional support programs designed to enhance student wellbeing and academic success.

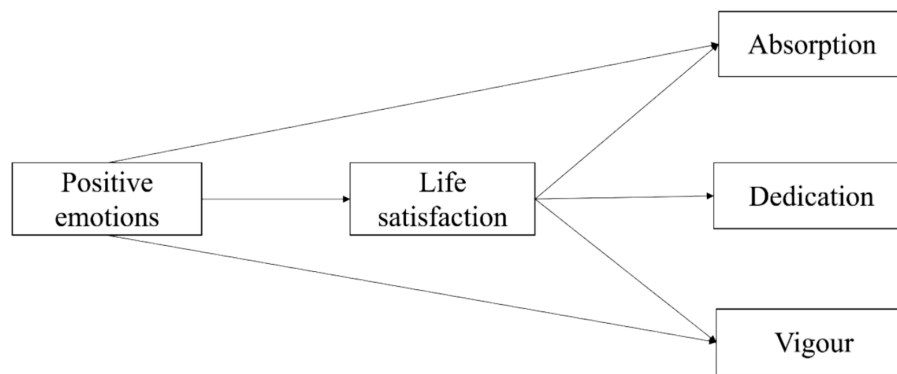


FIGURE 1
The proposed model.

3 Methods

3.1 Participants

The study sample comprised 335 undergraduate students from four Chinese universities across three faculties. Of these participants, 197 (58.8%) were female, freshmen ($n = 130$, 38.8%), followed by juniors ($n = 119$, 35.5%), sophomores ($n = 59$, 17.6%), and seniors ($n = 27$, 8.1%) (see Table 1).

3.2 Materials

3.2.1 Positive and Negative Affect Scale

The Positive and Negative Affect Scale (PANAS) (Watson et al., 1988) was used to assess students' positive emotional experiences (Watson et al., 1988). Only the Positive Affect subscale, consisting of 10 items, was utilized in this study, as it directly aligns with the focus on positive emotional states related to academic engagement. Each statement was scored on a five-point Likert-scale ranging from 1 (very slightly or not at all) to 5 (extremely), with greater average scores reflecting greater positive affect. The exclusion of the Negative Affect subscale was based on the study's focus on how positive emotions specifically impact engagement outcomes.

3.2.2 Satisfaction with Life Scale

To assess life satisfaction, the Satisfaction with Life Scale (SWLS) was administered (Diener et al., 1985). This widely validated 5-item scale uses the seven-point Likert format (1 = strongly disagree, 7 = strongly agree) to assess respondents' overall cognitive judgment of life satisfaction. Higher average rating on SWLS indicated higher life satisfaction. SWLS is frequently used in educational and psychological research, supporting its relevance to understanding students' broader wellbeing.

3.2.3 Academic Engagement Scale

Academic engagement was measured by a modified version of the Utrecht Work Engagement Scale for Students (UWES-S) (Schaufeli et al., 2006). UWES-S assesses three dimensions—dedication, vigor, and absorption—each with three items adapted for academic contexts by replacing terms like “work” with “study.” Respondents rated each

TABLE 1 Demographic statistics ($N = 335$).

Demographic variables	Frequency (n)	Percent (%)
Gender		
Male	138	41.2%
Female	197	58.8%
Grade		
Freshman	130	38.8%
Sophomore	59	17.6%
Junior	119	35.5%
Senior	27	8.1%
Total	335	100%

item on a seven-point Likert scale (0 = never, 6 = always), with higher scores indicating stronger engagement in each dimension. The adapted version has been validated for academic contexts, ensuring its reliability in measuring students' academic engagement.

3.3 Data collection

The study was conducted among full-time undergraduate students in Bachelor's programs at universities in southern Sichuan, China. Using the fishbowl technique, four universities were randomly selected from a total of five universities in the region (Gog, 2015). To ensure a representative sample, we employed multistage cluster sampling within each selected university, focusing on three faculties—Education, Literature, and Management—due to practical constraints. Although economic and time constraints limited our sampling to these faculties, this may affect the generalizability of our findings across all academic disciplines.

The inclusion criteria required participants to be full-time undergraduate students actively enrolled in a Bachelor's program within the selected faculties. Students who were part-time, enrolled in associate degree programs, or from other faculties were excluded to ensure a consistent academic context. Additionally, students on leave of absence, those who had withdrawn, or those who declined to participate were also excluded from the study.

3.4 Reliability and validity

To ensure the measurement model's robustness, we assessed internal consistency, composite reliability (CR) and convergent validity for each construct.

Cronbach's Alpha (CA) values indicate high internal consistency, with all constructs surpassing the 0.70 threshold: positive emotions (CA = 0.925), life satisfaction (CA = 0.836), absorption (CA = 0.908), dedication (CA = 0.913), and vigor (CA = 0.839). CR scores further support reliability, all above 0.70 (see Table 2). Average Variance Extracted (AVE) values confirm convergent validity for each construct by exceeding the 0.50 benchmark, with factor loadings ranging from 0.520 to 0.936, indicating item alignment with constructs despite some variability.

3.5 Variable measurement

The model fit for the constructs—positive emotions, life satisfaction, and academic engagement—was evaluated using multiple goodness-of-fit indices to confirm the adequacy of the measurement model. Specifically, the chi-square/degree of freedom ratio (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Relative Fit Index (RFI), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI) were used to assess model fit. Each of these indices provides unique insights into model performance: for example, CMIN/DF assesses model parsimony, while RMSEA considers error per degree of freedom, and CFI, TLI, and NFI compare the fit of the proposed model to a null model.

The results demonstrate that the model achieves an excellent fit across all indices, with each construct exceeding the commonly accepted thresholds (see Table 3). Notably, CFI and NFI scores above 0.98 indicate exceptional model fit, suggesting the robustness of the measurement model. Although RMSEA for life satisfaction is close to the 0.05 threshold, it remains within acceptable bounds, indicating good model fit for all constructs.

Table 3 provides a summary of the goodness-of-fit indices, further confirming the reliability of the constructs used in this study.

3.6 Statistical analysis

SPSS 26.0 (IBM, Chicago, IL, United States) (Bolin, 2014) and AMOS 24.0 were used for statistical analysis. SPSS facilitated preliminary data analysis, including descriptive statistics, correlation analysis. AMOS was employed to examine the hypothesized mediating model via structural equation modeling (SEM), with model fit evaluated via indices such as CFI, TLI, and RMSEA. All significance tests were conducted with a threshold of $p < 0.05$, and effect sizes were calculated to evaluate the practical significance of the findings.

4 Results

4.1 Model fit

To evaluate the robustness of the structural (mediated) model, several fit indices were examined, as shown in Table 4. Although some indices, specifically GFI (0.847), NFI (0.885), and RFI (0.866), are

TABLE 2 Construct items measurement model.

Constructs	Factor loadings
Positive emotions (CA = 0.925, CR = 0.922, AVE = 0.567)	
PE1	0.731
PE2	0.693
PE3	0.703
PE4	0.757
PE5	0.795
PE7	0.749
PE8	0.768
PE9	0.767
PE10	0.804
Life satisfaction (CA = 0.836, CR = 0.842, AVE = 0.522)	
LS1	0.792
LS2	0.755
LS3	0.822
LS4	0.683
LS5	0.520
Academic engagement	
Absorption (CA = 0.908, CR = 0.907, AVE = 0.766)	
AEA1	0.845
AEA2	0.908
AEA3	0.871
Dedication (CA = 0.913, CR = 0.914, AVE = 0.780)	
AED1	0.883
AED2	0.914
AED3	0.851
Vigor (CA = 0.839, CR = 0.862, AVE = 0.685)	
AEV1	0.936
AEV2	0.921
AEV3	0.574

PE, positive emotions; LS, life satisfaction; AEA, academic engagement-absorption; AED, academic engagement-dedication; AEV, academic engagement-vigor.

marginally below the ideal threshold of 0.90, the majority of indices, including CFI (0.919), TLI (0.906), IFI (0.920), and RMSEA (0.055), meet or exceed recommended levels. This suggests that the model demonstrates an adequate fit overall. The slight deviations in GFI, NFI, and RFI may result from sample characteristics or the model's complexity, which warrant further investigation in future studies. Nevertheless, the overall pattern of the fit indices supports the robustness of the hypothesized relationships within the model, demonstrating an acceptable fit to the data.

4.2 Correlation analysis

Table 5 shows mean, standard deviations, and correlations between the primary study variables, with the square root of AVE values for each construct on the diagonal. The high correlations between positive emotions and other constructs, such as life satisfaction ($r = 0.662$, $p < 0.01$), absorption ($r = 0.600$, $p < 0.01$), dedication ($r = 0.659$,

TABLE 3 Goodness-of-fit-index model summary.

Goodness of fit index	Values results			
	Positive emotions	Life satisfaction	Academic engagement	Model fit
CMIN/DF	1.219	1.883	1.183	CMIN/DF < 5
RESEA	0.026	0.051	0.023	RESEA ≤ 0.08
NFI	0.986	0.989	0.989	NFE ≥ 0.90
CFI	0.997	0.995	0.998	CFI ≥ 0.90
TLI	0.996	0.987	0.997	TFI ≥ 0.90
RFI	0.976	0.973	0.983	RFI ≥ 0.90
GFI	0.983	0.991	0.982	GFI ≥ 0.90
AGFI	0.964	0.966	0.966	AGFI ≥ 0.90

TABLE 4 Model fit indices for the structural model.

Model	χ^2/df	GFI	CFI	NFI	TLI	RFI	IFI	RMSEA
Structural model (mediated model)	3.015	0.847	0.919	0.885	0.906	0.866	0.920	0.055

χ^2/df , relative Chi-square; GFI, goodness-of-fit index; CFI, comparative fit index; NFI, normed fit index; TLI, Tucker Lewis index; RMSEA, root mean square error of approximation.

TABLE 5 Means, standard deviations, correlations of variables and square root of AVE.

Variables	Mean	SD	1	2	3	4	5
Positive emotions	3.403	0.611	0.753				
Life satisfaction	4.288	1.052	0.662**	0.722			
Absorption	4.274	0.866	0.600**	0.565**	0.875		
Dedication	4.320	0.936	0.659**	0.602**	0.445**	0.828	
Vigor	4.028	1.015	0.675**	0.615**	0.455**	0.494**	0.883

* $p < 0.05$, ** $p < 0.01$. SD, standard deviation; AVE, average variance extracted. The squared root of AVE of each construct presented on the diagonal with bold values.

$p < 0.01$), and vigor ($r = 0.675$, $p < 0.01$), indicate strong associations, suggesting that positive emotions are closely related to various aspects of academic engagement and life satisfaction.

The square roots of the AVE values on the diagonal support discriminant validity, as the AVE square root of each construct exceeds its correlations with other constructs, demonstrating that each construct is distinct from the others. Specifically, the AVE square roots for positive emotions (0.753), life satisfaction (0.722), absorption (0.875), dedication (0.828), and vigor (0.883) confirm that each construct is more closely related to its own indicators than to those of other constructs, in line with the Fornell-Larcker criterion.

4.3 The mediating effect of life satisfaction

The regression weights for the paths in the mediated model (Table 6) demonstrate significant effects, with standardized coefficients indicating moderate to large effect sizes based on Cohen's (1988) guidelines. Positive emotions show a large effect on life satisfaction ($\beta = 0.662$), suggesting a strong association. For the dimensions of engagement, positive emotions have moderate effects on absorption ($\beta = 0.402$), dedication ($\beta = 0.465$), and vigor ($\beta = 0.476$). Additionally, life satisfaction's effects on absorption ($\beta = 0.299$), dedication ($\beta = 0.300$), and vigor ($\beta = 0.294$) were moderate, underscoring its significant but slightly weaker influence compared to positive emotions.

To assess the mediating influence of life satisfaction, a bootstrap analysis with bias-corrected 95% confidence intervals was conducted (Table 7). The results confirm the mediating influence of life satisfaction

between positive emotions and each engagement dimension. The indirect effects of life satisfaction were moderate, with standardized coefficients ranging from $\beta = 0.195$ to 0.199. The effect sizes suggest that life satisfaction plays a meaningful mediating role, though the magnitude is somewhat smaller than the direct effects of positive emotions on engagement dimensions. The finding further highlights life satisfaction's partial mediation role, emphasizing that while positive emotions directly enhance engagement, life satisfaction provides an additional psychological pathway amplifying this effect.

These findings highlight life satisfaction as a critical psychological mechanism by which positive emotions translate into higher levels of academic engagement. This suggests that positive emotions alone may not fully drive engagement; rather, it is through the enhancement of life satisfaction that positive emotions can effectively foster engagement in academic activities. Life satisfaction appears to provide a psychological foundation that amplifies students' capacity for absorption, dedication, and vigor, aligning with broader theories of life satisfaction and engagement (Figure 2).

5 Discussion

This study examines the mediation of life satisfaction between positive emotions and academic engagement dimensions (absorption, dedication, and vigor) among undergraduate students. The findings support the hypothesized relationships and highlight life satisfaction as a significant mediator, shedding light on how positive emotions foster academic engagement.

TABLE 6 The regression weights for the paths in the mediated model.

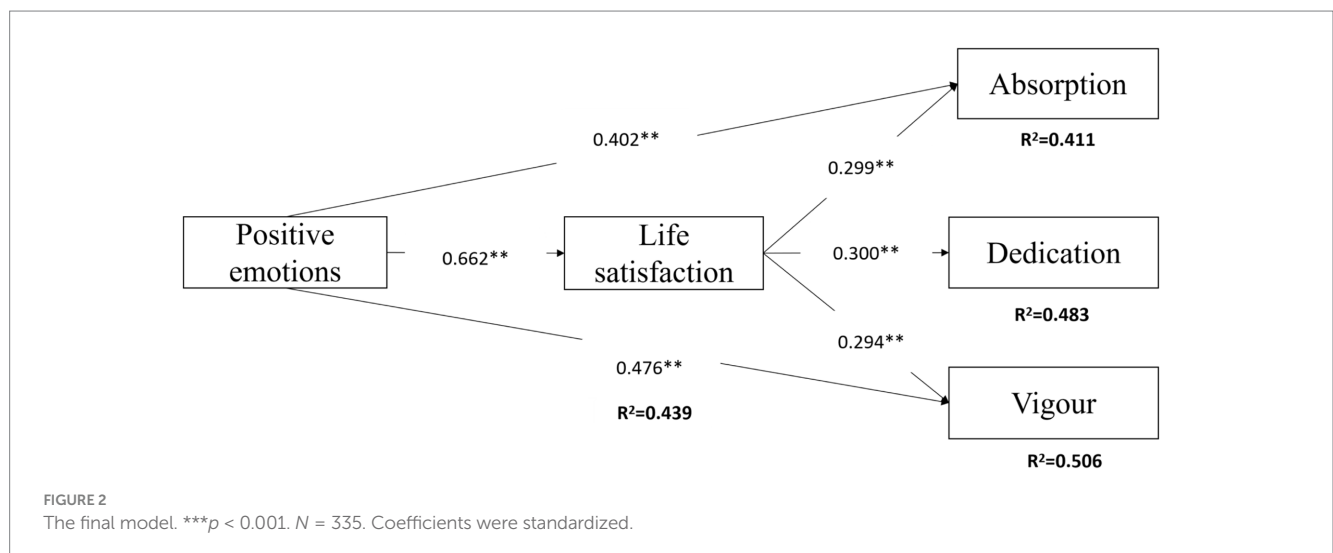
Hypothesized relationship	<i>B</i>	β	S.E.	C.R.	<i>p</i>
Positive emotions → life satisfaction	1.208	0.662	0.121	9.941	0.000
Positive emotions → absorption	0.647	0.402	0.120	5.389	0.000
Positive emotions → dedication	0.779	0.465	0.121	6.458	0.000
Positive emotions → vigor	0.920	0.476	0.137	6.724	0.000
Life satisfaction → absorption	0.264	0.299	0.065	4.070	0.000
Life satisfaction → dedication	0.318	0.300	0.072	4.429	0.000
Life satisfaction → vigor	0.270	0.294	0.064	4.238	0.000

B, unstandardized regression weight; S.E., standard error; β , standardized regression weight; C.R., critical ratio.

TABLE 7 Bootstrap results of mediation effect of life satisfaction.

Path	β	<i>p</i>	95% CI BC	
			LB	UB
Positive emotions → life satisfaction → absorption	0.198	0.030	0.027	0.482
Positive emotions → life satisfaction → dedication	0.195	0.028	0.032	0.468
Positive emotions → life satisfaction → vigor	0.199	0.019	0.045	0.401

β , standardized regression weight; 95% CI BC, bias corrected at 95% confident interval; LB, lower boundary; UB, upper boundary.



5.1 Positive emotions and life satisfaction

Aligned with the B&B theory, the results show that positive emotions significantly enhance life satisfaction, suggesting that positive emotions do more than contribute to immediate happiness; they help build enduring psychological resources that improve wellbeing (Fredrickson, 2004). In the context of Chinese higher education, where students often face high academic pressure and competitive environments, fostering positive emotions may provide a critical buffer against stress (Li, 2017; Zhang et al., 2024). This finding complements prior research demonstrating that individuals who frequently experience positive emotions tend to report higher life satisfaction, supporting holistic development and better adjustment in challenging academic settings (Cheng and Lin, 2023). These insights highlight the importance of integrating practices that promote positive emotions—such as mindfulness programs or positive reinforcement strategies—into educational policies to bolster students’ life satisfaction and resilience.

5.2 Positive emotions and academic engagement

Our findings confirm that positive emotions significantly improve the dimensions of academic engagement: absorption, dedication, and vigor. The B&B theory underscores that positive emotions serve as resources for sustained engagement by fostering lasting psychological capacities (Fredrickson, 2004). Specifically, students who experience frequent positive emotions are more likely to demonstrate cognitive focus, emotional commitment, and sustained energy in academic tasks (Shafait et al., 2021; Yang et al., 2024). While our findings align with the broaden-and-build theory (Fredrickson, 2004) and prior research on positive emotions and academic engagement (Shafait et al., 2021; Yang et al., 2024), they also raise important questions about the generalizability of these effects across different cultural and educational contexts. For instance, while Chinese students show a strong connection between positive emotions and engagement (Luo et al., 2019), it remains unclear whether these results hold true in more individualistic cultures, where intrinsic motivation may play a

larger role in engagement (Anyichie and Butler, 2023). Additionally, some studies have suggested that the relationship between positive emotions and academic success may be moderated by factors such as socio-economic status or perceived academic pressure (Pekrun et al., 2023), suggesting that while positive emotions may promote engagement, they may not be sufficient in more stressful or resource-deprived environments.

5.3 Mediating role of life satisfaction

A notable contribution of this study is identifying life satisfaction as the mediator between positive emotions and engagement. The observed effect sizes underscore the robust influence of positive emotions on both life satisfaction and academic engagement. The large effect of positive emotions on life satisfaction ($\beta = 0.66$) indicates that fostering positive emotions may be a highly effective strategy for enhancing students' overall well-being. This finding is consistent with Fredrickson's broaden-and-build theory (2001), which posits that positive emotions have both direct and indirect pathways to enhancing personal resources, including academic engagement. This suggests that life satisfaction acts as a psychological resource that amplifies the effects of positive emotions on academic outcomes, such as absorption, dedication, and vigor. These results are consistent with prior research indicating that life satisfaction plays a pivotal role in fostering academic success through enhanced engagement (Maniriho, 2024; Sun and Liu, 2023).

In the Chinese higher education context, where students often face unique stressors - including the process of adapting to changes at the juncture between school and social life - strategies aimed at enhancing life satisfaction could provide significant benefits. For example, programs that focus on building resilience, encouraging peer support, and promoting work-life balance could help mitigate stress and reinforce the positive pathways identified in this study (Wu et al., 2020).

6 Conclusion and implication

The findings offer valuable implications for educational institutions aiming to enhance students' engagement by fostering positive emotions and life satisfaction. Programs that cultivate positive emotions—such as gratitude exercises, mindfulness, and peer support groups—can have lasting effects on students' life satisfaction and engagement levels. By creating a supportive, positive academic environment, universities can foster intrinsic motivation and greater investment in studies, potentially improving academic outcomes and wellbeing. Institutions might also consider tracking students' life satisfaction and engagement over time to assess intervention effectiveness.

While the study contributes to the literature by shedding light on the role of life satisfaction in the positive emotions-engagement relationship, several limitations must be addressed in future research. One key limitation is the cross-sectional design, which prevents the establishment of causal relationships. The directionality of the observed relationships between positive emotions, life satisfaction, and academic engagement could be bidirectional or influenced by unmeasured third variables, such as social support or academic self-concept. Longitudinal studies would help clarify these causal pathways and offer more robust conclusions. Furthermore, while our study focused on Chinese undergraduates, the findings may not be directly applicable to other educational systems, especially those with different cultural orientations and student expectations. Research in more diverse contexts, including Western and non-Western settings, would enhance the external validity of these findings.

In conclusion, the study highlights the critical role of life satisfaction in translating positive emotions into higher academic engagement among undergraduate students. The findings underscore the significance of fostering both emotional wellbeing and life satisfaction to create an engaging academic environment, promoting students' success and overall wellbeing.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Ethics Committee for Research Involving Human Subjects of University Putra Malaysia (JKEUPM). The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board waived the requirement of written informed consent for participation from the participants because the research utilized an online survey platform. On the homepage of the survey, participants were provided with information about the study's purpose, content, confidentiality, and anonymity. Participants were required to click "Agree" to proceed to the actual questionnaire, indicating their consent. Therefore, a handwritten informed consent form was not used.

Author contributions

XW: Writing – original draft, Writing – review & editing, Formal analysis. WW: Writing – review & editing. RS: Writing – review & editing.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2025.1535996/full#supplementary-material>

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