Journal of Contemporary Educational Research, 2025, Volume 9, Issue 12
http://ojs.bbwpublisher.com/index.php/JCER
ISSN Online: 2208-8474
ISSN Print: 2208-8466

Research on the Impact of College Students' Professional Identity on Academic Burnout and Its Prevention

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Abstract: As higher education shifts from quantitative expansion to high-quality development, academic burnout among university students has become a widespread challenge, troubling university teaching management and talent cultivation. To explore the internal mechanisms among professional identity, subjective well-being, learning motivation, psychological capital, and academic burnout, this study targeted university students and conducted a questionnaire survey among 1,269 students from different majors and grades. Using AMOS software, a structural equation model was constructed to empirically analyze the pathways through which professional identity influences academic burnout via subjective well-being, as well as the mediating roles of learning motivation and psychological capital. The results indicate that: (1) Professional identity can reduce academic burnout by enhancing students' subjective well-being; (2) Professional identity can strengthen students' learning motivation through improving subjective well-being, thereby alleviating academic burnout; (3) Professional identity can enhance students' psychological capital by improving subjective well-being, ultimately reducing academic burnout. Based on these findings, the paper proposes recommendations across four dimensions—student, faculty, family, and societal—to enhance professional identity and reduce academic burnout among college students.

Keywords: Professional identity; Subjective well-being; Academic burnout; Psychological capital; Learning motivation

Online publication: December 31, 2025

1. Research background

Data from 2023 indicates that 28.4% of college students experience moderate to severe levels of academic burnout, with a "lack of professional identity" being the primary risk factor. Moreover, the "regret index" regarding students' majors continues to rise, with 67% of graduating students expressing regret over their current major. In the post-pandemic era, there is a stark contrast in the popularity of different majors, compounded by the amplification effect of social media. Students tend to associate the value of their major with happiness and future benefits, leading to shaken identity, decreased happiness, and depleted learning motivation,

ultimately resulting in academic burnout. Simultaneously, the popularization of higher education has heightened expectations from families and society towards college students, causing academic burnout to manifest earlier, as evidenced by the multiple pressures faced by freshmen. Professional identity has emerged as a key factor in resisting these pressures, with high professional identity correlating with high subjective happiness, while low identity leads to confusion. Therefore, clarifying the inhibitory pathway of professional identity on academic burnout is crucial for addressing "involution" and resolving academic burnout among college students.

2. Literature review

Wang [1] found in a survey that 56.44% of rural primary school students experienced academic burnout, while Zheng [2] reported an incidence rate of 58.8% among college students, with over 70% of students experiencing low mood. Zhou [3] discovered that academic burnout has negative impacts on academic performance and psychological development, such as causing students to rely on the internet, leading to academic procrastination, affecting academic grades, resulting in covert truancy behavior, reducing subjective well-being, and heightening feelings of shame associated with academic burnout.

To explore the causes of academic burnout, scholars have conducted research from demographic, external environmental, and psychological perspectives. Firstly, there is no unified conclusion regarding the impact of demographic variables such as age, gender, grade level, place of origin, major, whether one is an only child, ethnicity, and family factors on academic burnout. Jiao [4] found that male students experienced higher levels of academic burnout than female students, while Zhou [5] and Zhao [6] reached the opposite conclusion. Some studies have also found no significant gender differences in academic burnout. Secondly, external environmental factors are also important contributors to academic burnout, primarily divided into school and family aspects. Yang *et al.* [7] discovered that teachers and classmates can create pressure and increase academic burnout, but they can also reduce it through tolerance and understanding. Wang [8] and others believe that a positive atmosphere in schools and classes can motivate students and reduce the likelihood of academic burnout. In contrast, factors within the family, such as parenting styles, phubbing behavior, parental divorce, and perceived support, are significant contributors to academic burnout. Finally, research by Lu [9] reveals that students' psychological factors, including self-esteem, self-acceptance, and perfectionism, also influence the development of academic burnout. These factors not only serve as indicators of individual mental health but can also effectively predict levels of academic burnout.

A review of the literature indicates that research on academic burnout primarily relies on questionnaire data and employs correlational analysis and structural equation modeling. Cao [10] utilized the "Teacher Affinity Behavior Scale" and the "Foreign Language Learning Scale" to study non-English major students at a university, finding a significant negative correlation between students' perception of teacher affinity and foreign language learning. Zhou [5] examined the intrinsic relationships among academic burnout, smartphone addiction, and psychological capital, discovering that smartphone addiction can directly impact academic burnout and indirectly influence it through the mediating effect of psychological capital. Hu [11] employed both mediating and moderating effects to investigate the intrinsic relationships among career planning, learning motivation, school atmosphere, and academic burnout. Other similar studies, such as Zhang [12], primarily utilize mediating effect models to explore the relationships between learning motivation, psychological capital, academic buoyancy, and academic burnout, examining their impacts on academic burnout.

The above findings provide valuable references for this study, yet further research is still necessary.

Firstly, existing studies predominantly focus on simple binary relationships or merely verify a single mediating variable (e.g., solely exploring the mediating role of learning motivation), making it difficult to fully uncover the complex transmission pathways among variables. Secondly, the survey samples in most empirical studies are relatively narrow. While some useful conclusions have been drawn, the robustness and generalizability of these conclusions require further examination. Lastly, the measures proposed in existing studies to reduce academic burnout are not sufficiently specific or comprehensive and fail to integrate with the current teaching arrangements in universities. For instance, measures such as enhancing college students' psychological capital, increasing their self-efficacy in academic burnout, cultivating their sense of social responsibility, and stimulating their interest in learning are all predicated on students' identification with their majors. Therefore, relevant measures must be developed from the perspective of professional identification. Given these shortcomings, this study examines the intrinsic connections among subjective well-being, learning motivation, psychological capital, and academic burnout from the perspective of professional identification and proposes actionable suggestions for reducing academic burnout among college students.

3. Theoretical foundations and research hypotheses

3.1. Theoretical foundations

There are three theoretical hypotheses regarding the onset of burnout. The first is the Job Demands-Resources (JD-R) Theory. Bakker *et al.* [13] found that work conditions can be categorized into two types: demands and resources. Demands require individuals to continuously exert physical and mental effort, leading to physiological and psychological depletion and burnout. Bakker and Mostert [14] discovered that resources provide individuals with energy, reduce physical and mental depletion, help them achieve goals, and promote personal growth. The JD-R model posits that burnout is influenced by both excessive demands and a lack of resources. The second is the Conservation of Resources (COR) Theory. Hobfoll [15], from a resource perspective, argued that individuals, under stress, will protect their existing resources and attempt to acquire more. Zhang [16] believed that burnout is the result of individuals' long-term protection of their resources through effective coping mechanisms, clear regulatory strategies, psychological resilience, self-control, and other protective factors. The third is the Self-Determination Theory (SDT). American psychologists Deci and Ryan [17] proposed that human behavioral motivation is a continuum encompassing different types of motivation (amotivation, intrinsic motivation, and extrinsic motivation). Amotivation refers to a state where individuals have no interest in their actions or lack the ability to complete them, representing the worst state for learners. When individuals are driven by intrinsic motivation, they develop an interest in their actions and are less likely to experience burnout. Conversely, when individuals are motivated by extrinsic factors, the importance of the outcome of the activity far outweighs the activity itself, making individuals more prone to burnout. This theory suggests that students are more likely to experience burnout in stressful environments or difficult situations, which can impact their physical and mental health.

3.2. Research hypotheses

This paper focuses on college students as the research subjects and explores the impact of professional identity on academic burnout by constructing a chain mediation model. Five variables, namely professional identity, subjective well-being, psychological capital, learning motivation, and academic burnout, are selected to construct the initial model of factors influencing professional identity, as shown in **Figure 1**.

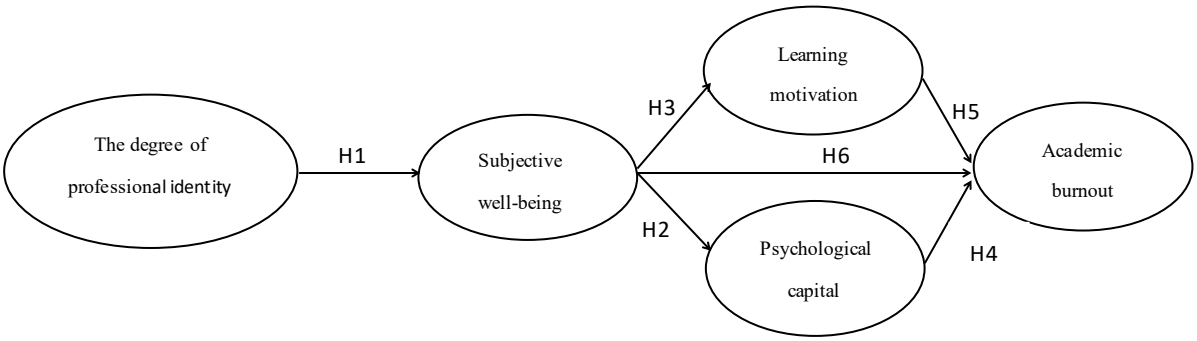

Figure 1. Model diagram of factors influencing academic burnout among college students

According to the Conservation of Resources Theory, individuals with initial resources are more likely to acquire additional resources. High professional identity itself constitutes a psychological resource that can further generate secondary resources such as positive emotions, social support, and achievement experiences, forming a "resources-happiness" gain cycle. Yi [18] proposed that professional identity is significantly positively correlated with subjective well-being and that professional identity has a good predictive effect on subjective well-being. Therefore, Hypothesis 1 is proposed as follows:

H1: Professional identity positively influences subjective well-being

According to the Conservation of Resources Theory, individuals with more initial resources are more likely to acquire subsequent resources. Subjective well-being is regarded as an initial "conditional resource." The higher its level, the easier it is for individuals to obtain achievement experiences, social support, and positive feedback in academic or work settings. These secondary resources, in turn, strengthen self-efficacy and resilience, enhancing overall psychological capital. Scholars Wang and Li [19] proposed that there is a significant positive correlation between psychological capital and subjective well-being among college students. To this end, Hypothesis 2 is proposed as follows:

H2: Subjective well-being has a positive impact on psychological capital

According to self-determination theory, individuals will only develop stable intrinsic motivation when their three basic psychological needs—autonomy, competence, and relatedness—are satisfied. High levels of subjective well-being imply that students experience more positive emotions and self-fulfillment, thereby enhancing their sense of autonomy and competence in academic tasks, ultimately boosting their intrinsic learning motivation. Chen [20] found that the experimental group receiving positive emotion interventions experienced a significant increase in subjective well-being, leading to a 0.63 standard deviation increase in intrinsic learning motivation scores, validating that subjective well-being can positively influence learning motivation. Therefore, Hypothesis 3 is proposed as follows:

H3: Subjective well-being has a positive impact on learning motivation

The more initial resources an individual possesses, the more capable they are of acquiring subsequent resources and reducing depletion. Psychological capital is a typical example of "conditional resources" that can directly offset the imbalance of "high demands-low resources" in academic settings, thereby suppressing the three core dimensions of emotional exhaustion, depersonalization, and reduced accomplishment. Academic settings are regarded as "high-demand" environments, and psychological capital, as a key "resource," can buffer their positive effects. Therefore, Hypothesis 4 is proposed as follows:

H4: Psychological capital has a negative impact on academic burnout

Learning motivation is driven by three basic needs: autonomy, competence, and relatedness. When these needs

of students are met, intrinsic motivation will be enhanced, leading them to engage more actively and proactively in learning, thereby reducing academic burnout. Conversely, if the learning process is filled with coercion, lacks autonomous choices and challenges, intrinsic motivation will significantly decrease, subsequently leading to academic burnout. Li [21] found that the total score of learning motivation, as well as its two dimensions—intrinsic motivation and extrinsic motivation, all exhibit a significant negative correlation with academic burnout. Based on this, Hypothesis 5 is proposed as follows:

H5: Learning motivation has a negative impact on academic burnout

Individuals with high levels of subjective well-being typically experience more positive emotions and fewer negative emotions. Positive emotions can broaden the scope of an individual's thinking and actions, providing them with the confidence and perseverance to overcome learning difficulties, thereby reducing academic burnout. Li [22] and others discovered that subjective well-being has a significant negative predictive function for academic burnout and plays a mediating role between coping self-efficacy and academic burnout. Zhang [23] and others argued that there is a significant negative correlation between subjective well-being and academic burnout, and that subjective well-being can indirectly predict academic burnout through psychological capital. Based on this, Hypothesis 6 is proposed as follows:

H6: Subjective well-being has a negative impact on academic burnout

4. Research design

4.1. Design of measurement questionnaire

To test the aforementioned six hypotheses, it is necessary to measure professional identity, academic burnout, subjective well-being, learning motivation, and psychological capital. The academic burnout questionnaire employed is the "College Students' Academic Burnout Questionnaire" developed by Lian *et al.* [24], which encompasses three dimensions: low mood, low sense of achievement, and improper behavior. Professional identity is assessed using the "College Students' Professional Identity Questionnaire" formulated by Qin [25], which includes four dimensions: cognitive, emotional, behavioral, and appropriateness. Subjective well-being is reflected through three indicators: life satisfaction, positive emotions, and negative emotions, measured by the "Life Satisfaction Scale" and the "Positive and Negative Affect Scale" developed by Diener *et al.* [26] and Huang *et al.* [27], respectively. The psychological capital scale selected is the "Positive Psychological Capital Questionnaire (PPQ)" developed by Zhang *et al.* [28], which is divided into four dimensions: self-efficacy, resilience, hope, and optimism. The learning motivation scale utilizes 11 items from the "Revised Student Process Questionnaire" designed by Biggs and Kember [29] to measure learning motivation levels, divided into two scales: intrinsic motivation and extrinsic motivation.

4.2. Data sources and composition analysis

This study utilized Wenjuanxing (an online survey platform) to distribute questionnaires. Data collection was conducted in two phases: a preliminary survey and a formal survey. The preliminary survey gathered 500 questionnaires to verify the reliability and validity of the questionnaire. The formal survey collected 1,520 questionnaires, and after eliminating invalid ones, 1,269 valid questionnaires were obtained, resulting in an effective response rate of 83.4%. Descriptive statistics were performed on the research subjects based on demographic variables such as gender, family's permanent residence, grade level, type of institution, major, and whether they were an only child or not, with the results presented in **Table 1**. **Table 1** shows that there are 773 females and 496 males. Among them, 604 individuals are from urban areas, while 665 are from rural areas,

showing a relatively even distribution. There are 778 first-year students, 347 second-year students, 47 third-year students, 23 fourth-year students, and 74 postgraduate students or above. Regarding the type of institution, 541 individuals are from regular undergraduate colleges, 37 are from 985 and 211 universities (elite universities in China), and 691 are from vocational and junior colleges. In terms of major, 337 individuals are in science and engineering fields, 672 are in humanities and social sciences, and 260 are in arts (including physical education). There are 393 only children and 876 non-only children.

Table 1. Descriptive distribution of demographic characteristics of the sample

Variable	Category	Frequency	Percentage
Gender	Male	496	39.09%
	Female	773	60.91%
Permanent residence	Urban	604	47.60%
	Rural	665	52.40%
Academic year	Freshman	778	61.31%
	Sophomore	347	27.34%
	Junior	47	3.70%
	Senior	23	1.81%
	Postgraduate or above	74	5.83%
Institution type	985/211 universities	37	2.92%
	Regular undergraduate	541	42.63%
	Vocational colleges	691	54.45%
Major	Science & engineering	337	26.56%
	Humanities & social sciences	672	52.96%
	Arts (including sports)	260	20.49%
Only child	Yes	393	30.97%
	No	876	69.03%

5. Empirical research

5.1. Reliability and validity tests

5.1.1. Scale reliability test

First, reliability tests were conducted on the Academic Burnout Scale for College Students, Psychological Capital Scale, Learning Motivation Scale, Professional Identity Scale, and Overall Well-being Scale, with the results presented in **Table 2**. Taking the Academic Burnout Scale for College Students as an example, the Cronbach's alpha coefficient is 0.902, which is greater than 0.9, indicating excellent reliability of the scale. The Cronbach's alpha coefficients for the three dimensions—depression, low sense of achievement, and improper behavior—are 0.858, 0.822, and 0.887, respectively, all above 0.8, demonstrating good reliability of the Academic Burnout Scale for College Students. Similarly, the other four scales also exhibit good reliability, meeting the requirements for subsequent research.

Table 2. Results of reliability tests for each scale

Scale	Variable / dimension	Number of items	Cronbach's α
Academic burnout scale	Emotional exhaustion	8	0.858
	Reduced accomplishment	6	0.822
	Behavioral impropriety	6	0.887
	Total score	20	0.902
Psychological capital scale	Self-efficacy	7	0.857
	Resilience	7	0.865
	Hope	6	0.907
	Optimism	6	0.902
	Total score	26	0.918
Learning motivation scale	Intrinsic motivation	7	0.841
	Extrinsic motivation	4	0.725
	Total score	11	0.832
Professional identity scale	Cognitive identity	5	0.778
	Affective identity	8	0.844
	behavioral identity	6	0.888
	Appropriateness identity	4	0.853
	Total score	23	0.904
General well-being scale	Life satisfaction	5	0.900
	Positive affect	6	0.791
	Negative affect	8	0.879
	Total score	19	0.899

5.1.2. Scale validity test

This paper considers two types of tests: convergent validity and discriminant validity. Generally, when the standard loading coefficient exceeds 0.5, it can meet the analytical requirements, and a coefficient exceeding 0.7 indicates good convergent validity. When the Average Variance Extracted (AVE) value and Composite Reliability (CR) value exceed 0.5 and 0.7, respectively, it suggests that each dimension has good convergent validity. The results of the convergent validity tests for the five scales are presented in **Tables 3** to **7**. Taking the convergent validity of the College Students' Academic Burnout Scale in **Table 3** as an example, it is evident that all standard loading coefficients are above 0.70, and the AVE and CR values for each dimension exceed 0.5 and 0.7, respectively, indicating good convergent validity for the College Students' Academic Burnout Scale. Similarly, the Psychological Capital Scale, Learning Motivation Scale, Professional Identity Scale, and Overall Well-being Scale also demonstrate good convergent validity.

Table 3. Results of the convergent validity test for the college students' academic burnout scale

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
QD1	<---	Emotional exhaustion	0.708	0.739	0.903
QD2	<---	Emotional exhaustion	0.714		
QD3	<---	Emotional exhaustion	0.706		
QD5	<---	Emotional exhaustion	0.816		
QD6	<---	Emotional exhaustion	0.722		
QD7	<---	Emotional exhaustion	0.767		
QD8	<---	Emotional exhaustion	0.742		
XB1	<---	Behavioral impropriety	0.739	0.754	0.896
XB2	<---	Behavioral impropriety	0.721		
XB3	<---	Behavioral impropriety	0.729		
XB4	<---	Behavioral impropriety	0.801		
XB5	<---	Behavioral impropriety	0.788		
XB6	<---	Behavioral impropriety	0.748		
CG1	<---	Reduced accomplishment	0.704	0.669	0.873
CG3	<---	Reduced accomplishment	0.729		
CG4	<---	Reduced accomplishment	0.802		
CG5	<---	Reduced accomplishment	0.803		
CG6	<---	Reduced accomplishment	0.768		

Note: QD1, QD2, QD3, etc., represent abbreviations for corresponding items in the questionnaire scale, and the same explanation applies to other tables.

Table 4. Convergent validity test for the psychological capital scale

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
ZW2	<	Self-efficacy	0.738	0.791	0.915
ZW3	<---	Self-efficacy	0.883		
ZW4	<---	Self-efficacy	0.896		
ZW5	<---	Self-efficacy	0.754		
ZW6	<---	Self-efficacy	0.683		
RX1	<---	Resilience	0.744	0.792	0.930
RX3	<---	Resilience	0.888		
RX4	<---	Resilience	0.898		
RX5	<---	Resilience	0.744		
RX6	<---	Resilience	0.726		
RX7	<---	Resilience	0.752		

Table 4 (Continued)

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
XW1	<---	Hope	0.735	0.785	0.928
XW2	<---	Hope	0.891		
XW3	<---	Hope	0.907		
XW4	<---	Hope	0.735		
XW5	<---	Hope	0.684		
XW6	<---	Hope	0.756		
LG1	<---	Optimism	0.739	0.782	0.925
LG2	<---	Optimism	0.885		
LG3	<---	Optimism	0.855		
LG4	<---	Optimism	0.743		
LG5	<---	Optimism	0.694		
LG6	<---	Optimism	0.756		

Table 5. Convergent validity of the learning motivation scale

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
NB1	<	Intrinsic motivation	0.681	0.741	0.927
NB2	<---	Intrinsic motivation	0.715		
NB3	<	Intrinsic motivation	0.711		
NB5	<	Intrinsic motivation	0.817		
NB6	<---	Intrinsic motivation	0.791		
NB7	<---	Intrinsic motivation	0.751		
WB2	<---	Extrinsic motivation	0.780	0.793	0.902
WB3	<---	Extrinsic motivation	0.813		
WB4	<---	Extrinsic motivation	0.785		

Table 6. Convergent validity of the professional identity scale

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
QG1	<	Affective identity	0.726	0.742	0.933
QG2	<---	Affective identity	0.710		
QG3	<---	Affective identity	0.720		
QG4	<---	Affective identity	0.716		
QG6	<---	Affective identity	0.815		
QG7	<---	Affective identity	0.766		
QG8	<---	Affective identity	0.739		

Table 6 (Continued)

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
RZ1	<---	Cognitive identity	0.690	0.820	0.897
RZ3	<---	Cognitive identity	0.793		
RZ4	<---	Cognitive identity	0.766		
RZ5	<---	Cognitive identity	0.760		
SQ1	<---	Behavioral identity	0.713	0.807	0.900
SQ2	<---	Behavioral identity	0.787		
SQ3	<---	Behavioral identity	0.771		
SQ4	<---	Behavioral identity	0.777		
XX1	<---	Appropriateness identity	0.738	0.803	0.921
XX2	<---	Appropriateness identity	0.725		
XX3	<---	Appropriateness identity	0.731		
XX4	<---	Appropriateness identity	0.756		
XX5	<---	Appropriateness identity	0.788		
XX6	<---	Appropriateness identity	0.748		

Table 7. Convergent validity test for the subjective well-being scale

Path			Standardized loading	AVE (Average Variance Extracted)	CR (Composite Reliability)
SH1	<---	Life satisfaction	0.784	0.593	0.880
SH2	<---	Life satisfaction	0.714		
SH3	<---	Life satisfaction	0.752		
SH4	<---	Life satisfaction	0.776		
SH5	<---	Life satisfaction	0.821		
XJ5	<---	Negative affect	0.769	0.642	0.926
XJ2	<---	Negative affect	0.777		
XJ3	<---	Negative affect	0.810		
XJ4	<---	Negative affect	0.823		
XJ6	<---	Negative affect	0.773		
XJ7	<---	Negative affect	0.790		
XJ8	<---	Negative affect	0.862		
JJ2	<---	Positive affect	0.825	0.730	0.931
JJ3	<---	Positive affect	0.839		
JJ4	<---	Positive affect	0.856		
JJ1	<---	Positive affect	0.881		
JJ6	<---	Positive affect	0.869		

Tables 8 to **12** present the results of the discriminant validity tests for five scales. Generally speaking, if the square root of the Average Variance Extracted (AVE) for each factor is greater than the maximum correlation coefficient between that factor and any other factor, it indicates good discriminant validity. Taking **Table 8**, the Academic Burnout Scale for College Students, as an illustrative example, the table shows that the correlation coefficients between each pair of dimensions are all smaller than the square root of the corresponding AVE value for each dimension, indicating good discriminant validity among the dimensions. Similarly, the Psychological Capital Scale, Learning Motivation Scale, Professional Identity Scale, and Overall Well-being Scale all demonstrate good discriminant validity.

Table 8. Discriminant validity of the academic burnout scale for college students

Factor	Emotional exhaustion	Reduced accomplishment	Behavioral impropriety
Emotional exhaustion	0.859		
Reduced accomplishment	0.522	0.868	
Behavioral impropriety	0.537	0.479	0.809

Table 9. Discriminant validity of the psychological capital scale

Factor	Self-efficacy	Resilience	Hope	Optimism
Self-efficacy	0.854			
Resilience	0.424	0.835		
Hope	0.323	0.443	0.746	
Optimism	0.377	0.411	0.416	0.745

Table 10. Discriminant validity of the learning motivation scale

Factor	Intrinsic motivation	Extrinsic motivation
Intrinsic motivation	0.861	
Extrinsic motivation	0.507	0.891

Table 11. Discriminant validity of the professional identity scale

Factor	Affective identity	Cognitive identity	Behavioral identity	Appropriateness identity
Affective identity	0.862			
Cognitive identity	0.550	0.875		
Behavioral identity	0.514	0.450	0.878	
Appropriateness identity	0.509	0.425	0.414	0.869

Table 12. Discriminant validity test of the subjective well-being scale

Factor	Life satisfaction	Positive affect	Negative affect
Life satisfaction	0.770		
Positive affect	0.388	0.801	
Negative affect	0.375	-0.356	0.854

5.2. One-way ANOVA

To determine whether the personal factors of respondents have an impact on academic burnout, a one-way ANOVA method was employed for testing, with the results shown in **Table 13**. **Table 13** reveals that, at a significance level of 0.05, there are statistically significant differences in academic burnout corresponding to different levels of four factors: major, school type, grade, and whether the respondent is an only child. At a significance level of 0.10, there are also statistically significant differences in the impact on academic burnout corresponding to different levels of two factors: gender and place of origin.

Table 13. One-way analysis of academic burnout

Variable	Category	Mean ± SD	*t/F*-value	*P*-value
Gender	Male	4.01 ± 0.80	3.314	0.069
	Female	4.11 ± 0.92		
Major	Science & engineering	4.13 ± 0.75	8.265	<0.001***
	Humanities & social sciences	4.22 ± 0.65		
	Arts (including sports)	4.97 ± 0.87		
Academic year	Freshman	4.10 ± 0.98	3.919	0.009**
	Sophomore	4.23 ± 0.35		
	Junior	3.78 ± 0.76		
	Senior	3.98 ± 0.56		
	Postgraduate or above	3.99 ± 0.33		
Institution type	985/211 universities	4.23 ± 0.98	3.675	0.016*
	Regular undergraduate	4.56 ± 0.79		
	Vocational colleges	4.76 ± 0.43		
Residence	Urban	3.44 ± 0.67	3.556	0.067
	Rural	4.23 ± 0.98		
Only child	Yes	4.45 ± 0.67	4.657	0.035*
	No	4.34 ± 0.56		

Note: *** indicates $P < 0.001$, ** indicates $P < 0.01$, and * indicates $P < 0.05$.

5.3. Structural equation model fitting and hypothesis testing

5.3.1. SEM model fit test

Table 14 presents the results of the model fit test. The results indicate that the CMIN/DF value is 1.361, which is less than 3, and the RMSEA value is 0.017, which is less than 0.08, both falling within the acceptable range of the test criteria. Additionally, the values of TLI, CFI, GFI, IFI, PGFI, and PNFI are all within acceptable ranges, meeting the model fit criteria. Therefore, the SEM model for factors influencing academic burnout among college students demonstrates good fit.

Table 14. Model fit test

Indicator	Data result	Evaluation criteria
CMIN/DF	1.361	< 3
RMSEA	0.017	< 0.08
TLI	0.979	> 0.9
CFI	0.979	> 0.9
GFI	0.917	> 0.9
IFI	0.979	> 0.9
PGFI	0.871	> 0.5
PNFI	0.900	> 0.5

5.3.2. Hypothesis testing of path relationships in the SEM model for factors influencing academic burnout among college students

Table 15 presents the estimated results of the SEM model corresponding to the factors influencing academic burnout. Firstly, professional identity significantly and positively affects subjective well-being, with a coefficient estimate of 0.567. Therefore, Hypothesis 1 is valid, indicating that professional identity has a positive impact on subjective well-being. For college students, a higher level of professional identity corresponds to a higher level of subjective well-being. Secondly, subjective well-being significantly and positively affects psychological capital and learning motivation, with coefficient estimates of 0.596 and 0.700, respectively. Thus, Hypotheses 2 and 3 are valid. Additionally, psychological capital and learning motivation significantly and negatively affect academic burnout, with coefficient estimates of -0.201 and -0.313, respectively. Therefore, Hypotheses 4 and 5 are valid. Finally, subjective well-being significantly and negatively affects academic burnout, with a coefficient estimate of -0.303, indicating that Hypothesis 6 is valid.

Table 15. Path and test results of the SEM model for factors influencing academic burnout among college students

Path relationship			Standardized path coefficient	S.E.	C.R.	*P*-value
Subjective well-being	<---	Professional identity	0.567	0.059	10.832	***
Learning motivation	<---	Subjective well-being	0.700	0.042	10.654	***
Psychological capital	<---	Subjective well-being	0.596	0.061	10.065	***
Academic burnout	<---	Learning motivation	-0.313	0.092	-4.232	***
Academic burnout	<---	Psychological capital	-0.201	0.041	-3.777	***
Academic burnout	<---	Subjective well-being	-0.303	0.071	-3.403	***

Note: *** indicates $P < 0.001$

5.3.3. Mediation effect test

(1) Test for the chain mediation effect of subjective well-being and learning motivation

Theoretical analysis suggests that subjective well-being and learning motivation may play mediating roles between professional identity and academic burnout. To explore whether there exists a chain mediation effect, the Bootstrap method was employed for testing, with the results shown in **Table 16**.

Table 16. Test for the chain mediation effect of subjective well-being and learning motivation

Parameter	Estimate	Lower	Upper	*P*-value	Effect proportion
Indirect effect	-0.132	-0.221	-0.078	0.000	38%
Direct effect	-0.215	-0.375	-0.103	0.000	62%
Total effect	-0.347	-0.572	-0.180	0.000	—

Table 16 shows that the test probabilities corresponding to the indirect effect, direct effect, and total effect are all close to 0, and the upper limits of the confidence intervals for all three types of effects are negative. This indicates that professional identity not only has a direct negative impact on academic burnout through subjective well-being but also indirectly negatively affects academic burnout through the chain-mediated effects of subjective well-being and learning motivation. The indirect effect is -0.132, and the direct effect is -0.215, accounting for 38% and 62% of the total effect of -0.215, respectively. Therefore, subjective well-being and learning motivation exhibit a chain-mediated effect between professional identity and academic burnout.

(2) Test for the chain-mediated effect of subjective well-being and psychological capital

Theoretical analysis also suggests that subjective well-being and psychological capital may serve as mediators between professional identity and academic burnout. To explore whether a chain-mediated effect exists, the Bootstrap method was again employed for verification, with the results presented in **Table 17**.

Table 17. Test for the chain-mediated effect of subjective well-being and psychological capital

Parameter	Estimate	Lower	Upper	*P*-value	Effect proportion
Indirect effect	-0.072	-0.121	-0.038	0.002	28%
Direct effect	-0.183	-0.373	-0.061	0.002	72%
Total effect	-0.255	-0.414	-0.126	0.001	—

Similar to the conclusions in **Table 16**, **Table 17** reveals that the indirect effect, direct effect, and total effect are all highly significant at the 0.01 significance level. Moreover, the upper-bound estimates of all three effects are negative, indicating that professional identity not only has a direct negative impact on academic burnout through subjective well-being but also indirectly negatively affects academic burnout through the chain mediation effect of subjective well-being and learning motivation. The indirect effect is -0.072, and the direct effect is -0.183, accounting for 28% and 72%, respectively, of the total effect of -0.255. Therefore, subjective well-being and psychological capital exhibit a chain mediation effect between professional identity and academic burnout.

6. Strategies to reduce academic burnout among college students

The above research indicates that enhancing college students' professional identity is a crucial approach to reducing academic burnout. Given the numerous factors influencing professional identity among college students, this paper attempts to enhance professional identity and thereby reduce academic burnout from four

dimensions: the student level, the teacher level, the family level, and the social level.

6.1. Anchoring professional orientation and activating intrinsic identification motivation

As core participants in professional learning, students' perceptions and orientations towards their majors directly determine their level of professional identity. On the one hand, we should guide students in conducting professional self-positioning and planning, and strengthen and improve the compulsory course "Professional Cognition and Career Planning" offered during the freshman enrollment stage. Through content such as sharing by industry practitioners, interpretation of the professional curriculum system, and analysis of career development paths, we can help students clearly understand the core areas, training objectives, and employment directions of their majors, thereby avoiding professional cognitive biases caused by "blind enrollment." On the other hand, we should encourage students to actively participate in professional practices and academic activities, such as research projects related to their majors, academic competitions, and corporate internships. This allows students to experience the value of their majors in practice, enhance their professional abilities, transform from "passively accepting their majors" to "actively identifying with their majors," thereby enhancing their learning motivation and subjective well-being, and alleviating academic burnout.

6.2. Enhancing professional competence and innovating teaching empowerment models

Professional teachers are important guides for students' professional cognition and learning interests, and their knowledge, abilities, and teaching methods directly influence students' professional identification. The comprehensive competence of teachers can be enhanced in the following two aspects. Firstly, we should strengthen the alignment between professional teachers' knowledge and abilities and industry needs, establish a system for teachers' "industry practice and training," and require professional teachers to incorporate real-world cases into classroom teaching to avoid the monotony of professional learning caused by "rote teaching from textbooks." Secondly, we should innovate teaching methods and evaluation systems, promote interactive teaching models such as project-based learning and collaborative group learning, encourage teachers to utilize online-offline hybrid teaching platforms to expand teaching scenarios, and optimize evaluation criteria by incorporating practical abilities and innovative thinking into the professional learning evaluation system. This reduces the suppression of students' learning enthusiasm caused by "solely focusing on grades" and enhances students' professional identification through improved teaching quality.

6.3. Transforming educational concepts and strengthening emotional support

The family, as an important environment for students' growth, has a profound impact on students' professional identity through its educational concepts and guidance methods. On the one hand, parents should be guided to establish a scientific concept of professional selection, avoiding forcing students to choose majors based on "utilitarian" criteria. Instead, they should respect students' interests and strengths, and help students make rational choices by jointly understanding the connotations of the majors and analyzing career development prospects with them. On the other hand, it is essential to strengthen emotional support and communication within the family. Parents should regularly communicate with students about their academic progress in their majors and pay attention to their emotional changes. When students encounter difficulties or resistance in their professional studies, parents should offer understanding and encouragement rather than blame and criticism, helping students build confidence in their professional studies through emotional support. At the same time, parents should actively learn about the characteristics and development prospects of their children's majors to

avoid misunderstandings caused by a "lack of professional knowledge," thereby creating emotional support for enhancing students' professional identity.

6.4. Standardizing information dissemination and creating a rational atmosphere

Public opinion plays a significant guiding role in students' professional selection and professional identity, necessitating the creation of a rational professional cognitive atmosphere through positive guidance. On the one hand, it is crucial to regulate the excessive interpretation of majors by internet celebrities and media outlets. In response to the tendency of some internet celebrities to interpret professional selection in an "excessively utilitarian" and "one-sided" manner, relevant departments should strengthen supervision and require media and bloggers to base their interpretations on objective data, avoiding exaggerated or misleading statements. At the same time, industry experts and university faculty should be encouraged to participate in professional interpretations, providing authoritative and comprehensive professional information. On the other hand, it is essential to foster a social atmosphere that "respects professional expertise and encourages diverse development." This can be achieved by using mainstream media to publicize cases of outstanding talents in various professional fields, thereby dispelling the misconception in public opinion that only popular majors matter. By guiding the public to view the value of different majors rationally, we can help students understand that all majors offer opportunities for personal fulfillment, thereby enhancing their identification with their chosen fields of study and reducing resistance to their majors caused by societal biases.

Funding

Research Project on Educational and Teaching Reform in Anhui Province: "Research on the Path and Countermeasures of the Impact of College Students' Professional Identity on Academic Burnout" (2024jyxm0166)

Disclosure statement

The authors declare no conflict of interest.

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