



## RESEARCH ARTICLE

# The Impact of Professional Identity on Learning Engagement Among University Students: The Mediating Role of Academic Emotions

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ARTICLE INFO	ABSTRACT
Received: Apr 24, 2024 Accepted: Jul 1, 2024	This study aims to explore the relationships between professional identity, academic emotions, and learning engagement among university students. Using scales for professional identity, academic emotions, and learning engagement theory, a survey was conducted among 1,090 students from a university in Henan Province. The results indicate that professional identity has a significant positive impact on academic emotions and significantly positively influences learning engagement. Additionally, academic emotions partially mediate the relationship between professional identity and learning engagement. This study provides recommendations for enhancing students' professional identity, fostering positive academic emotions, and promoting effective learning engagement. These insights are intended to inform university teaching content and offer guidance on the psychological and behavioral aspects of student learning.
<b>Keywords</b> Professional identity Academic emotions Learning engagement	
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## INTRODUCTION

Higher education plays a crucial role in talent cultivation, and the quality of its graduates directly impacts the economic and social development of a country. In practice, universities should not only focus on macro aspects such as educational philosophy, faculty quality, curriculum, and practical training conditions to improve talent cultivation quality, but also pay attention to micro factors that influence the quality of talent cultivation. These include students' learning psychology, learning behaviors, and learning outcomes. Professional identity, academic emotions, and learning engagement are important psychological and behavioral variables that play key roles in the learning and development of university students. Currently, the level of professional identity among university students is concerning, negative academic emotions lead to learning psychological issues, and insufficient learning engagement is common. These issues not only harm the quality of learning but also hinder the improvement of talent cultivation quality in higher education institutions.

Professional identity is the internal alignment and actual balancing process between an individual and their profession (Salling Olesen, 2001). Welmond (2002) posited that a teacher's professional identity is the ability to energetically and holistically take responsibility and pursue academic truth, effectively balancing potential conflicts between interests and ideologies. Richter (2021) enriched the definition of professional identity by presenting it through a three-tier evaluation. The first tier involves self-perception, the second includes personal frameworks built on beliefs, values, motivation, and experience, and the third comprises task perception, stress interpretation, and practical actions that guide individual work. It is evident that researchers generally adhere to a three-dimensional perspective: explaining professional identity from cognitive, emotional, and behavioral aspects, and then further refining and expanding from these aspects to establish and categorize the dimensions of professional identity. Therefore, it is crucial to conduct research on professional

identity. In this study, professional identity is defined as learners' comprehensive understanding of their field of study on a cognitive level, their emotional acceptance and recognition of it, and the presence of positive learning motivation and behaviors.

The concept of academic emotions was first introduced by German scientist Pekrun et al. (2002), who defined academic emotions as the various emotional experiences related to academics that occur during teaching and learning processes. Pekrun categorized academic emotions into four types based on valence and arousal: positive high-arousal emotions, positive low-arousal emotions, negative high-arousal emotions, and negative low-arousal emotions. Overall, scholars have followed traditional definitions of academic emotions. Based on this, the current study defines academic emotions as the various emotional experiences related to academics during academic-related processes.

Research on learning engagement initially stemmed from studies on work engagement. In the 1930s, Ralph Tyler introduced the concept of task time, suggesting that the more time students spend on learning, the more engaged they are, and the more knowledge and skills they acquire. Richardson & Skinner (1992) was the first to concretely define learning engagement as students exhibiting positive and persistent learning behaviors in specific school learning contexts, overcoming difficulties, and experiencing positive internal emotions. Schaufeli et al. (2002) provided a more detailed definition, describing learning engagement as a learning behavior encompassing externalized mental states, where learners possess ample vitality and high concentration. Fredricks et al. (2004) viewed learning engagement as the level of participation students exhibit in effective learning activities, including emotional experiences, behavioral participation, and cognitive strategies. Kuh et al. (2008) described it as the time and effort students invest in educational activities aimed at achieving educational goals, as well as the effort they put into effective educational practices. In summary, most researchers attribute learning engagement to cognitive, emotional, and behavioral dimensions. This study adopts the widely used three-component theory, dividing learning engagement into behavioral engagement, emotional engagement, and cognitive engagement, corresponding to the state dimensions of vigor, dedication, and absorption.

Based on a review of the literature, this study identifies gaps and deficiencies in current research to further enrich studies on learning engagement among university students. It constructs a regression prediction model of professional identity among university students and analyzes the mediating role of academic emotions between professional identity and learning engagement. Finally, detailed recommendations are proposed based on the research findings to inform government and institutional management and guide future research.

## **LITERATURE REVIEW**

### **Relationships Between Variables**

#### **Professional Identity and Learning Engagement**

The literature on professional identity and learning engagement largely focuses on teachers' professional identity and teaching engagement, with limited studies on university students. However, some research has explored the relationship between these two factors. For example, Silver et al. (2011) found that senior law students exhibit higher efficacy in all environments and activities compared to first-year students. This reflects a higher recognition of professional identity and learning purpose among senior law students and indicates that grade level influences the relationship between professional identity and learning engagement. Yu et al. (2021) demonstrated that professional cognition and evaluation positively influence learning engagement, specifically in tourism students.

These findings suggest that the impact of professional identity on learning engagement is well-documented, primarily from the perspective of students in specific disciplines. The research consistently shows a significant influence of professional identity on learning engagement, either directly or indirectly through variables such as self-efficacy. Therefore, we hypothesize:

H1: Professional identity has a significant positive impact on learning engagement among university students.

### **Professional Identity and Academic Emotions**

Regarding the relationship between professional identity and academic emotions, Anttila (2019) provided a new understanding of the dynamic nature of academic emotions. In socially embedded contexts, academic emotions form the foundation for learning and promote the development of professional identity. For instance, nursing students' professional identity indirectly influences their sustained attention through academic emotions. This indicates that professional identity often directly impacts academic emotions, such as students feeling negative emotions when they do not identify with their major.

Researchers have also explored the extent, range, and mechanisms of professional identity's impact on academic emotions, often finding direct effects, though some studies suggest indirect effects through other variables like self-efficacy. Therefore, we hypothesize:

H2: Professional identity has a significant positive impact on academic emotions.

### **Academic Emotions and Learning Engagement**

Research by Zhen et al. (2017) showed that academic self-efficacy and positive academic emotions mediate the relationship between ability, academic satisfaction, and learning engagement. Positive emotions enhance learning engagement. Similarly, Ganotice et al. (2016) found that students with high positive and low negative academic emotions are more likely to have better learning engagement and adaptive learning outcomes. Huang and Cherng (2021) established a reciprocal effects model linking academic emotions, situational interest, and learning engagement, focusing on enjoyment and boredom dimensions.

Most studies on the relationship between academic emotions and learning engagement indicate that academic emotions directly influence learning engagement, with positive academic emotions boosting engagement. Thus, we hypothesize:

H3: Academic emotions have a significant positive impact on learning engagement.

### **Mediating Role of Academic Emotions**

Recent research has explored the mediating role of academic emotions in the impact of other variables on learning engagement. For instance, academic emotions mediate the relationship between academic satisfaction, student adaptability, teacher-student interactions, and learning engagement. This suggests that academic emotions, as dynamic individual experiences, are increasingly studied as mediators.

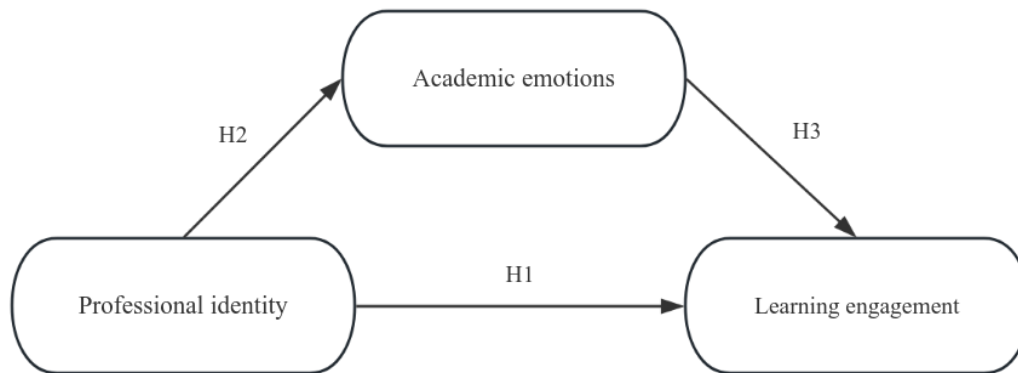
Given that professional identity directly impacts learning engagement and significantly influences academic emotions, and that academic emotions are closely related to learning engagement, we expand the scope to examine the relationships among professional identity, academic emotions, and learning engagement. Considering the dynamic role of academic emotions throughout the learning process, we hypothesize:

H4: Academic emotions mediate the relationship between professional identity and learning engagement among university students.

## METHODOLOGY

### Research Framework

This study uses professional identity as the independent variable, learning engagement as the dependent variable, and academic emotions as the mediating variable. Based on these research hypotheses, the research structure is presented in Figure 1.



**Figure 1. Research Framework**

### Sample and Data Collection

This study was conducted from March to April 2024. The research sample consisted of university students from a university in Henan Province, China. Using convenience sampling, 1,100 university students were selected as participants. A total of 1,019 questionnaires were collected, resulting in a response rate of 94.96%. The primary reason for selecting these participants is that Henan Province is one of China's economically and educationally resource-rich provinces. Over the years, its GDP has consistently ranked in the top ten in China. With 168 higher education institutions, Henan Province has the highest number of universities in the country. The students at this university originally come from 28 different provinces and autonomous regions across China, making this sample representative of a diverse demographic background. This study strictly adhered to the ethical requirements of the National Research Council of Thailand. Participants were thoroughly informed about the study's purpose before answering the questionnaire and signing the informed consent form. They were assured that the research data would only be used for this study and not for any other purposes, and that their privacy would be protected. Additionally, participants were informed of their right to withdraw their data at any stage of the study.

### Research Instruments

#### Professional Identity Scale

The Professional Identity Scale used in this study is based on the "Formal Questionnaire on University Students' Professional Identity" developed by Qin (2009). The questionnaire was revised and refined to include three dimensions: cognitive, emotional, and behavioral, with a total of 18 items. Each item is scored on a 5-point Likert scale, where higher average scores indicate a higher level of professional identity.

The reliability of the scale was evaluated with a Cronbach's alpha coefficient of 0.943 for the overall scale. The alpha coefficients for the dimensions were as follows: 0.722 for the cognitive dimension, 0.841 for the emotional dimension, 0.902 for the behavioral dimension, and 0.864 for the suitability

dimension. This indicates good internal consistency for the overall scale and each dimension. The Kaiser-Meyer-Olkin (KMO) value was 0.940, and Bartlett's test of sphericity was significant, demonstrating good reliability and validity.

### **Academic Emotions Scale**

The Academic Emotions Scale used in this study is based on the scale developed by Wang (2013), with revisions made according to the study's needs. The revised scale consists of four dimensions: positive high-arousal, positive low-arousal, negative high-arousal, and negative low-arousal emotions, with a total of 20 items. For this study, only the positive high-arousal and negative high-arousal dimensions were measured, resulting in 15 items scored on a 4-point Likert scale.

The overall alpha coefficient for the academic emotions scale was 0.898. The alpha coefficients for the dimensions were as follows: 0.883 for positive high-arousal, 0.603 for positive low-arousal, 0.878 for negative high-arousal, and 0.837 for negative low-arousal. While the overall internal consistency is good, the positive low-arousal dimension's reliability is marginally acceptable. The KMO value for the scale was 0.887, and Bartlett's test of sphericity was significant, indicating good reliability and validity.

### **Learning Engagement Scale**

The Learning Engagement Scale is based on the "University Students' Learning Engagement Questionnaire" developed by Liao (2011), with revisions made according to the study's requirements. The revised questionnaire consists of 17 items across three dimensions: cognitive engagement, behavioral engagement, and emotional engagement. Each item is scored on a 5-point Likert scale, with higher scores indicating higher levels of learning engagement.

The overall alpha coefficient for the learning engagement scale was 0.964. The alpha coefficients for the dimensions were as follows: 0.883 for behavioral engagement, 0.930 for cognitive engagement, and 0.907 for emotional engagement. This indicates good internal consistency for the overall scale and each dimension. The KMO value was 0.953, and Bartlett's test of sphericity was significant, demonstrating good reliability and validity.

## **Analyzing of Data**

### **Demographic Analysis of University Students**

Among the study participants, there were 515 males (50.5%) and 504 females (49.5%), resulting in a balanced gender distribution that aligns well with actual conditions. Regarding their place of origin, 508 students (49.9%) came from urban areas and 511 (50.1%) from rural areas, indicating an evenly distributed sample.

Looking at the academic year, 460 students (45.1%) were freshmen, 248 (24.3%) were sophomores, 169 (16.6%) were juniors, and 142 (13.9%) were seniors, with the highest number in the freshman year and the lowest in the senior year.

In terms of academic disciplines, there were 37 students (3.6%) in Philosophy, 96 (9.4%) in Economics, 51 (5.0%) in Law, 23 (2.3%) in Education, 137 (13.4%) in Literature, 26 (2.6%) in History, 187 (18.4%) in Science, 220 (21.6%) in Engineering, 26 (2.6%) in Agriculture, 89 (8.7%) in Medicine, 101 (9.9%) in Management, and 26 (2.6%) in Arts. This distribution closely matches the actual distribution of students across various majors at the university.

When selecting their majors, 639 students (62.7%) chose based on personal interest and preference, 352 (34.5%) considered advice from others (parents, teachers, or peers), and 28 (2.7%) had their majors chosen by others. This distribution is also consistent with real-world scenarios.

Regarding their first-choice major, 739 students (72.5%) were studying their first-choice major, while 280 (27.5%) were in a reassigned major. This reflects a realistic distribution as well. Overall, the demographic composition of the study participants is well-balanced, and the obtained data is relatively authentic and reliable.

### T-Test Analysis

As shown in Table 1, the independent sample T-test results indicate that the p-values for gender differences in professional identity, academic emotions, and learning engagement are 0.317, 0.09, and 0.075, respectively, all of which are greater than 0.05. This suggests that there are no significant differences between male and female students in these three variables.

At the dimension level, the p-values for gender differences in cognitive, behavioral, negative low arousal, behavioral engagement, and cognitive engagement dimensions are 0.095, 0.388, 0.501, 0.709, and 0.082, respectively, all of which are greater than 0.05. These results also indicate no significant differences.

However, significant differences were found in the emotional dimension, positive high arousal emotions, and emotional engagement, with p-values less than 0.05. Specifically, for the emotional dimension ( $t = 2.861$ ,  $p = 0.004$ ,  $d = 0.18$ ), positive high arousal emotions ( $t = -2.015$ ,  $p = 0.044$ ,  $d = 0.13$ ), and emotional engagement ( $t = 2.086$ ,  $p = 0.037$ ,  $d = 0.13$ ), there are significant differences between genders. Male students scored higher than female students in the emotional and emotional engagement dimensions, while female students scored higher in the positive high arousal emotion dimension.

**Table 1. Differences in Background Variables and Entrepreneurial Intentions**

Variable	Male (N=515)	Female (N=504)	<i>t</i>	<i>p</i>	<i>d</i>
Professional Identity	3.79±0.703	3.748±0.644	1.001	0.317	
Cognitive Dimension	3.962±0.734	4.032±0.601	-1.671	0.095	
Emotional Dimension	3.789±0.768	3.651±0.766	2.861**	0.004	0.18
Behavioral Dimension	3.668±0.764	3.627±0.751	0.863	0.388	
Academic Emotions	3.026±0.472	3.073±0.416	-1.696	0.090	
Negative High Arousal	2.836±0.607	2.861±0.587	-0.673	0.501	
Learning Engagement	3.595±0.69	3.518±0.689	1.782	0.075	
Behavioral Engagement	3.636±0.775	3.618±0.754	0.373	0.709	
Cognitive Engagement	3.572±0.803	3.485±0.799	1.743	0.082	

Emotional Engagement	3.594±0.693	3.503±0.698	2.086*	0.037	0.13
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Note: \* $p < 0.05$ , \*\* $p < 0.01$

### Descriptive Statistics and Correlation Analysis

The overall mean score for professional identity was 3.77. Specifically, the cognitive dimension had a mean of 4.00, the emotional dimension had a mean of 3.72, and the behavioral dimension had a mean of 3.62. These results indicate that university students generally have a moderately high level of professional identity, with the cognitive dimension being the highest, followed by the emotional and then the behavioral dimensions. The behavioral dimension still requires further improvement. The overall mean score for academic emotions was 3.05. The mean for the positive high-arousal emotion dimension was 3.18, while the mean for the negative high-arousal emotion dimension was 2.85, both exceeding the theoretical value of 2.5. This indicates that university students have moderately high levels of academic emotions, with positive high-arousal emotions being more prevalent than negative high-arousal emotions. The overall mean score for learning engagement was 3.56. The mean for behavioral engagement was 3.63, cognitive engagement had a mean of 3.53, and emotional engagement had a mean of 3.55. All these means exceed the theoretical value of 3, indicating that university students have a moderately high level of learning engagement. Among the dimensions, behavioral engagement was the highest, followed by emotional and then cognitive engagement.

### The Mediating Role of Academic Emotions in the Effect of Professional Identity on Learning Engagement among University Students

According to Table 2, we set professional identity as the independent variable and learning engagement as the dependent variable, introducing control variables for regression analysis. The independent variable, professional identity, has a significant positive effect on the dependent variable, learning engagement, with a variance explanation rate of 49.9% ( $\beta=0.732$ ,  $p<0.001$ ), supporting hypothesis H1.

**Table 2. Regression Analysis of Professional Identity and Learning Engagement**

Model 1	$\beta$	$p$
(Constant)	0.804	0.000
Professional Identity	0.732	0.000
Female	-0.05	0.106
Sophomore	-0.012	0.762
Junior	0.012	0.782
Senior	-0.01	0.833
Influenced by Others	0.002	0.952
Chosen by Others	0.132	0.174
Assigned Major	0.067	0.056

R=0.709 R <sup>2</sup> =0.503 Adjusted R <sup>2</sup> =0.499 F= 127.857***
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Note: Dependent Variable: Learning Engagement; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

As shown in Table 3, the coefficient of determination ( $R^2$ ) for professional identity on academic emotions is 0.326, with an adjusted  $R^2$  of 0.321. The regression coefficient is 0.379, with a  $p$ -value less than 0.001. This indicates that professional identity positively influences academic emotions, with a variance explanation rate of 32.1% ( $\beta = 0.379$ ,  $p < 0.001$ ), thus confirming H2.

**Table 3. Regression Analysis of Professional Identity and Academic Emotions**

Model 2	$\beta$	$p$
(Constant)	1.609	0.000
Professional Identity	0.379	0.000
Female	0.066	0.005
Sophomore	-0.062	0.032
Junior	-0.028	0.403
Senior	-0.139	0.000
Influenced by Others	0.036	0.151
Chosen by Others	0.054	0.457
Assigned Major	0.020	0.453
R=0.571 R <sup>2</sup> =0.326 Adjusted R <sup>2</sup> =0.321 F=61.123***		

Note: Dependent Variable: Academic Emotions; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

As shown in Table 4, academic emotions positively influence learning engagement, with a variance explanation rate of 28.1% ( $\beta = 0.806$ ,  $p < 0.001$ ), thus confirming H3.

**Table 4. Regression Analysis of Academic Emotions and Learning Engagement**

Model 3	$\beta$	$p$
(Constant)	1.161	0.000
Professional Identity	0.806	0.000
Female	-0.111	0.003
Sophomore	0.056	0.228
Junior	0.020	0.702
Senior	0.152	0.007
Influenced by Others	-0.123	0.002
Chosen by Others	-0.140	0.218



R=0.535 R <sup>2</sup> =0.286 Adjusted R <sup>2</sup> =0.281 F=57.916***
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Note: Dependent Variable: Academic Emotions; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Based on Table 5, it can be seen that the indirect effect value of professional identity influencing learning engagement through academic emotions is 0.109, with a Bootstrap confidence interval of [0.067, 0.149]. Since the interval does not include 0, the mediating effect is significant, accounting for 15% of the total effect. This indicates that academic emotions play a partial mediating role between professional identity and learning engagement, thus confirming H4.

**Table 5. Decomposition of Total Effect, Direct Effect, and Mediating Effect**

	Effect	BootSE	BootLLCI	BootULCI	Effect Proportion
Indirect Effect of Academic Emotions (a*b)	0.109	0.021	0.067	0.149	15%
Direct Effect c'	0.623	0.040	0.546	0.702	85%
Total Effect c	0.732	0.032	0.666	0.794	

Note: \*p<0.05 \*\*p<0.01 \*\*\*p<0.001

**DISCUSSION**

**Analysis of Differences in Professional Identity, Academic Emotions, and Learning Engagement across Demographic Variables**

According to the results of this study, significant gender differences were found in the dimensions of emotional identity, positive high-arousal emotions, and emotional engagement. Male students had higher mean scores in emotional identity than female students, which is consistent with Yue (2022) findings, indicating that males have a higher acceptance level of their profession than females. Males scored lower in positive high-arousal emotions but higher in emotional engagement compared to females. The differences could be attributed to gender personality differences and traditional views. Males tend to exhibit more rational characteristics in professional learning, hence their higher acceptance of their major. Traditionally, some fields like engineering are considered more suitable for males, which increases their professional identity. On the other hand, males experience lower positive high-arousal emotions such as joy and pride, aligning with Zhao et al. (2012), possibly due to different emotional evaluations of academic goals based on the control-value theory.

Regarding grade differences, significant differences were found in the dimension of negative high-arousal emotions. The results showed significant differences in negative high-arousal emotions across different years, consistent with Liu (2022) findings. Post hoc comparisons revealed that first-year students experienced more anxiety, frustration, and guilt compared to other years, which could be due to their psychological immaturity and lower emotional regulation capability when facing academic pressure.

Discipline differences were evident in professional identity and learning engagement. Significant differences were found in emotional identity, behavioral identity, behavioral engagement, cognitive engagement, and emotional engagement across disciplines. Students in management had the lowest professional identity, while art students had the highest. Emotional identity was lowest in education, and behavioral identity was lowest in management. Law students had the least learning engagement, while history students had the most. Literature and law students scored lowest in all engagement

dimensions, while science, engineering, agriculture, and medicine scored moderately. This is inconsistent with Kong (2019) findings. The low professional identity in management may be due to societal undervaluation of management fields, while high identity in arts may be due to the interesting and engaging nature of art courses.

Students in their desired major had significantly higher professional identity than those in adjusted majors. This supports Zhou (2018) findings. Students in their desired major are more motivated and have a stronger sense of belonging and curiosity, enhancing their professional identity and academic engagement.

### **Direct Effects among Professional Identity, Academic Emotions, and Learning Engagement**

Regression analysis revealed that professional identity positively influences learning engagement, consistent with Zou (2022) findings. Cognitive, emotional, and behavioral identities significantly influence behavioral engagement. This aligns with the findings of Du (2022), Zhang (2018), and Li et al. (2017). Higher professional identity increases learning engagement, as students integrate their values with professional knowledge, resulting in stronger internal motivation and higher engagement in learning activities.

Furthermore, professional identity positively predicts academic emotions, with cognitive, emotional, and behavioral identities significantly influencing positive high-arousal emotions, consistent with Ji et al. (2020) findings. According to the control-value theory, professional identity enhances positive academic emotions by increasing students' perceived control and value in their learning.

Lastly, academic emotions positively influence learning engagement. Positive high-arousal emotions and negative high-arousal emotions both significantly influence behavioral and cognitive engagement. Positive high-arousal emotions also positively influence emotional engagement, while negative high-arousal emotions negatively influence it. These results are consistent with Sun (2024). Positive high-arousal emotions, such as joy and pride, foster self-directed learning and persistent engagement, whereas negative emotions like anxiety can, up to a certain level, motivate learning but may decrease engagement if excessive.

### **Mediating Effect of Academic Emotions between Professional Identity and Learning Engagement**

The study found that academic emotions partially mediate the relationship between professional identity and learning engagement. This is consistent with Yin and Bai (2022). Strong professional identity increases positive academic emotions, which in turn enhances learning engagement by fostering positive attitudes and resilience in students.

On a dimensional level, positive high-arousal emotions significantly mediate the effects of cognitive, emotional, and behavioral identities on behavioral, cognitive, and emotional engagement, with mediation effects ranging from 36% to 48%. Negative high-arousal emotions also mediate these relationships, but to a lesser extent, ranging from 4% to 7%. This indicates that positive high-arousal emotions have a more substantial mediating effect, possibly due to their longer duration and stronger motivational impact compared to negative emotions.

## **CONCLUSION**

### **Differences in Professional Identity, Academic Emotions, and Learning Engagement Across Demographic Variables**

This study examined the differences in the impact of demographic variables such as gender, place of origin, grade level, type of discipline, factors influencing major choice, and whether the major was adjusted on professional identity, academic emotions, and learning engagement. Significant differences were found in professional identity, academic emotions, and learning engagement based

on gender. Specifically, there were no significant differences in cognitive, behavioral, low arousal negative emotions, behavioral engagement, and cognitive engagement, but there were significant differences in affective aspects, high arousal positive emotions, and affective engagement. There were no significant differences in any of the research variables or specific dimensions based on the place of origin. Grade level did not show significant differences in the research variables. At the dimensional level, there were no significant differences in cognitive, affective, behavioral aspects, high arousal positive emotions, behavioral engagement, cognitive engagement, and affective engagement, except for significant differences in high arousal negative emotions. Significant differences were found in professional identity and learning engagement based on the type of discipline. At the dimensional level, significant differences were found in affective aspects, behavioral aspects, behavioral engagement, cognitive engagement, and affective engagement. Factors influencing major choice showed significant differences in professional identity and learning engagement. At the dimensional level, significant differences were found in cognitive, affective, behavioral aspects, high arousal positive emotions, behavioral engagement, cognitive engagement, and affective engagement. Whether the major was adjusted showed significant differences in professional identity, but not in academic emotions and learning engagement. At the dimensional level, significant differences were found in cognitive, affective, and behavioral aspects, with the first choice mean being higher than the adjusted major, while there were no significant differences in high arousal positive emotions, high arousal negative emotions, behavioral engagement, cognitive engagement, and affective engagement.

### **Improving Professional Identity Levels Helps Increase Learning Engagement and Improve Academic Emotions**

The study found that the impact of professional identity on learning engagement is positive and significant, with behavioral aspects having a more significant impact on behavioral engagement than cognitive and affective aspects, and behavioral aspects having a higher impact on cognitive engagement than on behavioral engagement. Affective and behavioral aspects have a significant positive impact on affective engagement, with behavioral aspects having a greater impact. This indicates that strong motivation to learn one's major helps students engage more in learning behaviors, maintaining an active learning state. As professional identity levels increase, the degree of learning engagement also increases. The behavioral aspect of professional identity and students' motivation to learn their major play important roles in this, enhancing the motivation for major studies, making students more willing to dedicate their time and focus on learning, thereby achieving good learning outcomes. Meanwhile, the study found that professional identity has a significant positive impact on academic emotions. Specifically, cognitive, affective, and behavioral aspects have a positive and significant impact on high arousal positive emotions, with cognitive aspects having the highest impact. This indicates that improving college students' professional identity levels helps enhance their high arousal positive emotions. Increasing students' understanding of their major, enhancing their recognition of the major, and their motivation for major studies will make their emotions more pleasant during learning, leading to a hopeful outlook for future studies and the ability to learn autonomously.

### **Academic Emotions Partially Mediate Between Professional Identity and Learning Engagement**

The study found that undergraduate students' academic emotion levels are above average, with academic emotions playing an important role in promoting learning engagement. Academic emotions partially mediate the relationship between professional identity and learning engagement. Cognitive, affective, and behavioral aspects can directly influence behavioral engagement, cognitive engagement, and affective engagement, and can also influence these aspects through high arousal positive emotions. Additionally, high arousal negative emotions can indirectly affect behavioral and

cognitive engagement. Among cognitive, affective, and behavioral aspects, any one of these three exerts a greater mediating effect through high arousal positive emotions than through high arousal negative emotions. Therefore, both teachers and schools should focus on enhancing professional identity and stimulating and maintaining students' academic emotions, particularly the importance of positive academic emotions.

### **RECOMMENDATION**

This study found that professional identity, academic emotions, and learning engagement vary across demographic variables. An increase in the level of professional identity helps enhance learning engagement and improve academic emotions. Academic emotions partially mediate the relationship between professional identity and learning engagement. The study offers the following recommendations for universities. First, optimize professional guidance to strengthen students' professional identity, enhance career education, and build professional awareness. Seek ideological alignment and foster professional emotions; increase professional practice content and adjust professional behavior. Second, pay attention to emotional guidance to stimulate positive academic emotions. Conduct psychological support activities to guide students in rationally regulating their emotions; strengthen the awareness of academic goals and guide students to set appropriate learning objectives; stimulate interest in learning to mobilize positive academic emotions. Third, provide comprehensive support for student learning to ensure learning engagement. Enhance self-efficacy and improve academic self-monitoring; focus on teaching methods to encourage substantive student engagement; improve environmental support to assist students in dedicated learning.

The study shows that the academic emotional levels of undergraduates are above average. Academic emotions significantly promote learning engagement and partially mediate the relationship between professional identity and learning engagement. Specifically, cognitive, emotional, and behavioral aspects can directly influence behavioral, cognitive, and emotional engagement. They can also influence these engagements indirectly through positive high-arousal emotions and through negative high-arousal emotions, although the mediating effect of positive high-arousal emotions is much greater than that of negative high-arousal emotions. Therefore, we offer additional suggestions to universities. Both teachers and schools should focus on enhancing professional identity and stimulating and maintaining students' academic emotions, paying particular attention to the important role of positive academic emotions.

### **LIMITATIONS**

Due to constraints of time, manpower, and financial resources, it was difficult to conduct surveys at more universities, resulting in an incomplete investigation. The research method primarily relied on questionnaires, limiting the scope to the topics covered in the questionnaire, which may have overlooked other relevant content.

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