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22-Year Trajectory Changes in Professional Commitment Level Among Chinese University Students: A Cross-Temporal Meta-Analysis (2003-2024)

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Abstract: Since the expansion of higher education enrollment in 1999, the gross enrollment ratio of university students in China has increased from 15% in 2002 to 60.8% in 2024. In the context of this expansion, it is imperative to investigate the historical trends in professional commitment among university students. Utilizing a longitudinal historical meta-analysis approach, this study compiled data on the levels of professional commitment among university students over the past 22 years. The analysis revealed a consistent increase in the levels of professional commitment and its dimensions, namely, affective commitment, idealistic commitment, and continuance commitment, over time. Additionally, this research examined the predictive role of various social indicators on professional commitment among university students, identifying significant factors such as national higher education funding, per capita higher education expenditure, student-to-faculty ratios, the proportion of faculty with advanced titles, full-time faculty, and the number and scope of research and development institutions and projects. Further exploration of subgroup differences revealed no significant differences in professional commitment between female and female students, although the trend of increase was slightly higher among females. When comparing students across academic years, a stepwise increase in professional commitment was observed with advancing grade levels.

Keywords: Professional commitment; University students; Higher education; Educational policies; Longitudinal historical meta-analysis

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1. Introduction

University student professional commitment refers to the attitudes and behavioral tendencies of students who identify with their chosen field of study and are willing to engage fully in learning it [1–3]. Professional commitment is a critical predictive factor for academic persistence [4], career development [5], and psychological

well-being [6]. Studies have revealed that the overall level of professional commitment among university students is not high [7,8], with a significant propensity towards changing majors during their academic tenure; approximately one-third of university students actually opt to switch their fields of study [9,10]. Additionally, many graduates are reluctant to pursue careers related to their field of study [11–13], with research indicating that 80.4% of students driven by low levels of professional commitment choose careers outside their field of study [14]. Thus, examining the trends in university students' professional commitment, both from macroscopic and microscopic perspectives, has become increasingly urgent in recent years. In summary, our study utilizes a longitudinal historical meta-analysis approach to objectively and comprehensively collect data from 97,384 students across Chinese universities to investigate trends in university students' professional commitment levels.

2. Research methods

2.1. Research tools

American scholars such as Becker [15] and Allen et al. [16] were among the first to study organizational and professional commitment. Since the primary occupation of students is learning, and university education is vocationally oriented, the professional commitment of university students can be termed as such [17,18]. Following this concept, Chinese scholars Wu Lanhua and Lian Rong developed the "Professional Commitment among University Students" questionnaire, based on the established framework, to assess students' identification with and affection for their chosen fields, as well as their willingness to maintain their professional identities [19].

2.2. Literature retrieval and coding

To include more literature that met these criteria, searches were conducted in both Chinese and international databases, including CNKI, Wanfang, VIP, Chinese Doctoral/Master Dissertations, Baidu Scholar, Elsevier, Springer, SAGE, EBSCO, Taylor & Francis, ProQuest Dissertations, Google Scholar, Web of Science, and PsycINFO. The search terms used were: "professional commitment," "affective commitment," "idealistic commitment," "normative commitment," "continuance commitment," "scale/questionnaire."

The meta-analysis closely followed the protocols outlined in the Preferred Reporting Items for Systematic Reviews and MetaAnalyses (PRISMA) guidelines [20]. PRISMA provides specific recommendations for conducting a comprehensive and effective meta-analysis. The literature collected for this study was required to meet the following criteria:

(1) The primary measurement tool employed should be the "Scale of Professional Commitment among University Students," developed by Wu Lanhua and Lian Rong;

(2) The studies must report the overall score of professional commitment among university students, as well as the mean, standard deviation, and sample size for its four dimensions;

(3) The subjects should be university students enrolled in various higher education institutions across China, excluding those with psychological disorders or special disabilities;

(4) The literature collection was concluded in December 2024;

(5) If multiple articles used the same dataset, these averages were considered as a single data point.

The search concluded in December 2024, resulting in 187 publications that met the inclusion criteria (**Figure 1**). The publication dates of the final set of literature ranged from 2005 to 2024. For samples where the data collection year was not specified, it was estimated by subtracting two years from the year of publication

[21]. Thus, the period of study spans from 2003 to 2024, covering 22 years. In this research, Microsoft Excel and SPSS 24.0 software were utilized to code, enter, and analyze the data from the literature that met the criteria [22]. Data was coded based on each publication's reported sample size, mean and standard deviation of professional commitment among university students and its four dimensions, year of publication, year of data collection, academic stage, and additional sub-studies were coded for variables such as gender.

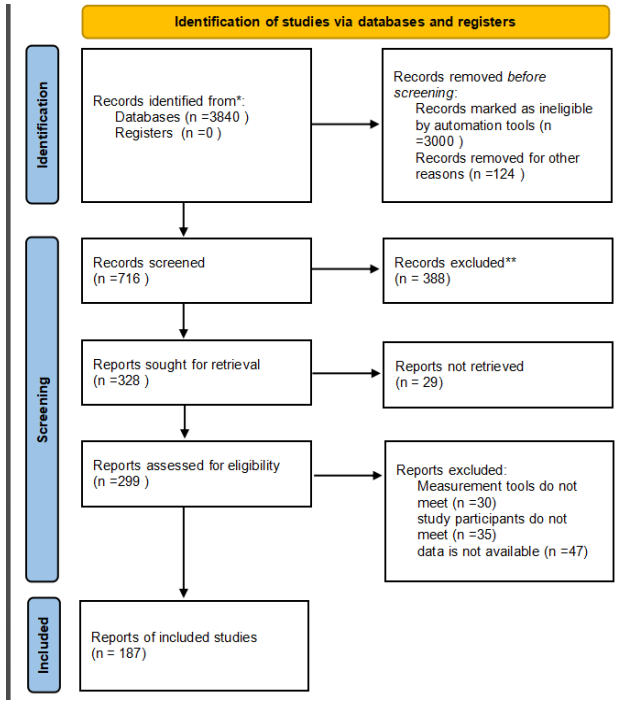

Figure 1. The PRISMA flow chart of the meta-analysis shows the records identified, included, and excluded in the process.

2.3. Sources of social indicators

This study selects seven key social indicators from the "China Statistical Yearbook" and the "China Education Statistics Yearbook." In cases where data are missing from these yearbooks, the required information is retrieved from the statistical databases of the Ministry of Education. These indicators include national higher education funding, per capita higher education expenditure, student-to-faculty ratios in higher education, higher education faculty with advanced titles, full-time faculty in higher education, the number of research and development institutions, and the number and scope of research and development institutions and projects. The purpose is to explore the changes in professional commitment among university students in China as a result of educational reform and societal development, and to analyze the predictive role of these social indicators on professional commitment among these students.

3. Results

3.1. Temporal trends in professional commitment among Chinese university students

This study investigates the evolution of professional commitment among Chinese university students from 2003 to 2024. To visually represent the trend, scatter plots (**Figures 2–6**) were created, where the x-axis represents the year of data collection and the y-axis shows the scores for overall professional commitment

as well as its four dimensions: affective commitment, idealistic commitment, normative commitment, and continuance commitment. As depicted in **Figure 2**, the overall score for professional commitment exhibited an increasing trend over the specified period. **Figures 3–6** illustrate that the mean scores for affective, idealistic, and continuance commitment also increased over time. In contrast, the mean score for normative commitment showed a downward trend. However, since the overall trend is the sum of the trends across these dimensions, the aggregate level of professional commitment among Chinese university students has progressively increased over the years.

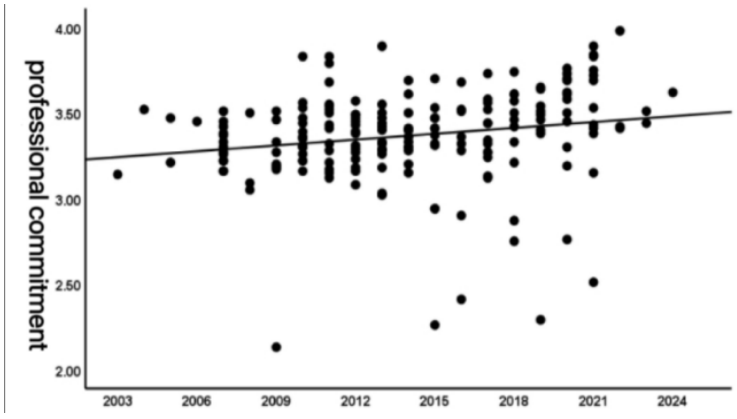

Figure 2. The changing trend of the average professional commitment of Chinese college students from 2003 to 2024.

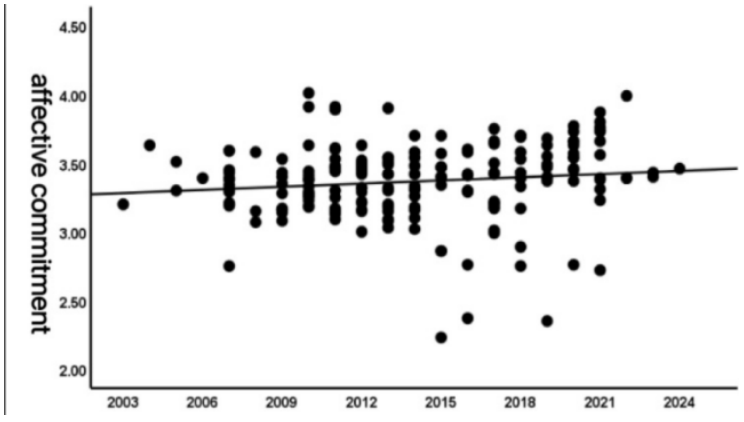

Figure 3. The changing trend of the average affective commitment of Chinese college students from 2003 to 2024.

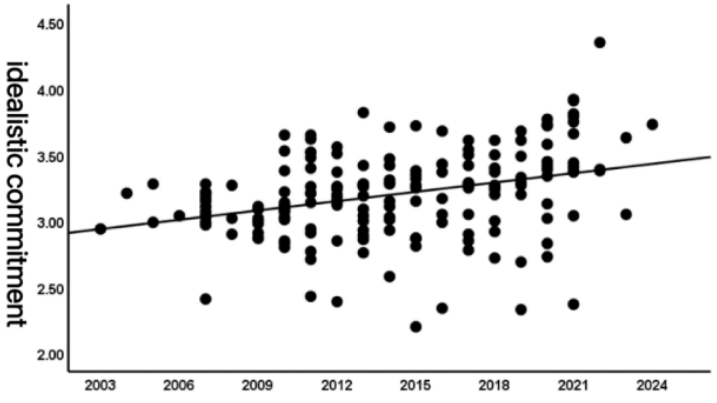

Figure 4. The changing trend of the average idealistic commitment of Chinese college students from 2003 to 2024.

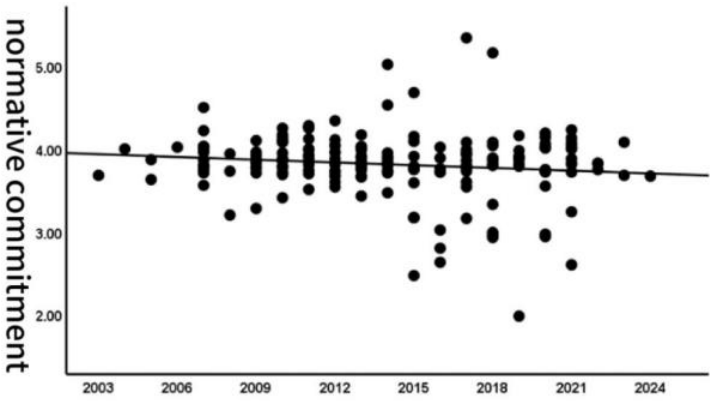

Figure 5. The changing trend of the average normative commitment of Chinese college students from 2003 to 2024.

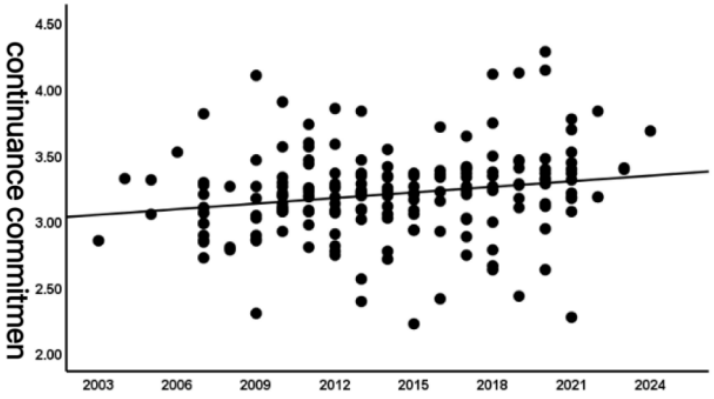

Figure 6. The changing trend of the average continuance commitment of Chinese college students from 2003 to 2024.

To ascertain the generational effect on professional commitment among university students, a simple regression analysis was conducted. The results show that, except for the normative commitment, the generation has a significant positive predictive effect on the mean value of college students' major commitment and other dimensions.

Furthermore, to mitigate the impact of sample size on the research outcomes, weighted least squares regression analysis was employed, with the year of data collection as the independent variable and the mean scores for professional commitment and its dimensions as the dependent variables (**Table 1**). Controlling for sample size, the year still significantly positively predicted the overall mean score for professional commitment among university students ($\beta = 0.32$, $P = 0.000$; $F = 20.88$, $P < 0.001$), explaining 10% of the variability. Among the dimensions, all except normative commitment showed significant positive predictive effects from the year of data collection ($P = 0.000$). These results confirm that from 2003 to 2024, there was a significant upward trend in the overall level of professional commitment among Chinese university students.

Table 1. Correlation between major commitment and each dimension and age of university students

Factor	Uncontrolled sample size		Control sample size	
	r	r^2	β	r^2
Professional commitment	0.19**	0.03	0.32***	0.10
Affective commitment	0.13^{**}	0.01	0.26^{***}	0.06
Idealistic commitment	0.33^{***}	0.10	0.41^{***}	0.16
Normative commitment	0.13^{+}	0.01	-0.10	0.01
Continuance commitment	0.19^{**}	0.03	0.31^{***}	0.10

Note: $+0.05 < P < 0.1$, $*P < 0.05$, $**P < 0.01$, $***P < 0.001$. r is the correlation coefficient of uncontrolled sample size, β is the standardized coefficient of control sample size, r^2 is the coefficient of determination, the same below.

To summarize, the level of professional commitment among Chinese university students has increased progressively from 2003 to 2024. To further investigate the magnitude of change in professional commitment among Chinese university students during this period, the study calculated the effect size (d) for explanatory purposes. Initially, a regression analysis was conducted on a weighted sample size, resulting in the regression equation y = Bx+C. Subsequently, the means for the years 2003 (M_{2003}) and 2024 (M_{2024}) were calculated using this equation, and the results were applied to Formula 1 to derive the value of d.

$$d = \frac{M_{2003} - M_{2024}}{M_{SD}} \quad (1)$$

As indicated in **Table 2**, and according to Cohen's criteria [23]. In this study, the changes in overall professional commitment, as well as in idealistic commitment, are categorized as large effects. The changes in affective and continuance commitments are medium effects, while the change in normative commitment is a small effect. This indicates that over the past twenty-two years, there have been significant increases in the overall scores of professional commitment and the dimensions of affective, idealistic, and continuance commitments among Chinese university students, with only a slight decline in normative commitment. Overall, there has been a substantial upward trend in the professional commitment of Chinese university students.

Table 2. The amount of change in the professional commitment level of university students over the years

Factor	M_{2003}	M_{2024}	M_{CHG}	M_{SD}	d
Professional commitment	2.82	3.82	1.00	0.55	1.82
Affective commitment	4.16	4.48	0.32	0.63	0.51
Idealistic commitment	2.86	3.45	0.59	0.67	0.88
Normative commitment	4.81	4.64	-0.17	0.71	-0.24
Continuance commitment	2.79	3.23	0.44	0.58	0.76

3.2. Subgroup variations in professional commitment among Chinese university students

3.2.1. Temporal changes and score variability in professional commitment among university students of different genders

The exploration of factors influencing professional commitment among university students can commence with an examination of demographic variables. Gender, a critical factor in individual development, serves as

the starting point for this investigation. This study analyzes 100 scholarly articles reporting gender-specific data, encompassing 23,615 male and 37,500 female students. Figures 7 and 8, along with **Table 3**, illustrate that the professional commitment of both male and female university students has increased over time. Subsequent regression analyses, adjusted for sample size, indicate that the era significantly and positively predicts professional commitment in terms of affective commitment, idealistic commitment, and continuance commitment across genders. However, its predictive influence on normative commitment is not significant.

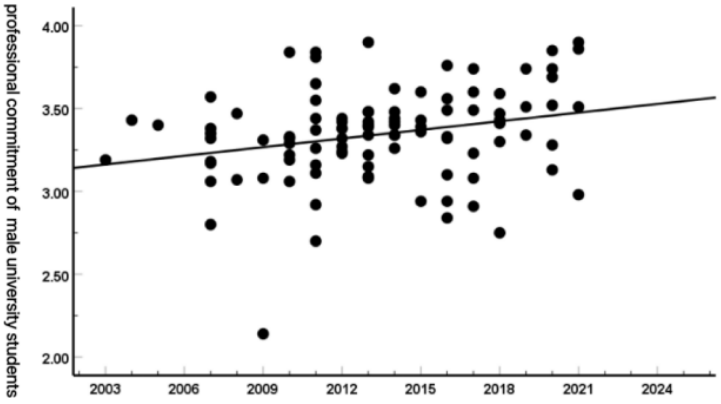

Figure 7. The changing trend of the average professional commitment of Chinese male university students from 2003 to 2024.

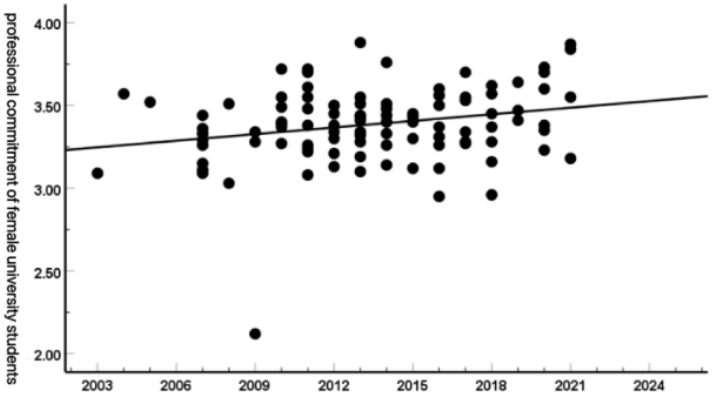

Figure 8. The changing trend of the average professional commitment of Chinese female university students from 2003 to 2024.

Table 3. Professional commitment of college students by gender and the change of each dimension with age and their correlation

Factor	Male				Female			
	β	r^2	M_{SD}	d	β	r^2	M_{SD}	d
Professional commitment	0.28**	0.07	0.29	0.49	0.30**	0.08	0.29	0.54
Affective commitment	0.30**	0.08	0.31	0.47	0.24*	0.05	0.23	0.38
Idealistic commitment	0.29**	0.08	0.40	0.57	0.32***	0.10	0.38	0.57
Normative commitment	-0.09	-0.00	-1.69	-2.17	-0.08	-0.00	-1.35	-1.92
Continuance commitment	0.25*	0.05	0.38	0.61	0.26**	0.06	0.29	0.49

To analyze the changes over time in professional commitment among male and female students across

these four dimensions, effect sizes (Cohen's d) for each gender and commitment dimension were calculated as shown in **Table 3**. The data reveal that the level of professional commitment among both male and female Chinese university students generally exhibited an upward trend, albeit with a non-significant negative predictive effect on normative commitment. The magnitude of change tends to be slightly higher in male students compared to their female counterparts.

To further investigate the differences in the mean professional commitment among male and female university students during this period, this study conducted an in-depth analysis. Female students were designated as the experimental group, with male students serving as the control group for calculating Cohen's d effect size, as outlined in formula 2. According to the results presented in **Table 4**, with the exception of idealistic commitment, which showed a positive value, the overall scores for professional commitment, as well as those for affective commitment, normative commitment, and continuance commitment, were negative. This indicates that male students scored higher than female students only in idealistic commitment, while scoring lower in all other dimensions. Following Cohen's (1992) criteria, the average effect size for idealistic commitment approached a small effect size, whereas the effect sizes for overall professional commitment and other dimensions were below the threshold for a small effect. Consequently, the gender differences in the overall scores and individual dimensions of professional commitment among Chinese university students are generally not significant.

$$\bar{d} = \sum W_i d_i / \sum W_i$$

$$W_i = 2N_i / \left(8 + d_i^2\right)$$

$$d = \left(M_{\text{男}} - M_{\text{女}}\right) / SD$$

$$\mathrm{SD} = \sqrt{\left[\left(n_e - 1\right)S_e^2 + \left(n_c - 1\right)S_c^2\right] / \left(n_e + n_c - 2\right)} \quad (2)$$

Table 4. Average effect size of gender differences in professional commitment and dimensions among Chinese university students

Factor	Professional commitment	Affective commitment	Idealistic commitment	Normative commitment	Continuance commitment
d	-0.07	-0.07	0.00	-0.14	-0.07

3.2.2. Temporal changes and score variability in professional commitment across academic stages among university students

In the student population, the academic stage is a significant factor influencing the professional commitment of university students. In this study, we explore the relationship between decades and professional commitment among university students across various academic stages and four dimensions (**Table 5**). After adjusting for the sample size, the data indicate that the decade positively predicts the professional and affective commitment of juniors and sophomores ($p < 0.05$). In contrast, it does not significantly predict the professional and affective commitment of freshmen. Furthermore, the predictive effect of the decade on professional commitment increases progressively from freshmen to juniors. The decade also significantly or marginally predicts an increase in idealistic and continuance commitment among freshmen, sophomores, and juniors ($p<0.001$), with the predictive effect strengthening from freshmen to juniors. In contrast, the decade's negative predictive

effect on normative commitment among students at all three academic levels is marginally significant or nonsignificant.

Table 5. Professional commitment of university students in different stages and the change of each dimension with age and their correlation

Factor	Education stage	M_{2003}	M_{2024}	M_{CHG}	M_{SD}	d
Professional commitment	Freshmen	0.15	0.00	0.14	0.54	0.25
	Sophomore	0.26*	0.05	0.19	0.54	0.35
	Junior	0.35**	0.11	0.26	0.56	0.46
Affective commitment	Freshmen	0.16	0.01	0.17	0.60	0.28
	Sophomore	0.33**	0.09	0.27	0.61	0.45
	Junior	0.38**	0.13	0.32	0.63	0.51
Idealistic commitment	Freshmen	0.32*	0.09	0.46	0.39	0.58
	Sophomore	0.39**	0.14	0.41	0.66	0.62
	Junior	0.43***	0.17	0.48	0.67	0.71
Normative commitment	Freshmen	-0.24+	0.04	-0.34	0.69	-0.49
	Sophomore	-0.23+	0.04	-0.31	0.71	-0.43
	Junior	-0.17	0.02	-0.24	0.72	-0.33
Continuance commitment	Freshmen	0.20+	0.03	0.24	0.61	0.39
	Sophomore	0.28*	0.06	0.31	0.51	0.60
	Junior	0.34**	0.10	0.39	0.60	0.65

Additionally, this research has calculated the effect sizes for changes in professional commitment and its four dimensions across academic stages over time, as demonstrated in **Table 5**. Students from freshman to junior year exhibited a significant increasing trend in professional commitment over the decades, with the magnitude of increase stepping up as students progressed through their academic stages. Among the dimensions, only normative commitment shows a decline over the decades, and the magnitude of change decreases progressively.

National higher education funding, per capita higher education expenditure, student-to-faculty ratios in higher education, higher education faculty with advanced titles, full-time faculty in higher education, the number of research and development institutions in higher education, and the number of research and development projects in higher education institutions, factors that have been found to significantly or marginally significantly influence the trends in professional commitment among Chinese university students and its dimensions.

From the results discussed, it has been observed that over the past twenty-two years, the level of professional commitment among Chinese university students has shown an increasing trend with the passage of time. The question then arises whether this trend is associated with societal changes. This study explores the relationship between professional commitment among university students and its dimensions with societal indicators to elucidate the impact of societal changes on these variables. Through direct correlation analysis, as shown in **Tables 6 and 7**, controlling for sample size, This indicates that, with the exception of normative commitment, national investments in higher education funding, per capita expenditures, student-to-faculty ratios, faculty with advanced titles, full-time faculty, and the number and scope of research and development

institutions and projects are significantly correlated with changes in professional commitment among university students and its various dimensions.

To more thoroughly investigate the impact of social indicators on the professional commitment among Chinese university students, this study employed a lagged correlation analysis method. It incorporated social indicators from one and five years prior, analyzing their relationship with various dimensions of students' professional commitment. Overall, the study identifies national higher education funding, per capita higher education expenditure, student-to-faculty ratios, higher education faculty with advanced titles, full-time faculty in higher education, and the number and scope of research and development institutions and projects as critical factors influencing or predicting the dynamics of professional commitment among Chinese university students.

Table 6. The predictive effect of social indicators on the change of university students' professional commitment in the current year, one year ago, three years ago and five years ago

Social indicators	Current year		1 year ago		5 years ago	
	Professional commitment		Professional commitment		Professional commitment	
	β	r^2	β	r^2	β	r^2
National higher education funding	0.26***	0.07	0.29***	0.08	0.34***	0.12
Per capita higher education expenditure	0.27***	0.07	0.29***	0.08	0.30***	0.09
Student-to-faculty ratios in higher education	0.32***	0.11	0.17*	0.03	0.11	0.01
Higher education faculty with advanced titles	0.31***	0.10	0.31***	0.09	0.31***	0.10
Full-time faculty in higher education	0.31***	0.10	0.31***	0.09	0.29***	0.09
The number of research and development institutions in higher education	0.35***	0.12	0.35***	0.11	0.31***	0.10
The number of research and development projects in higher education institutions	0.34***	0.12	0.34***	0.12	0.26***	0.07

Table 7(A). Predictive effect of social indicators on the changes of each dimension of university students' professional commitment in the current year, one year ago, three years ago and five years ago

Social indicators	Affective		Idealistic		Idealistic		Continuance	
	β	R2	β	R2	β	R2	β	R2
Current year								
National higher education funding	0.19*	0.04	0.34***	0.11	-0.14+	0.02	0.26***	0.07
Per capita higher education expenditure	0.19**	0.04	0.33***	0.11	-0.09	0.01	0.26***	0.07
student-to-faculty ratios in higher education	0.32***	0.10	0.37***	0.14	0.02	0.001	0.20**	0.04
Higher education faculty with advanced titles	0.26***	0.07	0.40***	0.16	0.10	0.01	0.29***	0.09
Full-time faculty in higher education	0.26***	0.07	0.40***	0.16	-0.09	0.01	0.29***	0.09
The number of research and development institutions in higher education	0.32***	0.10	0.45***	0.20	-0.07	0.01	0.31***	0.10
The number of research and development projects in higher education institutions	0.31***	0.10	0.43***	0.19	-0.10	0.01	0.30***	0.09

Table 1 (Continued)

Social indicators	Affective		Idealistic		Idealistic		Continuance	
	β	R2	β	R2	β	R2	β	R2
1 year ago								
National higher education funding	0.23**	0.05	0.38***	0.14	-0.11+	0.01	0.29***	0.09
Per capita higher education expenditure	0.22**	0.05	0.38***	0.14	-0.12	0.02	0.29***	0.09
Student-to-faculty ratios in higher education	0.14+	0.02	0.24***	0.06	-0.09	0.01	0.12	0.01
Higher education faculty with advanced titles	0.25***	0.06	0.39***	0.15	-0.10	0.01	0.29***	0.08
Full-time faculty in higher education	0.24***	0.06	0.40***	0.16	-0.10	0.01	0.30***	0.09
The number of research and development institutions in higher education	0.32***	0.10	0.44***	0.19	-0.07	0.01	0.32***	0.10
The number of research and development projects in higher education institutions	0.31***	0.10	0.44***	0.19	-0.10	0.01	0.30***	0.09

Table 7(B). Predictive effect of social indicators on the changes of each dimension of university students' professional commitment in the current year, one year ago, three years ago and five years ago

Social indicators	Affective		Idealistic		Idealistic		Continuance	
	β	R2	β	R2	β	R2	β	R2
5 years ago								
National higher education funding	0.32***	0.10	0.43***	0.18	-0.06	0.003	0.33***	0.11
Per capita higher education expenditure	0.26***	0.07	0.39***	0.15	-0.09	0.01	0.31***	0.10
Student-to-faculty ratios in higher education	0.01	0.00	0.03	0.001	0.07	0.01	0.11	0.01
Higher education faculty with advanced titles	0.25***	0.06	0.40***	0.16	-0.10	0.01	0.30***	0.09
Full-time faculty in higher education	0.22**	0.05	0.37***	0.14	-0.11	0.01	0.28***	0.08
The number of research and development institutions in higher education	0.26***	0.07	0.42***	0.17	-0.11	0.01	0.31***	0.10
The number of research and development projects in higher education institutions	0.24**	0.06	0.36***	0.13	0.09	0.01	0.28***	0.08

4. Discussion

This study organizes and analyzes data on professional commitment reported by 97,384 Chinese university students since the year 22, examining the trends in professional commitment among university students over the decades and the factors influencing these changes. The analysis is conducted in light of the results obtained.

4.1. An observable upward trend in the professional commitment among university students with continuous educational reform in China

Results from a longitudinal historical meta-analysis reveal a significant positive correlation between the mean values of professional commitment among Chinese university students and the chronological era. Among the

four dimensions of commitment (affective, idealistic, and continuance commitments) all show significant positive correlations with time. Overall, this indicates a gradual enhancement in the professional commitment among university students in China.

These findings suggest that as the state-led educational reforms progress, the ongoing refinement and implementation of educational concepts and practices by educators are inevitably enhancing students' professional commitment. Initially, from a theoretical perspective [24], the Social Cognitive Career Theory (SCCT) posits that university students' professional commitment is influenced by their interest in their field, self-efficacy, anticipated career outcomes, and social support [25]. This implies that students with high interest and self-efficacy in their professions, who also receive substantial familial, academic, and teacher support, are more likely to develop strong professional commitments. Additionally, from a practical standpoint, the school environment, which plays a crucial role in students' lives and education, significantly impacts their growth and professional commitment. Current research indicates that a positive educational culture, curriculum demands, educational philosophies, and value orientations significantly affect students' professional commitment [26]. In China, the establishment of vocational experience activities during basic education lays the foundation for enhancing students' understanding and interest in their professions. At the higher education level, activities such as "career planning experiences" and "career planning competitions" help students deepen their self-understanding, explore the professional world, and set realistic goals, all of which are factors that enhance the level of professional commitment among university students.

4.2. Subgroup differences in professional commitment among Chinese university students

This study examines the differences in professional commitment levels among university student subgroups, focusing on four demographic variables. Firstly, an analysis of gender reveals that over two decades, both male and female students have shown an increasing trend in their levels of professional commitment. Among the four dimensions of commitment, only normative commitment exhibited a negative predictive effect over the decades, although this was not statistically significant. Furthermore, the trend of change in professional commitment appears to be slightly higher among male students compared to female students. This difference may be influenced by gender-specific personality traits and traditional societal roles, suggesting that societal expectations of gender roles typically perceive males as more rational and proactive, which also correlates with higher self-confidence. This indirectly reflects the students' affirmation of their self-worth and the clarity of their career objectives [27]. However, these gender differences were overall not significant, indicating that gender is not a determining factor affecting changes in professional commitment.

Secondly, regarding different academic stages, students from freshman to junior year exhibited a significant increasing trend in professional commitment over the decades, with the magnitude of increase stepping up as students progressed through their academic stages. Further analysis of different dimensions of commitment revealed that affective commitment, idealistic commitment, and continuance commitment all correlated positively with time, with increments also following a pattern of gradual amplification from lower to higher academic years. This aligns with conclusions drawn from previous research [28]. Possible reasons for this pattern are as follows:

(1) As students progress through their academic years, their professional understanding deepens and adaptability increases. With advancing academic stages, students deepen their professional knowledge through coursework and practical internships, transitioning their understanding of disciplinary values

from abstract to concrete [29]. This adaptive growth directly strengthens both affective and idealistic commitments. Conversely, lower-year students, due to asymmetrical information, are prone to cognitive biases, resulting in lower levels of professional commitment.

(2) As students approach higher academic years, employment pressures increase. Facing the realities of further education and job hunting, senior students are compelled to actively strengthen their continuance commitment [30].

(3) Students are influenced by the socialization within their peer groups. As students advance in their studies, their professional circles become more solidified, and the demonstrative effect of their peers influences their career choices, subsequently boosting affective commitment [31].

4.3. Enhancing the provision of social resources to foster professional commitment among university students

In addition to the aforementioned outcomes, another focal point of this study is to examine the impact of changes in social indicators on the trends in professional commitment among university students. The results indicate that several key factors—national higher education funding, per capita higher education expenditure, student-to-faculty ratios in higher education, the proportion of higher education faculty with advanced titles, the number of full-time faculty in higher education, the number of research and development institutions, and the number and scope of research and development projects—are significant predictors or influencers of the levels and dimensions of change in professional commitment among Chinese university students. This suggests that fluctuations in the levels of professional commitment among university students are influenced by changes in social indicators, which can be addressed from three perspectives:

(1) Increasing Investment in Higher Education Funding. Enhanced funding can enrich institutional resources, align students' professional interests more closely with their academic programs [32]. This consolidation of professional identity fosters an elevation in the level of professional commitment among university students.

(2) Improving the Quality and Expansion of Higher Education Faculty: Participation of senior faculty members in undergraduate teaching strengthens students' professional identification, while reasonable student-to-faculty ratios ensure personalized guidance, effectively reducing professional doubts due to academic difficulties. These factors highlight that enhancing the quality and breadth of the teaching staff is a critical pathway for boosting professional commitment among students.

(3) Optimizing the Allocation of Scientific and Technological Resources in Higher Education: Student involvement in research projects deepens their professional understanding and enhances their sense of self-efficacy, which in turn elevates their level of professional commitment [33].

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