

The Educational Feelings Scale Compiled And The Reliability And Validity Analysis Of The Scale For Education Major Students

Li Jing, Diyana Kamarudin and Xiaojie Hu

Abstract—Educational feelings are the core quality of education major students, which is mainly reflected in their moral behavior, professional identity, professional attitude and professional maturity. On the basis of literature analysis and previous studies, through the investigation of CNKI China academic journal database and VIP knowledge resource service platform database, there is no relevant research on education major students' educational feelings scale in China. However, from the connotation of education major students' educational feelings, some scholars have studied the education major students' professional identity scale, teaching willingness scale, professional attitude scale and professional maturity scale. Therefore, based on the connotation and cultivation of education major students' educational feelings, this paper preliminarily compiled the evaluation scale of education major students' educational feelings. This paper makes exploratory factor analysis and confirmatory factor analysis on the prediction data through SPSS 26 software and Amos 26 software, revises the initial scale, and finally forms a formal scale. The scale of educational feelings of education major students compiled in this paper includes four dimensions: professional attitude, professional identity, willingness to teach and career maturity. The results show that the scale has good reliability and validity. The scale of education major students'

educational feelings studied in this paper can be used as a measurement tool for the evaluation of education major students' educational feelings, and has certain practical significance in the cultivation of education major students' educational feelings in the future.

Keywords—Educational feelings, Educational feelings scale design, Reliability and validity analysis, Education major students

I. INTRODUCTION

China attaches great importance to the comprehensive quality training of education major students and has issued relevant policies to improve the teaching competence of Chinese education major students. For example, the Central Committee of the Communist Party of China issued the opinions on deepening the reform of the new era of teachers in January 2018; in April 2021, five documents were printed and issued, including the standard of professional competence of teachers majoring in secondary education (for trial Implementation), the standard of professional competence of teachers majoring in primary education (for trial Implementation), the standard of professional competence of teachers majoring in preschool education (for trial implementation), the standard of professional competence of teachers majoring in secondary vocational education (for trial implementation) and the standard of professional competence of teachers majoring in special education (for trial implementation). "Cultivating educational feelings" is a very important content in the professional competence standards of teachers for education major students majoring in middle school education, primary education, preschool education and secondary vocational education. Therefore, the study of education major students' educational feelings scale is of

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certain significance to improve education major students' professional competency.

II. PROBLEM STATEMENT

The educational feelings of education major students are an important part of teachers' professional competency. Adopt CNKI China HowNet academic journal database and VIP knowledge resource service platform database search, there is no relevant research on education major students' educational feelings scale at present. However, from the connotation of education major students' educational feelings, some scholars have studied the education major students' professional attitude scale, professional identity scale, teaching willingness scale and career maturity scale. This study attempts to compile the educational feelings scale of education major students from four aspects of the connotation of educational feelings: professional attitude, professional identity, teaching willingness and career maturity, which is helpful to provide support for cultivating the educational feelings quality of education major students.

III. LITERATURE REVIEW

Research on the education major students' educational feelings

In his study, Huang (2020) noted that the concept of educational feelings refers to the professional and emotional attitude of teachers toward education. It shows their love and belief in education and their firm pursuit of it. It also reflected in their spiritual and emotional realm. The feelings of education majors are mainly centered on their love for basic education. They believe that it is their duty to take it seriously and to treat every student with dignity and respect. They also believe that it is their responsibility to establish morality and cultivate people as the interests and pursuit of life. Aside from being able to guide their students to taste classic literature, teachers also need to make sure that they are able to carry out emotional education in order to develop their educational feelings. This can be done through deeds and words. They also need to make sure that their students are aware of the importance of practicing educational practice (p. 73-76).

According to Zhang, Hu and An (2022), education major

students should have a positive attitude and a good outlook on life. They should also have a good sense of responsibility and have a good personality. This is why it is very important for them to have a good mentality and be able to teach others. The concept of educational feelings is an integral part of the teaching profession, as it represents the internal drive of teachers to follow their ethical and moral standards. Most students in universities and colleges exhibit various types of educational feelings, such as professional identity, scientific spirit, and moral consciousness. Being able to cultivate these feelings can also help improve the willingness of students to teach and the team of rural teachers. It can also help make them more effective and contribute to the development of rural children (p. 63-65).

In Cen's (2022) study, he proposed that the educational feelings are the most important factors that a student must consider when choosing a career in preschool education. They can also help determine their future professional level and position. To effectively promote the development of educational feelings among preschool education major students, various methods must be adopted. These include developing effective communication skills, increasing enthusiasm, and developing a passion for teaching (p. 86-93).

Cheng and Zhu (2021) noted that the current state of education major students' feelings is at a medium level. The main factors that influence their educational experiences are their salary, learning attitude, and model strength. The study revealed that increasing the salaries of teachers and developing moral models for teachers can help improve the educational experiences of students. It also pointed out that cultivating a good learning attitude and professional belief are also important factors that can improve the academic experiences of education major students (p. 83-86).

According to Lu (2022), educational feelings are a multidisciplinary concept that includes psychology, sociology, and pedagogy. It is a deep emotion that is associated with education. The quality of teachers is mainly composed of their moral realm and emotional attitude. One of the most important values that education major students should consider when it comes to the development of their educational feelings state is the importance of learning. This can be done through the following four steps: immerse yourself in the environment, learn about emotion, promote emotion with action, and guide emotion with knowledge (p.

71-74).

The three researchers, Du, Wang and Liu (2021) noted that the quality of teachers is related to their educational feelings. They refer to these feelings as a high-level realm of survival that includes tolerance and emotional attitude. Their dedication to teaching and love for education is also evidenced by their willingness to work hard and live up to their ideals (p. 76-79).

Hu, Xie and Xu (2021) explained that teachers' educational feelings are influenced by their desire to educate themselves and their sense of responsibility and identity. They also believe that education is a part of their life. Early studies on the subject focused on the professional aspects of education (p. 12-17).

Wu (2021) revealed that the perceptions of the teacher profession by education major students are the main factors that influence their decision-making process when it comes to becoming a teacher. They also have a significant influence on their working attitude and their guidance for their future professional development (p. 117-120).

The research on the educational feelings of education major students is an important research content under the background of cultivating excellent teachers proposed by China's normal education at this stage. According to the above Chinese scholars' research on the content of education major students' educational feelings, educational feelings are a complex of education major students' moral cultivation, professional identity, willingness to teach, professional attitude and career maturity.

Research status of educational feelings scale for educational major students

The professional attitude scale includes the questionnaire of professional attitude of education major school students proposed by Li (2005); Zhou (2009) proposed a questionnaire on the professional attitude of free education major students; Tian (2021) proposed the scale of professional attitude of physical education normal students and Dong (2020) proposed the questionnaire of professional attitude of rural teachers towards education major students.

The professional identity scale includes the professional identity questionnaire for free education major students proposed by Xu (2020); Zhang (2019) proposed a questionnaire on teachers' professional identity of education

major students majoring in special education; Meng (2020) proposed a questionnaire on professional identity of education major students in normal universities; Liang (2020) proposed a questionnaire on preschool teachers' professional identity of education major students in higher vocational preschool education; Xu (2021) proposed a questionnaire on teachers' professional identity of education major students majoring in primary education; Wu (2018) proposed a questionnaire on the impact of educational practice on pre-school education major students' professional identity; Qu (2021) proposed a questionnaire on the professional identity of teachers of six-year public funded education major graduates and Li (2020) proposed a questionnaire on the professional identity of education major students in excellent classes.

From the teaching willingness scale, there is a questionnaire on motivational factors affecting teachers' career choice proposed by Guo (2018); Zhang (2020) proposed a questionnaire on the willingness of non-publicly funded education major students to teach; Zhou (2018) proposed a questionnaire on free education major students' willingness to teach and its influencing factors; Zhang (2020) proposed a questionnaire on students' willingness to teach; the research questionnaire on the relationship between professional commitment, learning satisfaction and teaching willingness of preschool education students proposed by Geng (2020) and the research questionnaire on teaching willingness of vocational teachers' students proposed by Chen (2017).

The scale of career maturity includes the questionnaire of college students' career maturity proposed by Liu (2015); Fan (2016) proposed a questionnaire on the development status and influencing factors of career maturity of physics education major students; Zhao (2017) proposed the questionnaire on college students' career maturity and Jiao (2009) proposed the questionnaire on teachers' career maturity of education major students.

Design of educational feelings scale for education major students

The initial scale of education major students' educational feelings is compiled by comprehensively studying the questionnaire of four dimensions of education major students' professional attitude, professional identity,

willingness to teach and career maturity. The initial scale of educational feelings for education major students is mainly based on the scale of professional attitude of physical education major students proposed by Tian (2021), the questionnaire of professional identity of education major students in excellent classes proposed by Li (2020), the questionnaire on current students' teaching willingness proposed by Zhang (2020) and the questionnaire of teachers career maturity of education major students proposed by Jiao (2009). The scale is designed with Likert 5-point scoring scale, and the four preset dimensions are shown in Table I.

TABLE I: PRESET DIMENSIONS OF EDUCATION MAJOR STUDENTS' EDUCATIONAL FEELINGS SURVEY SCALE

Dimension	Question	Source
Profession al attitude (PA)	PA1 I think teachers play a great role and contribute to society.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 1.
	PA2 I like being with students very much.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 14.
	PA3 I especially like being a teacher.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 10.
	PA4 I think being a teacher is very in line with my personality and interests.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 13.
	PA5 I am determined to work hard and teach happily.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 19.

Profession al identity (PI)

PA6 I will actively learn various skills related to the teaching profession.

PI1 I will work in the teaching all my life.

PI2 I think the teaching profession is relatively stable.

PI3 I think I can be an excellent teacher.

PI4 I think teachers' work is very important to promote students' growth and development.

PI5 I think teaching is a highly respected profession.

PI6 I think the working environment of teachers is very good.

Willingnes s to teach (WT)

WT1 I'd like to teach in the countryside.

Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 17.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 7.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 16.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 19.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 12.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 11.

Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 15.

Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 10.

	WT2 The salary of teachers can make me happy.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 18.
	WT3 I have practical experience in teaching.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 14.
	WT4 I like teachers' working hours.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 2.
	WT5 My character is suitable for being a teacher.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 29.
	WT6 I approve Chinese teacher management system.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 9.
Career maturity (CM)	CM1 If I choose to be a teacher, mainly because it can play my ability.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 2, question 1.
	CM2 On the issue of whether to be a teacher, I will follow my parents.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 2, question 3.
	CM3 If I choose to be a teacher, it is a good profession for me.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 2, question 20.
	CM4 I have been to middle school or primary school to give lectures.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 3, question 3.
	CM5 I have learned my future professional experience from primary and secondary school teachers.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 3, question 13.

CM6 If I choose to be a teacher, it is mainly because the teachers have a high social status.	Adapted from the "Questionnaire of teachers career maturity of education major students" (Jiao, 2009), part 2, question 10.
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IV. METHOD

Pilot test

This paper makes exploratory factor analysis and confirmatory factor analysis on the prediction data through SPSS 26 software and Amos 26 software.

The minimum sample size of quantitative research is based on the number of dependent variables and independent variables, through Linear multiple regression: Fixed model, R² increase of F tests by G-Power software to test and analysis results of increase are shown in the Table II below.

TABLE II MINIMUM SAMPLE SIZE CALCULATION TABLE

F tests - Linear multiple regression: Fixed model, R ² increase		
Analysis:	A priori: Compute required sample size	
Input:	Effect size f ²	= 0.15
	α err prob	= 0.05
	Power (1-β err prob)	= 0.95
	Number of tested predictors	= 2
	Total number of predictors	= 4
Output:	Noncentrality parameter λ	= 16.0500000
	Critical F	= 3.0854650
	Numerator df	= 2
	Denominator df	= 102
	Total sample size	= 107
	Actual power	= 0.9517447

Through calculation, the minimum sample size is 107. In order to ensure the validity and reliability of the questionnaire, the predetermined sample size is 500 samples are planned. This paper selects the education major students of J University in China as the test object, and issues the questionnaire through Wechat, QQ and Ding talk. 535 education major students were selected to fill in the questionnaire, 535 copies were recovered, the invalid questionnaires were eliminated, and 521 valid questionnaires were obtained. Through item analysis, reliability and validity analysis of 521 valid test samples,

the deficiencies of the questionnaire are found and modified in order to obtain a high-quality questionnaire and facilitate the development of follow-up research.

V. FINDINGS

Reliability analysis

Before issuing the formal questionnaire, the first thing to do is to test the reliability. Reliability refers to the consistency of the measurement results of the questionnaire after multiple measurements, and the questionnaire shows a stable nature. The higher the reliability coefficient, the more reliable the measurement result is. When tested with a Cronbach's alpha to represent the internal consistency of the questionnaire. The higher the coefficient α , the better the internal consistency of the questionnaire. Wu (2010), a Chinese scholar, pointed out that the overall questionnaire is based on Cronbach's α theory when synthesizing the views of various scholars on reliability test. If the coefficient α is above 0.8, it means that the questionnaire is good; The coefficient α is between 0.7-0.8, and the questionnaire is in the acceptable range. For each dimension of the questionnaire, the reliability coefficient α of each level is greater than 0.7, indicating that the questionnaire is appropriate; The reliability coefficient α is between 0.6-0.7, indicating that the questionnaire is in an acceptable range; If the Cronbach's α coefficient is lower than 0.6, it means that the questionnaire needs to be re compiled or modified.

The reliability test results of the scale are shown in Table III. As can be seen from the table, Cronbach's α of each variable dimension and overall Cronbach's α are greater than 0.8, indicating that the scale has good internal consistency and high reliability.

TABLE III RELIABILITY ANALYSIS

Reliability Analysis		
	N	Cronbach's α
PA	6	0.886
PI	6	0.929
WT	6	0.942
CM	6	0.943
Total	24	0.955

Validity analysis

Exploratory Factor analysis

First, exploratory factor analysis was conducted on the data, and the results are shown in Table IV. KMO value is 0.959, greater than 0.7, indicating that the scale data is very suitable for factor analysis. Bartlett's spherical test $p = 0.000$, less than 0.01, passed the significance test with a significance level of 1%.

TABLE IV KMO AND BARTLETT'S TEST OF SOCIAL SUPPORT

KMO and Bartlett's Test of social support		
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.959
Bartlett's Test of Sphericity	Approx. Chi-Square	10548.0
	df	8
		276
	Sig.	0.000

Four factors with characteristic roots greater than 1 were extracted by principal component analysis, and the cumulative variance interpretation was 73.82%, which met the standard of more than 60%. The maximum variance method is used for orthogonal rotation. A total of 4 common factors are extracted from 24 items, which is consistent with the potential variables preset in this study. In each factor, the factor load of the corresponding item is greater than 0.6, indicating that the item is highly correlated in the same dimension and has a strong explanation for the variation dimension of the dimension, while the factor load on other factors is less than 0.5, indicating that there is a certain degree of discrimination between dimensions, See Table V Total Variance Explained of social support and Table VI Factor loading of social support Rotated Component Matrix for details.

TABLE V TOTAL VARIANCE EXPLAINED OF SOCIAL SUPPORT

Total Variance Explained of social support			
Com	Extraction Sums		
pone	Initial	of Squared	Rotation Sums of
nt	Eigenvalues	Loadings	Squared Loadings

	T ot al	Var ian ce	Cum ulati ve	T ot al	Var ian ce	Cum ulati ve	T ot al	Var ian ce	Cum ulati ve
1	11.95	49.80	49.80	11.95	49.80	49.80	4.08	20.03	20.03
2	3.25	13.55	63.36	3.25	13.55	63.36	4.05	19.13	39.16
3	1.39	5.81	69.16	1.39	5.81	69.16	4.04	18.52	57.67
4	1.12	4.66	73.82	1.12	4.66	73.82	3.08	16.15	73.82
5	0.70	2.91	76.73						
6	0.55	2.28	79.01						
7	0.45	1.86	80.87						
8	0.42	1.73	82.60						
9	0.41	1.70	84.30						
10	0.36	1.51	85.81						
11	0.35	1.45	87.26						
12	0.33	1.37	88.63						
13	0.31	1.29	89.92						
14	0.29	1.20	91.11						
15	0.27	1.11	92.22						
13	0.25	1.05	93.27						
14	0.24	1.00	94.27						
15	0.24	0.98	95.25						
16	0.22	0.97	96.17						

17	0.21	0.89	97.06
18	0.21	0.87	97.93
19	0.20	0.81	98.74
20	0.17	0.71	99.45
21	0.13	0.55	100.00

Extraction Method: Principal Component Analysis.

**TABLE VI FACTOR LOADING OF SOCIAL SUPPORT
ROTATED COMPONENT MATRIXA**

	Component			
	1	2	3	4
CM4	0.825			
CM3	0.817			
CM6	0.813			
CM5	0.792			
CM1	0.761			
CM2	0.732			
PI3		0.796		
PI6		0.781		
PI5		0.777		
PI4		0.754		
PI1		0.750		
PI2		0.743		
WT3			0.788	
WT4			0.784	
WT5			0.774	
WT1			0.762	
WT6			0.735	
WT2			0.725	
PA4				0.769
PA1				0.739
PA2				0.735
PA6				0.721
PA3				0.704
PA5				0.643

Validation factor analysis

Model Fitting

For the fitting indexes of the original model, the chi square degree of freedom ratio is $2.272 < 3$, the progressive root mean square residual RMSEA is $0.05 < 0.08$, the quantity adaptability adaptation index GFI is $0.914 > 0.85$, and other indexes also meet the minimum fitting standard. In the original model, the factor load of the second test item PA2 in the latent variable PA is less than 0.6, indicating that the test item has weak explanatory power for PA, so it can be considered to delete this item.

After deleting PA2, the model fitting indexes meet the minimum fitting indexes. See Figure 1 for the original model fitting, Table VII for the model fit summary, and Figure 2 for the model fitting after deleting test item PA2.

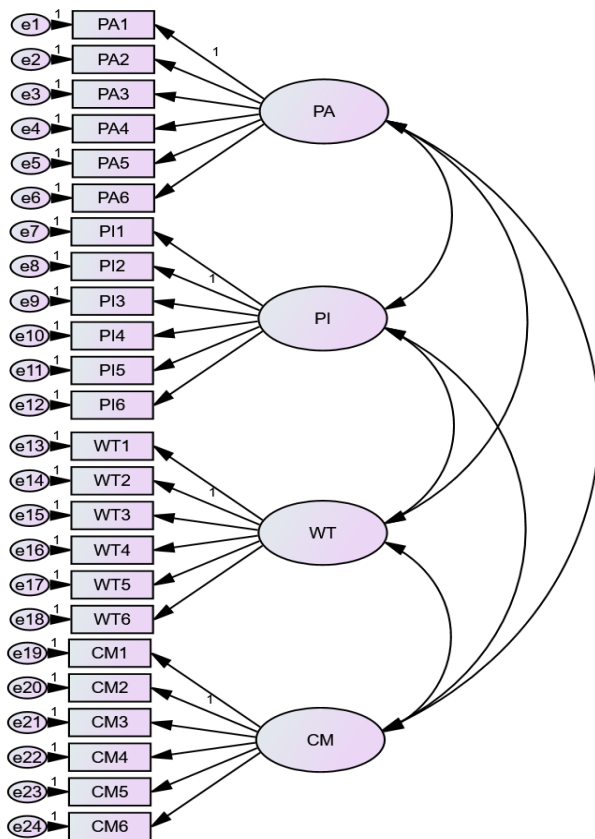


Figure 1. The Original Fitted Model

TABLE VII MODEL FIT SUMMARY

Model Fit Summary						
CMIN/DF	RM	RMS	GFI	NFI	TLI	CFI
	R	EA				

Standard	<3	<0.05	<0.08	>0.85	>0.9	>0.9	>0.9
Mod	2.272	0.0	0.050	0.9	0.9	0.9	0.9
el		21		14	48	66	70
	after	2.185	0.0	0.048	0.9	0.9	0.9
			19		22	53	71
						74	

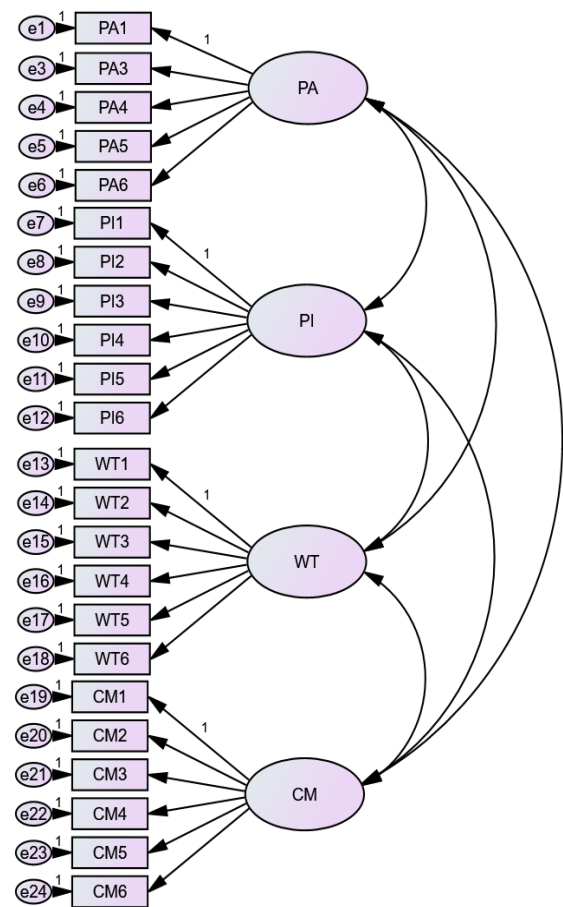


Figure 2. Model Fitting After Removing The Test Item PA2

Convergent validity

The factor load of each latent variable corresponding to each topic is greater than 0.7, indicating that its corresponding question is highly representative, the average variance AVE exceeds 0.5, and the combined reliability CR exceeds 0.8, indicating that the convergent validity of the scale also meets the standard. See Table VIII for details.

TABLE VIII CONVERGENT VALIDITY

Convergent validity							
Variable	Factor Loading		S.E.	C.R.	P	AV	CR
	Estimate	Std Estimate					
	P A	PA					
	1					16	89
	PA	0.910	0.787	0.0	20.4	**	
	3			45	06	*	
	PA	0.790	0.753	0.0	19.2	**	
	4			41	25	*	
	PA	0.852	0.751	0.0	19.1	**	
	5			45	48	*	
	PA	0.877	0.798	0.0	20.7	**	
	6			42	94	*	
PI	PI1	1.000	0.857			0.6	0.9
	PI2	0.932	0.839	0.0	24.5	**	90
				38	67	*	30
	PI3	1.023	0.838	0.0	24.5	**	
				42	00	*	
	PI4	0.956	0.825	0.0	23.8	**	
				40	44	*	
	PI5	1.005	0.805	0.0	22.9	**	
				44	02	*	
	PI6	1.056	0.817	0.0	23.4	**	
				45	84	*	
W T	WT	1.000	0.856			0.7	0.9
	1					33	43
	WT	1.037	0.830	0.0	24.3	**	
	2			43	22	*	
	WT	0.961	0.869	0.0	26.4	**	
	3			36	35	*	
	WT	1.022	0.867	0.0	26.2	**	
	4			39	84	*	
	WT	0.992	0.852	0.0	25.4	**	
	5			39	80	*	
	WT	1.002	0.862	0.0	26.0	**	
	6			39	15	*	
C M	CM	1.000	0.829			0.7	0.9
	1					38	44
	CM	0.939	0.764	0.0	20.4	**	
	2			46	72	*	

CM	1.033	0.884	0.0	25.7	**
3			40	52	*
CM	1.010	0.869	0.0	25.0	**
4			40	00	*
CM	1.026	0.897	0.0	26.3	**
5			39	89	*
CM	1.032	0.904	0.0	26.7	**
6			39	20	*

***p<0.001 **<0.01 *<0.05

Discriminant Validity

Table IX discriminant validity diagonal is the square root of the mean variance variation value of each dimension. It can be seen that there is correlation among PA, PI, WT and CM, but the correlation coefficient is less than the square root of the ave value of each dimension, indicating that the discriminant validity between the four factors meets the standard.

TABLE IX DISCRIMINANT VALIDITY

Discriminant Validity				
	PA	PI	WT	CM
PA	0.785			
PI	0.762***	0.830		
WT	0.499***	0.596***	0.856	
CM	0.474***	0.527***	0.789***	0.859

***p<0.001 **<0.01 *<0.05

VI. DISCUSSION

Final formation of the scale

Through the reliability and validity test of the initial scale of education major students' educational feelings, it is found that the evaluation scale of education major students' educational feelings has good reliability and validity and can be used as a measurement tool for the evaluation of education major students' educational feelings. The final scale is shown in TableX, which has certain significance in the cultivation and practice of education major students' educational feelings in the future.

TABLE X EDUCATION MAJOR STUDENTS' EDUCATIONAL FEELINGS SURVEY SCALE

Dimension	Question	Source	
Professional attitude (PA)	PA1 I think teachers play a great role and contribute to society.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 1.	
	PA3 I especially like being a teacher.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 10.	
	PA4 I think being a teacher is very in line with my personality and interests.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 13.	
	PA5 I am determined to work hard and teach happily.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 19.	
	PA6 I will actively learn various skills related to the teaching profession.	Adapted from the "Questionnaire on the scale of teacher professional attitude of physical education major students" (Tian, 2021), question 17.	
	Professional identity (PI)	PI1 I will work in the teaching all my life.	Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 7.
PI2 I think the teaching profession is relatively stable.		Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 16.	
PI3 I think I can be an excellent teacher.		Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 19.	
		PI4 I think teachers' work is very important to promote students' growth and development.	Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 12.
		PI5 I think teaching is a highly respected profession.	Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 11.
		PI6 I think the working environment of teachers is very good.	Adapted from the "Questionnaire of professional identity of education major students in excellent classes" (Li, 2020), question 15.
		WT1 I'd like to teach in the countryside.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 10.
		WT2 The salary of teachers can make me happy.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 18.
		WT3 I have practical experience in teaching.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 14.
		WT4 I like teachers' working hours.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 2.
		WT5 My character is suitable for being a teacher.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 29.
		WT6 I approve Chinese teacher management system.	Adapted from the "Questionnaire on current students' teaching willingness" (Zhang, 2020), part 3, question 9.

Career maturity (CM)	CM1 If I choose to be a teacher, mainly because it can play my ability.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 2, question 1.
	CM2 On the issue of whether to be a teacher, I will follow my parents.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 2, question 3.
	CM3 If I choose to be a teacher, it is a good profession for me.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 2, question 20.
	CM4 I have been to middle school or primary school to give lectures.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 3, question 3.
	CM5 I have learned my future professional experience from primary and secondary school teachers.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 3, question 13.
	CM6 If I choose to be a teacher, it is mainly because the teachers have a high social status.	Adapted from the “Questionnaire of teachers career maturity of education major students” (Jiao, 2009), part 2, question 10.

VII. LIMITATION

The pilot test data of this study are from education major students of the same university - J University in China. The prediction results and the scope of use of the scale may have some limitations. The findings cannot be generalized to all Chinese universities education major students.

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