Exploring the Identity of University Teachers with Factor Analysis

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Abstract: This study explores the identity of university teachers with factor analysis using a survey data from questionnaire. The result indicates that the overall score of teacher identity is 0.00113, which suggests that as a whole, the identity level of surveyed samples is low. Moreover, male teachers have higher identity than female ones. There is a reverse U-shape relationship between identity level and age. Middle aged teachers enjoy the highest identity level and older teachers have the lowest identity level. The identity degree is decreasing with the increase of duration and education and the promotion of title. The administrators have a stronger sense of teacher identity than others. The teachers from accounting department carry the highest identity level and teachers from E-commerce department receive the lowest identity level.

Keywords: Teacher Identity; University; Factor analysis.

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1. INTRODUCTION

Identity refers to "the view that individuals have of themselves and of their place(s) in the world in the past, now, and in the future" (Murray & Christison, 2011). Teacher identity is seen as an "ongoing process of interpretation and re-interpretation of experiences" (Beijaard et al., 2004). It is more or less agreed that teacher identity construction spans the whole course of a teacher's career, incorporating the past, present, and future, and it is a complex process in which the teacher's personal experiences, professional experiences, institutional context as well as the broader sociopolitical context all play crucial roles (Mockler, 2011). Teacher identity can be either assigned by others or claimed by teachers themselves (Buzzelli & Johnston, 2002), so it involves similarities and differences, that is, how teachers relate to and distinguish from others. In this sense, teacher identity plays a crucial role in teachers' choice of participation and job performance (Wenger, 1998). As a consequence, this study explores the identity of university teachers with factor analysis using a survey data from questionnaire.

2. IDENTITY EVALUATION

In order to investigate the identity of university teachers, we utilize a five-response questionnaire conforming to the Likert scale with reference to the literature on measures of social integration. Correspondents were asked to what extent they agree or disagree on a scale of five possible responses concerning their current and their ideal situation (strongly disagree, disagree, neutral, agree, strongly agree). Two categories of 20 relevant questions were included in the questionnaire. Table 1 describes the questionnaire. The survey was conducted at the School of Business of Gannan Normal University in September 2017 in the Jiangxi province. We acquire a survey data with 51 effective samples. Table 2 reports the description of our data.

Table 1: The questionnaire

Professional self-identity	Q1	I am proud of being a teacher
	Q2	I am delighted to introduce myself as a teacher
	Q3	I am suitable for the teaching job
	Q4	I feel being respected as a teacher
	Q5	I feel gratified when others eulogize teachers
	Q6	I can finish the teaching work carefully
	Q7	I treat my job seriously
	Q8	I try to establish harmonious relationship with colleagues
	Q9	I think my job is meaningful for the students
	Q10	I think my job is meaningful for the society
Professional satisfaction	S1	I am satisfied with current income
	S2	I accept the pace of promotion
	S3	I am optimistic for the future career and salary
	S4	I am satisfied with the school management
	S5	I feel sense of achievability with obvious effect of classroom teaching
	S6	I am satisfied with the workload
	S7	I can exert my talents and values in the job.
	S8	I am interested in my teaching job
	S9	I am satisfied with the relationship between colleagues
	S10	I will still choose my job if possible.

Table 2: Statistical description

Stats	Gender	Age	Duration	Education	Title	Position	Department
N	50	51	51	50	49	49	46
mean	0.500	41.10	15.45	1.960	2.633	1.347	3.891
min	0	27	2	1	1	1	1
max	1	54	33	3	4	3	8

3. IDENTITY EVALUATION

We adopt an exploratory factor analysis method using PCF and Varimax with Kaiser Normalization. The "eigenvalue greater than 1" criterion is used to determine the number of factors to extract. The factor analysis is implemented with STATA. The software reports a Kaiser-Meyer-Olkin (KMO) index of 0.796 indicating that the correlation matrix was factorable. The scree test in figure 1 yields a solution for 4 factors with eigenvalue greater than 1. This 4-factor solution accounts for 74.22% of the variance in the factor matrix as shown in table 3.

Table 3: Factor variance contribution rate table

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	9.64335	6.77548	0.4822	0.4822
Factor2	2.86787	1.62917	0.1434	0.6256
Factor3	1.23870	0.14531	0.0619	0.6875
Factor4	1.09340	0.18584	0.0547	0.7422
Factor5	0.90756	0.13625	0.0454	0.7875
Factor6	0.77131	0.08628	0.0386	0.8261
Factor7	0.68503	0.15388	0.0343	0.8604
Factor8	0.53115	0.07833	0.0266	0.8869
Factor9	0.45282	0.01360	0.0226	0.9096
Factor10	0.43922	0.11613	0.0220	0.9315
Factor11	0.32308	0.05523	0.0162	0.9477
Factor12	0.26786	0.02609	0.0134	0.9611
Factor13	0.24177	0.09503	0.0121	0.9732
Factor14	0.14674	0.02801	0.0073	0.9805
Factor15	0.11873	0.02256	0.0059	0.9864
Factor16	0.09617	0.01375	0.0048	0.9912
Factor17	0.08242	0.04417	0.0041	0.9954
Factor18	0.03825	0.00550	0.0019	0.9973
Factor19	0.03274	0.01089	0.0016	0.9989
Factor20	0.02185	.	0.0011	1.0000

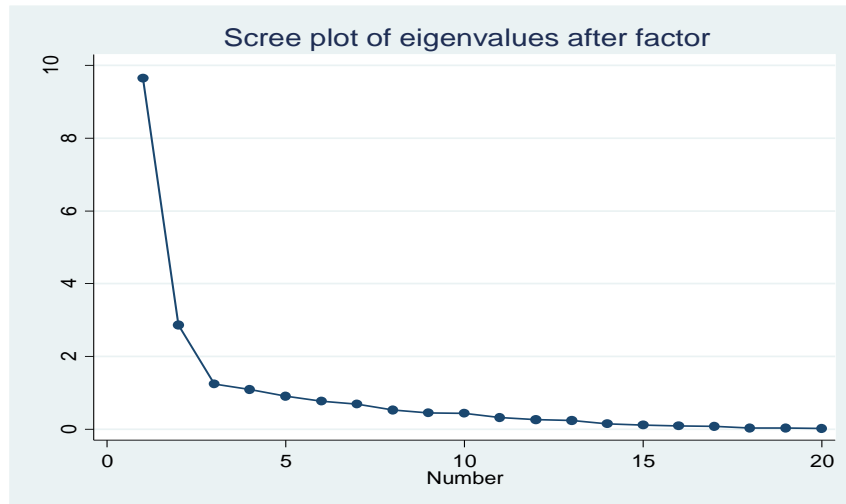LR test: independent vs. saturated: chi2(190) = 870.89 Prob>chi2 = 0.0000

Figure 1: Scree plot of eigenvalues after factor

The rotated factor loadings in Table 4 show that the items we designate for teacher identity enjoy high loadings. As a consequence, we could perfectly combine all of the 20 items into 4 common factors and use them to measure the teacher identity.

Table 4: Rotated factor loadings

Variable	Factor1	Factor2	Factor3	Factor4
q1	0.4928	0.5201	0.5358	0.0989
q2	0.3957	0.5091	0.5426	-0.0071
q3	0.4741	0.4354	0.5027	-0.0571
q4	0.4214	0.6639	0.1860	0.1255
q5	0.6498	0.5312	0.0006	0.0898
q6	0.8842	0.1756	0.2395	-0.0212
q7	0.9192	0.0976	0.0994	0.0029
q8	0.8987	0.2043	0.0161	0.0767
q9	0.8489	0.0445	0.0711	0.3842
q10	0.7394	-0.0933	0.2399	0.3357
s1	0.1557	0.8134	0.1481	0.1531
s2	-0.0119	0.7981	0.2640	0.0808
s3	0.1483	0.8187	0.2573	0.1856
s4	0.1475	0.6630	0.1807	0.3953
s5	0.4016	0.2973	-0.2763	0.4746
s6	0.0912	0.5788	0.1185	0.5552
s7	0.1254	0.5647	0.4020	0.4775
s8	0.2973	0.2805	0.5690	0.4071
s9	0.2065	0.2498	0.2972	0.7458
s10	0.0717	0.2614	0.8565	0.1949

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

The variance contribution-weighted score of each sample is aggregated with the following formula:

$$F_{total} = (0.4822F_1 + 0.1434F_2 + 0.0619F_3 + 0.0547F_4)/0.7422$$

Table 5 reports the statistical description for the aggregate score and by different groups. From the table, we see that the aggregate score of teacher identity is 0.00113, which suggests that as a whole, the identity level of surveyed samples is really low. Moreover, male teachers have higher identity than female ones. There is a reverse U-shape relationship between identity level and age. Middle aged teachers enjoy the highest identity level and older teachers have the lowest identity level. The identity degree is decreasing with the increase of duration and education and the promotion of title. The administrators have a stronger sense of teacher identity than others. The teachers from accounting department carry the highest identity level and teachers from E-commerce department receive the lowest identity level.

Table 5: The computed scores by groups

		N	mean	SD	min	max
Gender	Male	21	0.002	0.72	-2.07	0.91
	Female	24	-0.01	0.67	-2.07	0.93
Age	[20,30]	13	-0.01	0.55	-0.81	0.8
	(30,40]	23	0.21	0.45	-0.55	0.93
	(40,60]	10	-0.47	1.03	-2.07	0.91
Duration	[1,5]	19	0.04	0.48	-0.81	0.8
	(5,15]	18	0.02	0.55	-1.07	0.93
	(15,40]	9	-0.13	1.19	-2.07	0.91
Education	Bachelor	8	0.13	0.95	-2.07	0.93
	Master	30	0.01	0.64	-2.07	0.91
	Doctor	7	-0.12	0.6	-1.07	0.76
Title	Assistant	3	0.54	0.12	0.43	0.67
	Lecturer	20	0.1	0.5	-0.81	0.93
	Associate Professor	15	0.07	0.55	-1.07	0.89
	Professor	6	-0.52	1.29	-2.07	0.91
Position	Teacher	34	-0.12	0.71	-2.07	0.91
	Administrator	5	0.61	0.44	-0.12	0.93
	Both	5	0.2	0.17	0.04	0.42
Department	International trade	5	-0.16	0.76	-1.07	0.76
	Accounting	8	0.34	0.43	-0.12	0.91
	Logistical	6	-0.26	0.99	-2.07	0.89
	Human Resource	5	0.22	0.3	-0.1	0.65
	E-commerce	5	-0.61	0.93	-2.07	0.32
	Marketing	5	-0.15	0.57	-0.73	0.49
	Financial management	7	0.05	0.53	-0.77	0.74
Total		46	0.00113	0.68	-2.06	.93

4. CONCLUSION

This study explores the identity of university teachers with factor analysis using a survey data from questionnaire. The result indicates that the overall score of teacher identity is 0.00113, which suggests that as a whole, the identity level of surveyed samples is low. Moreover, male teachers have higher identity than female ones. There is a reverse U-shape relationship between identity level and age. Middle aged teachers enjoy the highest identity level and older teachers have the lowest identity level. The identity degree is decreasing with the increase of duration and education and the promotion of title. The administrators have a stronger sense of teacher identity than others. The teachers from accounting department carry the highest identity level and teachers from E-commerce department receive the lowest identity level.

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