

The Influence of Chinese Teachers' Gender and Educational Background on Teachers' Job Satisfaction -- Analysis Based on 2015 PISA Data

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Abstract: Job satisfaction affects teachers' motivation, investment and performance to a great extent, and then affects the development of students and the improvement of school education quality. At present, there are a lot of researches on teachers' job satisfaction. There are many factors affecting teachers' job satisfaction, such as teachers' gender, educational background, and the support of principals. Based on the teacher survey data of the Programme for International Student Assessment (PISA) in 2015, this study analyzed whether gender and educational background of Chinese teachers have differences in the job satisfaction of teachers. It is found that gender and educational background have no significant influence on teachers' job satisfaction.

1. Introduction

Job satisfaction affects teachers' motivation, investment and performance to a great extent, and then affects the development of students and the improvement of school education quality. At present, there are a lot of researches on teachers' job satisfaction. There are many factors affecting teachers' job satisfaction, such as teachers' gender, educational background, and the support of principals. Based on the teacher survey data of the Programme for International Student Assessment (PISA) of four Chinese provinces (cities) and some OECD member countries in 2015, this study analyzes whether there are differences in teacher job satisfaction between the gender and educational background of Chinese teachers. The analysis of this study mainly involves the following questions in the 2015 PISA questionnaire: teacher gender (teacher version questionnaire P3, TC001Q01); teacher's degree (teacher's version of questionnaire P11, TC012Q01); teachers' job satisfaction (teacher's questionnaire P29, TC026Q10 NA01 -- 04).

2. Descriptive statistics of datum

The data used in this paper are from the Programme for International Student Assessment (PISA) conducted by the organization for economic cooperation and development (OECD) in 72 countries and regions in 2015. In 2015, PISA tested and surveyed 268 principals, 6,423 teachers and 9,841 students from 268 middle schools in Beijing, Shanghai, Guangdong and Jiangsu provinces. PISA is

sampled in two stages, first by stratified random sampling of schools, and then by random selection of a specific proportion and number of students and teachers in each school.

This study mainly analyzes the questionnaire data of teachers in China. The geographical distribution of the schools of teachers participating in the PISA survey is shown in table 1.

Table 1 Urban and rural distribution of teacher samples in four provinces and cities of China in PISA 2015

		Number of sample schools	Number of sample teachers	Weighted sample number of teachers	Proportion of weighted samples in effective samples (%)
Cities		97	2303	61977	35.03
	Big cities	60	1414	39977	22.60
	Small and medium cities	37	889	22000	12.43
Villages and towns		165	3990	109040	61.64
	Villages	31	703	15528	8.78
	Town	134	3287	93512	52.86
Others		6	130	5891	3.33
Total		268	6423	176908	100.00

The data in table 1 shows that the 6,423 randomly selected teachers represent nearly 177,000 full-time teachers in all kinds of middle schools in four provinces and cities in China. The weighted sample number of teachers was 176,908, accounting for 19.5% of the total number of full-time middle school teachers (907,221) in the four provinces (cities) of China. Among them, urban teachers accounted for 35.03% of the total number of teachers, and teachers in towns and other areas accounted for 64.97%.

The description statistics of teachers' gender are shown in the following table:

Table 2 Teacher gender distribution table

Are you male or female?					
		Frequency	Percentage	Effective percentage	Cumulative Percent
Effective	Women	3615	56.3	57.6	57.6
	Men	2663	41.5	42.4	100.0
	Total	6278	97.7	100.0	
Missing	No Response	17	.3		
	System	128	2.0		
	Total	145	2.3		
Total		6423	100.0		

The descriptive statistics of teachers' qualifications are shown in the following table:

Table 3 The distribution table of the highest educational qualifications of teachers

What is the highest degree you have completed in formal education?					
		Frequency	Percentage	Effective percentage	Cumulative Percent
Effective	Below higher education	36	.6	.6	.6
	Junior college	590	9.2	9.4	10.0
	Bachelor	5176	80.6	82.3	92.3
	Master	470	7.3	7.5	99.8
	Phd	14	.2	.2	100.0
	Total	6286	97.9	100.0	
Missing	No Response	9	.1		
	System	128	2.0		
	Total	137	2.1		
Total		6423	100.0		

The following table can be obtained by merging teachers with junior college degrees below the higher education level and those with master's and doctor's degrees.

Table 4 Combined table of teachers' highest academic qualifications

What is the highest degree you have completed in formal education?					
		Frequency	Percentage	Effective percentage	Cumulative Percent
Effective	Junior college and below	626	9.7	10.0	10.0
	Bachelor	5176	80.6	82.3	92.3
	Master and phd	484	7.5	7.7	100.0
	Total	6286	97.9	100.0	
Missing	No Response	9	.1		
	system	128	2.0		
	Total	137	2.1		
Total		6423	100.0		

In 2015, PISA added teacher questionnaires to the new round of tests, and teacher job satisfaction is an important part of the PISA 2015 survey. TC026 is composed of 8 Likert questions with 4 points. Questions 1-7 listed some teachers' statements about their profession, work unit or job performance. Question 8 asked teachers about their job satisfaction as a whole, asking them to report the degree of "agreement" or "disagreement". The overall Alpha reliability coefficient of the scale is 0.849, indicating that the scale has a high internal consistency reliability. This study only analyzed the data of question 8. Chinese teachers' answers to question 8 are as follows:

Table 5 Distribution table of teachers' job satisfaction

All in all, I am satisfied with my work					
		Frequency	Percentage	Effective percentage	Cumulative Percent
Effective	Strongly disagree	79	1.2	1.3	1.3
	Disagree	591	9.2	9.5	10.7
	Agree	3961	61.7	63.4	74.1
	Totally agree	1616	25.2	25.9	100.0
	Total	6247	97.3	100.0	
Missing	No Response	48	.7		
	System	128	2.0		
	Total	176	2.7		
Total		6423	100.0		

3. Hypothesis testing

3.1 The influence of teacher gender on teacher job satisfaction

Null hypothesis H0: There was no difference between male and female teachers in their job satisfaction.

Alternative hypothesis H1: There are differences between male and female teachers in their job satisfaction.

Significance level $\alpha = 0.05$

Test method: independent sample T test.

Table 6 Statistical table of teacher gender description

Statistics Group					
	Are you male or female?	Number of cases	Mean	SD	Mean of standard error
All in all, I am satisfied with my work	Female	3596	3.15	.605	.010
	Male	2638	3.13	.640	.012

Table 7 Independent sample T test of teacher gender and job satisfaction

Independent sample test										
		Levine test of equal variance		Mean equality T test						
		F	Significance	t	DOF	Significance (double tail)	Mean difference	Standard error difference	The difference 95% confidence interval	
All in all, I am satisfied with my work	Assumed equal variance	1.378	.240	1.241	6232	.215	.020	.016	-.011	.051
	Not assume equal variance			1.231	5495.327	.219	.020	.016	-.012	.051

Because the significance is greater than 0.05, the null hypothesis cannot be rejected. Therefore, there is no difference in job satisfaction between male and female teachers.

3.2 The influence of teachers' academic qualifications on teachers' job satisfaction

H0: There is no effect of teacher's degree on the job satisfaction of teachers, that is, there is no difference in the job satisfaction of all levels of education.

H1: At least two levels differ in job satisfaction.

Test method: single factor ANOVA test.

Table 8 Statistical table of teachers' highest degree description

Description								
All in all, I am satisfied with my work.								
	Number of cases	Mean	SD	Standard error	95% confidence interval for the average		Minimum	Maximum
					Inferior limit	Upper limit		
Junior college and below	618	3.13	.577	.023	3.09	3.18	1	4
Bachelor	5143	3.14	.624	.009	3.13	3.16	1	4
Master and phd	482	3.11	.634	.029	3.05	3.16	1	4
Total	6243	3.14	.620	.008	3.12	3.15	1	4

Table 9 Sample variance homogeneity test table

Homogeneity test of variances			
All in all, I am satisfied with my work			
Levin statistics	DOF 1	DOF 2	Significance
4.568	2	6240	.010

Table 10 Variance analysis of teachers' highest educational background and job satisfaction

ANOVA					
All in all, I am satisfied with my work					
	Quadratic sum	DOF	Mean square	F	Significance
Among groups	.619	2	.309	.805	.447
Intra groups	2399.254	6240	.384		
Total	2399.872	6242			

Table 11 Post-test of variance analysis of teachers' highest educational background and job satisfaction

Multiple comparison						
Dependent Variable: All in all, I am satisfied with my work						
LSD						
(I) What is the highest degree you have completed in formal education?	(J) What is the highest degree you have completed in formal education?	Mean difference (I-J)	Standard error	Significance	95% confidence interval	
					Inferior limit	Upper limit
Junior college and below	Bachelor	-.010	.026	.709	-.06	.04
	Master and phd	.027	.038	.476	-.05	.10
Bachelor	Junior college and below	.010	.026	.709	-.04	.06
	Master and phd	.037	.030	.214	-.02	.09
Master and phd	Junior college and below	-.027	.038	.476	-.10	.05
	Bachelor	-.037	.030	.214	-.09	.02

Because the significance is greater than 0.05, the null hypothesis cannot be rejected. Therefore, teachers' academic qualifications have no effect on teachers' job satisfaction, that is, there is no difference in job satisfaction among all levels of academic qualifications.

In short, there was no statistically significant difference. In other words, gender and educational background have no significant influence on teachers' job satisfaction.

4. Conclusion

4.1 The influence of gender on teacher satisfaction

In conclusion, the option "I am satisfied with my work" is a little general.

In Xu Zhiyong's research, the measurement of teachers' job satisfaction mainly includes three basic levels: 1. Intrinsic job satisfaction, which refers to the satisfaction brought by the job itself, such as development opportunity, stability, and sense of achievement; 2. Extrinsic job satisfaction, which refers to the work load, remuneration, welfare benefits, office conditions to bring the teachers' satisfaction; 3. Overall satisfaction refers to the integration of internal and external satisfaction, and refers to the overall and comprehensive emotional response of teachers to their work.

In terms of teacher gender variables, the intrinsic satisfaction of both male and female teachers reached a very high level (4.42 and 4.31, respectively), but there was no significant difference

between them ($p = 0.06 > 0.05$). However, in terms of external satisfaction and overall satisfaction, the satisfaction level of male teachers was significantly higher than that of female teachers ($p < 0.05$).

However, this study only selects the overall satisfaction of teachers as a variable, which is rather general and cannot well prove that there is no difference between male and female teachers in their job satisfaction.

In addition, because question 8 is in the last of TC026, teachers have a sense of burnout when making choices of similar questions, resulting in more balanced answers from teachers. The relationship between gender and teacher job satisfaction cannot be well analyzed.

4.2 The influence of educational background on teacher satisfaction

In this study, the distribution of educational qualifications of the investigated teachers is unbalanced. Among them, teachers with a college degree or less account for 9.7%, those with a master's degree or doctor's degree account for 7.5%, and those with a bachelor's degree account for 82.3%. As a result, the data cannot well prove the influence of academic degree on teacher satisfaction.

In addition, the job satisfaction of teachers is actually affected by such factors as the teacher's title, age, specific job position, teacher-student relationship, school cultural atmosphere, and school type (public/private, urban/rural). However, these factors were not excluded in the statistical analysis, so gender and educational background had no significant impact on teachers' job satisfaction.

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