

Research on the Relationship between the Learning Motivation of Master Students and Their Intention to Pursue a Doctorate

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ABSTRACT. *This article aims to explore the relationship between the learning motivation of master students and their intention to pursue a doctorate, and builds the scale of learning motivation and the intention to pursue a doctorate. Taking the master students of some colleges and universities in Jiangsu Province of China as the sampling scope, the survey was conducted by means of an online questionnaire. Using SPSS analysis, it is found that there is a correlation between learning motivation and the intention to pursue a doctorate. The stronger the willingness to pursue a doctorate, the more motivated the learning motivation is for self-realization, the stronger the learning initiative, and the relatively less self-pressure. The social influence and the influence of others have little influence on the intention to pursue a doctorate.*

KEYWORDS: *Master students, Learning motivation, The intention to pursue a doctorate*

1. Introduction

According to the *Statistical bulletin on the development of national education in 2018* published by the Ministry of Education of China, there are 2.7313 million postgraduate students in China, including 389500 doctoral students and 2341700 master students. The wide gap in the number of master students and doctoral students on campus leads us to think about why these master students do not choose to pursue a doctorate. Based on the analysis of the status quo of learning motivation of postgraduate students in Jiangsu Province, this paper discusses the influence of learning motivation on their intention to pursue a doctoral degree.

2. Research Preface

2.1 Research Background

According to the *Statistical bulletin on the development of national education in*

2018 published by the Ministry of Education of China, there are 2.7313 million postgraduate students in China, including 389500 doctoral students and 2341700 master students. The wide gap in the number of master students and doctoral students on campus leads us to think about why these master students do not choose to pursue a doctorate. Based on the analysis of the status quo of learning motivation of postgraduate students in Jiangsu Province, this paper discusses the influence of learning motivation on their intention to pursue a doctoral degree.

2.2 Research Purpose

Based on the above research background and current situation, the learning motivation scale and the doctoral intention scale were constructed to measure the doctoral intention of current postgraduate students. The purpose of this study is to explore the influence of individual learning motivation factors and doctoral study intention of postgraduate students in Jiangsu province, and to know about the current situation of master students' learning motivation in school, analyzing which aspects of their learning motivation can affect their willingness to pursue a doctoral degree, analyzing the relationship between the learning motivation of master students and their intention to pursue a doctoral degree. The conclusion of this study can provide an inspiration to current schools, to promote them to be more effective in stimulating the motivation of graduate students to learn, to reasonably awaken their research motivation, and to better prepare for the cultivation of academic and scientific talents.

2.3 Research Scope

This paper focuses on the postgraduate students in universities in Jiangsu province, especially those in Nanjing normal university. Since most of the graduate students in the third year of the survey have decided their graduation destination, the respondents of the questionnaire mostly take the first and second years of graduate students as the main part.

2.4 Research Framework

The variables of this study include: learning motivation, intention to study for a doctorate, its connotation is interpreted as follows.

(1) Learning motivation: Currently, under the influence of subjective and objective factors, postgraduate students expect to make professional progress, pay professional efforts, obtain professional harvest to maintain, encourage and guide their psychological motivation of study and research.

Self actualization: Achieve your own expectations, such as improving your own quality;

Self pressure: The pressure caused by the objective environment to their own

requirements and expectations

Social impact: the impact of the social environment, such as obtaining a higher social status;

Expectations of others: the influence of those around them, such as the expectations of their parents.

(2) Intention to Pursue a Doctorate: This paper refers to the tendency of current postgraduate students in Jiangsu province (especially those in Nanjing Normal University) to choose whether they are willing to pursue a higher level of academic degree standard and pursue a doctoral degree from their own will.

3. Scale Design

3.1 Measurement of Learning Motivation

The measurement of learning motivation is divided into four research aspects: self-actualization, self-pressure, social influence and influence of others. Take the single item as a measurement, the scale uses a five-point measurement method, and fill in the answers according to the degree of recognition. The scores of 1, 2, 3, 4 and 5 were given respectively. All the questions were scored in a positive way. The higher the average score was, the higher the recognition degree of the item; the higher the average score was, the lower the recognition degree was. The more the average score is inclined to 1, the higher the recognition of the item; the more the average score is inclined to 5, the lower the recognition of the item. All questions are answered by the user according to their own perception to choose the appropriate answer.

3.2 Measurement of the Intention to Pursue a Doctorate

The measurement method is consistent with the learning motivation. The topic is a single multiple choice question. The five-point measurement method is adopted to fill in the answers according to the recognition degree. On a scale of 1, 2, 3, 4 and 5, from very willing, more willing, average and less willing to very unwilling. All the questions were scored in a positive way. The more inclined the score is to 1, the higher the intention is to study for a doctoral degree. The answerers select the appropriate answer based on his own perception.

4. Reliability and Validity Analysis

This study conducted an online questionnaire survey on June 18, 2019 on August 18, 2019 using the professional online questionnaire platform of "questionnaire star". It has been widely published in the QQ group and WeChat group of universities in Jiangsu province (mainly Nanjing Normal University), and 106 questionnaires have

been collected in total, with an effective rate of 100%.

4.1 The Reliability Analysis

In this study, the Cronbach coefficient was used to test the internal consistency of each variable. By means of SPSS analysis, the Cronbach coefficient of each variable was obtained. Generally speaking, the Cronbach α coefficient is analyzed first. If the value is higher than 0.8, the reliability is high; if the value is between 0.7 and 0.8, the reliability is good; if the value is between 0.6 and 0.7, the reliability is acceptable; if the value is less than 0.6, the reliability is poor. Secondly, if the CITC value of the correction item is lower than 0.3, the item can be considered to be deleted. Third, if the value of the “alpha coefficient of the deleted item” is significantly higher than the alpha coefficient, you can consider re-analyzing the deleted item at this time. Finally, summarize the analysis. Taking the self-actualization facet in the Learning Motivation Scale as an example here, the reliability coefficient (Cronbach α coefficient) value of this facet is 0.859, which is greater than 0.8, thus indicating that the research data has high reliability. Regarding the “alpha coefficient of item deleted”, the reliability coefficient value after the analysis item is deleted has not been significantly improved. Therefore, all the item items should be retained, further indicating that the research data has a high level of reliability. In summary, the reliability coefficient value of the dimension data is higher than 0.8, and the reliability coefficient value will not be significantly improved after item deletion, indicating high reliability quality.

According to the above steps, this study examines the internal consistency of the learning motivation variables one by one. After SPSS analysis, the Cronbach α coefficients of the related variables are obtained, which is summarized in table 6. Cronbach α coefficient of each variable in this study is 0.859 for self realization, 0.783 for self pressure, 0.730 for social impact, and 0.647 for others' expectation, which is relatively low, but still within the acceptable range of credibility. In a word, Cronbach α coefficient of 20 items for measuring learning motivation is 0.838. The internal consistency brings the requirement of general reliability. The data of this questionnaire has high reliability and can be used for further analysis.

Table 1 Cronbach Summary Of Each Dimension of Learning Motivation

Research concept	Facets	Question items	Cronbach α	
learning motivation	Self actualization	6	0.859	0.838
	Self pressure	5	0.783	
	Social impact	4	0.730	
	Expectations of others	6	0.647	

4.2 The Validity Analysis

4.2.1 Content Validity

When designing the questionnaire, the research team analyzed the measurement indicators of related research by referring to the literature. To a certain extent, reference is made to the study motivation scale published by Wang Wei in Value Engineering magazine in the article Research on the Impact of Foreign Students' Learning Motivation and Self-evaluation on Higher Education Intention in Higher Vocational Colleges. In this study, it is assumed that learning motivation contains four core components: self-actualization, self-pressure, social influence, and expectation of others, and 25 questions of learning motivation and 5 questions of doctoral study intention were preliminary compiled. After the guidance of professional teachers of educational research methods and the multiple trials and discussions of the research group, finally, 20 questions of learning motivation and 1 question of doctoral intention were determined.

4.2.2 Structural Validity

SPSS factor analysis was mainly used. Before factor analysis, KMO test and Bartlett sphericity test were generally conducted on the original data. The KMO value is greater than 0.5, and the significance probability p value of the Bartlett sphericity test statistic is less than 0.05. Only when the questionnaire has structural validity can factor analysis be conducted. As can be seen from the table 2, the data passed the test.

Table 2 Kmo Test And Bartlett Test

Kaiser-Meyer-Olkin measure of sampling adequacy of KMO	.810
Bartlett test of sphericity The approximate chi-square	1122.297
Variance	190
significance	.000

When factors were extracted, 5 qualified factors were extracted based on the eigenvalue greater than 1, and the cumulative percentage was 69.225%, basically reflecting the common factor of most data. As can be seen from the rotated component matrix diagram, except that the values of Q7, Q9 and Q20 are lower than 0.6 and are not displayed. The subjects corresponding to the principal components extracted from the data are basically consistent with the classification in the questionnaire design. It can be seen that these 20 questions can reflect the four to five main factors of learning motivation studied in the questionnaire, so the questionnaire is effective.

5. Results Analysis

According to the data measured by the scale, it analyzes and discusses the questions to be answered and the research hypothesis, and discusses the relationship between the various aspects of the learning motivation and the intention to pursue a doctorate in the empirical research.

5.1 Demographic Data Frequency Statistics

A total of 106 valid questionnaires were withdrawn in this study. The subjects were all master students enrolled in colleges and universities in Jiangsu Province, and most of them were master students enrolled in Nanjing Normal University. The subject's background variable mainly uses frequency analysis in SPSS description statistics, and the analysis results are summarized in Table 3.

Table 3 List of Subjects' Background Variable Distribution

Background variable	Category	Frequency	Percentage	Total	Cumulative percentage
Sex	Male	34	32.1	106	100
	Female	72	67.9		
Age	20 years old and below	1	.9	106	100
	21-23 years old	53	50.0		
	24-26 years old	46	43.4		
	27 years old and above	6	5.7		
Grade	Grade 1	82	77.4	106	100
	Grade 2	19	17.9		
	Grade 3	5	4.7		

According to the table 3, most of the subjects in this questionnaire survey are women, and the age of the subjects is mostly 21-26 years old. Among the subjects, more than 95% of the students are in the first and second grades, and there are five students in the third. These results are considered for the following reasons: First, the phenomenon that there are significantly more female subjects than men in the sample is related to the distribution of questionnaires. The questionnaires are mainly published in the QQ group of graduate students in Nanjing Normal University, and according to online data, the ratio of men and women in NNU is about three to seven, which is basically consistent with the sample data of this survey. The second reason is that when the questionnaire was released, it was the third grade students when they graduated. Most of the third grade students had basically determined whether to continue their Ph.D. studies. Therefore, the fact that the sample of third-year students is small does not affect the overall research results.

5.2 Descriptive Analysis

5.2.1 Descriptive Analysis of Various Facets of Learning Motivation

According to the five-point evaluation method, the questions included in each facet of learning motivation are classified and analyzed one by one to obtain the average value of the survey data. Through descriptive analysis in SPSS descriptive

statistics, it is concluded that the self-actualization facets have an average score of less than 2.5, and the maximum and minimum values include the bipolar options of the topic. The standard deviation is small and meets the requirements. Taken together, the average value of the self-actualization facet is about 2.082, which means that the test subject prefer to agree the expression of the self-actualization facet. Using this method, the other facets of learning motivation continue to be analyzed. The average of self-stress facet is 2.762, the average of social influence facet is 2.1175, and the average of others' influence facet is 2.934. Among them, in the important others influence facet, Q18 shows an average value of 4.14 which is obviously different from other items. The corresponding expression "I am studying because my boyfriend or girlfriend is in graduate school" is ambiguous and belongs to the error in questionnaire design. The meaning that it really want to express should be "I am studying under the influence of my boyfriend or girlfriend", this is to test the students' learning motivation from the influence of boyfriends or girlfriends. After deleting this item, the average value of the facets influenced by others is 2.6325. By comparing, we can see that the main learning motivation of master students is self-actualization, followed by social influence, others' influence, and finally self-pressure, as shown in Table 4. This shows that the learning motivation of master students is mainly dominated by internal factors, but also influenced by external factors, and the self-awareness of learning is good.

Table 4 Convergence of Average Values of Various Facets of Learning Motivation

Research concept	Research Facets	average value
Learning motivation	Self-actualization	2.082
	Self-stress	2.762
	Social influence	2.1175
	Others' influence	2.6325(after adjustment)

5.2.2 Descriptive Analysis of the Intention to Pursue a Doctorate

In this 106 data, on the question that I am willing to continue my Ph.D. studies, the answers chosen by the 106 respondents are basically evenly distributed among the various options, indicating that the respondents covers all types from very reluctant to pursue a doctorate to very willing to pursue a doctorate.

Table 5 Frequency Statistics Of Each Option of the Intention of Pursue a Doctorate

		Frequency	Percentage	Effective percentage	Cumulative percentage
Effective	Very willing	18	17.0	17.0	17.0
	More willing	24	22.6	22.6	39.6
	General	23	21.7	21.7	61.3
	Less	28	26.4	26.4	87.7

	willing				
	Very reluctant	13	12.3	12.3	100.0
	Total	106	100.0	100.0	

Assign a value to the answer according to the five-point measurement method, and then further carry out the descriptive analysis in the SPSS description statistics for this question. The average value of the option scores for this question is 2.94, which tends to be “general”, and further comparative average analysis is needed to investigate the relationship between various facets of learning motivation and the intention to pursue a doctorate.

5.3 Comparative Means Analysis

In order to study the relationship of learning motivation and the intention to pursue a doctorate, five levels of intention to pursue a doctorate were used as independent variables in the analysis of the average value, and various facets of learning motivation were used as dependent variables to analyze different types respondents. Here is still taking the self-actualization facet as an example. The respondents who choose general, less willing and very reluctant on the question of I am willing to continue my Ph.D. studies, the average value of their self-actualization facet options is generally higher than those who chose to “very willing” and “more willing” to read the blog. And the higher the average value, the weaker their desire for self-actualization, we can initially make the inference that “the stronger the desire for self-actualization, the stronger the desire to pursue a doctorate”, or “the stronger the desire to pursue a doctorate, the stronger the desire for self-actualization” . But a correlation analysis is still needed to confirm this inference that there is a positive correlation between the two.

The respondents who choose very willing in their intention to pursue a doctorate have a higher average value of each item in the self-stress facet than other respondents, especially on the Q16. Those who choose very willing are in The academic pressure from the course(Q16) has the highest average value, as high as 4.06 points, indicating that most of the respondents tend to disagree, inferring that the intention to pursue a doctorate is inversely related to self-stress.

Comparing the relationship between the average value of other facets of learning motivation and the intention to pursue a doctorate in turn, we can find that the items of the social influence and others’ influences facet do not show obvious correlation with the intention to pursue a doctorate, further correlation analysis is still needed to verify.

5.4 Correlation Analysis

In SPSS correlation analysis, its significance probability value less 0.05 ($P < 0.05$) is regarded as a non-small probability event. It can be seen from the results of the two-variable Pearson correlation analysis--- First, except the significance of Q7

0.217 > 0.05, most of the items of the intention to pursue a doctorate and the self-realization facet have a positive correlation; There is a negative correlation between each item of the self-stress facet and the intention to pursue a doctorate but the correlation is not obvious, but the P value of some topics is greater than 0.05, so we have reason to suspect that the occurrence of its correlation is a small probability event; Third, Only Q17 of the social influence facet conforms to the standard, showing a Pearson correlation of -0.270 with the doctoral intention(Q21); Fourth, the influence facets of others only have Q19 that meets the standard, and has a certain positive correlation with the Q21. However, other items of this facet have a small probability or correlation, so it is impossible to judge the the correlation between others' influence and their intention to pursue a doctorate. It is necessary to specifically investigate whether others have a positive or negative impact on the respondents' intention to pursue a doctorate or not.

6. Research Findings and Discussion

6.1 Research Findings

The learning motivation in this research includes four facets, among which self-realization is the highest, followed by social influence, others' influence and self-pressure. Calculated according to five-point evaluation method, the average value of the four facets are all within 3, which tends to agreement. Through analysis, it can be found that there is a correlation between learning motivation of master students and their willingness to pursue a doctorate. Among the four facets of learning motivation, the intention to study for a doctorate has a significant positive correlation with self-realization, a negative correlation with self-pressure, a negative correlation with avoidance of employment pressure(Q17) in social influence, a positive correlation with making friends(Q19) in the influence of others. Thus, it can be found that master students' intention to pursue a doctorate is more easily influenced by internal learning motivation. The stronger one's desire for self-realization is, the stronger one's intention of a doctorate is; the less one's self-pressure is, the stronger one's intention of a doctorate is. In terms of external learning motivation, there is no significant correlation between social influence and the intention to pursue a doctorate, except that Q17 is relatively negative with the intention to pursue a doctorate, which indicates that social influence has little influence on the intention to pursue a doctorate. The more one avoids employment pressure, the lower one's intention to study for a doctorate. Except Q19, which shows a positive correlation between making friends and the intention to pursue a doctorate, other items of the influence of other people have no significant correlation with pursuing a doctoral degree. It reflects that the intention to study for a doctorate has almost no relation with the influence of others. It is mainly dominated by internal self-awareness. In general, this research found that master students with stronger intention to pursue a doctorate has learning motivation mainly influenced by self-realization, strong learning initiative and relatively small self-pressure. The social influence and the influence of others have little influence on the intention of

pursuing a doctoral degree.

6.2 Discussion and Reflection

Reviewing the entire research process, this research has the following points that need to be explained.

First, in the reliability analysis, the reliability of others' influence facet is relatively low, but it is still within the acceptable range. This situation is inseparable from the questionnaire design. When designing the questionnaire, we neglected to consider the positive or negative impacts of others on the master students. The question design only focused on whether it was affected by some important others, which led to the inability to carry out in-depth and effective analysis. Moreover, Q8 of this facet is ambiguous and neglects the consideration of single persons. Therefore, this item can not effectively measure the influence of boyfriends or girlfriends on the intention to pursue a doctorate. This item has been deleted in the comparative mean analysis.

Second, in factor analysis, SPSS extracted five principal components, which is one more facet than the four main facets of the research presupposition. This is mainly because this questionnaire did not pretest in advance and adjust the questions based on the results of the pretest analysis. This research is based on the predetermined research facets to analyze the results.

Third, in the correlation analysis, according to the predetermined facets of the research, there is no significant correlation between the social influence and the others' influence on the intention to pursue a doctorate. There are two guesses about this. The first is that social influence and others' influence have no obvious influence on the intention to pursue a doctorate. The second is that there are ambiguities or unclear descriptions in the questionnaire design.

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