The Influence of Major Satisfaction on Learning Engagement of Agriculture-Related Vocational Colleges in China: Taking Learning Motivation as a Mediating Variable

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This study explores the intermediary structure model of agriculture-related vocational college students. Learning motivation is the mediating effect between major satisfaction and learning engagement. The objects of this study were 630 college students majoring in agriculture in SX city higher vocational colleges, Zhejiang Province. Three scale tools, namely, major satisfaction, learning engagement and learning motivation, were used to investigate the subjects. Likert five-point scale was used for scoring. The measurement model and structural model were constructed by structural equation model. The results show that major satisfaction has a positive effect on learning engagement. Learning motivation is a complete mediator between major satisfaction and learning engagement. The results show that the higher degree of major satisfaction has a good influence on learning engagement, but the strong learning motivation is more beneficial to learning engagement. Therefore, the school should not only improve students' satisfaction with their major, but also stimulate students' learning motivation in learning engagement.

Keywords: agriculture-related majors, learning engagement, learning motivation

INTRODUCTION

The year 2021 will be the final year of China's poverty alleviation campaign. To further consolidate the achievements of poverty alleviation and comprehensively promote rural revitalization, the state will invest unequivocally in technologies, talents, and funds in rural areas. The most important "screw" of rural revitalization is the technical personnel for rural construction, and the cultivation of rural technical personnel cannot be separated from the cultivation of agricultural-related vocational colleges. Therefore, the state has been vigorously supporting the agricultural-related vocational colleges.

With the support of national policies and the efforts of higher vocational colleges, students' views on agriculture-related majors can be described as "so-so". Some students choose agriculture-related majors because their scores are "adjusted by majors". They do not know their majors, let alone invest in their major learning (Feng and Wang, 2014). Students majoring in agriculture do not have a high sense of professional identity. Influenced by traditional ideas, they believe that the major of "agriculture" is inferior to their future work (Peng, 2017), which leads to students' low enthusiasm for learning professional knowledge. Some

agriculture-related higher vocational colleges are short of funds and lack of specialty construction and can't meet students' major satisfaction either in terms of faculty strength or supporting facilities (Wang and Xu, 2012).

China is a large agricultural country, and Zhejiang province is rich in agricultural products, and all cities and regions are supported by its agricultural products. This study took the agriculture-related students from the only agriculture-related higher vocational college in SX city as the research object, in order to understand the influence of agriculture-related students' major satisfaction on their learning engagement and learning motivation.

Major satisfaction refers to the degree of individual satisfaction with the major itself and the software and hardware related to learning, that is, individual's subjective feelings during major learning, which is used to explain and satisfy the degree of their own learning and development.

Learning engagement refers to a continuous state of positive emotion in learning (Schaufei *et al*.,2002). also shows that students actively participate in various learning activities in the learning process, think deeply, deal with challenges and setbacks with vigor, and have positive emotional experience (Zhang, 2012). Learning motivation refers to the whole behavioral process of students' learning (Mao, 1995).

In the process of learning, the effort of the subject out of desire or satisfaction (Gardner, 2001) generates positive conscious actions that ultimately enable people's behavior to persist until the goal is accomplished or the plan is realized.

Hypothetical Model

Cognitive dissonance theory, first proposed by Leon (1957), is one of the major attitudes change theories in contemporary western countries. Cognitive dissonance theory refers to the contradiction and conflict between the individual's thought, attitude and behavior when carrying out an activity. Cognitive dissonance is divided into four different conditions: forced obedience dissonance, post-decision dissonance, dissonance caused by social support system and dissonance of old and new information. In the theory of cognitive dissonance, Leon mainly emphasizes individual cognition and realizes the balance between cognition and behavior through the regulation of individual cognition.

The theory of participatory identity model was put forward by Finn in 1989. In this model, it proposed the relationship between positive social experience and emotional experience and learning engagement. The theory of participatory identity model mainly describes the degree of students' learning engagement, including behavioral investment and emotional investment.

Social constructivist motivation theory is derived from cognitivism, which mainly studies how students acquire knowledge. Social constructivist motivation theory provides theoretical guidance for learning activities, including student view, teaching view, etc. David (2010) created the motivational model of social constructivism and put forward three stages, namely, the reason for doing something, the decision to do something and the final effort. These three stages respectively gave a detailed explanation of students' learning activities.

Liu *et al*., (2017) showed that there was a significant positive correlation between major satisfaction and learning engagement. The degree of students' satisfaction with their major will affect their investment in learning. Based on the analysis, this study proposes research hypothesis $H_{1:}$

H_1: *The degree of satisfaction of higher vocational college students majoring in agriculture has a positive and significant impact on learning engagement.*

Cognitive conflict is one of the factors that affect learning motivation. When students' original cognition conflicts with realistic preset goals, there will be cognitive conflict. Major satisfaction is a factor of cognitive conflict, which is consistent with the content emphasized by cognitive dissonance theory. Gardner (1985) put forward the attitude, ability, and desire to learn among the factors that influence learning motivation, and the attitude and desire to learn are closely related to major satisfaction to a large extent. Based on the analysis, this study proposes research hypothesis H2:

H2: *The major satisfaction of higher vocational college students majoring in agriculture has a positive and significant influence on their learning motivation.*

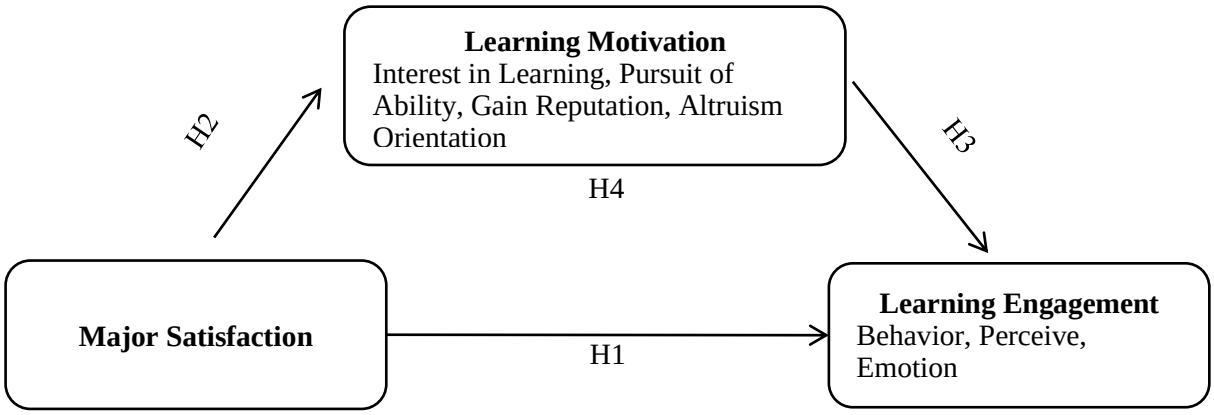
Studies on learning engagement of online courses have found that learning motivation can promote students' learning engagement through self-management and control of effort and attention as well as adjustment of learning strategies (Kim et al., 2015). According to the motivational expectation value theory, learning motivation, as a motivational factor, plays a positive role in promoting individual behavior (Wigfield & Eccles, 2000). Based on the analysis, this study proposes research hypothesis H3:

H3: *The learning motivation of higher vocational college students majoring in agriculture has a positive and significant influence on learning input.*

The research of Peng et al., (2017) shows that students' major satisfaction does not directly affect learning engagement, but plays an indirect role through self-regulation ability, that is, self-regulation ability, which plays a complete intermediary role between the two. Scholars Wang et al., (2019) Learning motivation is the internal motivation and psychological resources to promote students' learning, and directly affects the learning effect, while effective learning motivation plays a key role in the stage of higher education (Sattar et al., 2019). According to the research results of Shi et al., (2020), learning motivation is positively correlated with learning engagement, which is consistent with the research results of Hou and Guan (2019). Learning motivation between major satisfaction and learning into partial intermediary role, major satisfaction can be indirectly through the learning motivation of learning into effect, the school students need to fully consider the external and internal conditions, pay close attention to the improvement of students' major satisfaction, strengthen the learning motivation intervention, so as to achieve the purpose of the study in ascension. Based on the above analysis, research hypothesis H4 is proposed in this study:

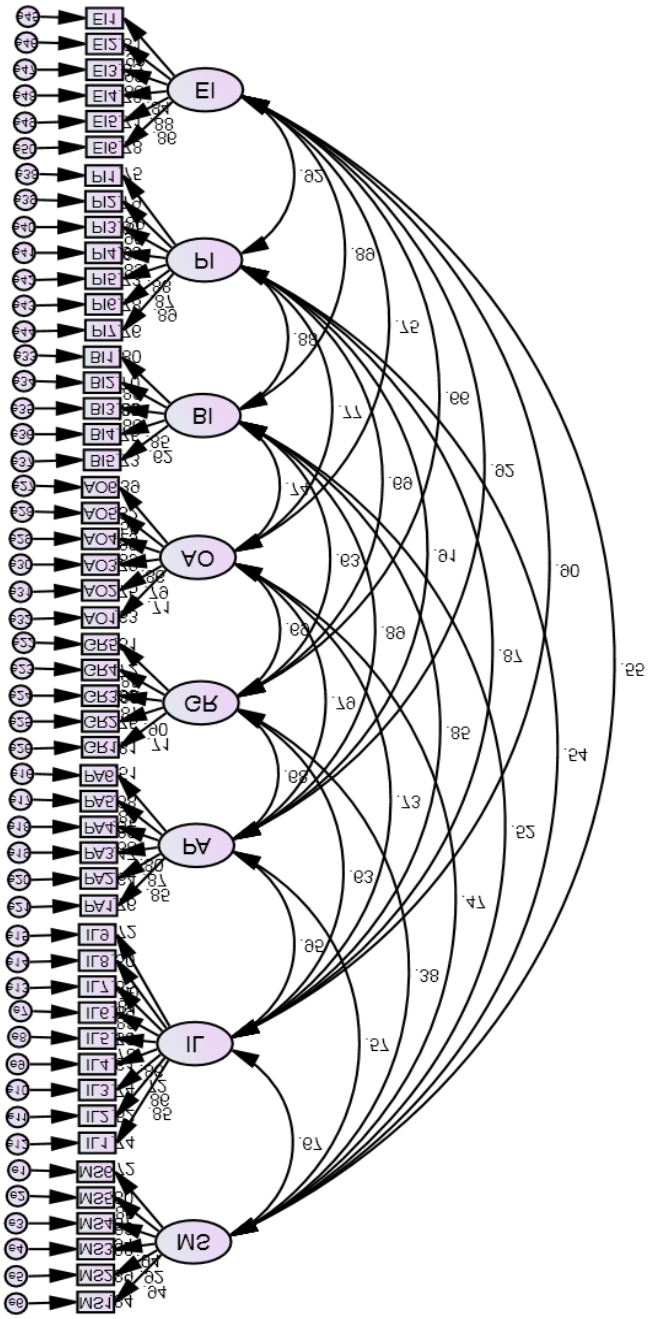
H4: *The learning motivation of vocational college students majoring in agriculture plays a mediating role in the relationship between major satisfaction and learning engagement*

FIGURE 1
HYPOTHETICAL MODEL



According to the contents of literature review and hypotheses, this study takes Major satisfaction as an independent variable, learning Engagement as a dependent variable, and learning motivation as a mediating variable. Figure 1 illustrates the hypothetical model as follows:

FIGURE 2
MEASUREMENT MODEL



Research Method

The data of this research is collected by questionnaire. The purpose of the implementation is to measure the major satisfaction of vocational college students majoring in agricultural economy in Shaoxing area, located in the south of the Yangtze River, SX region has been known as the land of fish and rice since ancient times. This region has abundant crops and develops agricultural economy, which is of high regional research value. According to the advantages of agricultural economy in SX region, this paper selects the students of the Department of Agricultural Economics of N College, which is the only one in the region

that is involved in agriculture, as the research object and conducts an investigation. In the prediction stage of this survey, 279 questionnaires were distributed to test the reliability and validity of each scale. A total of 630 formal questionnaires were issued.

TABLE 1
TABLE OF CORRELATIONS

Var.	No.	Coefficient of Association							
		A	B	C	D	E	F	G	H
A Major Satisfaction	6								
B Interest in Learning	9	.62**							
C Pursuit of Ability	6	.55**	.88**						
D Gain Reputation	5	.38**	.62**	.65**					
E Altruism Orientation	6	.41**	.65**	.70**	.73**				
F Behavior	5	.50**	.80**	.81**	.63**	.66**			
G Perceive	7	.53**	.84**	.85**	.67**	.70**	.84**		
H Emotion	6	.53**	.85**	.86**	.65**	.67**	.84**	-.89**	

*Note: *p<.05; **p<.01; ***p<.001*

The situation of learning motivation, learning Engagement, and to discuss the influence of each aspect. There are three variables and scales in this study. Likert five-point scale is adopted, ranging from 1(strongly disagree) to 5(strongly agree) to score the questionnaire. The scoring results are as follows:

As for the measurement of major satisfaction scale, many researchers in the past divided the scale according to different entry points of professional satisfaction and designed the questions of the scale based on different entry points. So major satisfaction dimensions refer to the literature of this study is divided into training scheme, course system (Margaret, 2007), faculty, hardware facilities, professional prospects (Li, 2021), and other dimensions, and according to Yang (2019) of the Major satisfaction scale design 6 item for the title of the Major satisfaction scale of this study.

By comparing learning motivation, this study divided learning motivation into four dimensions: interest in learning, pursuit of ability, acquisition of reputation, and altruistic direction (Mohsen and Sepideh, 2017). Meanwhile, a learning motivation scale was designed according to the topic of the learning motivation scale compiled by Yang (2019). Among them, there are 9 questions for knowledge seeking interest (IL1-IL9), 6 questions for ability pursuit (PA1-PA6), 5 questions for reputation acquisition (GR1-GR5), and 6 questions for altruism (AO1-AO6).

After sorting out the literature, the researcher divided learning motivation into three dimensions: behavior, cognition, and emotion (Cigdem, 2019). The learning motivation scale in this study was used for reference according to the topic of the learning engagement scale developed by Yang (2019). Among them, there are 5 questions in behavioral input (BI1-BI5), 7 questions in perceive input (PI1-PI7), and 6 questions in emotional input (EI1-EI6).

Analysis Method

In this study, Structural equation model (SEM) was used to test the data and hypothesis model of students majoring in agricultural economy in higher vocational colleges (Rong, 2009). Confirmatory factor analysis (CFA) was used to test the measurement model, and the factor load was obtained as a statistical index to verify the degree of compatibility between the data of students majoring in agricultural economics and the measurement potential variables. This is shown in Figure 2. CFI=.98, all reached the fitness standard, and the major satisfaction scale had good reliability and validity. Cronbach's alpha coefficient of each dimension of the learning motivation scale were.93, .92, .92, .90, CR values were.94, .92, .92, .91,

AVE values were.63,.66,.69,.63, respectively, and the fitness degree $\chi 2$=1369.91 (P value was significant). $\chi 2$/DF=4.68, GFI=.70, RMR=.06, RMSEA=.12, AGFI=.64, NFI=.81, CFI=.84, all reached the fitness standard, and the learning motivation scale had good reliability and validity. Cronbach's alpha coefficient of each dimension of the learning engagement scale was.89,.96,.95, CR value was.91,.96,.96, AVE value was.63,.79,.78, fitness degree $\chi 2$=774.75 (P value was significant), $\chi 2$/DF=5.87, GFI=.75, RMR=.03, RMSEA=.13, AGFI=.68, NFI=.88, CFI=.90, all reached the adaptation standard, and the learning engagement had good reliability and validity. Are shown in table 1 and table 2.

TABLE 2
DESCRIPTIVE STATISTICS AND STANDARDIZED REGRESSION COEFFICIENTS(SRC)

Var	No.	Questionnaire Items	Mean	SD	SRC	*t* Value
MS	MS1	The degree of satisfaction with the training program of this major	4.14	.80	.94	85.52***
	MS2	Satisfaction degree of the curriculum system of this major (including teaching materials and class hours)	4.14	.81	.92	85.57***
	MS3	The degree of satisfaction of the faculty of this specialty	4.19	.79	.94	88.74***
	MS4	Satisfaction degree of the hardware facilities of the major (including book resources, practice base and teaching facilities)	4.17	.80	.94	87.15***
	MS5	Whether the training goal and effect of this major can adapt to the market needs	4.15	.81	.93	85.67***
	MS6	What do you think of the employment prospects of your major	4.09	.84	.89	81.30***
LM	IL1	I always find college study enjoyable	4.09	.71	.85	96.49***
	IL2	With the deepening of the learning process, I interest in major learning has become more and more concentrated	4.01	.79	.86	84.45***
	IL3	I seldom feel empty because I study so hard	3.77	.99	.72	63.86***
	IL4	In general, I have a strong interest in the study of college courses	4.00	.78	.86	85.62***
	IL5	I often read books or magazines related to my major	3.66	.97	.78	62.79***
	IL6	I often feel a strong sense of satisfaction from the advantage I have in my study	3.73	.97	.73	64.47***
	IL7	I try to learn more knowledge than others	3.97	.76	.83	87.17***
	IL8	I am eager to seek new discoveries in the course study	4.06	.70	.81	96.99***
	IL9	In the course of my college studies, I often felt a sense of relief at the solution of a professional problem	3.99	.80	.70	83.68***

	PA1	I often consciously improve my scientific research ability by reading professional books	3.81	.85	.85	74.49***
	PA2	I often remind myself that I should constantly improve my ability to analyze and solve problems in the learning process	4.01	.73	.87	92.14***
	PA3	I study hard in order to have a good career in the future	4.11	.73	.80	94.73***
	PA4	I often think that if I don't study hard, I will lose my competitiveness when I get a job	4.04	.81	.69	83.40***
	PA5	Through persistent study, I can read more professional literature than the average student	3.81	.84	.82	75.61***
	PA6	By studying, I have solved many problems that I didn't understand before	4.05	.71	.83	95.11***
	GR1	I hope to use my academic record to expand my sphere of influence	3.94	.82	.71	80.62***
	GR2	I want to study hard to improve my position in the class	3.58	1.02	.90	58.49***
	GR3	I always want to win others' respect by improving my grades	3.62	1.01	.87	59.98***
	GR4	I regard hard work as a chip to be elected as a student cadre	3.38	1.10	.82	51.56***
	GR5	I often remind myself that I cannot affect my status in the eyes of my classmates because of my academic performance	3.49	1.07	.85	54.55***
	AO1	I often remind myself that if I don't study hard, I can't give an explanation to my parents	3.71	.93	.71	66.89***
	AO2	I often think that if I don't study hard, I will be sorry for the teacher's cultivation	3.70	.90	.79	69.03***
	AO3	In order to equip myself to help others in the future, I have been studying hard	3.97	.76	.86	87.71***
	AO4	I want to make use of my talent to serve my hometown and win honor for the school	3.94	.78	.89	84.44***
	AO5	The desire to make my country richer and stronger in the future is the main motivation for my study	4.00	.78	.89	85.62***
	AO6	I was very afraid of being blamed by friends and relatives and laughed at by classmates because of my poor academic performance	3.35	1.13	.56	49.81***
LE	BI1	I will listen carefully and think positively in class	4.10	.65	.83	104.86***
	BI2	I will take an active part in extra-curricular activities after class	3.96	.74	.89	88.95***
	BI3	I will use winter and summer vacation time to carry out social practice	3.93	.78	.86	84.56***
	BI4	I often organize or participate in organizing some quality development activities	3.89	.79	.85	82.00***

BI5	I often read all kinds of books which have nothing to do with study	3.68	.96	.62	63.89***
PI1	I will make a suitable study plan	3.78	.83	.89	76.28***
PI2	I constantly monitor my compliance with the plan	3.75	.77	.90	72.131***
PI3	I often check my progress against my learning goals	3.83	.82	.91	77.81***
PI4	My study has both long term plan and short-term goal	3.91	.77	.86	84.84***
PI5	I can allocate my study and activity time well	3.88	.78	.88	83.36***
PI6	As soon as I find myself distracted while studying, I will immediately focus on my study	3.80	.82	.87	77.84***
PI7	When I make mistakes in my study or practice, I can analyze the reasons carefully to solve them	3.90	.78	.89	83.72***
EI1	I can set my mind at study, study when the mood is very quiet	3.91	.77	.90	85.36***
EI2	I can easily deal with study and practice	3.85	.81	.92	79.10***
EI3	My grades are relatively stable and my comprehensive quality is relatively strong, so I feel at ease and relaxed	3.86	.80	.88	80.47***
EI4	I am often praised and praised for my academic performance and ability	3.73	.86	.84	72.40***
EI5	I find both learning and practice very interesting	4.07	.67	.88	101.05***
EI6	Learning and practice bring me a lot of happiness	4.05	.68	.86	98.94***

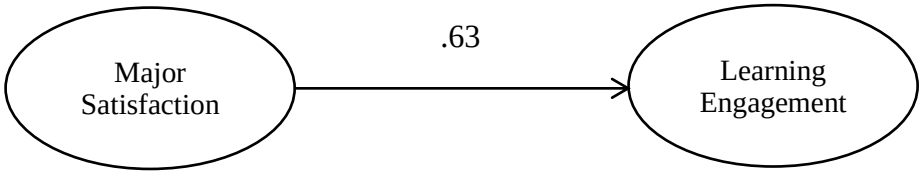
*Note: *p<.05; **p<.01; ***p<.001*

EMPIRICAL RESULTS

Main Effect

SEM test was conducted on the main effect path, and the standardized regression coefficients of each main effect ranged from.63 to.97. The main effect path showed that: χ^2=286.36 (*p* value was significant), χ^2/DF=11.01, GFI=.90, RMR=.05, RMSEA=.13, AGFI=.82, NFI=.97, CFI=.97. The path coefficient is shown in Figure 3. The hypothesis that H_1 major satisfaction has a significant effect on learning engagement is proved (γ =.63, p < .001).

FIGURE 3
MAIN PATH COEFFICIENT OF MAJOR SATISFACTION ON LEARNING INVESTMENT

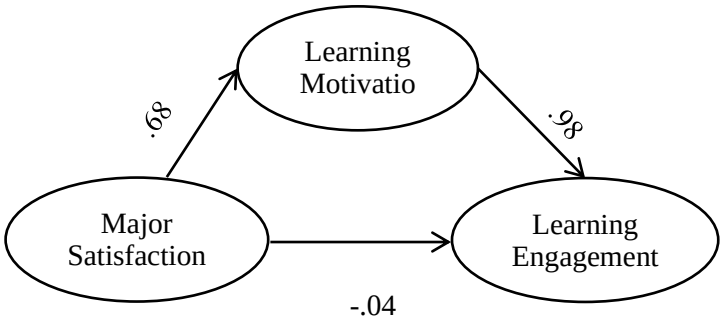


Structural Model Effect

Hypothesis H2 and H3 are involved in the model, and hypothesis H4 is involved in the mediating effect to form the structural model. The normalized regression coefficients in the model ranged from.75 to.97, and the fitting effect of the structural model showed that $\chi 2$=3862.39 (p value was significant), $\chi 2$/DF=11.31, GFI=.69, RMR=.17, RMSEA=.13, AGFI=.63, NFI=.87, CFI=.88. in Figure 4.

The hypothesis that H2 major satisfaction has a significant effect on learning motivation was proved (γ = .68, p < .001). The hypothesis that H3 learning motivation has a significant effect on learning engagement was confirmed (γ = .98, p < .001). In the mediation structure model, major satisfaction had no significant effect on learning investment (γ =- .04, p = .052). It can be concluded that, after adding the mediator variable of learning motivation into the model, in the main path, major satisfaction changes from a significant effect to no significant effect on learning investment, and the effect of the mediator variable of learning motivation is a complete mediator. Hypothesis H4 learning motivation was proved to be a complete mediator in the relationship between major satisfaction and learning engagement.

FIGURE 4
EFFECT OF STTRUCTURAL MODEL



DISCUSSION

The research results verified H1, as shown in Figure 3. It is proved that major satisfaction has a significant positive effect on learning engagement. This result is consistent with the literature results (Peng et al., 2017; Yang, 2019; Shi et al., 2020) Agricultural professional college for professional training scheme, faculty, teaching facilities, and the professional satisfaction, the prospect of the studies in behavior will be better, on the cognitive constantly remind myself to study hard professional knowledge, emotionally with full enthusiasm in learning, so it can enhance professional satisfaction from software and hardware configuration, through the school helps the student to learn, Continue to learn and improve.

Both H2 and H3 were verified by the research results, as shown in Figure 4. Confirmed professional satisfaction have significant positive effects on learning motivation, and the various dimensions of learning motivation has a positive effect, the results are basically consistent with the literature (Yang, 2019), and document the results and altruistic dimensions did not have a positive influence, but this study can be concluded that enhance professional satisfaction, will stimulate students desire for knowledge. At the same

time, I will strive to pursue and develop college students' personal abilities, so as to gain better reputation and honor. At the same time, a better degree of professional satisfaction will promote students' idea of helping others and create a more harmonious learning environment. Learning motivation has a significant positive impact on learning engagement, which is consistent with the results of literature (Wang et al., 2019; Grolnick, 2007) believe that self-help learning motivation has a positive influence on learning under whatever circumstances. Literature results think that college students' learning motivation, the more intense, it put more effort into learning, students' learning behavior is due to its ability to continue to pursue, college students have more positive cognition and emotion based on its strong curiosity, expect growing their own capabilities, continuous efforts to continuously affirm oneself, thus affecting behavior (Wang et al., 2019).

In this study, a structural model was also used to verify H4, as shown in Figure 4. It is confirmed that learning motivation has a complete mediating effect on the influence of major satisfaction on learning engagement. It is not enough to put more effort into learning and have a high degree of professional satisfaction. It requires a strong motivation to learn. Which argues for higher professional satisfaction on students' learning in the input, or enhance the students' learning motivation also can improve the students' learning input, or when a higher professional satisfaction will have stronger learning motivation, so as to promote student learning, the purpose of this kind of method to improve students' learning input.

CONCLUSION

The results of this study show that higher degree of major satisfaction and strong learning motivation have a positive impact on students' learning engagement, and when students have higher degree of major satisfaction and stronger learning motivation, students will certainly invest more energy in learning.

Suggestions for this study are as follows: First, to improve major satisfaction, not only to increase the investment in software and hardware in major, but this method is also from the school level to meet students' needs for major satisfaction, can try to understand more detailed needs of major satisfaction from the student level. Since the scale of major satisfaction in this study is based on the mature scale of previous scholars, the researcher believes that positive advertising of students' major or school reputation before enrollment, production practice during graduation and follow-up service after employment can all enhance students' degree of major satisfaction. Second, educators should do more to stimulate students' learning motivation in the work devoted to students' learning. Learning motivation plays a crucial role in students' learning engagement. This study shows that educators should focus on stimulating students' strong desire for learning motivation, because its powerful intermediary role helps students to devote themselves to learning and serve the society until students get better grades.

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