

Effects of Major Selection Motivation and Major Satisfaction of College Students Majoring in Artificial Intelligence on Their Adaptation to College Life

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Abstract: *This study focuses on university students majoring in artificial intelligence at S University in Zhejiang Province, aiming to reveal the relationships among major selection motivation, major satisfaction, and adaptation to college life, as well as the mediating role of major selection motivation on major satisfaction. The objective is to examine whether it influences adaptation to college life. Based on previous research and theories, research hypotheses were established, and a survey was conducted among 340 university students from the first to the fourth year majoring in artificial intelligence at S University in Zhejiang. The data were analyzed using SPSS 26.0 and AMOS 26.0. To understand the impact of major selection motivation and major satisfaction on adaptation to college life, a structural model analysis was performed, with the following results. In the relationship between major selection motivation and major satisfaction, it was confirmed that major selection motivation has a significant direct effect on major satisfaction, and major satisfaction plays a significant mediating role in the relationship between major satisfaction and adaptation to college life. Therefore, to enhance the adaptability of university freshmen to college life, it is necessary to provide career guidance based on their interests or abilities during the process of selecting a major upon entering university. Furthermore, there is a need for institutional arrangements to offer various educational services and programs related to major satisfaction.*

Keywords: Major Selection Motivation, Major Satisfaction, Adaptation to College Life, University Students Majoring in Artificial Intelligence.

1. Introduction

1.1 Research Background and Necessity

In recent years, with the rapid development of technology, artificial intelligence has emerged as a promising and burgeoning major, attracting significant attention from students and parents alike. Since 2019, numerous universities have established artificial intelligence programs, aiming to cultivate high-quality AI talents to meet societal demands. However, the popularity of this major has also brought about some issues. Many students majoring in artificial intelligence, driven by blindly following the trend, have experienced difficulties in keeping up with their studies and a lack of interest in their major, leading to maladaptation to college life.

A university is a place for teaching, research, and the creation of new knowledge. In today's rapidly changing society, attending university has become a common choice for people seeking to acquire knowledge and information and enhance their competitiveness. Throughout one's life, numerous decisions are inevitable. Among these, the choice of major upon entering university is a significant one, as it is closely linked to the life and career aspirations one pursues in the future [1]. Therefore, selecting a suitable major is a crucial decision for university students in order to pave the way for a promising future. It is recommended that new students choose their majors based on gathering specific information about their interests, abilities, personalities, and the majors themselves [2].

According to Erikson's (1986) psychosocial stages of development, the university period is understood as the

transition from late adolescence to early adulthood [3]. As students make the transition from high school to university, they face academic and social challenges, such as high academic demands and adapting to new friends and professors. Furthermore, high school education is often geared towards the established goal of university admission, and upon entering university, students suddenly encounter unfamiliar specialized knowledge and values. When confronted with career-related issues, they may also experience confusion [4]. To minimize this confusion and better adapt to university life, careful consideration should be given to the choice of major upon enrollment.

Choosing a university major involves setting personal goals and understanding oneself, the environment, and the professional world. It can be described as a decision-making process of selecting a major based on considerations of university and major information [5]. If one's interests and abilities do not align with their major, classroom engagement may decrease, potentially leading to maladaptation to college life and a subsequent decline in major satisfaction [6]. If students choose a major without fully exploring their own interests and abilities, they may lose interest in the major and pursue a different one through major changes. Furthermore, inability to adapt to the major may result in a decrease in learning motivation and interest, ultimately leading to dropout. Therefore, major selection motivation and major satisfaction can be regarded as important factors influencing university students' academic performance or adaptation to college life.

A review of previous research on adaptation to college life reveals that most studies have primarily focused on aspects such as social support, life stress, self-esteem, and

self-efficacy [7][8], with little attention paid to emerging disciplines like artificial intelligence. Therefore, it is necessary to focus on university students majoring in artificial intelligence and reveal the factors influencing their adaptation to college life from multiple perspectives.

1.2 Research Questions

Research Question 1: What is the impact of major selection motivation and major satisfaction on adaptation to college life among university students majoring in artificial intelligence in China?

Research Question 2: In the impact of major selection motivation on adaptation to college life among university students majoring in artificial intelligence in China, does major satisfaction exhibit a mediating effect?

2. Theoretical Background

2.1 Adaptation to College Life

Unlike the passive lifestyle dictated by a set schedule during elementary, middle, and high school, college life becomes relaxed and free upon enrollment. Students must actively adapt to the tasks required in college life. Many scholars have defined adaptation to college life. Additionally, research has been conducted on factors such as major selection motivation, major satisfaction, and the impact of emerging fields like artificial intelligence on students' experiences and adaptability in college.

Kim Eun-jung (1992) pointed out that adaptation to college life refers to the appropriate responses of university students to the academic, interpersonal, and emotional demands of college life during their university years [9]. Kim Min-jung (2011) defined adaptation to college life as a positive response to the need to adapt to the surrounding environment within the physical setting of the university or to change the environment to suit one's own needs [10].

In the early research by Pantages and Greedon (1978), academic adjustment was a significant factor in adaptation to college life, but it has since evolved into a concept that includes abnormalities in cognitive learning abilities [11]. Baker and Syrik (1984) categorized the components of adaptation to college life into four domains: academic adjustment, social adjustment, personal-emotional adjustment, and institutional adjustment [12]. Kim Byung-chan (2003) identified factors related to adaptation to college life among university students as academic adjustment, social adjustment, personal-emotional adjustment, and university attachment, and analyzed the differences in adaptation to college life [13]. Kang Hyo-ju (2009), in a study on interpersonal relationship orientation and adaptation to college life, divided adaptation to college life into four factors: academic adjustment, social adjustment, personal-emotional adjustment, and institutional adjustment [14].

Therefore, this study synthesizes the concept of adaptation to college life proposed in previous research and defines it as a psychosocial process of appropriately coping with various demands and issues encountered in college life. Based on the

research of multiple scholars, the components of adaptation to college life are divided into three categories: academic adaptation, personal-emotional adaptation, and social adaptation.

2.2 Major Selection Motivation

Major selection motivation refers to the behavior of making a choice by comprehensively considering major information, self-understanding, and understanding of the environment and the professional world before entering university. Choosing a major at the university entrance stage is an important decision in life, as it lays the foundation for developing professional knowledge and refining abilities for entry into society after graduation [15]. Finding and selecting a major that suits oneself through comparison and analysis of the environment is a crucial decision in one's lifetime, necessitating a correct understanding of oneself and the majors available [16].

Jeong Bo-yeong (2010) categorized the components of major selection motivation into personal motivation and social motivation. Personal motivation comprises elements such as ability and interest, while social motivation includes factors like the popularity of the major, recommendations from others, and academic performance. Song Yun-jeong (2013) explained it by dividing it into intrinsic motivation and extrinsic motivation. Intrinsic motivation includes intrinsic rewards and adaptability, while extrinsic motivation includes job prospects, recommendations from others, and popular disciplines.

Based on these findings, this study integrates the concept of major selection motivation proposed in previous research and defines it as the behavior of an individual in selecting a major based on a combination of factors including interests, values, personality, abilities, understanding and information about the major, career goals, and social and family environments. According to the research of multiple scholars, the components of major selection motivation are divided into intrinsic motivation and extrinsic motivation.

2.3 Major Satisfaction

Major Satisfaction

Before examining major satisfaction, we decided to first explore the concept of satisfaction. Satisfaction is defined as the overall sense of fulfillment or contentment derived from the completion or achievement of something, with origins in the Latin language. Bang, H.J., and Park, J.S. (2014) argue that satisfaction represents the physical or mental factors that influence an individual's level of satisfaction. It can be described as a feeling perceived psychologically by humans, representing the degree of subjective emotional state as individuals strive to fulfill certain desires or goals.

Lee Dong-jae (2004) defined major satisfaction as the result of combining subjective happiness felt when one's need levels are met while studying specialized subjects with positive thinking about one's future and career [17]. Han Ye-jeong (2008) argued that major satisfaction is a composite of cognition and emotion, representing an individual's subjective experience of their major.

Ha Hye-sook (2000) identified five factors in a study on factors influencing college students' satisfaction with their departments: satisfaction with understanding of the university, satisfaction with interest in professional research, satisfaction with understanding of the department, satisfaction with specialized courses, and satisfaction with teacher-student relationships [18]. Kim Young-min (2012) divided major satisfaction into course satisfaction, relationship satisfaction, and cognitive satisfaction [19]. Furthermore, in the study by Bang Hyo-jin and Park Jeong-shin (2014), it was categorized into four factors: classroom satisfaction, curriculum satisfaction, cognitive satisfaction, and relationship satisfaction [20].

Based on these research findings, this study synthesizes the concept of major satisfaction proposed in previous research and posits that major satisfaction is formed by the interaction between an individual's characteristics and their environment, while pursuing academic courses and meeting their own needs. We aim to define it as the outcome of a combination of subjective happiness and positive thinking about one's future and career. According to the research of multiple scholars, the components of major satisfaction are established as curriculum satisfaction, cognitive satisfaction, and relational satisfaction.

2.4 Relationships between Variables

2.4.1 The Relationship between Major Selection Motivation and Adaptation to College Life

In previous studies on major selection motivation and adaptation to college life, Lee Kyung-hee and Kwon Jun-mo (1996) found that the motivation for major selection at the time of enrollment influences factors related to the major and academics, and groups with higher motivation reported higher overall satisfaction with college life[21]. Lee Kyung-wan, Moon In-oh, and Park Suk-kyung (2013) discovered that the reasons for choosing a major affect adaptation to college life, such as the ease of employment and the influence of suggestions from others or the score of the admitted major[22]. Research has shown that if you choose a major based on intrinsic motivation, you will adapt better.

From the above studies, it can be seen that if the motivation for choosing a major is intrinsic, there is a higher overall satisfaction with the major and a higher level of adaptation to college life.

2.4.2 The Relationship between Major Satisfaction and Adaptation to College Life

Jang Moon-young (2005) pointed out that if college students are dissatisfied with their major, they may experience psychological issues such as poor academic performance due to loss of interest in learning, anxiety, and nervousness due to maladaptation to college life[23]. It is said that this may lead to problems such as disrupting the learning atmosphere in college and affecting personal development. Kim Mi-sook et al. (2010) found in their research that the higher the satisfaction with the major, the higher the adaptability to the department[24]. Shin Seung-kyu (2011), in a study on major satisfaction among health profession students, found that

higher major satisfaction is associated with higher adaptation to college life [25].

From the above research, it can be seen that studies have shown that major satisfaction can affect career choice, academic adaptation, etc., but there is a lack of research related to adaptation to college life. Therefore, exploring the relationship between major satisfaction and adaptation to college life is of great significance.

3. Research Methodology

3.1 Research Model and Hypotheses

3.1.1 Research Model

To achieve the research objective, drawing on previous studies, this research designates major selection motivation as [an independent variable] and major satisfaction as a mediator variable. To verify whether major satisfaction mediates the influence of major selection motivation on adaptation to college life among artificial intelligence majors, the research model illustrated in Figure 1 was established, and the following research questions were proposed.

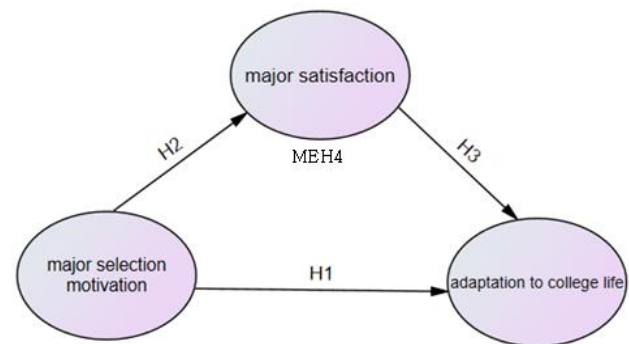


Figure 1: The Research Model

3.1.2 Research Hypotheses

To investigate whether major satisfaction mediates the influence of major selection motivation on adaptation to college life among artificial intelligence major students, the following research questions were posed:

Hypothesis H1: Major selection motivation of artificial intelligence majors will influence their adaptation to college life.

Hypothesis H2: Major selection motivation of artificial intelligence majors will influence their major satisfaction.

Hypothesis H3: Major satisfaction of artificial intelligence majors will influence their adaptation to college life.

Hypothesis MEH4: Major selection motivation of artificial intelligence majors will influence adaptation to college life through major satisfaction.

3.2 Study Participants

The study was conducted with 340 undergraduate students majoring in AI, ranging from first to fourth year, at S University in Zhejiang Province, China. The survey was

administered in November 2024. A total of 318 valid questionnaires were collected and analyzed, yielding a response rate of 93.53%. The sample included 225 males, accounting for 66.1%, and 115 females, accounting for 33.8%, with more males than females. Eighty-five students were selected from each of the four year levels, representing 25% of the sample. The measurement results are shown in Table 1.

Table 1: Demographic Information of Participants

Variable	subcategory	Frequency	Percent (%)
University Students	Male	225	66.2
	Female	115	33.8
Majoring in Artificial Intelligence	Grade 1	85	25
	Grade 2	85	25
	Grade 3	85	25
	Grade 4	85	25
Total		340	100

3.3 Research Instruments

3.3.1 Major Selection Motivation

The measurement tool for major selection motivation used in this study was adopted from Song, Y.J. (2013). The scale consists of 8 intrinsic motivation items and 5 extrinsic motivation items, with response formats ranging from 1 (“not at all”) to 5 (“very much”) on a Likert 5-point scale.

3.3.2 Major Satisfaction

The measurement tool for major selection motivation used in this study is an adapted version of the questionnaire used by Ha, H.S. (1999) and Cho, W.S. (2008). The scale comprises 6 items on course satisfaction, 4 items on relational satisfaction, and 5 items on cognitive satisfaction, with response formats ranging from 1 (“not at all”) to 5 (“very much”) on a Likert 5-point scale.

3.3.3 Adaptation to College Life

To measure college students’ adaptation to college life, a subscale of the Student Adaptation to College Questionnaire (SACQ) developed by Baker and Siryk (1984) and adapted by Kang, H.J. (2009) was used. The subfactors of adaptation to college life include 10 items on academic adaptation, 10 items on personal-emotional adaptation, and 10 items on social adaptation. The response format consists of a Likert 5-point scale ranging from 1 (“not at all”) to 5 (“very much”).

3.3.4 Reliability and Validity of the Instruments

The reliability of the research instruments was verified using SPSS 26.0. Cronbach’s α for each factor was above 0.9, indicating good reliability of the instruments. To ensure the authenticity and validity of the instruments, KMO test and Bartlett’s test were conducted. The results showed that $KMO > 0.8$ and the significance level was $p < 0.001$, indicating high validity of the research instruments.

3.4 Data Analysis Methods

This study investigated and collected data on major selection motivation, major satisfaction, and adaptation to college life to understand the structural relationships among the three variables. Descriptive statistical analysis and correlation analysis were conducted using SPSS 26.0 and AMOS 26.0. Subsequently, structural equation modeling was performed with major satisfaction as a mediator to examine how major selection motivation influences adaptation to college life.

4. Results

4.1 Descriptive Statistics

To identify the trends of the sub-factors of the latent variables in this study, means, standard deviations, skewness, and kurtosis were calculated. According to the research findings, among the sub-factors of adaptation to college life, social adaptation ($M=3.235$, $SD=1.065$) had a greater impact than personal-emotional adaptation ($M=3.446$, $SD=1.090$) and academic adaptation ($M=3.539$, $SD=1.053$). In terms of major selection motivation and major satisfaction, extrinsic motivation ($M=3.539$, $SD=1.133$) and cognitive satisfaction ($M=3.424$, $SD=1.024$) exerted a greater influence on adaptation to college life. Additionally, observing the skewness and kurtosis of each sub-factor, based on their absolute values, the skewness did not exceed 3.0 and the kurtosis did not exceed 7.0. Therefore, it was assumed that the distribution of the variables was normal, and based on this, it was judged to be suitable for verifying the structural equation model. The measurement results are shown in Table 2.

Table 2: Descriptive Statistics

	N	M	SD	skewness	kurtosis
intrinsic motivation	318	2.961	1.057	-0.040	-0.689
extrinsic motivation	318	3.235	1.133	-0.099	-0.749
academic adaptation	318	3.228	1.053	-0.191	-0.355
personal-emotional adaptation	318	3.446	1.090	-0.507	-0.436
social adaptation	318	3.518	1.065	-0.672	-0.175
curriculum satisfaction	318	3.293	1.004	-0.336	-0.297
cognitive satisfaction	318	3.424	1.024	-0.535	-0.086
relational satisfaction	318	3.296	1.196	-0.389	-0.805

4.2 Correlation Analysis

To explore the correlations among major selection motivation, major satisfaction, and adaptation to college life among artificial intelligence major students, Pearson correlation analysis was conducted. The results revealed that there was an overall positive correlation among major selection motivation, major satisfaction, and adaptation to college life among artificial intelligence major students. Specifically, intrinsic motivation was significantly positively correlated with academic adaptation, $r=0.160$ ($p < 0.01$). Academic adaptation was significantly positively correlated with course satisfaction, $r=0.267$ ($p < 0.01$). Social adaptation was significantly positively correlated with cognitive satisfaction, $r=0.293$ ($p < 0.01$), and social adaptation was also significantly positively correlated with relationship satisfaction, $r=0.342$ ($p < 0.01$). The measurement results are shown in Table 3.

Table 3: Correlation between Research Variable

	1	2	3	4	5	6	7	8
IM(1)	1							
EM(2)	.715**	1						
AA(3)	.160**	.130*	1					
PA(4)	.206**	.120*	.789**	1				
SA(5)	.192**	.142*	.793**	.836**	1			
CUS(6)	.155**	.186**	.267**	.274**	.298**	1		
COS(7)	.152**	.183**	.261**	.267**	.293**	.857**	1	
RS(8)	.387**	.292**	.274**	.333**	.342**	.287**	.293**	1

**p<.01, *p<.05

IM(1): intrinsic motivation, EM(2): extrinsic motivation, AA(3): academic adaptation, PA(4): personal-emotional adaptation, SA(5): social adaptation, CUS(6): curriculum satisfaction, COS(7): cognitive satisfaction, RS(8): relational satisfaction

4.3 Analysis of the Research Model

In this study, a structural equation model was utilized to analyze the specific paths and their impacts among the variables. Prior to the analysis of the research model, we examined the relationships between the observed variables and latent variables to validate the applicability of the research model.

4.3.1 Validation of the Applicability of the Research Model

To confirm the applicability of the model, indices such as CFI, TLI, NFI, GFI, and RMSEA were calculated and presented as indicators of model fit. The fit statistics for the research model were $X^2/df=4.162$, $RMSEA=0.1$, $CFI=0.965$, $NFI=0.954$, and $GFI=0.949$. Therefore, it can be concluded that the research model is appropriate. The measurement results are shown in Table 4.

Table 4: The research Model Fit indices

Indices	X^2/df	RMSEA	CFI	NFI	GFI	PGFI	PNFI
Cut-off	<5	<0.1	>0.9	>0.9	>0.8	>0.5	>0.5
Value	4.162	0.1	0.965	0.949	0.949	0.586	0.579

4.3.2 Direct Effects

The study used Amos 26.0 to analyze the effects among each variable in the research model. Major selection motivation had a significant positive effect on major satisfaction ($\beta=0.218$, $p<0.001$). Major satisfaction had a significant positive effect on adaptation to college life ($\beta=0.309$, $p<0.001$). Additionally, major selection motivation had a significant positive effect on adaptation to college life ($\beta=0.151$, $p<0.05$). The measurement results are shown in Table 5.

Table 5: the direct effect validation

Path	Estimate	S.E.	C.R.	p
Major selection motivation ---> major satisfaction	0.218	0.065	3.444	***
Major satisfaction ---> adaptation to college life	0.309	0.063	5.135	***
Major selection motivation ---> adaptation to college life	0.151	0.076	2.137	*

*p<.05, ***p<.001

4.3.3 Mediating Effect

The study analyzed the mediating effect of major satisfaction in the relationship between major selection motivation and adaptation to college life. According to the analysis results, the indirect effect was ($\beta=0.073$, $p<0.05$), with a lower bound of 0.016 and an upper bound of 0.122, excluding "0" thus being statistically significant. The results indicate that major satisfaction has a partial mediating effect. The measurement results are shown in Table 6.

Table 6: Results of the mediation effect in the research structural model

Effect	Estimate	S.E.	Lower	Upper	p
Indirect effect	0.073	0.035	0.016	0.122	0.027

5. Discussion

5.1 Discussion of Research Findings

This study aimed to investigate the relationships among major selection motivation, major satisfaction, and adaptation to college life among artificial intelligence major students, and to determine the relationships among variables by establishing a structural relationship model hypothesizing their interconnections. The following discussion is based on the analysis results.

Firstly, major selection motivation has a significant impact on adaptation to college life, and major satisfaction confirms the relationship between these two variables in the context of major selection motivation and adaptation to college life. The sub-factor of major selection motivation, intrinsic motivation, and the sub-factors of major satisfaction, course satisfaction and relationship satisfaction, are highly correlated with adaptation to college life. This implies that when students make good choices regarding their majors, are satisfied with their specialized courses or departments, and exhibit close relationships with professors or peers, it positively influences their adaptation to college life.

Secondly, major selection motivation has a significant influence on college students' adaptation to college life. Among the sub-factors of major selection motivation, intrinsic motivation affects both academic and social adaptation. Therefore, to enhance students' ability to adapt to college life, it is advisable to promote more professional information starting from senior high school and provide career guidance based on their interests or abilities.

Thirdly, major satisfaction has a significant impact on adaptation to college life. As a sub-factor of major satisfaction, course satisfaction influences academic adaptation, cognitive satisfaction affects social adaptation, and relationship satisfaction impacts personal-emotional adaptation. This may

change depending on the alignment between expectations for the major upon entering university and the actual experiences encountered in college life. Therefore, in the learning process of improving professional knowledge and skill levels, it is essential to provide various services or guidance to students to enhance their major satisfaction.

5.2 Limitations and Future Prospects

The limitations of this study and prospects for future research are as follows. Firstly, since this study focused solely on artificial intelligence major students, it is difficult to generalize the findings to all college students. Therefore, it is necessary to study the relationships among major selection motivation, adaptation to college life, and major satisfaction among college students representing various majors such as science and engineering, humanities and social sciences, music, architecture, and medicine. Secondly, this study was conducted on college students who had already entered university; however, to further enhance the persuasiveness of the research findings, it is necessary to expand the study to include prospective university students.

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