

중국 대학생의 학업태도가 학업만족도에 미치는 영향: 성실성의 간접효과와 성별의 조건부 간접효과

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Effect of Academic Attitude on Academic Satisfaction of College Students in China: Indirect Effect of Sincerity and Conditional Indirect Effect of Gender

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요약 고등교육의 지속적인 발전에 따라 대학생의 학업만족도는 교육의 질과 학생의 발달을 평가하는 중요한 지표 중 하나가 되었다. 이에 본 연구는 중국 대학생의 학업태도, 성실성, 학업만족도에 있어 성별의 역할을 탐색하고자 하였다. 연구대상은 의도적 표집방법을 활용하여 선정하였으며, 설문조사를 통하여 자료를 수집하였다. 중국 광저우 지역 대학생을 대상으로 400부의 설문지를 배포하였으며, 388부의 설문지를 최종 분석에 활용하였다. 통계분석을 위해 SPSS PC+ Win. ver. 26.0과 SPSS PROCESS macro ver. 4.2를 활용하였으며, 빈도분석, 신뢰도 분석, 상관분석, 조건부 간접효과 분석을 실시하였다. 연구결과는 다음과 같다. 첫째, 학업태도는 성실성, 성별, 학업만족도와 유의미한 정적 상관관계가 있었다. 둘째, 성별은 학업태도가 성실성을 통해 학업만족도에 미치는 영향을 조절 매개하였다. 본 연구 결과는 대학생의 학업태도와 성실성을 활용하여 학업만족도를 향상시키기 위해서는 성별에 따라 상이한 전략이 필요함을 시사하였다. 이를 토대로 대학생의 학업만족도를 향상시킬 수 있는 방안을 제시하였다.

주제어 성실성, 학업태도, 성별, 학업만족도, 조절된 매개효과, 대학생

Abstract With the continuous development of higher education, the academic satisfaction of college students has become one of the important indicators to evaluate the quality of education and student development. Therefore, this study aims to explore the role of gender in academic attitude, sincerity, and academic satisfaction of college students in China. The subject of the study was selected by using the purposive sampling method, and data were collected using the survey method. 400 questionnaires were distributed to college students in Guangzhou, China, and 388 questionnaires were used for the final analysis. For statistical analysis, SPSS PC+ Win. ver. 26.0 and SPSS PROCESS macro ver. 4.2 were used, and frequency analysis, reliability analysis, correlation analysis, and conditional indirect effect analysis were performed. The research results are as follows. First, academic attitude had a significant positive correlation with sincerity, gender, and academic satisfaction. Second, gender moderated the intermediary role of academic attitude on academic satisfaction through sincerity. This study indicated that different strategies are needed according to gender to improve academic satisfaction using academic attitude and sincerity of college students. Based on the results, plans to improve the academic satisfaction of college students were suggested.

Key Words Sincerity, Academic Attitude, Gender, Academic Satisfaction, Moderated Mediating Effect, College Student

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1. Introduction

Academic satisfaction is an important index because it is one of the outcomes that students achieve by participating in classes. In particular, as online learning develops with the development of IT technology, it is more important that the driving force for learners to actively participate in learning is the satisfaction of learning. There is a learning attitude as a factor influencing academic satisfaction. It has been reported that various characteristics of academic attitude affect learning outcomes [1], and these studies have been accumulated to some extent.

Meanwhile, with the spread of online classes, the sincerity of classes is emerging as an important factor. It is a variable that refers to students' adherence to moral principles, honesty, and trustworthy behavior in their academic endeavors. An opposing concept is academic dishonesty, which includes cheating, plagiarism, and fabrication of data [2]. This sincerity is influenced by learning attitude [3], and is reported to affect academic satisfaction [4]. Thus, sincerity is predicted to mediate in the link between academic attitude and academic satisfaction. However, there are few studies on the mediating role of sincerity.

Meanwhile, gender is reported to be different in academic satisfaction. There is a research result that shows that men affect academic satisfaction differently than women due to differences in aptitude or computer ability [5]. On the other hand, a study has also reported that there is no gender difference in online learning satisfaction [6]. Thus, more research on the effect of gender on academic satisfaction is needed. Therefore, this study used gender as a moderating variable to pay attention to whether the effect of academic attitude on academic satisfaction via sincerity differs according to gender. In particular, we wanted to have a high concern for college students who do a lot of online learning.

The primary objective of this study is to provide basic data that can enhance the academic satisfaction in

college students in China by verifying whether gender moderates the intermediary role of sincerity in the link between academic attitude and academic satisfaction. The research questions were set as follows. First, what is the correlation between academic attitude, sincerity, gender, and academic satisfaction? Second, does gender moderate the intermediary role of sincerity in academic attitude and academic satisfaction?

2. Theoretical background

2.1 Academic attitude and academic satisfaction

Academic attitudes refer to students' beliefs, values, motivations, and expectations regarding their academic pursuits. Numerous studies have shown that positive academic attitudes are associated with higher levels of student engagement, goal-directed learning behaviors, and academic achievement [7]. Researchers have utilized various theoretical models, such as the expectancy-value theory and self-determination theory, to examine the components and determinants of academic attitudes [8]. Moreover, studies have investigated the influence of contextual factors, including teacher-student linkages, parental involvement, and school climate, on shaping students' academic attitudes [9].

On the one hand, academic satisfaction reflects students' subjective evaluation and contentment with their academic experiences. It encompasses various dimensions, including satisfaction with teaching quality, learning outcomes, educational resources, social interactions, and personal achievements. High levels of academic satisfaction are associated with increased motivation, engagement, and persistence in learning [10]. Researchers have investigated the factors influencing academic satisfaction, such as instructional practices, student support services, academic self-efficacy, and social integration [11]. Furthermore, studies have examined the consequences of academic

satisfaction, such as students' well-being, retention rates, and future career choices [12].

Meanwhile, studies on the linkage between academic attitude and academic satisfaction have been conducted to some extent. In a study targeting university students, the attitude toward learning physical education in college had an effect on the satisfaction of physical education classes [13]. In a study targeting middle and high school students, subjective norms, visibility, and usefulness of academic attitude had a significant effect on academic satisfaction [1]. In a study targeting high school students across the country, it was found that academic attitude had a direct effect on strengthening academic achievement and school life satisfaction [14].

2.2 Mediating role of sincerity

Sincerity, in the context of education, refers to students' adherence to moral principles, honesty, and trustworthy behavior in their academic endeavors. The importance of academic sincerity has been widely recognized, as it ensures the fairness, credibility, and authenticity of academic achievements. Researchers have explored the prevalence and forms of academic dishonesty, such as cheating, plagiarism, and fabrication of data [2]. Studies have investigated individual and contextual factors that contribute to or deter students' sincerity, including personal values, academic pressure, ethical climate, and educational interventions [15][16].

There is little research on sincerity in academics. However, a small number of studies on test cheating have been conducted, and the mediating role of sincerity will be considered based on this. First of all, the effect of learning attitude on sincerity was examined, and then the effect of sincerity on academic satisfaction was examined. The lower the intelligence or academic achievement, the higher the tension or anxiety, and the higher the antisocial level, the more likely to cheat. And in terms of morality, those who

have low ethical consciousness, students with weak self-control, students who are good at extrinsic attribution while rationalizing or neutralizing themselves, and students with a strong desire to be recognized commit cheating a lot [17]. In a study targeting college students, it was reported that antisociality had an effect on academic misconduct [3]. In a study targeting adolescents, overall, the morality of adolescents did not have a significant effect on test cheating [18]. Based on these findings, the higher the negative attitude toward learning, the lower the sincerity. On the other hand, sincerity was found to have a significant negative association between test cheating and academic performance [4]. In general, it is judged that test cheating is a hindrance rather than an improvement in academic performance. Putting these research results together, it can be predicted that a positive academic attitude improves academic satisfaction via sincerity, and it is necessary to verify the intermediary role of sincerity targeting college students.

2.3 Mediating role of sincerity

Previous studies were reviewed to find out whether gender has a different effect on academic satisfaction. The research results that there is a difference in academic satisfaction by gender and the research result that there is no difference are reported at the same time.

In a study of 1,185 university students who participated in online education, female students were more satisfied with this learning subject than male students, and furthermore, female students assign more importance to the planning of learning, as well as to being able to contact the teacher in various ways [19]. According to [20], e-learning value and satisfaction were higher for male students than for female students. This is judged because male adolescents show better computer skills than female adolescents [5], and male

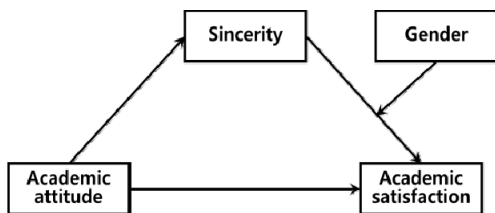
students have a more positive perception of e-learning than female students. This can be attributed to the fact that it exists [21]. However, some studies suggest that gender does not affect satisfaction or attitude toward e-learning [22] or educational outcomes [23]. In a study of 834 undergraduate students from the University of Mauritius enrolled in an online course, there was no gender difference in online learning satisfaction [24]. In spite of these diverse research results, this research aimed to confirm whether gender differences in the effect of sincerity on academic satisfaction differ, and furthermore, to confirm whether academic attitudes have different effects on academic satisfaction via sincerity.

3. Methods

3.1 Research Model

A model was established to verify the moderated mediating effect (conditional indirect effect) that the gender moderates the path of academic attitude → sincerity → academic satisfaction.

This model was analyzed according to the conditional indirect effect analysis procedure, which is Model 14 of PROCESS macro ver. 4.2. The detailed model is shown in Figure 1.



[Figure 1] Research model

3.2 Participants and data collection

The subject of the study was selected by using the purposive sampling method, and data were collected using the survey method. 400 questionnaires were distributed to college students in Guangzhou China, and

388 questionnaires were used for the final analysis. Of the participants in the survey, 29.9% identified as male and 70.1% as female. The average age was 19.9 years old, followed by 20 years old with 38.3%, followed by 19 years old with 25.7% and 21 years old with 15.1%. As for grade, 46.9% of first graders, 46.1% of second graders, and 7.0% of third and fourth graders. As for majors, logistics management accounted for 23.2% and industrial and commercial enterprises accounted for 14.7%.

3.3 Participants and data collection

3.3.1 Academic attitude

Academic attitude was measured using the AMS (Academic Motivation Scale), which was developed by Vallerand [25]. It measures students' attitudes and beliefs toward academic tasks and their reasons for engaging in academic activities. The scale consists of 10 questions. A 5-point Likert scale was utilized to assess each item ranging from 1 "not at all" to 5 "always", with higher scores indicating academic attitude. Throughout this investigation, the Cronbach's a coefficient for academic attitude reliability was found to be .886.

3.3.2 Sincerity

Sincerity was measured using the Academic Integrity Scale (AIS) developed by Ramdani [26]. The AIS assesses students' attitudes, beliefs, and behaviors related to academic sincerity. The scale consists of 10 questions. A 5-point Likert scale was utilized to assess each item ranging from 1 "not at all" to 5 "always", with higher scores indicating sincerity. Throughout this investigation, the Cronbach's a coefficient for sincerity reliability was found to be .902.

3.3.3 Academic satisfaction

Academic satisfaction was measured using the Student Satisfaction Inventory (SSI) developed by Maddox [27]. The SSI is a comprehensive measure that

assesses students' satisfaction with various aspects of the college experience. The scale consists of 15 questions. A 5-point Likert scale was utilized to assess each item ranging from 1 "not at all" to 5 "always", with higher scores indicating academic satisfaction. In the current study, the Cronbach's α coefficient for academic satisfaction reliability was found to be .955.

3.3.4 Others

Gender was investigated as male and female.

3.4 Statistical analysis

Throughout this investigation, SPSS PC+ Win. ver. 26.0 and SPSS PROCESS macro 4.2 were used for analysis. For basic analysis, descriptive statistics was performed, and Cronbach's α value, which is an internal consistency coefficient, was calculated to determine reliability. Pearson correlation analysis was performed to determine the correlation between major variables. In order to verify the conditional indirect effect, it was analyzed according to procedure No. 14 of the SPSS PROCESS macro model. Bootstrap was used to verify the conditional indirect effect, the confidence level was 95%, the number of samples was set to 5,000, and the independent and mediating variables were centered on the mean.

4. Results

4.1 Correlation between variables and descriptive statistics

Pearson's correlation analysis was performed to grasp the correlation of major variables, and the results are shown in Table 1. Academic attitude, Sincerity, Academic satisfaction were all positively correlated with each other. In particular, the correlation coefficient between academic attitude and academic satisfaction was the highest ($r=.740$, $p<.01$), followed by the correlation coefficient between sincerity and academic attitude ($r=.671$, $p<.01$), and between sincerity and

academic satisfaction ($r=.612$, $p<.01$). As a result of the correlation analysis, there were variables whose correlation coefficient was higher than .7, indicating multicollinearity, so the independent and dependent variables were mean-centered during the analysis of the conditional indirect effect.

As a result of descriptive statistical analysis, the average sincerity was the highest at 4.3154, followed by the average academic satisfaction of 3.8373 and average academic attitude of 3.8225. Academic attitude, Sincerity, Academic satisfaction were all higher than the median score of 3 points.

<Table 1> Correlation between major variables and descriptive statistics

	Gender (M=1)	Academic attitude	Sincerity	Academic satisfaction
Gender (M=1)	1			
Academic attitude	.160**	1		
Sincerity	.128**	.671**	1	
Academic satisfaction	.252**	.740**	.612**	1
M	0.299	3.8225	4.3154	3.8373
SD	0.4584	0.61888	0.60397	0.74519

** $p<.01$

4.2 Conditional indirect effect of gender

In order to verify whether gender moderates the intermediary role of sincerity in the linkage between academic attitude and academic satisfaction, the SPSS PROCESS macro model 14 proposed by [28] was used. The number of bootstrap samples was set at 5,000 and the confidence interval was set at 95%, and sincerity was centered on the average, and the analysis results are shown in Table 2.

Academic attitude had a significant beneficial impact on sincerity (.6524, $p<.001$), and on academic satisfaction (.6737, $p<.001$). Sincerity also had a significant effect on academic satisfaction (.6505,

p<.001)

The interaction term between sincerity and gender had a significant negative effect on academic satisfaction (-.2346, p<.05), and thus gender moderated the link between sincerity and academic satisfaction.

Looking at the conditional effect according to gender, the conditional effect according to male was .4158 (p<.001), and the conditional effect according to female was .1812 (p<.01), indicating that the conditional effect according to male was high.

〈Table 2〉 Moderating effect of gender in the moderated mediation model

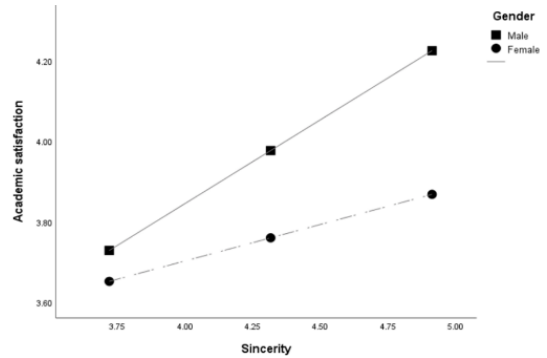
Mediating variable Model (DV: Sincerity)						
Variable	coeffect	se	t value	p	LLCI*	ULCI**
Constant	1.6768	.4647	3.6081	.0004	.7628	2.5907
Academic attitude	.6524	.0394	16.5658	.0000	.5750	.7299
Dependent variable model (DV: Academic satisfaction)						
Constant	-.5919	.8609	-.6875	.4922	-2.2852	1.1013
Academic attitude	.6737	.0567	11.8863	.0000	.5622	.7852
Sincerity	.6505	.1685	3.8601	.0001	.3191	.9819
Gender	.7959	.4029	1.9754	.0490	.0035	1.5883
Sincerity × Gender	-.2346	.0914	-2.5682	.0106	-.4143	-.0550
Conditional effect of sincerity according to gender						
Male	.4158	.0877	4.7401	.0000	.2433	.5884
Female	.1812	.0608	2.9826	.0031	.0617	.3007

*LLCI = lower bootstrap value within 95% confidence interval

**ULCI=Upper Bootstrap value with 95% confidence interval

Since the moderating effect of the gender has been verified, the results of visualizing the moderating effect to understand the interaction pattern are shown in Figure 2. According to the gender value, two groups (male group and female group) were divided, and when the sincerity increased, the academic satisfaction also increased. In the female group, the academic satisfaction gradually increased as the sincerity increased, whereas the male group showed a steeper increase in academic satisfaction as the sincerity increased. In other words,

as the sincerity increases, the academic satisfaction also increases, and even if the sincerity increases the same, the academic satisfaction of the male group increases more.



〔Figure 2〕 Moderating effect of the gender on the link between sincerity and academic satisfaction

Table 3 shows the results of analysis the direct effect and conditional indirect effect on the path from academic attitude to academic satisfaction. The direct effect between academic attitude and academic satisfaction was .6737 (.5622~.7852), which was significant because 0 was not included between the lower and upper bounds of bootstrap within the 95% confidence interval. On the path from academic attitude through sincerity to academic satisfaction, the conditional indirect effect was significant when the gender was male (.2713, .1613~.3759), and gender was female (.1182, .0304~.2066), because 0 was not included between the lower and upper bounds of the bootstrap within the 95% confidence interval. That is, the conditional indirect effect of the gender was verified in the path of academic attitude → sincerity → academic satisfaction.

The moderated mediating index of gender was .1531 (-.2388~-.0695), and the conditional indirect effect was verified.

〈Table 3〉 Results of direct effect and conditional indirect effect analysis

Direct effect (academic attitude → academic satisfaction)					
Effect	se	t value	p	BootLLCI*	BootULCI**
.6737	.0567	11.8863	.0000	.5622	.7852
Conditional indirect effect (Academic attitude → Sincerity → Academic satisfaction)					
Gender	Effect	BootSE	BootLLCI	BootULCI	
Male	.2713	.0542	.1613	.3759	
Female	.1182	.0451	.0304	.2066	
Index of moderated mediation					
Gender	Index	BootSe	BootLLCI	BootULCI	
	-1.531	.0433	-.2388	-.0695	

*LLCI=lower bootstrap value within 95% confidence interval

**ULCI=Upper Bootstrap value with 95% confidence interval

5. Discussion and conclusion

This study aimed to identify the conditional indirect effect of the gender on the link between academic attitude and academic satisfaction through sincerity in college students. The discussion and conclusion of the study is as follows.

First, as a result of the correlation analysis between major variables, there was a significant positive correlation between gender, academic attitude, sincerity, and academic satisfaction. These results were consistent with the results showing that there was a positive association between the academic satisfaction and academic attitude of college students, and there was a positive association between the sincerity and academic satisfaction, and that there was a direct relationship between sincerity and gender. These results are in line with the prior study results that academic attitude had a significant effect on academic satisfaction [1], that antisociality had an effect on academic misconduct [3], that sincerity was found to have a significant negative correlation between test cheating and academic performance [4], and that there is a difference depending on gender [5]. Therefore, it was suggested that a strategy using various variables

is needed to improve academic satisfaction.

Second, as a result of analyzing the conditional indirect effect of the gender, the gender moderated the path from academic attitude to academic satisfaction via sincerity. Specifically, in the case of male, the conditional indirect effect was significant at .2713, and in the case of female, it was also significant at .1182. Comparing males and females, males had a significantly higher conditional indirect effect than females (-.1531, -.2388 ~ -.0695). In other words, in the case of males, the influence of academic attitude on academic satisfaction via sincerity is higher than that of females. The reason is why the academic satisfaction increases more steeply when male's sincerity increases. Therefore, it suggests that it is imperative to create and implement a program that increases sincerity targeting women.

In conclusion, it was confirmed that the effect of academic attitude on academic satisfaction via sincerity differs according to gender, and based on this, it was confirmed that a strategy differentiated by gender is needed to improve academic satisfaction through sincerity.

When making suggestions for follow-up research centering on this study, first, the subjects of this study were sampled from some regions in Guangzhou and centered on vocational colleges. Therefore, it would be desirable to conduct research through the characteristics of schools and nationwide sampling in the future. Second, this study was limited to college students. Further studies targeting various school levels and majors are needed. Despite the limitations of sampling methods, this study is meaningful in that it presented a new model that can enhance academic satisfaction by verifying whether gender moderates the intermediary role of sincerity in the effect of academic attitude on academic satisfaction.

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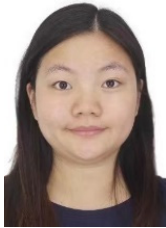
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