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What Influences the Ability Enhancement of College Students? - An Empirical Study

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Abstract: ***Using the data from the survey of the Higher Financial & Economic Branch of China Higher Education Association and with the help of structural equation modeling, this paper constructs a model of the influencing factors of ability enhancement from the perspective of students' learning process to explore the influencing mechanism of ability enhancement of students in finance and economics universities and colleges. The results indicate that both institutional factors (including supportive environment, course offerings, and teaching quality) and individual factors (including student background, social interaction, and personal effort) have positive impacts on students' ability enhancement, with the supportive school environment having the greatest effect. Process variables (including course offerings, teaching quality, social interaction, and personal effort) have a far greater impact on overall ability enhancement than input variables (including supportive environment and student background), and personal effort is the most important direct influencing factor on ability enhancement. Students experience the greatest growth in their professional cognitive abilities during their university or college studies. Additionally, this paper presents three directions for the future efforts of finance and economics universities and colleges.***

Keywords: Student Survey, Ability Enhancement, Influence Mechanism

1. Introduction

Since the beginning of the 21st century, socioeconomic development has placed new and higher demands on the quantity and structure of high-level talent. The number of enrollments in higher education institutions has rapidly increased, and according to statistics, the number of countries/regions with a gross enrollment ratio in higher education exceeding 50% has increased from 20 before 2000 to 76 in 2020[1]. In 2019, the gross enrollment ratio in higher education in China reached 51.6%, indicating that China has entered the stage of higher education popularization. With the rapid growth of enrollments in higher education institutions and the diversified development of higher education, people are paying more and more attention to the quality of higher education. The ultimate manifestation of the quality of higher education is the quality of talent cultivation. Malcolm Frazer, a British scholar, believes that the quality of higher education primarily refers to the quality of student development, which includes knowledge, abilities, and attitudes that students acquire throughout the learning process. The benefits that students receive in terms of cognition, skills, and other aspects constitute the core criteria for measuring the quality of higher education[2]. With the gradual

deepening of understanding the importance of student development, developed countries in the world have shifted the focus of higher education quality evaluation from schools to students, from the amount of resources possessed to the efficiency of resource utilization and student learning outcomes. They pay more attention to teaching activities, the process of generating teaching quality, and student learning outcomes, and may use ability-enhancement evaluation to measure the "increment" of university education in terms of the learning outcomes of students. The ability-enhancement evaluation may become a possible way to measure the high-quality development of talent cultivation in higher education.

In the past 40 years, China has undergone profound changes in both economic and social development as well as higher education. Through industrial upgrading, China has improved its position in the global value chain and gradually grown into the "world factory"[3]. The spillover effects of China's economic and social development have become a shared need for China and the world. Higher education is a "propeller" for economic and social development, and in China's economic and social development, higher education cannot remain indifferent, nor has it ever been indifferent. As one of the main representative countries of emerging economies, China has attached more importance to the quality and effectiveness of higher education as the scale of construction continues to expand, proposing work objectives for connotative development and comprehensive improvement of quality. This will promote the deep development of higher education towards popularization, inject the most effective impetus into improving the quality and efficiency of China's economic and social development, and have an unprecedented significant impact on the future development pattern of higher education in the 21st-century world. In 2020, China issued a guideline for deeper reform of its evaluation systems for students, teachers, and schools to facilitate the cultivation of young people with morals, intellectual and physical capabilities, artistic appreciation, as well as a healthy work ethic and competence in work skills, which stressed the need to enhance undergraduates' ability. In recent years, Chinese universities and colleges have also strengthened the measurement of the development results and progress of college students, focusing on students' learning starting point at admission and learning and development effects at graduation, as well as monitoring students' learning experience and investment during their studies from different perspectives to understand the impact mechanism of universities on students' development[4]. This is combined with the investment situation of higher education institutions to evaluate the influence of universities on college students, assess the internal efficiency and effectiveness of talent training in higher education institutions, and provide a reference basis for improving the quality of talent training in higher education.

A large number of studies suggest that ability-enhancement assessment is closely related to the theory of college student development, such as Astin and Pascarella's theory. The theory of college student development, which originated in the American psychology field, applies developmental theory to the context of higher education and primarily explains the process by which college students develop into mature individuals who understand themselves, others, and the world during their college years[5]. Astin, an American educator, as an important developer of this theory, proposed the "talent development model" theory, which divides educational capacity assessment into three parts: input-environment-output, forming the classic "IEO" model[6]. Based on this, Pascarella constructed a universal model of evaluation changes that includes student characteristics, school features, social interactions, personal efforts, and school environment[7]. Based on the theory of college student development, the ability-enhancement assessment of universities aims to measure the positive impact of university education on students' academic, work, and life aspects and the increase in students' learning outcomes over a certain period, usually referring to cognitive aspects but can also apply to non-cognitive performance[8]. Therefore, the development of college students' abilities is the concretization of general abilities (including cognitive and non-cognitive abilities) in college students, and it is an important learning outcome in the process of talent cultivation in colleges and universities.

There are three main ways in which existing literature measures abilities and their ability enhancement: the first is the "input-output" method represented by the National Survey of Student Engagement (NSSE) of Indiana University and the Australasian Survey of Student

Engagement (AUSSE) of Australia; the second is the self-measurement method represented by the National Student Survey (NSS) in the UK and the Course Experience Questionnaire (CEQ) in Australia; the third is the question and test method represented by the ETS Proficiency Profile (EPP) of the Educational Testing Service, the Collegiate Assessment of Academic Proficiency (CAAP) of the American College Testing Center, the Collegiate Learning Assessment (CLA) of the American Educational Assistance Council, and the Graduate Skills Assessment (GSA) of the Australian Education Research Committee. These measurements use standardized tests or self-report questionnaires to obtain learning outcome data required for ability-enhancement assessment, which is easy to collect and statistically analyze but difficult to reflect the heterogeneity of learning outcomes among different disciplines or majors.

In empirical research, Robert Pace studied the impact of students' investment of time and effort, as well as their utilization of school facilities and opportunities, on their learning outcomes[9]. Erik Erikson pointed out that individual development is influenced by environmental factors, and the school environment during a student's education is the main factor influencing individual development[10]. Hu and Kuh[11] focused on studying the joint impact of school environment and student effort on student development and academic achievement. Harper et al. found that student engagement has a positive effect on students' self-awareness, self-development, and practical skills[12]. Martin and Seifert[13] used student engagement as a mediating variable to explore the impact of social interaction among university students on their ability development and self-development. Klein et al.[14] found that controlling for students' entrance exam scores had a significant effect on evaluating student outcomes in standardized testing. In China, scholars often use research tools and data such as NSSE-China, the "Teaching Quality and Student Development in Capital Universities" project at Peking University, and the undergraduate education survey at Tsinghua University to explore the impact of various factors, such as learning attitudes, investment, beliefs, family background, parental education, urban and rural residence, gender, school level, discipline, school environment, school resource utilization, and regional background, on the development of students' abilities. Studies have explored the impact of these factors on the development of university students' abilities[15]-[18]. Some studies explored the impact of various school-level factors, such as discipline, school environment, and school resource utilization, on the development of students' abilities[19]-[21]. Bao[22] and Lu et al.[23] analyzed the positive and active role of students' learning experiences in developing their intellectual abilities and academic achievements. In terms of the selection of research subjects, these studies often focus on national or regional universities, with few studies considering different disciplines or majors. In terms of measurement methods, many studies use targeted evaluation scales that distinguish different types of abilities or smaller scales to measure students' evaluations of their own ability development, which may affect the objectivity and accuracy of student evaluations. In terms of constructing and analyzing the influence model, the structural relationships and hierarchy of the influencing factors are not sufficiently reflected. Therefore, based on data from the undergraduate education survey of the Higher Financial & Economic Branch of China Higher Education Association, this study attempts to use the structural equation model (SEM) of confirmatory factor analysis to explore the development and progress of students in finance and economics universities and colleges by comparing comprehensive questionnaires that do not specifically distinguish different abilities. This study aims to investigate whether there is a direct linear relationship between college investment and ability ability-enhancement, whether other mediating variables and regulatory variables should be used to promote student ability development, the degree of influence of individual student investment on ability enhancement, the impact of changes in the college environment on teaching and learning, and the impact of changes on the development of university students' learning and abilities.

The subsequent sections of this paper are arranged as follows. In Section 2, we expound on the study design ideas, construct the initial hypothesis model, and provide a comprehensive definition of the variables. In Section 3, we provide a detailed overview of the dataset and estimation strategy. Moving forward, Section 4 covers the results obtained and provides an insightful discussion on the same. Finally, we conclude the paper and present its implications in Section 5.

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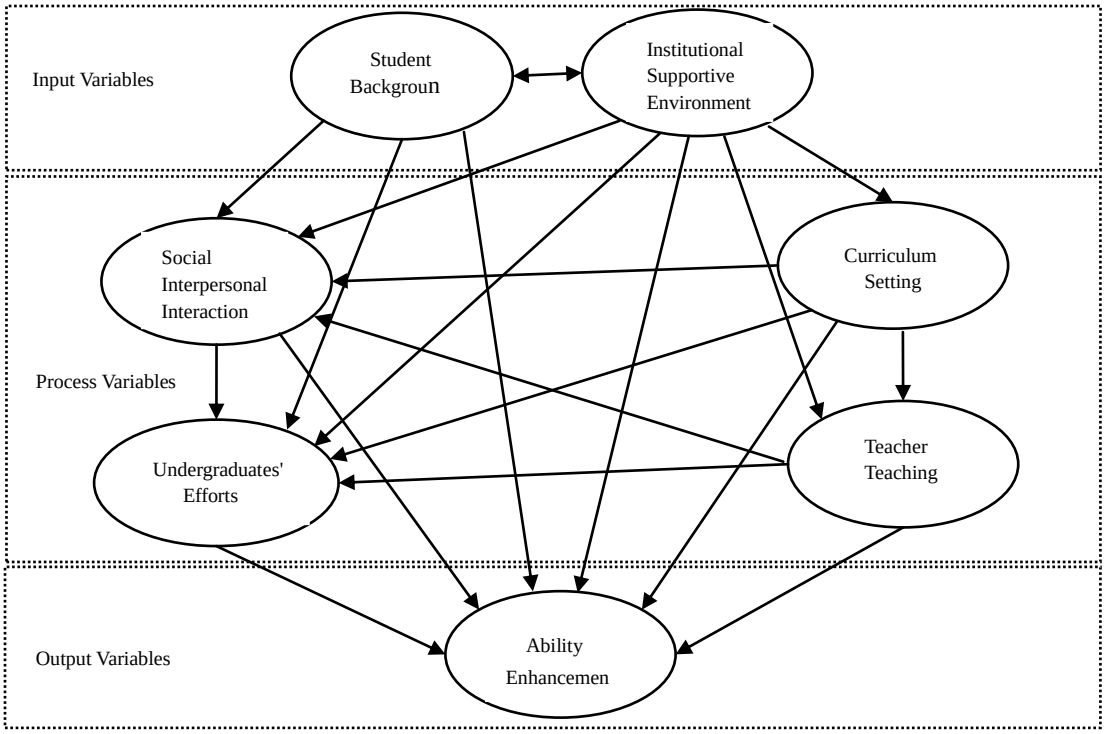
2. Hypothetical Model

Based on previous research, proposing hypotheses, constructing initial hypothesis models, and using data to verify and revise the model is the preliminary step in applying the method of confirmatory factor analysis. In this study, we analyzed the ability enhancement of students with individual background factors who entered a finance and economics college, using campus environmental and resource conditions, participating in academic and social interpersonal activities, and personal efforts, based on existing research and theoretical foundations. We utilized the college student development model proposed by scholars such as Astin and Pascarella and constructed the initial model according to the logical structure of "input-process-output", dividing the development of college students into three parts: input variables-independent variables, process variables-mediator variables, and output variables-dependent variables. In the construction of variables, the outcome variable is the ability enhancement of finance and economics college students. The input variables consider students' family background and school support environment factors, and the process variables include curriculum design, teaching, social interpersonal interaction, and student personal effort. In the construction of influencing relationships and paths, school support environment and student background, as input variables, may directly affect the outcome variable of ability enhancement and also indirectly affect it through process variables. Curriculum design, as a process variable, may directly affect the outcome variable of ability enhancement and indirectly affect it through other process variables such as social interpersonal interaction, student personal effort, and teaching. Teaching, as a process variable, may directly affect the outcome variable of ability enhancement and indirectly affect it through other process variables such as student personal effort and social interpersonal interaction. Social interpersonal interaction and student personal effort, as process variables, may also directly affect the outcome variable of ability enhancement, and social interpersonal interaction may indirectly affect it through its influence on student personal effort. Based on the possible impact and influence paths of these different factors in the model, we constructed an initial hypothesis model (Figure 1).

Figure 1: Initial Hypothetical Model of Influencing Factors of Undergraduates' Ability Enhancement



3. Methods and Model Testing

3.1 Survey and Samples

This study adopted the questionnaire of the Higher Financial & Economic Branch of China Higher Education Association (referred to as the Student Survey). The questionnaire was revised based on the Chinese College Student Experience Survey (CCSEQ) questionnaire by the Higher Financial & Economic Branch of China Higher Education Association and has been practiced in the student survey work of Chinese finance and economics colleges for over 5 years with good results. The Finance and Economics Branch Student Survey questionnaire consists of six parts, including school educational environment, student investment, student growth and harvest, satisfaction with major and school, student pressure and graduation plans, and demographic characteristics of students. In this study, the dimension of learning growth and harvest mainly includes self-reported student ability-enhancement situations, including non-cognitive abilities (four questions), professional cognitive abilities (six questions), and general cognitive abilities (three questions), with a total of 13 questions, divided into five levels of measurement according to the degree of ability improvement: very little, little, some, much, and very much. This study mainly used SPSS20.0 and AMOS20.0 statistical software for data analysis.

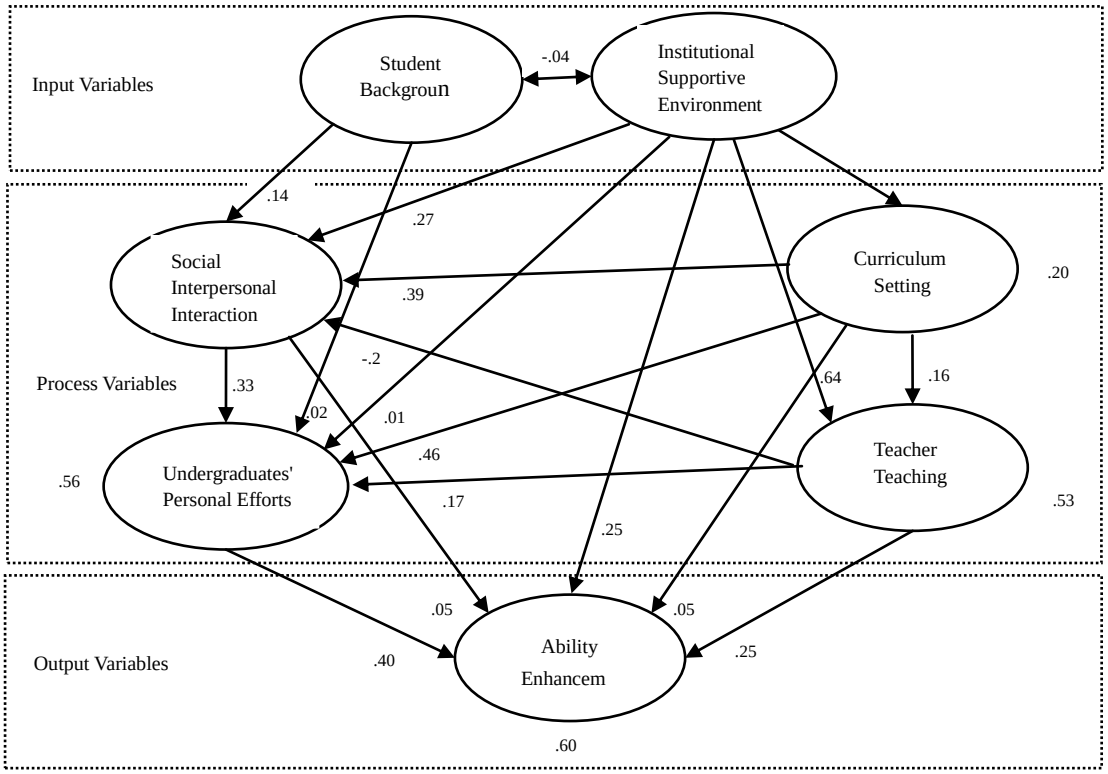


Figure 2: Standardized Estimation Model Diagram of Influencing Factors of Undergraduates' Ability Enhancement

The objects of the Finance Branch's "Student Survey" are mainly junior. All students come from Chinese universities and colleges of finance and economics. We also considered some other important factors such as gender, discipline, region of universities and colleges, and centralized or decentralized survey responses, the sample size reached more than 80,000. The region includes universities and colleges in the eastern and western Chinese Mainland. The survey was mainly conducted through a centralized organization. After cleaning, sorting, and checking the collected data and eliminating some of the samples, the number of effective questionnaire samples for this study was 67,942, with an effective response rate of 79.9%. The sample size is representative, of which more than 61,000 students from economic and management majors

participated, including 66 economic and management majors. The actual number of effective questionnaires collected was over 49,000, and the effective answer rate of students in economic and management majors was 80.7%.

3.2 Reliability and Validity Analysis

In terms of validating the theoretical model, the reliability and validity tests of the questionnaire were conducted to understand its reliability and effectiveness. In the reliability analysis of the questionnaire, Cronbach's Alpha coefficient is the most commonly used internal consistency coefficient for multi-choice scale testing. In this study, the reliability of each index was tested in SPSS software, and the results showed that most of the Cronbach's coefficients of the variables were greater than 0.8 (Table 1), indicating that the internal consistency of the scale was ideal. In the structural validity test of the questionnaire, the closer the KMO measurement coefficient of the overall sampling appropriateness is to 1, the stronger the partial correlation between variables and the better the factor analysis effect. In this study, the KMO value was 0.966, close to the optimal value of 1, indicating that factor analysis could be effectively carried out. At the same time, Bartlett's sphericity test significance value was 0, less than 0.05, indicating that the scale had strong reliability and high validity.

Table 1: Internal Consistency Coefficients for Each Variable

Variable	*The Question Item for the Test*	*Cronbach's Alpha*	*Variable*	*The Question Item for the Test*	*Cronbach's Alpha*
Student Background	3	0.746	Social Interpersonal Interaction	8	0.860
Institutional Supportive Environment	7	0.924	Undergraduates' Efforts	16	0.911
Curriculum Setting	4	0.907	Teacher Teaching	5	0.935
Ability Enhancement	13	0.956	-	-	-

3.3 Hypothesis Testing

In this study, the maximum likelihood estimation (MLE) method was used for model estimation, and model identification was conducted through the t-rule. By calculation and evaluation, the initial hypothesized model had 684 degrees of freedom, indicating that the number of data points was greater than the number of estimated parameters, making it an over-identified model. The initial hypothesized model was fitted to the data using AMOS software, and the path coefficients were calculated. Based on hypothesis testing of the data, the results showed that the impact path coefficient of student background on ability enhancement was not significant ($P>0.05$), while all other path coefficients were significant ($P<0.05$). The influence path of student background on ability enhancement was deleted, a standardized estimation model for factors affecting university students' ability enhancement was constructed (Figure 2), and a goodness-of-fit test was performed (Table 2). Compared with the standard values of the goodness-of-fit indicators, each indicator was relatively ideal, indicating that the structural equation model had a good fit and was acceptable.

Table 2: Model Fit Index and Fitting Situation

Index	*RMSEA*	*SRMR*	*GFI*	*AGFI*	*NFI*	*RFI*	*IFI*	*TLI*	*CFI*	*PGFI*
Standard	<0.08	<0.08	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.90	>0.50
Model	0.031	0.037	0.958	0.948	0.971	0.967	0.977	0.974	0.977	0.788

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4. Discussion

4.1 Correlation Analysis Between Variables

In the standardized estimate model diagram of factors affecting college students' capability enhancement, the numerical values represent the squared multiple correlation coefficients, with the value for the dependent variable being 0.60. This indicates that all variables in the model can explain 60% of the variance in capability enhancement, implying that most of the capability enhancement can be explained by the various influencing factors. As shown in Table 3, there was no significant relationship between student background factors and school-supportive environment factors at a significance level of less than 0.001, indicating that the influence of student background factors on capability enhancement was relatively small. There was a significant relationship between student personal effort and student background at a significance level of less than 0.01, and a significant relationship between social interpersonal interaction and capability enhancement at a significance level of less than 0.05. There was also a significant relationship between student personal effort and school-supportive environment at a significance level of less than 0.05, while all other path coefficients were significant ($p < 0.001$). Based on the observation of the significance levels among variables, further exploration of the degree of influence among variables can be conducted.

4.2 Analysis of the Direct and Indirect Impact of Overall Ability Enhancement

Table 4 presents the text report output results generated after the model runs, showing the proportion of each variable's impact on ability enhancement. It also reflects the standardized direct and indirect effects among variables. The direct factors that impact the ability-enhancement are student effort, school-supportive environment, teacher teaching, curriculum setting, and social interpersonal interaction. The largest direct factor is student effort. The indirect factors that impact the ability-enhancement are the school's supportive environment, curriculum setting, social interpersonal interaction, teacher teaching, and student background. The largest indirect factor is the school's supportive environment. In terms of the overall proportion of impact, the weight of input variables on ability-enhancement is 31.4%, and the weight of process variables is 68.6%, indicating that the positive influence of process variables is the main influencing factor on ability-enhancement. In terms of the proportion of impact by individual variable, the school-supportive environment has the largest impact (29.8%), followed by student effort (22.8%), curriculum setting (18.1%), teacher teaching (17.5%), social interpersonal interaction (10.3%), and student background (1.5%). It can be seen that the impact of student background on ability-enhancement is minimal.

Table 3: Standardized Regression Coefficients and Significant Levels Between Variables

Variables	*Student Background*	*Institutional Supportive Environment*	*Curriculum Setting*	*Teacher Teaching*	*Social Interpersonal Interaction*	*Undergraduates' Efforts*	*Ability Enhancement*
Student Background	-		-	-			-
Institutional Supportive Environment	-0.04	-					
Curriculum Setting	-	0.452***	-				
Teacher Teaching	-	0.642***	0.161***	-			
Social Interpersonal Interaction	0.140***	0.268***	0.389***	-0.258***	-		
Undergraduates'	0.023***	0.013***	0.465***	0.167***	0.327***	-	

Efforts							
Ability Enhancement	-	0.253***	0.053***	0.245***	0.050***	0.404***	-

Note：***p<0.001;**p<0.01;*p<0.05

Table 4: Proportion of the Impact of Each Variable on the Ability Enhancement

	Variable Name	*Direct Impact*	*Indirect Impact*	*Total Impact*	*Percentage of Total Impact*	*Sum*
Process Variables	Curriculum Setting	0.053	0.268	0.321	18.1%	68.6%
	Teacher Teaching	0.245	0.065	0.310	17.5%	
	Undergraduates' Efforts	0.404	—	0.404	22.8%	
	Social Interpersonal Interaction	0.050	0.132	0.182	10.3%	
Input Variables	Institutional Supportive Environment	0.253	0.276	0.529	29.8%	31.4%
	Student Background	—	0.027	0.027	1.5%	

4.3. Analysis of the Impact of Different Ability Enhancement

In terms of evaluating the impact of student ability enhancement, further analyzing the differences in different types of ability enhancement can help to explore the impact paths of different types of ability enhancement in depth. Based on the analysis of the overall impact of ability enhancement and the factor analysis results, students' abilities were divided into three types. The first type is professional cognitive abilities, including six aspects related to professional learning such as financial and economic professional knowledge, independent learning ability, dialectical thinking, financial and economic quantitative analysis ability, problem-solving ability, and information collection ability. The second type is non-cognitive abilities, including four aspects such as written expression ability, oral expression ability, communication ability, and teamwork ability. The third type is general cognitive abilities, including three aspects related to career-related cognitive abilities such as time management, emotion control ability, and self-awareness ability. At the same time, relevant data were classified and integrated to form Table 5. Without changing the input and process variables, data from the three parts of professional cognitive abilities, non-cognitive abilities, and general cognitive abilities were inputted as the outcome variables in the model to form three path analysis models. According to the aforementioned analysis steps, calculations and analyses were conducted, and the results showed that the three models fit well, with RMSEA=0.028<0.05, GFI=0.955>0.90, AGFI=0.941> 0.90, NFI=0.967>0.90, IFI=0.974>0.90, and CFI=0.977> 0.90, indicating that these models matched the data well. From the standardized regression coefficients of each model, the correlation between the main variables was significant, which can further explore the differences in different types of ability enhancement.

Table 5: Percentage of the Impact of Each Factor on Different Ability Enhancement

	Factor Name	*Cognitive Ability*	*Non-Cognitive Ability*	*General Cognitive Ability*
Input Variables	Student Background	0.026(1.62%)	0.03(1.83%)	0.019(1.15%)
	Institutional Supportive Environment	0.463(28.92%)	0.477(29.1%)	0.607(36.74%)
Process Variables	Curriculum Setting	0.318(19.86%)	0.303(18.49%)	0.282(17.07%)
	Teacher Teaching	0.242(15.12%)	0.206(12.57%)	0.249(15.07%)
	Social Interpersonal Interaction	0.133(8.31%)	0.28(17.08%)	0.111(6.72%)
	Undergraduates' Efforts	0.419(26.17%)	0.343(20.93%)	0.384(23.24%)

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In the model of professional cognitive abilities, the squared multiple correlation coefficient of the outcome variable is 0.60, which indicates that the explanatory power of the variables in the model for explaining the increase in students' professional cognitive abilities is 60%. Based on the aforementioned algorithm, the impact and proportion of each factor on professional cognitive abilities were analyzed, and the results show that school support, student effort, course design, and teacher instruction play important roles, accounting for 28.92%, 26.17%, 19.86%, and 15.12% respectively; social interaction and student background have a smaller effect, accounting for 8.31% and 1.62% respectively.

In the non-cognitive ability model, the squared multiple correlation coefficient of the outcome variable is 0.55, indicating that the explanatory power of the variables in the model for explaining the increase in students' non-cognitive abilities is 55%. Based on the aforementioned algorithm, the impact and proportion of each factor on non-cognitive abilities were analyzed, and the results show that school support, student effort, course design, and social interaction play important roles, accounting for 29.10%, 20.93%, 18.49%, and 17.08% respectively; teacher instruction and student background have a smaller effect, accounting for 12.57% and 1.83% respectively.

In the non-cognitive ability model, the squared multiple correlation coefficient of the outcome variable is 0.55, indicating that the explanatory power of the variables in the model for explaining the increase in students' non-cognitive abilities is 55%. Based on the aforementioned algorithm, the impact and proportion of each factor on non-cognitive abilities were analyzed, and the results show that school support, student effort, course design, and social interaction play important roles, accounting for 29.10%, 20.93%, 18.49%, and 17.08% respectively; teacher instruction and student background have a smaller effect, accounting for 12.57% and 1.83% respectively.

From the above analysis and comparison, it can be concluded that the largest increase in ability during students' university education is in their professional cognitive abilities, followed by non-cognitive abilities and general cognitive abilities.

4.4 Analysis of the Influence Relationship Between Explicit Variables and Latent Variables

An analysis of the explicit variables and standardized path coefficients in course design, teacher instruction, student effort, social interaction, and school support environment indicates that each of the manifest variables has a significant impact (Table 6). By comparing standardized path coefficients, the larger the numerical value, the greater the importance of the manifest variable and its explanatory power on the latent variable. For example, the manifest variables in course design significantly affect the latent variable, and teacher instruction, guidance of students, case study applications, and core logical courses have a greater impact on the latent variable. Discussions

Table 6: Explicit Variables in Latent Variables and Standardized Path Coefficients

Latent Variables	*Explicit Variables*	*Content*	*Average Value*	*Standard Deviation*	*Variance*	*Standardized Path Coefficients*
Curriculum Setting	CurriculumQ1	Emphasis on deep analysis	64.27	14.91	222.40	0.810
	CurriculumQ2	Accept different perspectives	64.61	14.64	214.19	0.873
	CurriculumQ3	Emphasize the formation of new understanding	64.84	14.81	219.29	0.875
	CurriculumQ4	Emphasize solving real problems	65.35	15.03	225.97	0.830
Teacher Teaching	TeacherQ1	Course objective requirements	75.36	16.36	267.52	0.850

	TeacherQ2	Course core logic	74.62	16.22	263.05	0.891
	TeacherQ3	Cases Illustrative application	76.44	15.55	241.71	0.883
	TeacherQ4	Guide students	74.89	15.82	250.19	0.899
	TeacherQ5	Timely feedback	71.82	17.10	292.33	0.775
Undergraduate Efforts	EffortQ1	Get key information	67.36	15.46	238.99	0.624
	EfortQ2	Summarize what they have learned	64.94	14.97	224.02	0.682
	EffortQ3	Converge experience and knowledge	63.02	14.85	220.55	0.725
	EffortQ4	Search Literature	71.92	15.93	253.86	0.610
	EffortQ5	Combine real-world issues	63.45	14.66	214.78	0.759
	EffortQ6	New ideas and new methods	61.30	14.74	217.29	0.732
	EffortQ7	Analyze data	63.39	14.56	211.96	0.765
	EffortQ8	Reflect on their perspective	69.31	15.35	235.53	0.655
	EffortQ9	Understand the opinions of others	70.34	15.11	228.45	0.630
	EffortQ10	Comprehensive knowledge to complete projects/assignments	66.09	14.80	218.89	0.737
	EffortQ11	Persistence	68.54	14.95	223.52	0.550
Social Interpersonal Interaction	InteractionQ1	Explain to classmates	55.35	15.51	240.66	0.612
	InteractionQ2	Interaction in class	49.06	16.15	260.80	0.741
	InteractionQ3	Discuss after class	47.35	16.09	258.80	0.814
	InteractionQ4	Participate in scientific research competitions	47.20	17.65	311.57	0.704
	InteractionQ5	Discuss academics	44.54	16.60	275.56	0.854
	InteractionQ6	Career development exchanges	46.69	16.81	282.59	0.777
Institutional Supportive Environment	SchoolQ1	Emphasis on academics	65.59	16.80	282.20	0.569
	SchoolQ2	Academic support	68.23	17.40	302.83	0.842
	SchoolQ3	Help to improve quality and ability	71.23	16.34	267.01	0.827
	SchoolQ4	Professional cognitive guidance	69.34	17.10	292.50	0.838
	SchoolQ5	Attach importance to cultural and sports activities	70.81	16.58	274.90	0.848
	SchoolQ6	Provide access to society	67.32	18.05	325.91	0.795
	SchoolQ7	Career Guidance	69.36	16.96	287.56	0.811

on academic studies and extracurricular discussions are more important in social interaction factors. In the school support environment, relative to schools emphasizing that students spend a lot of time studying and completing academic work, it is more important for schools to provide supportive policies and environments that

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encourage student participation in campus cultural and sports activities, provide more academic support to students, and help students achieve academic success.

4.5 Path Analysis of the Influence of Various Factors on Ability Enhancement Based on Different Groups

To investigate whether there are differences in the influence of factors on ability enhancement among groups with different demographic and organizational characteristics, this paper divides the sample into groups based on gender and academic discipline and conducts a multi-group analysis. Referring to the previous steps, the AMOS software is used to fit and adjust the model, and the results are outputted as shown in Table 7. From the perspective of model fit standards, the RMSEA and SRMR values of the gender and academic discipline-based models are both lower than the critical value of 0.08, and the other values (GFI, AGFI, CFI, NFI, RFI, IFI, TLI) are higher than the standard value of 0.9. Compared with the standard values of the indicators, the various goodness-of-fit indicators are relatively ideal, indicating that the multi-group structural equation model has a good fit and the relevant model can be accepted.

Table 7: Estimation Results of Multigroup Analysis

Path	*Sex*		*Discipline Category*		
	male	*female*	*Management*	*Humanities*	*Polytechnic*
Institutional supportive environment →Curriculum setting	0.52***	0.42***	0.439***	0.534***	0.528***
Institutional supportive environment →Teacher teaching	0.726***	0.608***	0.653***	0.57***	0.663***
Curriculum setting →Teacher teaching	0.083***	0.194***	0.155***	0.191***	0.151***
Curriculum setting →Social interpersonal interaction	0.464***	0.355***	0.396***	0.302***	0.288***
Student background interpersonal interaction	0.099***	0.157***	0.135***	0.152***	0.117***
Teacher teaching →Social interpersonal interaction	0.179***	0.254***	0.237***	0.377***	0.202***
Institutional supportive environment → Social interpersonal interaction	0.152***	0.299***	0.244***	0.442***	0.145***
Curriculum setting →Undergraduates' efforts	0.525***	0.442***	0.462***	0.472***	0.455***
Teacher teaching →Undergraduates' efforts	0.154***	0.157***	0.158***	0.179***	0.168***
Social interpersonal interaction →Undergraduates' efforts	0.313***	0.333***	0.333***	0.273***	0.221***
Institutional supportive environment's efforts	0.016**	0.026***	0.019**	0.027**	0.023**
Student background →Undergraduates' efforts	0.006*	0.043***	0.018**	0.03**	0.029**
Curriculum setting →Ability enhancement	0.036**	0.078**	0.047*	0.097**	0.054*
Teacher teaching →Ability enhancement	0.237***	0.198***	0.204***	0.216***	0.214***
Undergraduates' efforts →Ability enhancement	0.304***	0.463***	0.412***	0.406***	0.403***
Social interpersonal interaction → Ability enhancement	0.054**	0.016***	0.002**	0.028***	0.002***
Institutional supportive environment enhancement	0.388***	0.246***	0.295***	0.263***	0.26***

note：*p<0.05；**P<0.01；***p<0.001

The estimated results of the multi-group analysis in this study show that in the grouping model based on gender and disciplinary categories, the path coefficients of each group are significant at a confidence level of 0.05. In the gender-based grouping, male students have a higher total impact on ability enhancement in teacher teaching, curriculum setting, and school-supportive environment than female students, while they have a lower total impact on ability enhancement in student family background, student personal effort, and social interpersonal interaction than female students. In the disciplinary-based grouping, in terms of the total impact of curriculum setting and teacher teaching on ability enhancement, students in humanities and social sciences have the greatest impact, followed by those in science and engineering, and those in economics and management have the lowest impact. In terms of the total impact of student personal effort on ability enhancement, students in economics and management are more influenced than those in humanities and social sciences and science and engineering. In terms of the total impact of social interpersonal interaction and school-supportive

environment on ability enhancement, students in humanities and social sciences are the most influenced, followed by those in economics and management, while students in science and engineering are significantly less influenced than students in other disciplines. The influence of student background on the ability-enhancement of humanities and social sciences students and science and engineering students is not significantly different, while economics and management students are least influenced by student background (specific influence coefficients are shown in Table 8).

Table 8: Coefficients of Influence of Multigroup Variables on Ability Enhancement

Group	*Variables*	*Direct Impact*	*Indirect Impact*	*Total Impact*
Male/Female	Curriculum Setting	0.036/0.078	0.304/0.193	0.34/0.271
	Teacher Teaching	0.237/0.198	0.073/0.069	0.31/0.267
	Undergraduates' Efforts	0.304/0.463	-/-	0.304/0.463
	Social Interpersonal Interaction	0.054/0.016	0.095/0.154	0.149/0.17
	Institutional Supportive Environment	0.388/0.246	0.214/0.277	0.602/0.523
	Student Background	-/-	0.006/0.043	0.006/0.043
Management/ Humanities/ Polytechnic	Curriculum Setting	0.047/0.097/0.054	0.268/0.257/0.288	0.315/0.354/0.342
	Teacher Teaching	0.204/0.216/0.214	0.082/0.091/0.085	0.286/0.307/0.299
	Undergraduates' Efforts	0.412/0.406/0.403	-/-/-	0.412/0.406/0.403
	Social Interpersonal Interaction	0.002/0.028/0.002	0.134/0.111/0.09	0.136/0.139/0.011
	Institutional Supportive Environment	0.295/0.263/0.26	0.251/0.305/0.271	0.546/0.568/0.531
	Student Background	-/-/-	0.018/0.03/0.029	0.018/0.03/0.029

5. Conclusion and Improvement Measures

5.1. Conclusion

In this study, a verification factor analysis using a structural equation model was used, and the "Student Learning Survey" questionnaire from the financial and economic subcommittee was used as an important research tool. External factors such as school environment were linked with internal factors such as student effort, as well as teacher teaching and student learning activities, to construct a complete model of important learning situations for students in higher education in finance and economics. The impact of various factors on student development and ability enhancement was analyzed. After analyzing and discussing the research results, the following main conclusions were drawn:

First, in terms of the impact of various factors on ability enhancement, both institutional factors (school-supportive environment, curriculum design, teacher teaching) and individual factors (student background, social interaction, student personal effort) have a positive and significant impact on university students' ability enhancement. The greater the investment in each influencing factor, the greater the ability enhancement.

Second, based on the amount of variation explained by each influencing factor, the school-supportive environment has the greatest impact on ability enhancement among institutional factors. Overall, the impact of institutional factors on ability enhancement exceeds that of individual factors.

Third, in terms of the impact pathway of various factors on ability enhancement, the school-supportive environment is the most important indirect influencing factor on ability enhancement, which not only directly affects ability enhancement but also indirectly affects it through other factors such as curriculum design, teacher teaching, social interaction, and student personal effort. Student personal effort is the most significant direct influencing factor on ability enhancement. The "process"

variables (curriculum design, teacher teaching, social interaction, and student personal effort) have a far greater impact on the overall ability enhancement of university students than the "input" variables (school supportive environment and student background).

Fourth, in terms of different types of ability enhancement, major cognitive ability enhancement during university study has the greatest impact, followed by non-cognitive ability and general cognitive ability enhancement.

Fifth, there are differences in the evaluation of ability enhancement among students in different gender and disciplinary groups.

5.2. Improvement Measures

Regarding the factors that influence student's ability-enhancement explored in this study, we suggest that both financial and economic universities and colleges and individual students make joint efforts in the following three aspects to improve student's ability-enhancement:

First, create an "adequate support" environment to enhance the educational requirements of the training process. Among the various factors that affect student learning and ability development, schools have the greatest opportunity to grasp and change their own educational environment, educational policies, and educational teaching practices. A large number of studies have found that campus environments that contribute to the development and growth of university students have two basic characteristics: "high academic challenge" and "adequate support." In this study, the academic challenge originating from financial and economic colleges is mainly the requirements from courses and teachers' teaching of courses, which have a significant impact on students' ability enhancement. The teaching in classroom teaching is the core, and the learning via students' classroom participation is fundamental, with the two being inseparable. Therefore, universities and colleges need to promote the improvement of students' abilities from the perspective of curriculum and teaching management. Firstly, they need to strengthen the process evaluation of students' course learning. Teachers should strictly require students and clarify course objectives. Secondly, they should pay attention to the combination of basic and cutting-edge teaching content, focus on the cross-fusion and internal logic of course content, and the core ideas and internal logic of the course. Thirdly, they should encourage teachers to study classroom teaching, optimize teachers' course awareness, and focus on guiding students in a problem-oriented manner, selecting and using diverse educational and teaching methods such as case studies to inspire students. In addition to the "academic challenge," the supportive campus environment has a positive and promoting effect on the development of university students' abilities. A supportive campus environment includes campus hardware and service environment, as well as the structural and organizational characteristics of colleges and universities, teaching levels, social and interpersonal interactions, etc. It mainly emphasizes the interaction of the university environment's supportiveness to students. Therefore, universities and colleges need to strengthen the construction of software and hardware facilities and environmental construction. Only the joint action of student individual behavior and college environment can promote students' learning and ability development.

Second, encourage college students to actively engage in learning and promote the mutual improvement of ability acquisition and self-growth. Astin's college student development theory and the institutional impact theory model point out that the interaction and communication between college students and the learning environment, as well as the active participation of college students in the higher education learning process, are important factors that affect the development of college student's abilities. Empirical research shows that personal effort is the most important direct factor in increasing ability, so the degree to which college students' abilities increase depends mainly on their active participation and energy input in the learning process. Student individual investment as an internal factor for individual development and growth largely determines the degree of student's ability development and learning outcomes, and even has an important impact on future career development trends. Therefore, in combination with career development planning, it is necessary to stimulate college students' all-round and whole-process investment in learning and ability development from cognitive, emotional, and behavioral aspects. Firstly,

stimulates college students' active cognitive investment in course learning. Through the learning goals and career development goals co-created by teachers and students, and with goals as the guidance, encourage students to focus on improving various abilities and qualities for coping with future social development and actively engage in learning, from "surface learning" to "deep learning." Secondly, stimulate college students' behavioral investment in extracurricular learning, that is, attract students to participate in diversified extracurricular activities such as student club activities, social practice activities, community volunteer services, and internships and practical training in the integration of production and education, as well as various lectures, academic reports, competitions, and reading activities inside and outside the school, and improve students' participation and continuity in extracurricular learning. Thirdly, increase emotional investment, through improving teachers' "teaching methods" and ensuring teachers' "energy input" and other means, create a good teacher-student interactive communication situation, and enhance the frequency and intensity of teacher-student interaction. Inspire students through teachers' words and deeds, and encourage students through critical discussion and expressing their own opinions together with teachers.

Third, carry out cross-fusion and classification policies to promote the balanced development of college students' abilities. In response to the objective differences in the evaluation of ability enhancement among students of different groups, financial and economic colleges, and universities should first optimize the academic evaluation system for financial and economic students based on the ability-enhancement concept, taking into account the relevant national standards for teaching quality of undergraduate majors in general higher education institutions in China, as well as the professional training objectives and positioning, training specifications, and different ability needs and influencing factors of different students. The financial and economic colleges and universities should highlight the financial and economic background, clarify the requirements for the level of ability, and realize the training of financial and economic compound talents through cross-fusion of disciplines, especially for non-business majors. They should combine the advantages of business disciplines to promote the balanced and characteristic development of student's abilities through integrated training modes such as foreign languages + finance, mathematics + finance, and journalism + finance. Secondly, classification policies should be implemented to provide a more targeted and effective educational supply, such as hierarchical and segmented training. Based on the assessment and analysis of students' ability needs, the students should be trained in a hierarchical and segmented manner, combined with career planning, to design modular courses and activities of different levels and types, providing personalized learning plans and ability enhancement programs for students. Finally, in terms of student development evaluation, the evaluation methods should be reformed to not only focus on the evaluation of student's learning process and results but also the evaluation of students' learning development, especially the ability-enhancement evaluation of their abilities.

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