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The Influence of Family Socioeconomic Status, Cultural Capital and Extra Curricular Study on Students' Academic Achievement

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Abstract

Studying the relationship and interactive mechanism between family socio-economic factors, family cultural resources, extracurricular tutoring, and students' academic performance can provide theoretical support and direction guidance for optimizing the allocation of educational resources and promoting the improvement of students' learning quality. This study used PISA China (2015) data to select a sample of 9,841 students from 268 schools covering dozens of districts and counties, and explored the impact of family socio-economic factors, family cultural capital, and extracurricular tutoring factors on students' academic achievement through a three-layer linear regression model. The study found that when only demography variables were included, it had no significant effect on predicting students' academic achievements. When adding family socioeconomic group variables, family socioeconomic factors have a significant positive predictive effect on students' academic performance, with family wealth contributing the most; After adding cultural resource group variables, the explanatory power of the model increased by 40.2%, indicating that cultural resource factors have a significant positive effect on students' academic performance. Increasing cultural resource investment can have a positive effect on improving students' academic achievement.

Keywords: socioeconomic status, cultural capital, private supplementary tutoring, academic achievements

1. Introduction

Academic performance, as an important indicator for evaluating students' learning situation, has always been highly valued by students, parents, and teachers. The academic performance of students is influenced by various factors, such as personal, family, school, and social environment, which can directly or indirectly affect their academic performance to a certain extent.

Among them, the family, as the earliest and most important place for students to come into contact with, is the first environment for their learning and growth. It plays a very important role in the formation of students' unique personalities and the cultivation of good learning habits. Family factors, as a comprehensive and complex influencing factor, also have a significant impact on students' academic performance. Family factors include

family socioeconomic status, family cultural resources, etc. The research results of many scholars at home and abroad show that family socioeconomic status and family cultural resources have a significant positive impact on students' academic performance.

At the same time, extracurricular tutoring, as a supplementary activity to the mainstream education system, has generally entered the public's perspective and is accepted by many parents. Parents invest funds and other resources to encourage students to receive extracurricular tutoring, with the aim of improving their academic performance. However, currently, the conclusions drawn by domestic and foreign scholars regarding the effectiveness of tutoring are not consistent. The research aims to focus on the relationship and interactive mechanism between family socio-economic factors, family cultural resources, and extracurricular tutoring and academic achievement.

2. Theoretical Basis and Literature Review

2.1 Family Socioeconomic Status

The Coleman report was the first to explain the impact of family background on academic performance, and it also analyzed the differential impact of family factors on academic performance, attracting people's attention to family factors. In subsequent studies, scholars at home and abroad have manipulated the family's socioeconomic status into three core indicators: parents' education level, parents' professional reputation and family's economic income. Subsequent studies have also gradually confirmed that there is a strong correlation between family socioeconomic status and academic performance. For example, DeGarmo (1999) found that indicators of socioeconomic status (income, education, occupation) are related to better upbringing, which in turn affects academic performance (skill building activities) and school behavior (DeGarmo DS, Forgatch MS & Martinez CR., 1999). Sirin's meta analysis shows that there is a medium to strong correlation between family socioeconomic status and children's academic achievements (SIRIN S R., 2005). Zhao Wenjun (2008) conducted a questionnaire survey on the relationship between students' academic performance and their family background (parents' occupation, education level, and economic status), and concluded that there is a significant positive correlation between students' family background and their academic performance. Wang Weiyi (2005) also reached a similar conclusion in his empirical study on the differences in admission opportunities among different classes: the admission opportunities of different classes are different, and the lower the class status, the lower the probability of entering higher education institutions; There is also a certain correspondence between the quality level and social status of universities.

Based on the above research results, this paper proposes research hypothesis 1: family socioeconomic status has a significant positive impact on predicting students' academic achievements.

2.2 Family Cultural Capital

In the in-depth study of using socioeconomic status to predict students' academic achievements, scholars found that the important variable in predicting students' academic achievements in socioeconomic status of families is the stock of cultural resources in families, which Bourdieu separated and called cultural capital. Bourdieu divided capital into three forms: economic capital, social capital, and cultural capital, and particularly emphasized the impact of cultural capital on society. Unlike other capital, cultural capital has a high degree of appreciation. The appreciation of economic and social capital is often supported by the operation of cultural capital. Without the existence of cultural capital, labor is difficult to convert into wealth, and therefore, appreciation cannot be achieved. In addition, cultural capital also has the nature of reproduction. The upper class transforms its own advantages into the educational advantages of future generations through cultural capital, thus realizing the reproduction of culture and class. In the private field of family, parents' words, deeds, cultural accomplishments and hobbies will be passed on through children's unconscious imitation. This kind of cultural reproduction in the way of inheritance is hidden and easier to be ignored. After Bourdieu, scholars Tramonte and Willms divided cultural capital into two forms: static and dynamic. Through analyzing data from 28 countries in PISA (2000), they found that dynamic cultural capital had a stronger impact on students' reading literacy, school belonging, and career aspirations (Tramonte, L., & Willms, J. D., 2010).

Based on this, this study proposes hypothesis 2: the stock of family cultural resources has a significant positive impact on predicting students' academic performance.

2.3 Human Capital Theory

In 1960, American economist Schultz proposed the modern human capital theory, pointing out that human capital, including factors such as knowledge, skills, and health, is a product of investment (Schultz, T. W., 1960). Primary, secondary, and higher education is an important investment in human capital, and this process of education and cultivation is the accumulation of human capital. Human capital investment can enable people to improve their personal production capacity and efficiency through the improvement of knowledge and skill levels, thereby increasing personal income and achieving class mobility. Since then, economists have generally recognized that education plays a crucial role in economic development, and the intermediary factor that plays a crucial role is human capital.

Therefore, while parents are constantly choosing to enhance their family's cultural stock, they are also constantly investing in education both on and off campus. However, unlike the positive predictions of student performance predicted by cultural resources, research on whether tutoring can predict student performance presents a complex relationship. Among them, Zhang Xue (2017) used data from CFPS in 2010 and found that extracurricular education expenditure has a significant positive impact on students' written learning performance. However, on the contrary, scholar Liu Shanshan (2015) used meta-analysis and propensity analysis methods to investigate 6103 middle school students in Z city, China. The results showed that whether before or after the propensity stratification, the impact of extracurricular tutoring on students' academic performance was minimal. However, He Yong (2016) used a sampling survey method to analyze the current situation and process of high school students' participation in mathematics tutoring in Chongqing, as well as the effect of extracurricular tutoring on their grades. The survey found that participating in extracurricular tutoring can improve students' grades, but the effect of each individual's improvement is different. Therefore, whether using extracurricular tutoring as a supplementary form of cultural resources to predict students' academic performance has a role still awaits research from the academic community.

Based on this, this study proposes hypothesis 3 that, after introducing the variable of family cultural resources, whether students participate in tutoring has no significant predictive effect on predicting students' academic performance.

3. Data and Models

3.1 Data Source

The data used in this study is provided on the official website of PISA (Program for International Student Assessment). PISA is a Programme for International Student Assessment conducted by the Organization for Economic Cooperation and Development (OECD) to test whether students have mastered the knowledge and skills required by society. Since its implementation in 2000, PISA has been conducting tests every three years, and the second round of tests focused on mathematics began in 2012.

The research object selected in this article is a valid sample released in 2015 from Beijing, Shanghai, Guangdong, and Jiangsu, China. This sampling covers 268 schools in dozens of districts and counties, covering various types of schools such as junior high schools, experimental demonstration high schools, regular high schools, and secondary vocational schools. Among the 9,841 student data released, there are 5,159 male samples, accounting for 52.4%; There are 4,682 female samples, accounting for 47.6%, and the proportion of male and female students is equivalent. Among them, the average length of education for the father of the student is 11.23 years, and the average length of education for the mother is 10.46 years, which is at the cultural level of the second and third grades of ordinary high school.

3.2 Model Definition

This study takes the math, reading, and science grades of middle school students in Shanghai as the dependent variables, and the individual characteristics of the students as the control variables. The study takes into account the economic wealth in the student's family environment, the father's professional reputation (ISEI), the mother's professional reputation (ISEI), the father's education years, and the mother's education years. Using participation in extracurricular tutoring and family cultural resources as explanatory

variables to construct a multi-level regression model to explore the impact of family capital factors and extracurricular tutoring on students' academic achievement. Among them: Model 1 mainly tests the impact of demography variables on academic achievement; Model 2 mainly tests the impact of demography variables and family socioeconomic status on academic achievement; Model 3 comprehensively tests the impact of demography variables, family socioeconomic status, family cultural capital and whether to participate in extra curricular remedial courses on students' academic achievements.

The general expression for the full structure model is as follows: $Y= \beta 0+ \Phi E+ \theta C+ \lambda X+ \varepsilon$.

Y represents students' math, reading and science scores. PISA2015 data provides ten sets of likelihood values for each student's math, science and reading scores. This study selects the first set of likelihood values to sum up to get the total score of students' academic scores. E represents the socioeconomic status of the family. Among them, the family economic property (E1) comes from the wealth value provided in the questionnaire, while the father's professional reputation (E2) and mother's professional reputation (E3) come from the PISA data report's ISEI. The father's education years (E4) and mother's education years (E5) are converted based on the ISCED codes provided in PISA data. C represents the family's cultural resources, while family cultural resources (C) represent objective cultural capital, which is calculated based on whether the family has desks, independent rooms, quiet learning environments, and computers available for learning. X is derived from whether students participate in extracurricular tutoring in mathematics, science, and reading. β 0 is a constant term, Φ It indicates the effect of family socioeconomic status on academic achievement, θ. The utility of cultural capital on academic achievement, λ Indicates the effectiveness of participating in extracurricular tutoring on academic achievement, ε It is a random perturbation term.

4. Result Analysis

4.1 The Influence of Demography Variables on Students' Academic Achievements

From Table 1, it can be seen that the population variable in the first block has less than one thousandth of an impact on the dependent variable's academic performance, which has no significant explanatory power and is not statistically significant (p>. 001). From Table 2, it can be seen that the coefficient of gender is negative, indicating that the higher the gender value, the lower the academic performance. That is, compared to girls, boys perform less academically than girls. This is also in line with the current situation of "female academic bullies" in Chinese high schools and even universities. However, this coefficient is not statistically significant, indicating that it is not sufficient to explain the dependent variable. However, gender still plays an important role in the model, and it is precisely because of the existence of this variable that we can say that the explanatory power of economic and cultural resources on academic performance is obtained by controlling for the influence of demographic variables such as gender.

Table 1.

		Model 1	Model 2	Model 3
Model summary	R^2	.000	.189	.265
	F	0.651	399.757	308.526
	p	.420[a]	.000[b]	.000[c]
	ΔR^2	.000	.189	.076
	ΔF	.651	532.742	176.408
	Δp	.420	0.000	.000

4.2 The Impact of Family Economic Resources on Students' Academic Performance

After the second block variable economic resource investment model, the overall explanatory power of the explanatory variable on the dependent variable's academic performance reached R2=. 189, p<. 001. The explanatory increment Δ R2=. 189, Δ P<. 001 shows that the input of the economic resource group can effectively enhance the explanatory power of the model, and the increment of the group is statistically significant. That is, after controlling for the gender of the population variable, the economic resource variable can contribute an additional 18.9% of the explanatory power, and the contribution of family wealth is the highest among the three explanatory variables, Beta=. 238, p<. 001, indicating a high correlation between family wealth and students' academic achievement

development, family wealth can explain a large part of the differences in students' academic achievements. The second largest contributor is the ISEI of father, Beta=. 157, p<. 001, indicating that the father's education level is related to the child's academic performance. The higher the father's education level, the greater the likelihood of the child achieving higher academic achievement. Supported by the above results, research hypothesis 1 is supported.

Table 2.

	1			2			3		
variable	Beta	t	p	Beta	t	p	Beta	t	p
gender	-0.01	-0.807	0.42	-0.018	-1.618	0.106	0.008	0.736	0.462
Mother ISEI				0.131	9.552	0	0.103	7.411	0
Father ISEI				0.157	11.516	0	0.123	9.121	0
wealth				0.238	18.29	0	0.072	4.829	0
Mother's edu							-0.013	-0.93	0.355
Father's edu							0.069	4.942	0
Private Tutor							0.275	19.85	0
Total cultural							-0.171	-16.5	0

4.3 The Impact of Cultural Resources on Students' Academic Achievements

After the introduction of the third cultural resource indicator into the model, the model was further improved, with an explanatory power of R2=. 265, P<. 001 for the dependent variable's academic performance. The added cultural resource variable had an explanatory increment of Δ R2=. 076, Δ P<. 001 for the dependent variable's academic performance, which was statistically significant. That is, after controlling for population variables and economic resource groups, the cultural resource group had a contribution to the impact of academic performance. The input of cultural resource variables can effectively enhance the explanatory power of the model, making the explanatory power of the entire model reach R2=. 265, P<. 001. Among them, in group three, the total contribution of cultural resources is the highest, Beta=. 275, p<. 001. This indicates that cultural resources can play a positive role in students' academic performance, that is, the availability of learning resources in their living environment can effectively promote students to achieve better academic performance. This also suggests that schools and parents should provide students with a better learning environment to promote higher academic performance. Research hypothesis 2 has been confirmed.

We also found a strange phenomenon from Table 2, which is that the beta values of the mother's education years and tutoring are negative and both reach a significant level. In fact, this can also be explained to some extent in real life. The higher the education level of a mother, the greater the likelihood of obtaining a high return rate job. Therefore, "career oriented mothers" may focus more energy and time on their career, neglecting the education and management of their children, which has a certain negative impact on students' academic performance. This is consistent with the increasing number of juvenile delinquency cases in recent years. The negative coefficient of tutoring does not mean that the knowledge level of tutoring teachers is not high. However, in the current "tutoring trend" in China, the majority of students who participate in tutoring are generally students with poor academic performance. These students have poor academic performance, weak knowledge mastery, and spend a lot of time participating in extracurricular tutoring and other inefficient learning activities, resulting in even less ideal academic performance. Research hypothesis 3 has been confirmed. At the same time, this data result is also worth reflecting on by teachers and parents, whether blindly enrolling students in tutoring classes can improve their grades.

4.4 Class Regression Improvement

By introducing three block variables into the model in sequence, it can be seen from Tables 2 and 3 that students' achievements in education largely depend on the distribution of economic and cultural capital. Families with more economic assets can increase cultural accumulation, allowing their children to internalize learning resources into their own cultural capital, and achieve greater success in education. In this study, gender induced differences in students' academic performance were not significant, and the impact of family economic and cultural resources on students' academic performance was more closely related. Among them, family wealth, ISEI of father, ISEI of mother, father's education years, and total cultural resources have a significant impact on students' academic performance.

Using hierarchical regression analysis to introduce block 1 and block 2, the model is:

Yb=-9.680S+1.687X1+2.080X2+64.566X3+1548.327

Yc=4.223S+1.318X1+1.624X2+19.513X3-.779X4+4.698X5+27.957T2-115.784T2

Taking the second model as an example, that is, after controlling for other explanatory variables, the impact of each additional unit of ISEI of father X2 on students' academic performance is 1.624.

5. Conclusion and Discussion

This study examines the impact of family socioeconomic status, cultural capital, and tutoring on students' academic performance. The study found that both the family's socioeconomic status and cultural capital have a significant positive impact on students' academic achievements. However, tutoring has a significant negative impact on students' academic performance, meaning that the more time they spend on tutoring, the worse their academic performance.

5.1 Socio Economic Conditions (SES) Have a Significant Positive Impact on Students' Academic Performance

This study, based on the PISA test, explores the relationship between family SES and academic performance of students in the current Chinese educational background. The results are consistent with previous studies, which have shown that the SES of Chinese families is associated with students' academic performance. We found that family socioeconomic conditions (SES) have a significant positive impact on students' academic performance, that is, the higher the SES of the family, the higher the students' academic performance. The academic performance of students from high SES families is significantly higher than that of students from low SES families. This study indicates that individual development is influenced by the environment. Specifically, in this study, the family's socioeconomic status is assessed by the parents' educational level, economic income and occupational level. Families with higher assessment scores will provide more input for children's education, such as educational resources and social resources, compared with families with lower assessment scores. Families with higher economic and social status tend to have their parents pass on their educational experiences to their children, instilling the concept of good learning in them, while providing a superior material foundation. For example, although the number and size of family cars, televisions, and rooms can better reflect the economic level of the family, the relationship between these indicators and students' learning is more indirect. Therefore, their impact on students' academic performance is significantly smaller than the impact of computers, broadband, and family book collections. The time and money spent by parents on their children is an investment that is beneficial for improving their academic performance; The more this investment, the better the child's performance will be.

5.2 Family Cultural Capital Has a Significant Positive Impact on Students' Academic Performance

The cultural capital of families has a significant positive impact on students' academic achievements. Many factors in the family environment can have an impact on children's academic performance, such as different parents' ideological concepts, educational methods, cultural qualities, lifestyle habits, and marital relationships, which are key factors affecting children's learning and growth. As a family library that objectifies family cultural capital, parents are able to provide their children with the necessary cultural goods and concrete family cultural capital, such as reading books frequently, participating in extracurricular activities, communicating with teachers about their children's educational progress, and taking their children to participate in extracurricular activities. These are also important reasons that affect the improvement of their children's

academic performance. Under such good learning and living habits, it can promote children to acquire good learning and living habits, which in turn affects their academic performance. Family cultural capital is crucial for students and their parents. Parents can enhance their cultural capital through the following methods: first, participating in various adult learning organization training, such as online education forms such as MOOC. Engage more knowledgeable talents with high levels of education and profound qualifications, and improve their cultural quality through their interactions and learning, enriching their knowledge and cultivation. While improving one's own cultural level, adjust one's mindset, correctly handle children's education issues, change the outdated educational methods, comprehensively grasp the learning requirements for students, develop corresponding learning strategies, consciously guide children's education, and promote the learning progress of their children. Secondly, participate in training courses related to family education. Participating in such courses can not only increase parents' own knowledge, but also exchange parenting experiences and experiences with other parents. It can also learn from other parents' ways and methods of building family cultural capital for their children, and share this with their children to strengthen communication and exchange between themselves and their children. Whether it is in family book collection, life attitude, or personal behavior, they can achieve better results, in order to achieve the goal of enhancing the cultural capital of one's own family. In short, parents of students can also maintain their high thirst for knowledge, hoping from a psychological level to achieve a higher cultural level and maintain their initial motivation, in order to lay a solid foundation for practical actions in learning.

5.3 Extracurricular Tutoring Has a Significant Negative Impact on Students' Academic Performance

What is inconsistent with previous research findings is that tutoring has a significant negative impact on students' academic performance. The time spent participating in extracurricular tutoring is negatively correlated with academic performance, indicating that the longer the after-school tutoring time, the lower the performance. Long periods of extracurricular tutoring not only affect students' efficiency in accepting knowledge, but also have a counterproductive effect. On the other hand, long periods of extracurricular tutoring can affect students' learning in school. Parents should clearly define the correct positioning of extracurricular tutoring and control the subjects and time allocated for their children to participate in extracurricular tutoring.

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