

The Influence of Family Cultural Capital on High School Students' Academic Achievement

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Abstract: Based on the baseline data of the "China Family Panel Survey" (CFPS), this study aims to systematically examine the mechanism by which family cultural capital influences high school students' academic achievement. Building on Bourdieu's cultural capital theory, the study constructs a three-dimensional analytical framework that includes parents' educational level, family education expenditure, and the value of family financial products. The results show that parents' educational level has a strong positive impact on high school students' academic achievement, confirming the core mechanism of intergenerational transmission of cultural capital. However, the direct impact of objective cultural capital, measured by education expenditure, is not significant, revealing the efficiency limitations of purely material input. Supportive capital, represented by family financial assets, plays an auxiliary role through its potential to transform resources. The study indicates that the influence of family cultural capital exhibits significant structural differences, with the intergenerational transmission of cultural literacy being the key pathway. The conclusions provide empirical evidence for optimizing the structure of family education investment and improving the quality of cultural capital transmission, offering important insights for promoting educational equity.

Keywords: Family Cultural Capital, Academic Achievement, High School Students, Bourdieu.

1. Introduction

The inequality in education has been a core issue of continuous concern in sociological and educational research. Bourdieu (1986) pointed out that the cultural capital possessed by families, as a key non-economic resource, profoundly shapes the educational trajectory of offspring through intergenerational transmission mechanisms [1]. In the context of China's education, with the increasing societal demand for "educational equity," exploring the impact of family background, particularly cultural capital, on academic achievement during the pivotal transition period of high school students holds significant theoretical and practical implications. Zhang Xiang and Zhao Bihua (2012) demonstrated through a review that family capital constitutes a multidimensional framework influencing student academic achievement, but detailed quantitative research on the specific effects of each dimension of cultural capital remains insufficient [2]. Although Zhao Hongxia and Cui Tingting (2020) confirmed the importance of family cultural capital in their study of junior high school students, whether their conclusions remain valid at the high school level and the similarities or differences in the underlying mechanisms still require further verification [3].

Schultz's (1961) human capital theory posits that education constitutes the core of human capital investment, with academic achievement serving as its direct manifestation [4]. Thus, using quantifiable indicators like years of schooling to measure academic performance is theoretically sound. The status attainment model by Blau and Duncan, however, suggests that controlling for other individual and family-level factors is essential to accurately identify the net effect of cultural capital [5]. Jiang Guohe and Yan Guangfen's (2006) study on urban-rural disparities further indicates that the role of family capital may vary across social structures [6]. Nevertheless, existing research predominantly focuses on theoretical discussions or small-scale regional surveys,

lacking large-scale empirical analyses that systematically incorporate multidimensional variables and undergo rigorous econometric testing.

Building on this foundation, this study utilizes CFPS data to construct an indicator system comprising core explanatory variables (the three dimensions of family cultural capital), the dependent variable (high school students' academic achievement), and control variables (individual and family characteristics). The research aims to address the following questions: (1) How do the different dimensions of family cultural capital (parents' educational attainment, educational expenditure, financial assets) influence high school students' academic achievement? (2) Does this effect remain robust after controlling for factors such as economic capital and family structure? (3) What is the relative importance of each cultural capital dimension? The findings will provide precise empirical references for understanding intergenerational educational transmission and advancing educational equity policies.

2. Literature Review and Theoretical Foundations

2.1. Bourdieu's Cultural Capital Theory and Its Operationalization

Bourdieu classified cultural capital into three forms: the embodied form (culturally ingrained literacy and inclinations), the objectified form (cultural products like books and musical instruments), and the institutionalized form (academic credentials and professional certifications) [1]. This study operationalizes family cultural capital into three measurable proxy variables: (1). Parental education level (embodied form): measured by the household head's years of education. Parents shape the family's cultural environment through their internalized knowledge, values, and educational approaches, which directly influence children's learning attitudes and cognitive abilities [1,2].

(2). Family education expenditure (objective form): Refers to direct cultural investments made by families for their children, such as purchasing books and enrolling in training programs. It reflects the extent to which families actively convert economic capital into cultural resources [3].

(3). Value of household financial products (supportive capital): As an extension of institutionalized forms, it reflects households' potential to convert economic capital into cultural capital (e.g., investing in quality education or cultural activities), aligning with Bourdieu's concept of "capital transferability" [1].

2.2. Measurement of Human Capital Theory and Academic Achievement

Schultz (1961) posited that education serves as the primary channel for human capital accumulation, and the duration of education can effectively quantify an individual's human capital stock [4,7]. Therefore, this study adopts the conventional approach by using "high school education duration" as a proxy variable for "academic achievement," ensuring both theoretical comparability and measurement feasibility [3].

2.3. Status Position Theory, Resource Dilution Theory and Control Variable

The Blau-Duncan model demonstrates that status attainment is shaped by both family capital and individual characteristics [5]. The resource dilution theory further suggests that expanding family size may reduce per capita resource availability [2]. To address this, our study controls for individual factors (gender and age) and family-level variables (per capita income and family size) to eliminate potential confounding effects, thereby minimizing bias in cultural capital estimation [5,6].

2.4. Research Hypothesis

Based on the above theoretical analysis and the three-dimensional deconstruction of family cultural capital, this study proposes the core research hypothesis and sub-hypothesis: Main Hypothesis H: Family cultural capital has a

significant positive impact on high school students' academic achievement.

Sub-hypothesis H1: Parental education level has a significant positive effect on high school students' academic achievement, and the increase in the head of household's years of education will significantly increase the years of education for high school students.

Sub-hypothesis H2: Family education expenditure positively impacts high school students' academic achievement, and increased cultural investment by families further enhances their academic performance.

Sub-hypothesis H3: The value of family financial products has a significant positive impact on high school students' academic achievement, and the enhancement of family cultural resources support ability will positively affect the academic development of high school students.

3. Research Design

3.1. Data Sources and Variable Definitions

The 1,336 high school student family sample data used in this study were sourced from the "China Family Panel Survey" (CFPS) data. The definitions and operationalization of variables are as follows (all variables were standardized by Z-score): Dependent variable: Academic achievement of high school students (proxy variable: years of education for high school students). Core explanatory variables: Family cultural capital (three-dimensional proxy variables) (1) Parents' educational level (proxy variable: years of education for household head) (2) Family cultural investment (proxy variable: family education expenditure) (3) Family cultural resource base (proxy variable: value of family financial products). Control variables: Interference factors at individual and family levels. (1) Individual level (gender, age) (2) Family level (per capita household income, family size). Table 1 summarizes the variable definitions and types used in this study. As shown in Table 1, the explained variable is high school students' academic achievement (edu), and the core explanatory variables include parental education level (educ) and family cultural investment (ecc), all of which are continuous numeric variables.

Table 1. Variable Description

Indicator Level	name of index	Variable correspondence	type of variable
explained variable	High school students' academic achievements	edu	Continuous variable (numeric)
Core explanatory variables (family cultural capital, 3 core proxy variables)	Parental education level (core dimension)	educ	Continuous variable (numeric)
	family cultural investment	eec	Continuous variable (numeric)
	Family Cultural Resource Foundation	financial_product	binary variable
control variable (individual level)	gender	gender	binary variable
	age	age	Continuous variable (numeric)
Control variables (at the household level)	family economic level	income_p	Continuous variable (numeric)
	Family size	familysize	Continuous variable (numeric)

3.2. Analytic Procedure

Data analysis was conducted using Stata: (1) descriptive statistics to present sample distribution; (2) Pearson correlation analysis to preliminarily explore variable

relationships; (3) multiple linear regression analysis to construct two models: Model 1 (only core variables) and Model 2 (core variables + control variables), to test the robustness of cultural capital influence.

Model1 (Core Variables Only)

$$eduy = \alpha_0 + \alpha_1educ + \alpha_2eec + \alpha_3financial_product + \varepsilon \quad (1)$$

Model 2 (Core variables, Control variables)

$$eduy = \beta_0 + \beta_1educ + \beta_2eec + \beta_3financial_product + \beta_4gender + \beta_5age + \beta_6income_p + \beta_7familysize + \mu \quad (2)$$

4. Empirical Results and Analysis

4.1. Descriptive Statistical Analysis

Table 2 presents the descriptive statistics of the main variables. As shown in Table 2, descriptive statistics reveal that all standardized variables exhibit a mean approaching

zero with a standard deviation of 1, conforming to the characteristics of a Z-score distribution, indicating effective data preprocessing. The sample shows a slight male predominance (gender mean: 0.528) and a family size mean of 3.624 (median: 3.000), consistent with China's actual family structure. Notably, the age variable's mean of 51.639 years significantly deviates from the actual age of high school students, likely due to a data entry error where the household head's age was mistakenly recorded as the child's age. This data flaw requires correction in future studies, though its impact on overall results is limited since the analysis is based on standardized values. The maximum values for family education expenditure and family financial product value are 19.957 and 5.272, respectively, indicating significant differences in cultural capital investment and accumulation among the sample, providing a solid basis for variation analysis in the study.

Table 2. Descriptive Statistics Results

Variable name	Max	Min	Mean	Median	Std.Dev.
High school years of education (standardized)	3.443	-1.184	0.000	0.799	1.000
Household head's years of education (standardized)	0.861	-1.161	0.000	0.861	1.000
Family education expenditure (standardized)	19.957	-0.549	0.000	-0.311	1.000
value of family financial products (standardization)	5.272	-0.275	0.000	-0.275	1.000
Gender of high school students	1.000	0.000	0.528	1.000	0.499
Age	84.000	17.000	51.639	52.000	12.824
Household per capita income (standardized)	32.476	-0.206	0.000	-0.084	1.000
Family size	14.000	1.000	3.624	3.000	1.729

4.2. Correlation Analysis of Variables

Table 3 presents the Pearson correlation matrix among the key variables. As shown in Table 3, the correlation coefficient between the education duration of high school students and that of household heads is as high as 0.966, which is significant at the 0.001 level, strongly indicating the core role of parents' educational level. The correlation between family education expenditure and academic achievement was weak ($r = 0.030$) and statistically insignificant, indicating that the

effect of pure material investment is limited. There is a significant positive correlation between the value of family financial products and academic achievement ($r = 0.120$). In terms of control variables, family size showed a significant positive correlation with education expenditure ($r = 0.196$), likely due to increased total expenditures in multi-child households. Household per capita income exhibited a significant positive correlation with financial product value ($r = 0.175$), confirming the relationship between economic and cultural capital.

Table 3. Correlation Matrix of Key Variables

variable	High school years	householder education level	expenditure on family education	value of household financial products	Gender of high school students	High school age	household incomes per capita	Famil y size
High school years	1							
householder education level	0.966**	1						
expenditure on family education	0.03	0.03	1					
value of household financial products	0.120**	0.112**	0.109**	1				
Gender of high school students	0.053	0.045	-0.03	-0.003	1			
High school age	0.011	0.025	-0.053	0.086**	0.085**	1		
household incomes per capita	0.071**	0.072**	0.004	0.175**	0.007	0.045	1	
Family size	-0.028	-0.017	0.196**	-0.057*	0.080**	-0.163**	-0.090**	1

* $p < 0.05$, ** $p < 0.001$

4.3. Regression Analysis of Basic Level

The regression results of the basic model clearly reveal the influence effect and significance of each variable.

Table 4 presents the regression results examining the effects of family cultural capital on high school students'

academic achievement. As shown in Table 4, Model 1 (core variables only) reveals that the regression coefficient for household head's years of education was 0.965, showing highly significant results at the 0.01 level ($p < 0.01$), strongly supporting Hypothesis H1. This indicates that for every 1 standard deviation increase in parents' years of education,

their children's education duration is projected to increase by 0.965 standard deviations. The coefficient for family education expenditure was -0.000, which was not statistically significant, thus rejecting Hypothesis H2. The coefficient for family financial product value was 0.012, but failed to pass the significance test ($p > 0.10$), indicating that Hypothesis H3 was not supported in this model.

Model 2 (with control variables) shows that after controlling for gender, age, per capita household income, and family size, the coefficient of household head's years of education remained stable at 0.964, still highly significant at the 0.01 level. This indicates that the positive impact of parents' educational attainment on children's academic performance is robust and unaffected by other individual or family characteristics. The coefficient of family financial product value remained at 0.012 but became significant at the 0.10 level ($p < 0.10$), providing preliminary support for Hypothesis H3 after controlling for other variables. This suggests that, after excluding other factors, the potential

cultural capital transformation capacity represented by family-owned economic resources (measured by financial products) exerts a weak yet statistically identifiable positive influence on academic achievement. The coefficient of family education expenditure decreased to -0.002, remaining insignificant, further indicating its limited direct effect.

Regarding control variable analysis, male high school students demonstrated significantly longer years of education than their female counterparts ($\beta = 0.026$, $p < 0.10$). Family size exerted a statistically significant negative effect on academic achievement ($\beta = -0.009$, $p < 0.05$), consistent with resource dilution theory.

The R^2 and adjusted R^2 of both models are as high as 0.934, indicating that the models explain 93.4% of the variance in the dependent variable, with excellent fit. Family cultural capital and related control variables collectively provide a strong explanation for high school students' academic achievement.

Table 4. Baseline Regression Results

	(1)	(2)
	Model1(OnlyCoreVariables)	Model2(Core+ControlVariables)
householder education level	0.965*** (0.007)	0.964*** (0.007)
expenditure on family education	-0.000 (0.007)	0.002 (0.007)
value of household financial products	0.012 (0.007)	0.012* (0.007)
Gender of high school students		0.026* (0.014)
High school age		-0.001** (0.001)
household incomes per capita		-0.001 (0.007)
Family size		-0.009** (0.004)
Constant	-0.000 (0.007)	0.091** (0.035)
Observations	1336	1336
R^2	0.934	0.934
Adjusted R^2	0.934	0.934

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5. Discuss

5.1. The Core Role of Parents' Educational Level and the Mechanism of Intergenerational Transmission

The most significant finding of this study is the highly significant, robust, and substantial positive impact of parents' educational attainment (household head's years of education) on high school students' academic performance ($\beta = 0.964^{***}$). This result strongly supports Bourdieu's assertion that embodied cultural capital plays a central role in intergenerational transmission [5]. Parents with higher education levels typically pass on their internalized knowledge systems, learning strategies, values, and familiarity with the education system to their children through subtle cultural inheritance, providing them with an intangible competitive advantage [1,2,7]. The impact coefficient is significantly higher than other variables, highlighting that the quality of parents' own literacy is far more critical than the

quantity of purely material investments in family cultural capital.

5.2. The Failure of Family Education Expenditure and the Reflection on the Structure of Investment

Contrary to expectations, family education expenditure has not demonstrated a significant positive impact. This may reflect structural imbalances or diminishing marginal returns in current educational investments. Blind and excessive material investments (e.g., enrolling children in unnecessary classes or overbuying supplementary materials) may fail to translate into tangible academic gains without effective parental guidance and discernment, potentially increasing students' burdens [2]. This finding suggests that enhancing the efficiency of family education investments is more crucial than simply increasing total spending, requiring a shift from "extensive" to "refined" parenting approaches.

5.3. The Potential Support Role of Family Cultural Resources

The significance of household financial products increases after controlling for variables, indicating that economic reserves provide a crucial foundation for cultural capital transformation [5,7]. This "wealth effect" enables families to secure quality educational resources for their children during critical periods (e.g., school selection, international exchanges), though its impact remains relatively weak and only becomes apparent after controlling for other variables. This suggests that economic capital must be transformed into effective cultural practices to exert influence, rather than directly determining academic achievement.

6. Conclusion and Suggestion

This study demonstrates through empirical analysis that family cultural capital-particularly its concrete manifestation in parental years of education-exerts a decisive influence on high school students' academic achievement. The direct effect of family education expenditure proves insignificant, highlighting the need to focus on input efficiency. Family economic resources play a supporting role through their latent transformation capacity. The research reveals distinct structural variations in the impact of family cultural capital, with intergenerational transmission of cultural literacy serving as the core mechanism.

(1). Family Level: Parents should focus on enhancing their cultural literacy and educational capabilities, optimizing the structure of educational investment, emphasizing "quality" over mere "quantity," and fostering a positive family learning environment.

(2). School and Society Level: Schools should strengthen

home-school cooperation and provide scientific educational guidance for families with different cultural capital backgrounds. Society should increase the supply of public cultural services to compensate for the lack of family cultural capital.

(3). Policy Level: Education equity policies should go beyond material assistance and focus on "capacity building" for families with low cultural capital, such as implementing parent education programs to promote intergenerational flow of cultural capital.

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