Analysis of the Influence of Academic Anxiety and Family Capital on Students' Academic Performance from the Perspective of Peer Effect in China

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Abstract. In the context of the serious phenomenon of "in-rolling" in China's education sector and the inequality of educational resources, this paper examines the prevalence of academic anxiety and the influence of cohort and family capital on academic performance through a questionnaire survey of young people in Beijing, Tianjin and Hunan. Based on the research method of correlation and regression analysis, the degree of influence and the mechanism of action are explored. Based on the results, it was found that peers had a significant positive effect on students' own academic performance, while academic anxiety and other exogenous variables such as family capital had less significant effects. The analysis of the data suggests that the causes of academic anxiety come from a variety of sources and that exogenous factors such as family economic and cultural capital have become less influential on academic achievement as society develops and young people's thinking improves; changing peers is perhaps the most effective way to intervene on student achievement.

Keywords: Academic anxiety; peer effect; family capital; household expenditure on education; academic achievement.

1. Introduction

In 2021, the introduction of China's "double reduction" policy makes people see the students' academic burden, as well as the short-sighted and utility of some problems. After-school tutoring classes gather and grow, and parents' economic investment in education is too heavy, which hedges the achievements of education reform and development. Education plays an important role in personal income and comprehensive development. At the same time, the efficiency and fairness of educational resource allocation is still an important factor affecting the long-term economic growth and social stability of a country [1].

The phenomenon of internal volume is an irrational phenomenon of internal competition. It means that they compete to put in more effort for limited resources, resulting in a decline in the individual's "benefit-effort ratio". Under the circumstances, in the field of education, the students and parents to achieve a good ranking, increasing education expenditure, which makes academic anxiety rampant, but the overall education quality and efficiency of the society has not been significantly improved, and even gradually evolved into the pursuit of family capital. With such inefficient internal friction and irrational internal competition in the field of basic education, academic anxiety and pre-exam anxiety have gradually developed into a kind of group social anxiety [2].

Comparison between peers is essential, regardless of time, age, or country. In this paper, peer effect includes the subtle influence between the peers and the pressure brought by the comparison. Generally speaking, the students' learning behavior has certain externalities, and the excellent academic performance of the people around them will drive the students themselves to forge ahead, and "imitate" in the mood, learning attitude and lifestyle, and then have an impact on the performance, which is the micro expression of the same group effect. And the increasing family education expenditure depends on the family economic capital.

From the perspective of capital theory, human ability is formed through human investment, and the human investment ability that a family can bear largely depends on the economic capital of the family [3]. Family economic capital belongs to explicit capital, which can provide material resources for children's life and study, and transform them into educational opportunities, and a key factor that

restricts the access of education [4]. While family education investment is a branch of family economic capital, which is divided into economic capital, cultural capital and social capital; as a "resource" factor, it plays an important role in children's academic performance. Families with higher economic resources often have stronger education investment and risk tolerance, and can increase education expenditure by buying school district housing, extracurricular training classes and other ways, which will have an impact on their children's academic performance. This also reflects the inequality of educational resources to some extent.

This paper attempts to determine how peer effects, academic anxiety, and family economic and cultural capital affect the academic performance of offspring in the Chinese social context and the extent of their effects on each other, which is a problem rarely studied abroad.

2. Method

2.1. Source of the Data

This paper mainly uses questionnaire survey to collect samples. In order to bring the data more in line with the current situation, this paper uses the latest primary data. The effective sample size is 138, concentrated in young people aged 18-30 from Beijing, Tianjin, Hunan, Jiangxi, Jilin and other provinces in China. This paper makes a detailed investigation of his academic situation in high school, which mainly includes three aspects: "academic anxiety", "academic performance range" and "family education investment".

2.2. Variable Setting

This paper focuses on the analysis of the same group effect and the significance of family economic capital on students' academic performance, using multiple regression model. According to the correlation between the same group effect and the family education investment, the size of the correlation coefficient measures how much the increase in input comes from peer pressure.

The control variables were subject age, school type and family cultural capital, so after excluding the private school sample in the questionnaire, the effective sample size was 135, which was analyzed as follows.

Among them, the same group effect takes the average value of peer academic performance as the measure, and the academic achievement is measured by the scores of the test students. All the variables about grades are assigned values of 1-8 through the achievement gradient, and the interval is consistent.

The level of academic anxiety is measured on three dimensions: "whether you are worried about your performance compared to others", "how worried you are about your performance" and "the level of anxiety caused by a drop in performance". The test was administered. The options "not at all" is set to 0, "more" to 1, "unclear" to 2, "more" to 3 and "fully" to 4. Academic anxiety is measured by addition and magnitude; the larger the number, the greater the academic anxiety.

In this case, family economic capital is measured by calculating the median value of each option group by "family education expenditure"; using "parents' education level", family cultural capital assigns "middle school and below" to 0, "high school" to 1, "college / technical school" to 2, "college undergraduate" to 3, and "master and above" to 4. Age, type of school attended and family cultural capital were also included as the main control variables.

3. Results

3.1. Correlation Analysis

The partial correlation of the three explanatory variables X1 "peer academic performance", X2 "academic anxiety degree", X3 "family education expenditure" and Y "subject student GRam scores" were analyzed by SPSS software (Table 1). At the significance level of 0.05, the correlation

coefficient between the explained variable Y and X1 peer academic performance was 0.631, and the P-value was 0, which was less than the significance level of 0.05.Therefore, the two are considered to have a more significant correlation. However, the correlation coefficient between other variables is small, so it is considered to have no significant correlation. The specific effect was further regression analysis.

Table 1 Variable correlation analysis table

relativity						
		X1 peer academic performance	X2 academic anxiety	X3 family education expenditure	X4 Parents' education level	Y college entrance examination achievement
X1 peer academic performance	Pearson correlation	1	-0.052	0.135	0.055	.631**
	Significance (double-tailed)		0.546	0.119	0.523	0
	The number of cases	135	135	135	135	135
X2 academic anxiety	Pearson correlation	-0.052	1	-0.008	0.092	0.058
	Significance (double-tailed)	0.546		0.929	0.286	0.501
	The number of cases	135	135	135	135	135
X3 family education expenditure	Pearson correlation	0.135	-0.008	1	0.144	0.132
	Significance (double-tailed)	0.119	0.929		0.095	0.127
	The number of cases	135	135	135	135	135
X4 Parents' education level	Pearson correlation	0.055	0.092	0.144	1	0.065
	Significance (double-tailed)	0.523	0.286	0.095		0.453
	The number of cases	135	135	135	135	135

3.2. Regression Model

Using Excel software, multiple regression analysis of the factors affecting academic achievement was conducted. The explanatory variables mainly selected "peer academic performance" X1, "academic anxiety degree" X2, "family education expenditure in high school" X3 and "education

level of parents" X4, and the "gaokao score" of the tested students as the explanatory variable Y. The expression is as follows:

$$y = b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \xi \quad (1)$$

Therefore, ξ is the error term, and b1, b2, b3, b4 are the regression coefficient of each item. Descriptive statistics after assigning values to the variables are shown in Table 2. The student achievement variables are more concentrated, mainly between 500-600 points, and all have varying degrees of academic anxiety. The average annual family education is mainly in the range of 10,000 yuan to 30,000 yuan. The parents' education levels were mostly "college/technical school" and "university degree".

Table 2 Descriptive statistics of the variables

Student scores of the subjects		Companion academic performance		Academic anxiety		Family education expenditure		Parents' education level	
average	3.896296	average	3.666667	average	7.962963	average	3.674074	average	1.977778
standard error	0.108904	standard error	0.100853	standard error	0.247354	standard error	0.220765	standard error	0.098898
median	4	median	4	median	9	median	2	median	2
mode	5	mode	4	mode	9	mode	2	mode	3
standard error	1.265348	standard error	1.171808	standard error	2.873989	standard error	2.565063	standard error	1.149086
variance	1.601106	variance	1.373134	variance	8.259812	variance	6.579547	variance	1.320398
kurtosis	1.599718	kurtosis	0.071919	kurtosis	0.550076	kurtosis	-0.4599	kurtosis	-0.84122
skewness	-1.30526	skewness	-0.59317	skewness	-0.84114	skewness	0.859396	skewness	-0.16577
region	6	region	6	region	12	region	9	region	4
least value	0	least value	0	least value	0	least value	1	least value	0
crest value	6	crest value	6	crest value	12	crest value	10	crest value	4
sue for peace	526	sue for peace	495	sue for peace	1075	sue for peace	496	sue for peace	267
Observations	135	Observations	135	Observations	135	Observations	135	Observations	135
confidence (95.0%)	0.215393	confidence (95.0%)	0.19947	confidence (95.0%)	0.489222	confidence (95.0%)	0.436636	confidence (95.0%)	0.195602

Original hypothesis H 0: $b_1 = b_2 = b_3 = b_4 = 0$ (the linear relationship of the regression equation is not significant)

Optional hypothesis H 1: $b_1, b_2 b_3 b_4$ incomplete zero (linear relationship of regression equation significant)

According to the significance test of the model (see Table 3), the Significance F value is less than 0.05, that is, the null hypothesis is rejected, and at least one of b1, b2, b3, b4 is not zero, and the linear relationship of this regression equation exists.

Table 3 Calculation results of F test

	df	SS	MS	F	Significance F
regression analysis	4	87.70648922	21.9266223	22.47259239	4.01216E-14
residual	130	126.8416589	0.975705069		
amount to	134	214.5481481			

According to the regression coefficient and its statistical test results (Table 4), the P-value of the explanatory variable X1 "peer learning performance" was 7.09642E-16, which was significantly less than the significance level of 0.05. rejecting the null hypothesis, X1 can be considered to have a significant effect on the explained variable Y. However, the P-values of the explanatory variables X2 "academic anxiety degree", X3 "family education expenditure" and X4 "parental education degree" were 0.185322377, 0.50670858 and 0.823220942, which were greater than the significance level of 0.05, and there was no sufficient reason to reject the null hypothesis that X2, X3 and X4 affected the explained variable Y.

Table 4 Regression coefficients and their statistical tests

	Coefficients	standard error	t Stat	P-value
Intercept	0.974678282	0.398167108	2.447912601	0.015702647
X Variable 1	0.678692086	0.073655198	9.214449323	7.09642E-16
X Variable 2	0.039776735	0.029871422	1.331598316	0.185322377
X Variable 3	0.022573143	0.033902988	0.665815752	0.50670858
X Variable 4	0.016889812	0.075449524	0.223855778	0.823220942

According to the model summary table of regression statistics (Table 5), the determination coefficient R Square is 0.4087963, which represents the degree of linear fit of the equation. Of the total variation in academic performance, 40.8568408% could be explained by the relationship between the explanatory variables and the explained variables.

Table 5. Calculation results of the determination coefficient

Regression statistics	
Multiple R	0.639371801
R Square	0.4087963
Adjusted R Square	0.390605417
standard error	0.987777844
observed value	135

According to the relevant analysis results, the correlation coefficient between the variables "peer college entrance examination score" X1, "academic anxiety level" X2, "family education expenditure" X3 and "parents' education level" X4 is small. Therefore, the same group effect, academic anxiety, family economic capital and cultural capital do not have a strong influence degree. The source of academic anxiety considers many reasons. In this survey, about 36% of people attributed their academic anxiety to the school environment, such as the pressure of classmates and friends, and about 46% attributed it to personal factors, such as motivation for learning and personal interest. At the same time, the data showed that 69% of the 135 samples controlling for variables expressed concern that "their grades are worse than others" and about 67% of the subjects said they were "worried about their academic performance", and about 76% of the sample thought that "the decline in grades led to my anxiety". Therefore, academic anxiety is common in Chinese education, especially in high school; but it is not only from peer pressure, nor does it directly lead to the increase of family education expenditure.

Through the regression analysis of academic performance, it can be seen that among the influencing factors, the effect of peer academic performance is the most significant. The fitting equation obtained by regression analysis is Y=0.974678282+0.678692086 X1; it indicates that the peer academic performance will increase by 0.6786208692086 points. It shows that having a better learning partner can have a positive effect on individual academic performance, confirming the existence of peer effect. This means that the range of friends' grades will be consistent with their own grades range to some extent. In other words, if there are more friends with good academic performance and hard work, then there is a greater probability to improve their academic performance; on the contrary, if there are more friends with low academic level, the probability of reducing their academic performance is also greater.

4. Discussion

There are many factors affecting academic performance, including the same group effect, focusing on the quality of education from school size and family background, or based on the knowledge spillover theory between peers, how to influence academic performance with the best knowledge spillover [5]. In addition, some scholars went to explore the effect of symmetry and asymmetry [6].

Anxiety has always been a hot topic in China's education field. As early as the 20th century, the problem of academic anxiety has attracted the attention of Chinese academic circles. The study found that the general anxiety of middle school students is prominent in the learning anxiety, a considerable proportion of students have excessive anxiety about academic performance, and the proportion of middle and high learning anxiety accounts for a large proportion. The existing literature mainly studies the differences of academic anxiety among different groups, or conducts the specialized discussion of specific subjects, and the other part explores the various influencing factors of test anxiety [7].

From the perspective of family capital, since the theory of family capital was put forward, scholars at home and abroad have never stopped their research and accumulated a wealth of literature data. Among them, in the process of family economic capital affecting children's education acquisition, it mainly makes children gain resource advantages in early education through economic education investment, and improve their academic performance and achievements. Marero research shows that the possibility for individuals to realize the "talent" value is subject to the family background and the social environment [4, 8]. Based on data analysis from Turkey, Tansel found that family economic background is an important factor affecting students' participation in market tutoring activities [9].

Although the existing literature is quite rich, most of them are obtained from family capital or education expenditure, or study the effect on academic performance based on the perspective of the same group effect. However, there are few studies that link the same group effect, academic anxiety with family capital and then lead to changes in academic performance. Therefore, this paper discusses all three of them together, using the family as the unit, namely, it examines the peer effects, academic anxiety status and family capital on students' academic achievement, including their interrelationships, mechanisms of influence and effects. One of the family capital factors focuses mainly on family economic capital. This will enable us to gain a more comprehensive and in-depth understanding of this factor; it has certain theoretical value in alleviating academic anxiety, alleviating "in-rolling" and promoting social equity.

Based on the existing literature, scholars believe that examination anxiety is mainly affected by both individual and social factors. In terms of individual factors, test anxiety was positively correlated with external motivation and students' expectations of failure, and negatively associated with internal motivation, self-concept of ability, expectations of academic self-efficacy, and belief in academic control. In terms of social factors, the achievement expectations from important others, evaluation feedback and the negative consequences caused by failure will affect students 'test anxiety, especially the parents' academic expectations, psychological control, support or pressure for their children will also affect students' test anxiety. The process of comparing it with "someone else's child" may have a different impact on test anxiety due to the different comparison results［7］.

A lot of research has been done on the influence mechanism of the same group effect. In general, the existence of the same group is mainly attributed to the externality of the same group effect, that is, when the better learning partner is more, the individual can benefit from the advantages of the learning partner and absorb its good externalities; when the poor learning partners are more, the individual will be subject to the shortcomings of the learning partner and absorb its poor externalities. In addition, according to Zhang Rong's research, in the same group effect, the number of friends with excellent quality behavior plays the leading role, which means that the positive effect of having a good learning partner is far greater than the negative effect of having a poor learning partner [10].

Family economic capital has an impact on students' academic performance through both direct and indirect channels, among which the indirect effect dominates, and its influence intermediary is mainly shadow education and family participation. Jiang Shuai et al. found that compared with the influence path of "family economic capital and family participation performance evaluation", the influence path of "family economic capital shadow education performance evaluation" is more significant. Compared with the influence path of "family cultural capital family participation performance evaluation", "family cultural capital shadow education performance evaluation" is more important, that is, families with more cultural capital will choose to participate in after-school tutoring,

which is also in line with the current phenomenon of serious "inner volume" of China's middle and middle class [4].

With the continuous improvement of China's education system and family education concept increasingly mature, on the influence mechanism of students' academic performance, family capital this kind of external factors is gradually weakened, gradually enhance adolescent independence and autonomy, so students own personal factors on the influence of academic performance will play a more and more major role.

At the same time, the adolescent stage is still in the formation period of thinking concepts and various habits, so peers will play a strong role in their behavior and thinking mode. The phenomenon of peer effect that means "those who are closer and closer are darker" and "academic anxiety" is more likely to appear in the adolescent group.

5. Conclusion

Based on the analysis of the above data, the following conclusions can be drawn: Firstly, there is no significant correlation between peer effect, family capital and academic anxiety. The sources of academic anxiety are multifaceted, including family reasons, school environment and one's own factors; therefore, efforts are needed to reduce academic anxiety. Secondly, among the variables selected in this paper, the peer effect has a significant impact on students' academic performance. It is mainly reflected in the imitation of each other's learning behaviours and states of learning, and even in the "comparison". So as the data shows, there is a certain consistency in their results. Therefore, changing cohorts is one of the more effective ways to intervene in students' academic performance. However, academic anxiety and family capital then do not have a significant impact on academic performance in the above findings, which this paper attributes to the following. The effectiveness of China's relevant economic policies, especially the completion of a moderately prosperous society by 2021, which has led to a gradual reduction in the gap between rich and poor families. In this context, the gap in educational expenditure between the families of students in public schools is gradually narrowing. The level of education available to young people is gradually becoming more equal and equitable.

A series of education policies, such as the "double reduction" and restrictions on extra-curricular institutions, have affected the channels of family financial expenditure, so that students' performance is no longer dependent on family financial input. This also suggests that increased financial input and shadow education alone will not be decisive for students' academic achievement.

The quality and quantity of the data sample is somewhat limited, making it impossible to conclude that the regressions have a significant effect. Finally, the results of this paper show that parents' investment in their children's education is no longer limited to extra-curricular classes and family involvement, but also includes moral support and companionship, which means that the role of family capital in children's education and growth is being replaced to a certain extent, so that the effectiveness of family capital is gradually reduced. Academic achievement may gradually become dependent on self-drive and cohorts.

Based on the foregoing discussion, the following suggestions are made: Reduced transparency of achievement. Establish a multi-dimensional system for assessing academic achievement. Regulate extra-curricular training practices, raise the market entry barrier in education and strengthen supervision and management. Balance the pursuit of educational efficiency and outcomes with educational equity.

Ultimately, there are many factors that influence students' academic performance. The limitation of this paper is that it focuses only on the peer effect, academic anxiety and family capital. The research perspective is not comprehensive. As education policies continue to improve and people's living standards continue to rise, the perturbation of students' academic performance may be reflected in more aspects, such as the city, the level of teachers and the psychological state of individual

students. Further exploration of the factors influencing academic performance and further refinement of the mechanisms of influence could be explored more deeply in the future.

References

[1] Zhang Chuanchuan, Wang Yueqin. Education burden reduction, family education investment and education inequality. Management the World, 2022, 38(09): 83-97.

[2] Wang Ya, Wei Jifei. Inertial potential energy and unembedding path of coil in the field of basic education in the "post-burden reduction" era —— Based on the analysis of social embedding theory. Journal of Chengdu Normal University, 2022, 38 (12): 65-70.

[3] Mao Yaqing, Tian Jin, Zhang Wanying . The influence of family economic capital on students' social affective abilities —— the multiple mediating effects of parental involvement. Educational Theory and Practice, 2022, 42 (13): 21-25.

[4] Jiang Shuai, Long Jing. The influence effect of family culture and economic capital on education acquisition. The Monthly Education and Academic Journal, 2022: 51-57.

[5] Wang Chunchao, Xiao Aiping, Yu Hanchen. A study of the asymmetric peer effect in —— education. Journal of Education, 2022, 18(05): 156-171.

[6] Hideki F, Mark S., Yoshinori K. Peer effects of friend and extracurricular activity networks on students, academic performance. Social Science Research, 2021, 97.

[7] Zhou Xu. Family capital and academic anxiety: A trial of parental anxiety caused by the "double reduction" policy. Journal of Guangxi Normal University (Philosophy and Social Science Edition), 2021, 57(06): 96-106.

[8] Marrero GA , Rodrero G JG. Inequality of opportunity and growth.Journal of Development Economics, 2013,104:107-122

[9] Bircan F., Tansel A,. Private supplementary tutoring in turkey recent evidence on its various aspects.Social Science Electronic Publishing, 2008, 9(1):162-171.

[10] Gao Yuoguang, Zhang Rong. Research on the mechanism of the influence of learning peers on individual learning performance. Journal of Education, 2022, 18(05):141-155.