

The Relation between Family Socioeconomic Status and Academic Performance in Chinese Adolescents

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Abstract. In recent years, due to high economic development, China has transformed from a society with relative equality in education to one with high inequality in education. How does the massive gap in socioeconomic status affect adolescents' academic achievement? This study examined the moderating role of family socioeconomic status between the family atmosphere (i.e., parental involvement) and family investment (educational investment and tutoring funds) on junior high school academic achievement with 10,279 Chinese junior high school students (aged 12-16). The data came from the 2014-2015 China Education Panel Survey (CEPS), a large-scale nationally representative tracking survey designed and implemented by the China Survey and Data Centre of Renmin University of China. The results of this study indicate that 1. socioeconomic status (The results of this study show that 1) socioeconomic status (parents' education level) positively moderates the relationship between academic achievement, family atmosphere (parental involvement), and adolescents' academic performance. 2) socioeconomic status (parents' income level) positively moderates the relationship between academic achievement, family investment, and adolescents' academic performance. 3) socioeconomic status (parents' income level) positively moderates the relationship between family investment and adolescents' academic performance. Thus, we can see that parental involvement and increased investment in education benefit junior high school students from families with high socioeconomic status. In contrast, junior high school students from low socioeconomic status do not enjoy this benefit. In the future, the government and society can develop family-based interventions to promote parental involvement and investment in education in low-SES families, which will, in turn, promote the educational attainment of adolescents. The results of this study have important implications for the development of family education in China.

Keywords: Family Socioeconomic Status; Adolescent Academic Achievement; Family Atmosphere; Parental Involvement; Family Investment; China Education Panel Survey (CEPS).

1. Introduction

China has experienced significant social and economic transformations since transitioning from a centrally planned economy to a market economy in 1978. These changes have led to the country's evolution from an agrarian society to a prominent global economic force. Consequently, there have been notable disparities in socioeconomic status (SES) across China's extensive territory and diverse population. Coleman et al. (1966) discovered a significant correlation between socioeconomic status (SES) and academic achievement in their study. This finding was based on analyzing individual student data collected from an extensive database comprising 580,000 pupils [8] (Coleman et al., 1966). This discovery significantly impacted and generated considerable further attention in the field. Extensive research has consistently demonstrated the notable influence of socioeconomic status (SES) on the development of children and adolescents. Specifically, in academic achievement, it has been observed that children and adolescents from impoverished backgrounds and lower SES backgrounds exhibit significantly lower performance compared to their non-poor and middle-class counterparts across various measures of academic achievement. These measures include achievement test scores, rates of course failure, the likelihood of being held back a grade, placement in special education programs, rates of completing middle and high school, rates of dropping out of middle and high school, as well as the number of years of education completed [24] (McLoyd, 1998).

Nevertheless, scholarly investigations in this domain have primarily concentrated on the cultural milieu of Europe and the United States. These studies predominantly rely on cross-sectional data that establish associations between conventional indicators of socioeconomic status (such as education, family income, and parental occupation) and various aspects of adolescents' well-being, including physical and mental health, cognitive abilities, academic performance, and socioemotional growth [36](Zhang et al., 2019). This study examines the influence of family socioeconomic status on adolescents' academic achievement within the educational culture of China, specifically concentrating on the correlation between family socioeconomic status and academic performance among Chinese adolescents. According to the American Psychological Association [3](APA, 2019), social status is the societal standing or classification of an individual or collective entity. The term "socioeconomic status" (SES) encompasses the evaluation of an individual's economic and social position, considering many factors such as education, income, and occupation. These three indicators, as identified by [30]Selvitopu and Kaya (2023), are commonly used to assess SES. Hence, in this scholarly article, the author employs parents' level of education and family economic income as proxies for family economic status to construct and examine the relationship between adolescents' academic performance in the core areas of language, mathematics, and English.

2. China Context

In the context of China's reform and opening up, significant transformations have occurred in terms of family income, education level, and education policy. Consequently, the interplay between socioeconomic status and academic performance may be subject to influence from these three aspects, as mentioned above. Based on the most recent China Economic Report of 2023, it has been shown that China possesses a cumulative wealth amounting to 790 trillion RMB. Furthermore, the report's net worth figures reveal that the top 0.3% of the population, consisting of 4.6 million individuals across 1.4 million households, collectively possess assets valued at 290 trillion RMB, translating to a per capita wealth of 63 million RMB. The middle class, consisting of 99 million individuals residing in 31 million households, possesses a collective sum of assets amounting to \$1.1 trillion RMB. It equates to an average of almost \$1 million RMB per capita [34](CICC,2023). According to a report by CICC in 2023, the remaining 93% of the population in China, which accounts for approximately 1.3 billion individuals, possesses collective assets amounting to 30 trillion RMB. It translates to a per capita income exceeding 20,000 RMB. Notably, implementing the poverty alleviation policy in China has uplifted over 500 million individuals from poverty [34](CICC,2023). Nevertheless, despite its considerable economic expansion, China continues to be characterized as a developing nation with significant disparities, as evidenced by almost 100 million individuals living below the national poverty threshold of RMB 2,300 per annum as of 2012 [33](World Bank, 2014). Furthermore, the Chinese government has demonstrated steadfast dedication to enhancing the comprehensiveness and equity of education by allocating greater resources to the education sector and formulating progressive educational regulations. For instance, the adoption of various reforms, such as the guidance of students, engagement with the education community, resolution of conflicts within school districts, comprehensive poverty alleviation measures, implementation of a teacher excellence program, and the organization of educational groups, among others, collectively represent endeavors aimed at fostering educational equity and balance. In 2001, the Chinese government reformed the nine-year compulsory education system. This reform resulted in a transfer of the responsibility and obligation of coordinating education funds from the township level to the county level [19](Liu et al., 2020). The measures mentioned above have significantly contributed to ameliorating educational disparity in China. There has been a notable increase in the overall allocation of funds for education, accompanied by an expansion in the scope of coverage. These policy developments have resulted in a more favorable distribution of resources towards regions with lower levels of development and households with lower socioeconomic status. Nevertheless, how these elements interact to impact the correlation between socioeconomic position and the scholastic achievement of a minor remains ambiguous. In light of the profound impact of Confucianism on Chinese society, the parenting practices employed by Chinese parents across various socioeconomic backgrounds diverge

significantly from those observed in Western nations [7](Chuanget al., 2018). Typically, Chinese parents prefer an educational approach called the 'chicken kid' style, wherein they allocate substantial resources towards facilitating their children's optimal cognitive and academic growth [37](Zou et al., 2013). Nevertheless, parents of lower socioeconomic status encounter challenges in affording their children the necessary material and resource provisions, such as high-quality home environments and consistent tutoring sessions, which foster child development. These difficulties arise due to economic constraints and the need to prioritize basic survival needs [29](Seidler & Ritchie, 2018). The significance of conducting further research on the impact of parental socioeconomic situation on children's academic achievement can be attributed to two primary factors. China's family structure has seen significant transformations in tandem with its economic expansion. During the latter half of the 1950s, the Chinese government introduced a policy known as the "open door" system, which involved the categorization of all individuals into two distinct groups: "agricultural" (about rural areas) and "non-agricultural" (about urban areas) "hukou". Significant variation exists in educational investment among children from diverse household registrations and family structures. Several studies have explored the potential disparities in access to educational resources among children from different social classes. For instance, [6]Wei Chi and Xiaoye Qian (2016) discovered that parents with elevated socioeconomic status, characterized by higher levels of education and income, tend to allocate greater resources toward their children's extracurricular education, particularly in urban settings. Children from low socioeconomic backgrounds, predominantly concentrated in rural regions of China, continue to pose a significant danger in school dropout rates [15](Guo et al., 2000). Children residing in impoverished rural regions are disproportionately susceptible to experiencing fundamental forms of deprivation necessary for survival, such as persistent hunger, challenges related to food cleanliness, limited access to educational resources, and substandard housing circumstances.

The second factor can be attributed to the geographical dispersion of China, wherein the coastal regions have witnessed substantial regional economic advancement owing to their strategic geographic positioning and facilitation of international trade. Conversely, the mountainous areas continue to exhibit significant underdevelopment. This shift in perspective underscores the necessity of reorienting educational priorities to address the substantial disparity between the privileges enjoyed by the affluent elite and the disadvantages faced by the underprivileged, elucidating the origins of academic inequity among youngsters. Concerning educational attainment, Adams and Hannum (2005) discovered that the disparity in enrolment and dropout rates between economically disadvantaged and affluent students remained consistent from 1989 to 1993 despite China's initiatives to enhance educational accessibility [2](Adams et al., 2005). Elisabetta Magnani and Rong Zhu note that in the period spanning from 1990 to 2000, a growing body of research started to examine the relationship between parental and offspring educational achievements[21](Magnani et al., 2015). Additionally, considerable scholarly interest was directed toward investigating the educational disadvantages associated with poverty, such as the influence of varying socioeconomic statuses on children's cognitive and socio-emotional development. However, there exists a need for more literature exploring the disparities in educational resources and outcomes among Chinese children belonging to distinct socioeconomic strata.

3. Literature Review on SES and Academic Performance Relation

The investigation of the correlation between the socioeconomic status (SES) of students' families and their academic achievements is a common focus among researchers, which is due to the widely accepted notion that SES serves as an indicator for predicting the academic performance of children and adolescents [30](Selvitopu & Kaya, 2003). Indeed, Bourdieu and Passeron (1990) have previously established, drawing upon the theory of cultural reproduction, that families possessing elevated socioeconomic status (SES) furnish their offspring with superior educational resources and more favorable educational settings[5](Bourdieu & Passeron, 1990). Consequently, this facilitates enhanced educational attainment and cognitive advancement among children. In Reardon's (2011) study, an investigation was conducted to examine the magnitude of the academic achievement dispar-

ity among students from different socioeconomic backgrounds between 1970 and 2001[27](Reardon, 2011). The findings revealed a substantial 40-50 percent increase in the academic achievement gap throughout this 31-year timeframe. This data supports the phenomenon observed in the 1970s, wherein students from lower socioeconomic statuses experienced lower academic performance than their counterparts. The provided data demonstrates a notable trend wherein students from low socioeconomic backgrounds lagged behind their counterparts from high socioeconomic backgrounds in terms of academic accomplishment throughout the 1970s. Specifically, the difference between these two groups was at least 2.6 years. Subsequently, in 2001, the disparity in academic achievement between the two groups increased to 3.8 years, as indicated by the data. The presence of a learning disparity between students of low socioeconomic status and those of high socioeconomic status has been a longstanding issue that persists and is currently expanding [27](Reardon, 2011). The following data model analysis of the relationship between family economic status and adolescents' academic performance will be demonstrated using two underlying model theories like mediating factors:

3.1. The Family Atmosphere Model

The family atmosphere model [9](Conger & Conger, 2002) emphasizes the impact of parental bonding relationships on children's academic performance in family atmospheres of different socioeconomic statuses. In this model, parental involvement is used as a measure of family atmosphere, and parental involvement includes a wide variety of behaviors, such as attending student parent-teacher conferences, tutoring children's homework, and accompanying children to school activities [13](Duan, 2018). According to Poon (2020), empirical investigations have substantiated a positive correlation between parental engagement and children's scholastic achievements[26](Poon, 2020). This association is observed across various developmental stages, including early childhood and primary school. Furthermore, Poon (2020) asserts that parents with a lower socioeconomic status exhibit comparatively limited involvement in their children's educational endeavors when compared to parents with a higher socioeconomic status[26](Poon, 2020). This phenomenon can be attributed to the heightened economic and social pressures parents from lower socioeconomic backgrounds face, necessitating a prioritization of survival-related concerns within their families. Consequently, the reduction of parent-child interactions occurs due to heightened survival pressures, manifesting various psychological distresses. These distress, such as irritability, indifference, harshness, and inconsistent discipline and speech behaviors, subsequently impact the parent-child relationship. This, in turn, leads to diminished parental involvement in their children's daily activities and school-related engagements[11](Conger & Donnellan, 2007). The presence of existential pressures and psychological suffering significantly influences the patterns of parental participation within impoverished situations. On the other hand, families with a higher socioeconomic status (SES) exhibit greater parental engagement in their children's educational and day-to-day activities, leading to an increased frequency of parent-child contact. The study conducted by Conger and Donnellan (2007) revealed a positive correlation between parental socioeconomic status (SES) and the quality of communication between parents and their children.[11](Conger & Donnellan, 2007). In a study conducted by Hayes in 2012, it was discovered that parental involvement positively impacted adolescents' academic performance.[16](Hayes, 2013).

Similarly, a study conducted in Italy in 2013 by Bosco et al., titled "Expanding Children's Communicative Discourse Competence in a Sample of 390 Italian-speaking Children," revealed a positive correlation between family economic status and children's discourse competence and that this effect continues to be present in adolescence exists.[4](Bosco et al., 2013). In a further study conducted in 2014, Manz et al. discovered a positive correlation between maternal family involvement and children's interpersonal skills and decreased negative classroom behaviors[23](Manz et al.,2014) These findings ultimately contributed to an indirect enhancement of children's academic achievement. Furthermore, it has been demonstrated in earlier research that adolescents hailing from homes with elevated socioeconomic levels tend to display favorable academic performance [13](Duan, 2018). The primary rationale behind this phenomenon lies in the ability of parents with high socioeconomic status, as determined by factors such as income, education, or occupation, to cultivate a conducive

family environment that fosters their children's educational progress [32](White, 1982). These parents engage in activities such as reading to their children, providing academic support for homework, nurturing their children's talents, and facilitating participation in cultural and recreational endeavors, including book clubs and camps. Conversely, parents with lower socioeconomic status exhibit a different level of involvement in these educational practices. Hence, the socioeconomic situation has a crucial role in shaping the association between parental participation and the academic achievement of adolescents.

3.2. The Family Investment Model

The Family Investment Model [11](Conger & Donnellan, 2007) suggests that the provision of cognitive stimulation within the domestic setting plays a pivotal role in children's neurocognitive development, significantly influencing their academic achievements. Previous studies conducted by Saegert and Evans in 2003 have established a discernible association between family socioeconomic status and a disorderly family environment or substandard living conditions.[28](Saegert & Evans, 2003) Specifically, it was observed that families with lower socioeconomic status tended to reside in more densely populated, noisy, and economically disadvantaged neighborhoods that were comparatively less secure. Furthermore, Evans argued in 2004 that households with lower socioeconomic status are less likely to be able to afford to provide their children with a clean, safe, and quiet environment. They also lack the resources to create a peaceful environment conducive to learning, which is harmful to the quiet learning of children. In addition, parents from lower socioeconomic backgrounds generally have less positive school experiences than parents from higher socioeconomic backgrounds. Neuenschwander et al. (2007) provided this evidence, showing that parents from lower socioeconomic backgrounds may feel less capable or effective at supporting their kids' learning and are less likely to invest in learning-related resources[25](Neuenschwander et al., 2007). In this model, it was observed that parents from lower socioeconomic status families exhibited a lower level of investment in providing their children with cognitively stimulating learning aids and experiences that facilitate their cognitive development. This lack of investment can be attributed to various factors such as financial constraints, limited abilities, and insufficient resources. Examples of such learning aids and experiences include access to books, attendance at tutorials, and visits to museums, among others. By the theoretical framework, it can be inferred that the decline in access to educational resources, such as literacy activities, and limited exposure to cognitive stimuli indirectly influence the association between socioeconomic status and scholastic achievement in children and adolescents[18](Lipina et al., 2013). In 2015, a study by Nelson et al. demonstrated that access to learning materials buffers socioeconomic status from harming cognitive performance in 36-month-old children. In a study conducted in 2018, Young and Hannum demonstrated that disparities in education are primarily influenced by the privileged advantage of individuals with high socioeconomic status (SES) and the enduring disadvantage faced by those in poverty with low SES. The research also revealed that affluent families in China make substantial investments in their children's education by acquiring education-related goods and services, such as learning materials, tutoring classes, and seasonal camps, in addition to formal schooling. Children from higher SES families perform "ahead" of their low SES counterparts in school. They are more likely to have better credentials, better employment prospects, and higher salaries, which this investment in educational goods and services may partially explain[35](Young & Hannum, 2018). Parenting difficulties and stress should result from the stark contrast between the culturally promoted ideal of giving children the best and the harsh reality of a family lacking resources due to financial difficulty. Stressful parenting can eventually erode good parenting practices and impair kids' academic achievement. Therefore, it is hypothesized that (a) family socioeconomic status positively moderates the relationship between the family atmosphere (parental involvement) and junior high school students' achievement, and (b) family socioeconomic status positively moderates the relationship between family investment and junior high school student's academic achievement; data from the China Education Panel Study (CEPS). Data from 2015-2016 will be used to test this hypothesis. The significance of this study may be as follows. First, this study emphasizes the importance of family

atmosphere (parental involvement) and family investment in children's academic performance, which may help to raise the importance of family education in China. Second, the current study is a suggestion for family education in China. The current study aims to analyze the utility of two key theoretical models (the family atmosphere model and the family investment model) on children's academic performance to elucidate the mechanisms linking family economic status and academic performance. To test the family atmosphere model, I use parents with different levels of education as a measure of socioeconomic status to analyze the indirect effects of families of (high, medium, and low) socioeconomic status on adolescents' academic performance in the main subject. To test the family investment model, I use parents with different levels of income as a measure of socioeconomic status to analyze the indirect effects of families with (high school and low) socioeconomic status on adolescents' academic performance in the main subject.

4. Model and Methodology

4.1. Participants and Procedures

The data for this study were obtained from the China Education Panel Pursuit Survey (CEPS) 2014-2015 conducted by the National Centre for Survey and Research of the Renmin University of China. CEPS 2014-2015 is publicly available [1](CEPS, 2016) and is a nationally representative survey designed to reveal the impact of family, school, community, and macro-economic and social structures on an individual's or household's educational outputs, using a multi-stage stratified probability proportional sampling (PPS) methodology to design the data collection procedures. Data collection used the average level of education of the population. The proportion of the mobile population as stratification variables to randomly select 28 county-level units from across the country as survey sites and 112 schools with 438 classes were randomly selected for probability proportional sampling in the selected county-level units, and all junior high school students in the sampled classes were selected [1](CEPS, 2016). According to the CEPS implementation report, the effective response rate for the follow-up was 91%. Human ethics approval was obtained from CEPS. Written informed consent was obtained from participants and their parents.

4.2. Measures of Socioeconomic Status

This study constructed a measure of family economic status based on parental education using parental education data from CEPS to categorize children into three groups: parental education (high SES), low parental education (low SES), and medium parental education (medium SES). High parental education was defined as having at least one parent with a bachelor's degree or higher. Low parental education was defined as having no parent with education beyond middle school. Moderate parental education was defined as not falling into the other categories. In CEPS, 7.41 percent of the nationally representative sample was classified as having low parental education, 81.59 percent as having medium parental education, and 10.99 percent as having high parental education. Family income was calculated as parent self-assessed gross family income in 2014-2015. Family economic status was categorized into five categories to compare high CEPS families with medium CEPS families and low socioeconomic status. In CEPS, 0.32 percent of the sample families were in wealthy economic situations, 6.04 percent were in rich economic situations, 72 percent were in medium economic situations, 17.59 percent were in difficult economic situations, and 3.97 percent were in challenging economic situations.

4.3. Family Atmosphere Model (Parental Involvement)

This study measured family atmosphere in terms of parental involvement. Home-based involvement includes parents' participation in their adolescents' activities at home (e.g., supervising studies and daily routines, talking about school life, and engaging in activities with them), and the following four items were used to assess parental involvement: (a) On a 4-point scale (1 = never, 4 = almost every day), did your parents check your homework every day? (b) Did your parent direct your homework

daily on a 4-point scale (1 = never, 4 = almost every day)? (c) On a 3-point scale (1 = do not care, 3 = very strict), were your parents strict about your daily behavior (i.e., homework/tests, how you did in school, whom you made friends with, how you dressed, how much time you spent on the Internet, how much time you watched TV)? (d) Using a 3-point scale (1 = never, 3 = often), how often do your parents talk to you about the following topics (e.g., what is happening at school, your relationship with your classmates, your relationship with your teachers, and what is on your mind or bothering you)? The mean of each scale was calculated and then analyzed in a standardized model. In this study, Cronbach's alpha for the above items was 0.678, which is higher than 0.60 and is acceptable

[14](George & Mallery, 2003).

4.4. Family Investment Model (Education and Counselling Fee Inputs)

This study measures family investment in terms of parental investment in education and counselling fees for adolescents (e.g., parents increase funding for their children's education in junior and senior high school, enroll their children in study counseling or special interest classes, etc.). The following two items were used to assess family investment: 1. Extra credit system: what interest classes/extracurricular tutoring classes you attended (did not attend, general maths (except OU), language/composition, English) as follows: English tutoring classes-impact on English performance (0-didn't attend, 1-attended), general maths classes-impact on maths performance (0-didn't attend, 1-attended), language/composition classes-impact on language performance (0-didn't attend, 1-attended), language/composition classes-impact on language performance (0-didn't attend, 1-attended). Tutoring classes-impact on language achievement (0-not attended, 1-attended); 2. Total cost to the child of attending out-of-school tutoring or learning interest classes (Amount to the family's socioeconomic status), Amount: in RMB, about subgroups of the five socioeconomic status categories.

4.5. Academic Achievement of Junior High School Students

This study calculated academic achievement based on the student's mid-term examination results in the three main subjects: Language, Mathematics, and English. The Cronbach's alpha for the three examination levels for the current sample was 0.862, which is above 0.60 and is acceptable (Kline, 2000). The test score data were collected directly from the school administration.

4.6. Methodology

The OLS regression model was used for the effect of parents' education level on family atmosphere (parental involvement), the effect of family atmosphere (parental involvement) on grades, the effect of the family's financial situation on total investment in tutorials, the effect of total investment in tutorials on academic performance, the effect of the corresponding tutorials on grades in the subject, p-value test for the relevant parameter in the results and the use of the parameter to denote the effect's strength. If the p-value test indicates that the parameter is statistically significant, then the between-group differences in the data can be assumed to be statistically significant.

5. Result and Analysis

5.1. Family Atmosphere (Parental Involvement)

Correlation analyses were conducted on the data as shown in Figure 1:

1. Direct Correlation Analyses Between Parents' Education Level and Students Achievement Positive correlations were observed for the maths achievement model ($\beta = 13.18$, $f = 335.7$, $p < 0.001$), for the English achievement model ($\beta = 15.59$, $f = 547.9$, $p < 0.001$), and the language achievement showed a positive correlation ($\beta = 6.18$, $f = 175.1$, $p < 0.001$). It is evident that the level of parental education shows a positive correlation for all three main subjects, with the strongest correlation for English language achievement and the weakest for language.

2. Correlation Analysis of the Level of Parental Education with Parental Involvement: The model showed a positive correlation ($\beta = 1.2$, $f = 289.6$, $p < 0.001$).

3. Model of the Correlation of Parental Involvement with Students' Achievement A positive correlation was found for maths achievement ($\beta = 1.46$, $f = 147.0$, $p < 0.001$), for English achievement ($\beta = 1.68$, $f = 221.3$, $p < 0.001$), and for language achievement ($\beta = 0.96$, $f = 153.0$, $p < 0.001$). Parental involvement showed a positive correlation for all three main subjects, with the strongest correlation for English achievement and the weakest for language.

5.2. Family Investment:

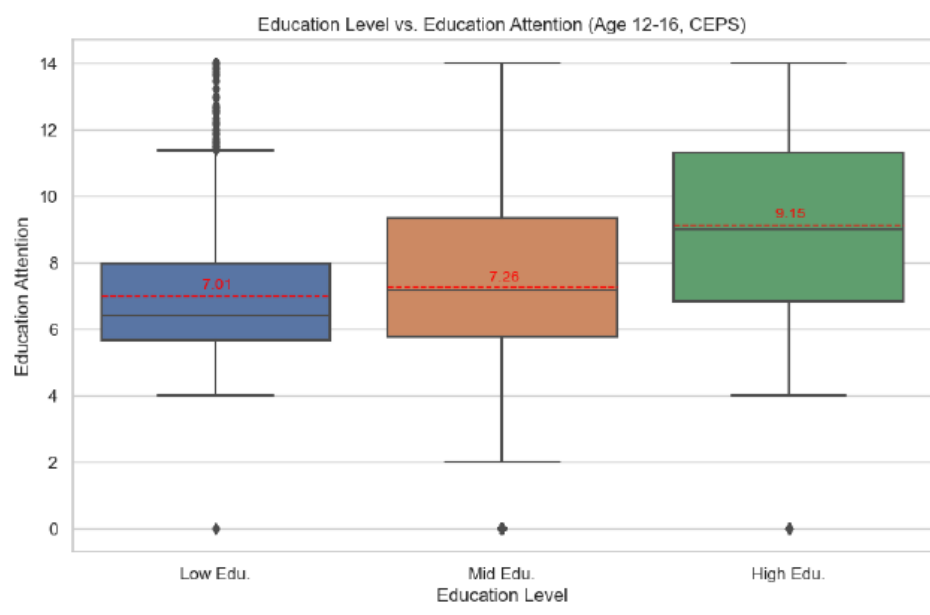


Figure 1. Relation between parent’s education level and academic performance of Chinese adolescent by SES

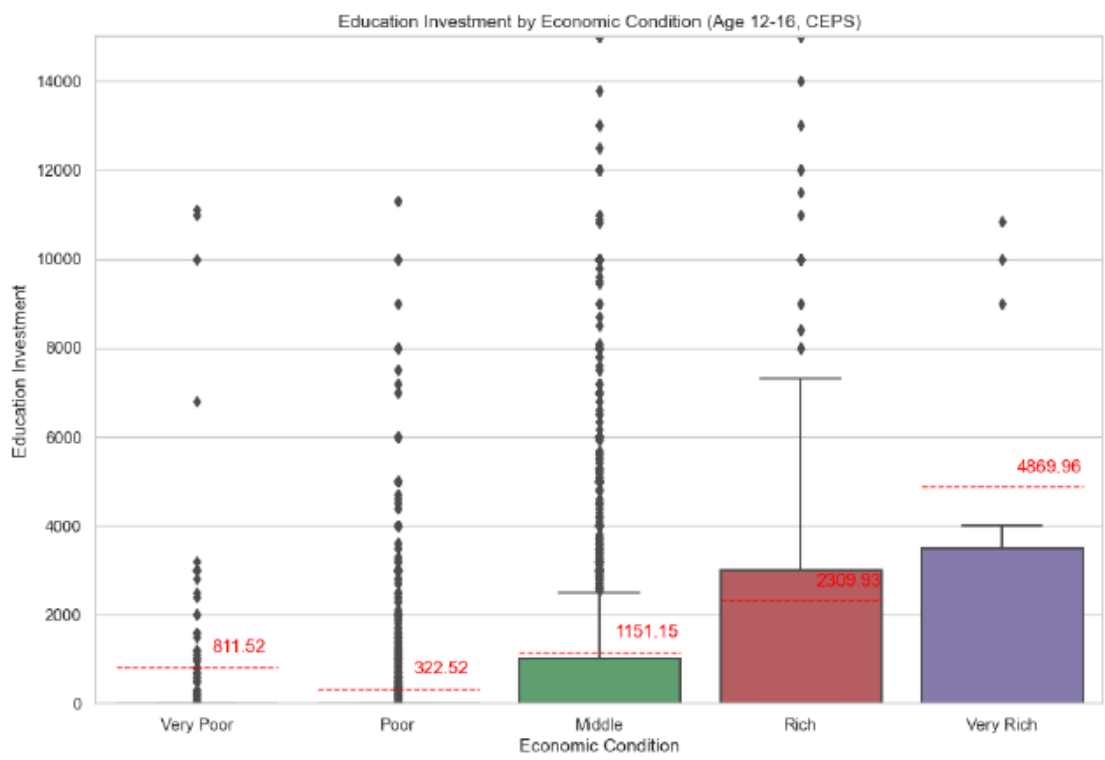


Figure 2. Relation between parent’s income level and academic performance of Chinese adolescent by SES

Correlation analysis of the data was performed as shown in Figure 2:

1. The correlation between family financial situation and students' performance showed a positive correlation for the maths performance model ($\beta = 4.47$, $f = 69.22$, $p < 0.001$), for the English language performance model ($\beta = 6.85$, $f = 187.7$, $p < 0.001$), and for the language performance ($\beta = 2.38$, $f = 48.94$, $p < 0.001$). It can be seen that family financial situation shows a positive correlation for all the three main subjects, with the strongest correlation for English language performance and the weakest for language.
2. The model shows a positive correlation between family financial situation and the Amount of money invested in tutoring classes ($\beta = 683.57$, $f = 119.5$, $p < 0.001$).
3. The model showed a positive correlation between the Amount of money invested in tutoring sessions and the student's overall grades in the three main subjects ($\beta = 0.0016$, $f = 58.47$, $p < 0.001$).
4. For the correlation between the corresponding tutoring sessions and the grades in that subject, the maths tutoring sessions showed a positive correlation with the grades in maths ($\beta = 13.4$, $f = 322.8$, $p < 0.001$), the language tutoring sessions and the grades in language showed a positive correlation ($\beta = 4.91$, $f = 54.19$, $p < 0.001$), and English tutorials showed a positive correlation with English grades ($\beta = 17.37$, $f = 613.3$, $p < 0.001$).

5.3. Analytical Discussion:

Parental Education Level and Student Achievement, Parental Education Level and Parental Involvement, and Parental Involvement and Student Achievement show a positive correlation, and I believe that parents with higher levels of education are more willing to be involved in their student's education and that this involvement improves student achievement. From the data, the average participation score of parents with a high education level is 1.2. The average parental participation score will increase the grades of language, mathematics, and foreign languages by 0.96, 1.46, and 1.68, respectively. The direct correlation coefficient between parental education and students' grades is even more significant, so parental participation is just a way for parents with high education levels to influence students' grades. There are several specific causes for this phenomenon. One such reason is that parents with a high level of education are more likely to provide learning environments and language-rich surroundings that foster the development of cognitive skills in their children [12](Davis-Kean, 2005). As an illustration, Mothers with higher levels of education demonstrate a greater capacity to employ intricate vocabulary and language structures in their everyday interactions with their children, hence facilitating exposure to a more extensive grammatical repertoire of the language. Second, parents who have completed more education are more likely to have some reading habits and to bring books and learning resources home for their kids to peruse whenever they want. Third, parents who have completed some education are more likely to be open to involving their kids in a range of reading and literacy-related activities, including finding structured learning opportunities to foster environments rich in language and literacy [12] (Davis-Kean, 2005). Furthermore, it has been shown that mums with higher levels of education possess enhanced abilities in employing effective communication strategies and teaching methodologies to foster their children's capacity for autonomous thinking and problem-solving [22] (Magnuson, 2007). Although there is a significant correlation between family socioeconomic status and academic performance, it is plausible that how parents nurture and educate their children is the crucial determinant. Factors such as parental involvement in fostering a reading culture, facilitating visits to libraries and museums, instilling resilience in the face of setbacks, and providing academic support through tutoring, among others, may substantially impact academic achievement more than parental occupations, incomes, or educational attainment. Correlations were found between family financial situation and student grades, family financial situation and Amount of money invested in tutoring classes, Amount of money invested in tutoring classes and overall student grades, and student grades and whether or not they attended the appropriate tutoring classes. All four models show a significant positive correlation and better-off families are more willing to invest in tutoring classes, and this investment impacts

students' grades. The corresponding tutoring classes for the three courses have a significant effect on students' performance in Maths and Foreign Languages, with 4.91, 13.4, and 17.37, respectively, while the effects of economic input and economic situation on performance are relatively small, with 0.0016 and (2.38, 4.47 and 6.85) respectively. Therefore, although the family's economic situation affects the students' performance through the investment in education, a more direct effect comes from the corresponding specialized tutoring classes. From the corresponding specialized tutoring. There are several specific reasons for this phenomenon, which can be outlined as follows: 1. Children from families with higher socioeconomic status are familiar with social arrangements and learning materials upon entering school, which is attributed to their parents' financial and energy investments. Furthermore, their ongoing learning experiences at home contribute to their ability to readily accept new knowledge in the school environment and sustain their pursuit of academic success[31] (Tramonte & Willms, 2010). 2. According to Tramonte and Willms (2010), parents with low-income face challenges in providing financial and competent support for their children's academic success. It is not due to the perceived low rewards associated with such support. Instead, it stems from a need for more resources, skills, mindsets, habits, and knowledge to assist their children effectively[31](Tramonte & Willms, 2010).

6. Limitations of the Study

The current data analysis study has certain limitations that need to be mentioned. Firstly, the data in this study were obtained from the student questionnaires and teacher questionnaires of the China Education Tracking Survey (CEPS), which may exaggerate some of the actual situations as parents' ideas or practices about child rearing may not necessarily be the same as what they do [17](Kaufmann et al., 2000). There is a high degree of variability of cultures and information in China's regions; future studies could use more objective methods, such as focus groups, observation, and interview methods, to facilitate more accurate measurement of adolescents' academic achievement. Second, the primary data analysis method used in this study was cross-sectional, which prevented it from examining the long-term effects of family socioeconomic status on adolescents' academic achievement. As a result, future research could use a longitudinal design to more thoroughly analyze the effects of parents from various socioeconomic backgrounds on their children's educational trajectories in the context of adolescents' academic achievement developing naturally over time. Third, although the analyses in this study were limited to adolescents aged 12–16, previous research indicates that infants and toddlers are more dependent on their parents' high-quality parenting and care (which is primarily influenced by the family's economic status) than are adolescents[20] (Lugo-Gil & Tamis-Lemonda, 2010). Parenting styles and family socioeconomic situations have been demonstrated to significantly impact early childhood development during infancy and early childhood [10](Conger et al., 2010). Hence, to better understand the impact of academic achievement at various ages (infants, toddlers, children, and adolescents), future research could broaden the study's scope to include studies on how family economic status (family participation and investment) moderates this effect. Fourth, it should be noted that this study solely focused on examining the role of family involvement and investment as mediators in the relationship between family socioeconomic status and academic achievement among adolescents. However, it is essential to acknowledge that additional mediators, such as co-parenting relationships, may exist, as well as other risk factors like community distress and protective factors like social support, which could potentially influence adolescents' academic achievement[19](Liu et al., 2020). Therefore, future research should consider incorporating these factors into their investigations.

7. Conclusion and Recommendation

China's socioeconomic landscape and its rapid changes and disparities have far-reaching implications for the nation's youth, particularly the gaps in cognitive development and academic achievement, and the China Education Panel Survey (CEPS) also provides valuable insights into these dynamics. The interrelated inequalities associated with the household registration system and uneven economic

development across the country put children and youth in China's lower socioeconomic status at a nutritional, economic, educational, and welfare disadvantage. The empirical evidence from these studies enables us better to understand the current educational equity status in mainland China. It has significant implications for the development of educational policies in countries worldwide. First, this study indirectly tests the positive moderating relationship between family socioeconomic status and junior high school student's academic performance through the mediating factors of parental involvement and family investment. Over the past three decades, China has experienced significant economic growth. However, this growth has been accompanied by an increase in the Gini coefficient, indicating a widening wealth disparity and an unequal distribution of educational resources. Consequently, the Chinese government has implemented various policies to foster educational equity, including establishing universal nine-year compulsory education and addressing the disparities in wealth distribution and educational resource allocation. Consequently, the Chinese government has implemented several policies to foster educational equity. These policies include establishing universal nine-year compulsory education, waiving school fees, providing scholarships to students from disadvantaged families, distributing free textbooks and meals, augmenting financial investment in education, and expanding enrolment capacities in higher education institutions. These measures have contributed to the advancement of educational equity within China and have also had a note-worthy impact on global educational practices. Furthermore, the findings of this study also indicate that the association between family socioeconomic status and foreign language proficiency exhibits greater strength compared to the association between socioeconomic status and academic performance in mathematics and mother tongue learning. In conclusion, the government and society must enhance the provision of opportunities and platforms for children and youth to engage in foreign language acquisition, which can be achieved through establishing English corners, implementing reading programs, facilitating free language training, and augmenting foreign language learning materials in libraries. By doing so, more children and youth from disadvantaged socioeconomic backgrounds will be able to access and benefit from these resources, thereby fostering educational equity. The primary objective of this study is to investigate the correlation and underlying mechanism of the association between family socioeconomic position and academic performance among teenagers in mainland China. The aforementioned findings hold significant theoretical and practical significance for future research endeavours. In summary, the transformation of China from an agrarian nation to a prominent global economic force is marked by notable accomplishments and distinctions. As the nation progresses, insights gained from study on its educational landscape will contribute to shaping a future wherein all children, irrespective of their socio-economic circumstances, are afforded the chance to flourish.

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