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Non-monetary Family Resources on  
Children's Development in Verbal  
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# **Influences of Monetary and Nonmonetary Family Resources on Children's Development in Verbal Ability in China**

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## **ABSTRACT**

This paper addresses the debate over the significance of family's monetary versus non-monetary resources in children's achievement and development. We use data from the 2010 baseline survey of the China Family Panel Study to examine the relevance of several proposed determinants in Chinese children's cognitive achievement. Our findings suggest that: (1) family's income is significantly associated with children's achievement, but direct measures of monetary resources are found to have limited effects; (2) non-monetary resources, particularly parenting, are of great importance to children's achievement; (3) parenting practices do not vary greatly by family's economic resources.

## INTRODUCTION

Intergenerational transmission of social class advantage or disadvantage via children's academic attainment is an important topic in sociology. It is well documented that children from low socioeconomic status (SES) families fare worse in terms of achievement and development than their counterparts from more affluent families (Duncan, Brooks-Gunn, and Klebanov 1994; Duncan et al. 1998; Duncan, Ziol-Guest, and Kalil 2010). However, the underlying reasons for this empirical pattern remain elusive. Efforts to explain the association between family SES and children's development have produced two perspectives.

The first perspective emphasizes families' economic resources, arguing that a family's economic position determines how much parents can invest in their children's education and development (Becker 1991; Duncan et al. 1994; Kaushal, Magnuson, and Waldfogel 2011). The second perspective emphasizes class-based cultural and social resources, represented by parenting practices. It emphasizes that differences in parenting practices between middle-class and working class families, which may be associated with family income, are responsible for the observed class-based disparities in children's outcomes. The second perspective considers non-monetary parenting practices important to children's cognitive development, and children's habits, personality traits, and non-cognitive skills critical for their later achievement both in school and in the labor market (Mayer 1997). As will be reviewed below, this large body of literature has not reached a consensus as to whether monetary factors or non-monetary factors are more important for the causal impact of family SES on children's academic development.

Examination of the underlying reasons for the observed achievement gap by family SES has important policy implications. If the gap is due to the family's differences in available financial resources, then policies to reduce the SES gap should focus on equalizing family income. If, on the other hand, children's development is mainly affected by non-monetary factors and family processes, policy focusing on improving these elements will be more helpful.

So far, nearly all the existing studies on the subject have used data from the U.S. and Western European countries, with little exploration outside these highly developed, western countries. East Asian societies differ substantially from U.S. society both culturally and institutionally. Extending research to East Asian societies will thus yield clues about whether the observed relationship between family's characteristics and children's achievement is generalizable to wider social contexts (Park 2008; Park and Kim 2011). High scholastic and

professional achievement in East Asian countries and among East Asian descendants in the U.S. has long been of interest to social scientists, and many studies have attempted to unravel the underlying reasons for these successes. Although East Asian immigrants in the U.S. are different from their counterparts in their countries of origin, they share some basic commonalities, such as Confucian culture. Past studies have suggested that this common culture may account for both native and immigrant East Asians' high academic performances relative to those of native-born white Americans (Nisbett 2009; Stevenson and Stigler 1992; Goyette and Xie 1998; Pearce 2006; Kao and Thompson 2003; Zhou and Xiong 2005; Vartanian et al. 2007; Harris, Jamison, and Trujillo 2008; Keller and Tillman 2008). Hence, examining the factors influencing East Asian children's development will help us understand how the family affects children's educational outcomes in different social contexts.

## **THEORETICAL MOTIVATION AND RESEARCH MODEL**

### **The Fundamental Cause of Disparities in Children's Development**

The term "fundamental cause" is not novel in sociology: it is a major, well-established sociological theory used to explain persistent health inequalities. First proposed by Link and Phelan (1995; Phelan, Link, and Tehranifar 2010), the theory claims that socioeconomic status (SES) is the fundamental cause of health. They argue that regardless of causal mechanisms, the association between SES and health has persisted over time, as SES implies differential access to relevant monetary and non-monetary resources such as money, knowledge, social networks, and power, that can affect health outcomes. The concrete causal mechanisms through which SES affects health may change when political institutions, social environments, or medical technologies evolve. In other words, how SES affects health in a given social context is a concrete, but conceptually transient, manifestation of an underlying permanent relationship. A health gradient by SES, however, is fundamental, as individuals from higher SES groups are at an advantage, through whatever means, relative to individuals from lower SES groups. For example, lower SES individuals lack material resources, such as money with which to purchase items and services beneficial to health. More importantly, they lack pivotal nonmonetary resources needed to keep themselves away from illness (Mirowsky and Ross 2003). Another causal mechanism is that people of lower SES are more likely to reside in a social network or environment where health behavior and practices are less widely advocated or adopted. As people's behaviors can be influenced by other individuals with whom they are in close contact,

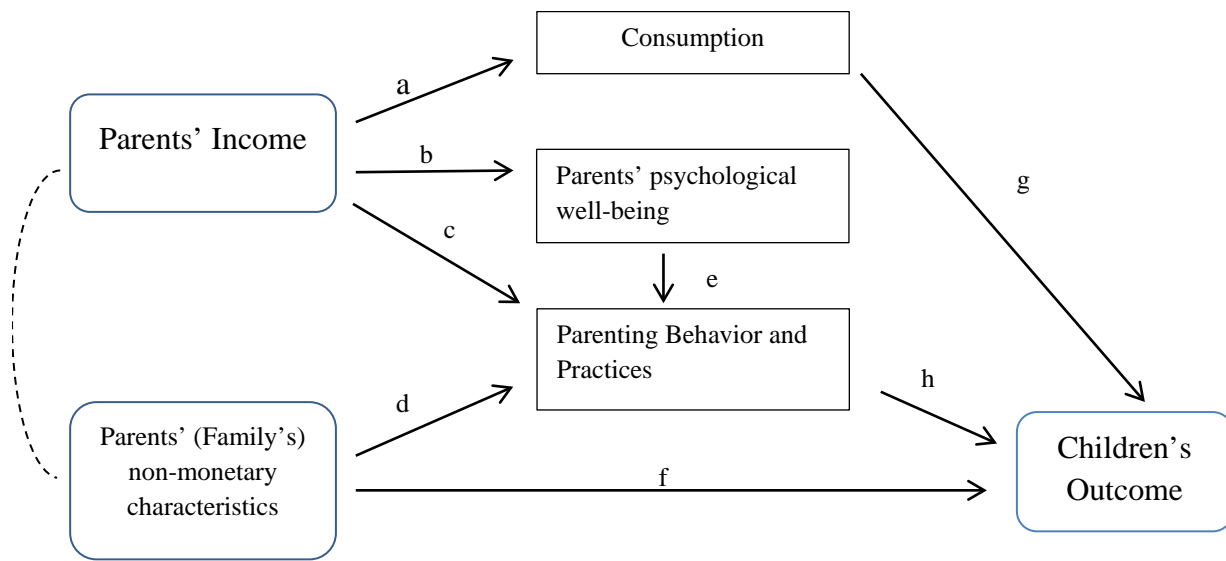
lower-SES individuals are less likely to benefit from their immediate social surroundings (Lutfey and Freese 2005). In addition, because of their limited education, lower-SES individuals possess less information about risks, health innovations, and how to harness the latest health advancements. Being exposed to more health risk factors, lower SES individuals may also experience health deterioration because they lack adequate knowledge for maintaining health. The health of lower SES people can even be undermined when they seek help from medical institutions. As medical decisions are made based on doctors' assessments of the likelihood of successful implementation of different solutions, a patient's apparent cognitive ability and motivation can influence medical processes. Empirical evidence has shown that doctors will adopt simpler and less aggressive treatments with lower-SES diabetes patients, as they seem less capable of maintaining complicated regimens (Lutfey and Freese 2005).

We borrow the framework of fundamental cause theory to understand disparities in children's development. As in the case of health, we argue that disparities in children's academic achievement are fundamentally caused by family SES. Although the lineation is not always clear-cut, let us roughly divide family resources into two types: monetary and non-monetary. Monetary resources for children's academic development include, for example, housing in desirable school districts (particularly in the U.S.), educational products, and services such as private tuition, summer schools and books. Non-monetary resources include social capital and cultural practices pertaining to children's development. In general, higher-SES families tend to possess more monetary and non-monetary resources than lower-SES families, but the association between the two is not perfect – a point to be elaborated below.

Borrowing fundamental cause theory, we propose that how family SES affects children's academic achievement should vary by the broader social context. When economic resources matter most in a society, high-SES families pass on their family advantages to children through mechanisms that can be purchased with money. When non-monetary resources matter most, high-SES families instead help children through non-monetary mechanisms. For specific contexts, however, it is imperative to carefully consider how the two types of resources concretely channel family SES's fundamental effects on children's development, the relationship between them, and which set more strongly influences children's academic outcomes. Understanding how these factors relate to one another will make it easier to formulate effective policy interventions to reduce or eliminate SES-based inequality. Specifically, if a family's

economic resources turn out to be less important than their non-monetary resources, governments may want to change intervention policies aimed at giving lower-income families more money and provide more support in developing families' non-monetary resources.

**Figure 1.** Significance of Economic vs. Non-Monetary Resources on Child Development



At present, there is still disagreement on the relative significance of monetary vs. non-monetary resources (as shown in Figure 1). Some past studies, especially in economics, have emphasized the importance of a family's monetary resources, usually measured in income, for children's growth. Originating in Becker's theoretical work, this approach assumes that parents, primarily based on their economic resources, influence their children's human capital through "expenditures on their skills, health, learning, motivation, 'credentials,' and many other characteristics" (Becker and Tomes 1986, p. S5). Income is thus important to children's development as it directly determines parents' financial ability to invest in children (pathway a-g in Figure 1). Families with higher incomes will be able to purchase more and better education-related goods and services (e.g. books, classes, instruments, etc.) that improve their children's chances of success (Becker 1993; Kaushal et al. 2011).

It is also argued that income is important not because it enables parents to invest in children but because it affects parents' ability to rear children properly. According to "role model" theory and "parental-stress" theory, low income and poverty can lead to poor parenting (pathway c-h in Figure 1). Parents with low or unstable incomes experience more stresses, which first

negatively impact their own emotional well-being and then jeopardizes their child-rearing capacities (pathway b-e-h in Figure 1). They are also more likely to adopt a harsh parenting style, which is known to be detrimental to children's well-being (Yeung, Linver and Brooks-Gunn 2002; Smith et al. 2001). In addition, the quality of parenting practices also varies by parents' economic resources (Chin and Phillip 2004). For example, affluent families are able to build home environments beneficial to children's cognitive stimulation (Baharudin and Luster 1998; Garrett, Ngandu, and Ferron 1994; Miller and Davis 1997; Watson, et al. 1996; Votruba-Drzal 2003).

Parallel to these "money matters" arguments are studies claiming that family income and affluence are not so important as other, non-monetary attributes and intangible assets such as parents' human capital, cognitive skills, social class, and culture. According to these studies, non-economic characteristics and resources influence children in more comprehensive and far-reaching ways than money per se (Mayer 1997; Heckman 2006). For example, family size, especially the sibship size of a family, has a negative effect on children's cognitive development and educational achievement, net of its effect of diluting parents' financial resources available to children (Jæger 2008; Tillman 2008).

In addition, these non-monetary characteristics may shape parenting practices more profoundly than family income does (pathway d-h in Figure 1). It is suggested, both theoretically and empirically, that parenting is a practice involving intangible resources such as cultural and social capital and thus is associated with parents' socioeconomic background and social class (Bourdieu 1984; Boudon 1974). For example, parents with higher socioeconomic status hold higher expectations for their children, which benefit children's performance (Davis-Kean 2005; Alexander, Entwisle, and Bedinger 1994). Upper middle-class parents engage in "concerted cultivation" and more purposeful practices in daily interactions with their children. They also arrange children's daily lives and activities in more structured ways so as to enhance children's development of both cognitive and non-cognitive skills (Heckman 2006; Covay and Carbonaro 2010; Calarco 2011; Cheadle and Amato 2011; Lareau 2011). Working-class parents, in contrast, tend to intervene in children's growth at a minimal level, holding that children should grow as they are (Lareau 2011). They are also less likely to provide children with an environment enriched with cognitive and noncognitive stimulation (Heckman 2006). Moreover, the differences between these "intellectually nurturing" vs. "natural growth" parenting practices are rooted in different cultures separating middle class and working class and can thus remain relatively stable even when a family's economic resources fluctuate.



## **Income and Parenting in the Chinese Context**

While the relative influences of monetary versus non-monetary resources for children's academic outcomes is still subject to debate, there are good reasons to suspect that family's monetary resources will be of lesser importance to children's development in China than in the U.S. and other western societies.

Monetary resources, like family income, affect children's development and achievement in the U.S. because critical educational resources can be purchased with money (Gamoran 2001; Mayer 1997; Coleman 1966; Hanushek 1997). For example, higher-SES families can "purchase" better schools for their children, by either sending children to private schools or spending money to reside in high-quality school districts. Better schools have more challenging curriculums, better-performing schoolmates, better physical resources, higher teacher-to-student ratios, and better-qualified teachers, all of which benefit children's development notably (Coleman 1966, 1968; Fuller and Clarke 1994; Greenwald, Hedges and Laine 1996; Rivkin, Hanushek and Cain 2005; Chiu 2010). More affluent families can also provide their children with more stimulating living environments, including better physical living arrangements as well as other materials.

However, this is not the case in China. The very strong role of the state means that educational opportunities for different social groups are directly and deeply affected by state policies (Zhou, Tuma, and Moen 1996; Hannum 1999; Buchmann 2001). For example, primary and secondary educational curricula are designed by the central government and are uniform nationwide. This, in principle, gives children equal access to homogeneous learning materials. Although large variation in the quality of and access to educational resources does exist, these differences depend less on families' monetary resources per se than to institutional factors, such as type of household registration (rural versus urban) and geographic location. Nearly all primary and secondary schools, including the best ones, are public and generally affordable. Entrance into good schools is largely based on exam scores. In this system, family material resources alone cannot directly ensure a child's entry into a high-quality school. We propose instead that family's monetary resources affect children's achievement indirectly: higher-SES families, through education investment, prepare their children better to distinguish themselves in exams so as to gain admission to good schools. For example, Hannum's work showed that household income exerts a net net on children's school enrollment probabilities and education attainment in China (Hannum 2003). In addition, parents in Korea tend to spend their income on extracurricular education services, such as private tutoring, which prepares the children better academically (Park, Byun, and Kim 2011).

Instead of direct investment, we argue that families' non-monetary characteristics, particularly parenting practices, should be of great importance to children's development in China. Theoretically, parenting is important to children's development, as bioecological and transactional models of children's development maintain that reciprocal interactions between children and the multiple environments in which they are embedded largely account for differences in children's development (Bronfenbrenner and Ceci 1994; Sameroff 1994). Proximal processes in children's home environments are thus critical. High quality parenting is crucial to children's later achievement in education and the labor market, and it can remedy the developmental disadvantages resulting from low family income (Gertler et al. 2013). Besides, one deeply rooted aspect of Chinese culture is the importance of children's achievement to a family and the family's primary responsibility for children's development. If a child excels academically, this brings pride to the family. Conversely, if a child fails academically, it brings embarrassment. Meanwhile, family and parents are expected to provide a healthy emotional environment at home and to support the school's role in improving children's academic achievement (Stevenson and Stigler 1992). Family is thus highly involved in children's growth and parenting influences children greatly.

As we discussed earlier, parenting practices are often associated with family's monetary resources. However, how strongly parenting practices are more associated with family's monetary resources may vary greatly by social contexts and by social groups. For a combination of reasons, it is plausible that the association between parenting practices and family's monetary resources may be weaker in China than in the U.S. In the U.S., it may be weaker among East Asian groups from Confucian cultures than among native-born whites. As Stevenson and Stigler (1992) argued, Confucian cultures promote education-oriented parenting styles regardless of a family's socioeconomic status. Parents are influenced to raise highly educated children even if they do not have education themselves. Goyette and Xie (1999) reported, for example, that Asian immigrant parents in the U.S. invariably hold high expectations regarding their children's educational achievement, irrespective of their own socioeconomic status. Good grades are more likely to be equated with parental satisfaction among Asian American children than among children of other racial and ethnic groups, and Asian children are also more likely to share their parents' expectations (Hao and Bonstead-Bruns 1998; Pang 1990; Schneider and Lee 1990; Sung 1987). In addition, Asian parents tend to expend resources to enhance children's education as

much as possible. For instance, they supervise children's extracurricular activities, assign homework tasks, help children with their school work, and purchase private lessons for their children (Kao and Tienda 1995; Schneider and Lee 1990; Stevenson and Stigler 1992; Louie 2001).

## Research Questions

In this study, we wish to provide an empirical evaluation, in the context of contemporary China, of the relative importance of family's monetary versus non-monetary resources to children's academic performance. We utilize newly available data from the 2010 baseline survey of the China Family Panel Studies (CFPS) to address the following research questions: (1) Do family-level monetary resources affect children's verbal development in China? If so, do these effects follow the same pattern as in Western countries? (2) How do non-monetary factors, particularly parenting attitudes and practices, influence children's outcomes? (3) Do parenting attitudes and practices differ significantly by families' economic resources?

## DATA

This study draws on data from the 2010 baseline survey of the China Family Panel Studies (CFPS), a nation-wide longitudinal survey in China. The 2010 wave of the CFPS consists of five questionnaires that collected information about community, family, adolescents, and adults. In the baseline wave of 2010, 14,798 households were interviewed, along with 33,600 adults and 8,990 children living in these households, in 25 provinces. This dataset has several strengths. First, it is the only dataset in China that measures children's, adolescents', and adults' cognitive skills using standardized tests. Second, it contains voluminous information on families, parents, and children. In addition, its national representativeness and large size give us greater statistical power when making inferences and interpretations.

Our study is based mainly on data from the adolescent questionnaire, as well as data pertaining to demographic information on families and parents from the family and adult data files. We restrict our sample to children 10-15 years old, as these are the ones who took the tests on cognitive ability. In addition, we include only those children at least one parent of whom has a valid adult questionnaire. This gives us a sample with 2954 cases. The basic descriptive statistics are summarized in Table 1.

**Table 1.** Descriptive Statistics of the Data

|                                     | Mean  | SD    | Min   | Max   |
|-------------------------------------|-------|-------|-------|-------|
| Grade                               | 5.85  | 1.91  | 1     | 12    |
| Gender (Male=1)                     | .51   |       | 0     | 1     |
| Family's Economic Resources         |       |       |       |       |
| Annual Income Per Capita(in 10,000) | 2.95  | 4.84  | 0.46  | 8     |
| Log (Annual Income Per Capita)      | 8.40  | .80   | 6.91  | 9.87  |
| Education Expenses (in 1,000)       | 1.30  | 2.39  | 0     | 44.2  |
| Income Group                        |       |       |       |       |
| 1. less than 2,505                  | 24.78 |       | 0     | 1     |
| 2. 2,505-4,448                      | 25.42 |       | 0     | 1     |
| 3. 4,448-7,867                      | 24.81 |       | 0     | 1     |
| 4. above 7,867                      | 24.98 |       | 0     | 1     |
| Structural Factors                  |       |       |       |       |
| Hukou (Urban=1)                     | .21   |       | 0     | 1     |
| Parents' Characteristics            |       |       |       |       |
| Parents' Cognitive Scores           | 53.56 | 17.20 | 15.50 | 96.72 |
| Parents' Years of Schooling         | 6.26  | 4.13  | 0     | 20    |
| Number of Children                  | 1.15  | .40   | 1     | 4     |
| Parenting Attitudes and Practice    |       |       |       |       |
| Academic Expectation                | 90.11 | 9.74  | 2     | 100   |
| Educational Involvement             | 19.42 | 4.69  | 6     | 30    |
| Family Environment                  | 6.96  | 1.25  | 2     | 10    |

N=2954

## MEASURES

### Children's Verbal Ability

We use the children's scores in the word test to capture their *verbal abilities*. The word test in the survey asked the respondent children to read out the characters presented to them. The test starts with easy characters and moves on to harder ones, which require better verbal knowledge. Children at different ages started at different points in the test, so that older children began with more difficult items than younger children. All children, however, ended the test with the three most difficult characters they could not recognize. We score a child's verbal ability in terms of the character of the highest difficulty he/she could recognize. The scores range

from 0 to 34. We do not standardize the scores by age but choose to control for children's grade in the analysis to reduce the confounding effects of education.

The independent variables can be categorized into three groups: control variables, monetary factors, and non-monetary factors. We will introduce each of these groups in the following section.

### **Control Variables**

The basic control variables in our analysis are *gender* and *grade*. For gender, female is coded as zero, while male is coded as one. Grade represents the level of education that children have received, ranging from one to twelve.

### **Structural Factors: Hukou and Province**

Institutional, or structural, factors exert an influential impact on social life in China. One of the most prominent structural factors, household registration system (*hukou*), divides the population into "agricultural" and "nonagricultural" sectors and influences one's accesses to many critical resources and life chances such as jobs, education, housing and health care. Compared to rural areas, urban areas in China are equipped with better and more abundant educational resources (Hannum 1999). Besides *hukou*, there are also prominent socioeconomic discrepancies across regions in China (Xie and Hannum 1996). Parallel to the level of socioeconomic development, the quality and distribution of educational resources vary greatly across regions and provinces, with eastern areas enjoying access to better resources. We thus control for *hukou* and *province* in this study. *Hukou* are divided into urban (coded as one) and rural (coded as zero), 20% of our sample being from urban areas. The study covers 25 provinces and province-level municipalities.

### **Monetary Factors**

The first variable under the subgroup of monetary factors is the log function of *family's per capita income*. We measure a family's income by its annual income<sup>1</sup> over the past year, and divide it by the number of people in the household. Missing values are imputed by predicted income using other available information on *hukou*, province, and parents' education. In addition, to control for the influences of outliers, income has been topcoded and bottom coded. Taking

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<sup>1</sup> If a family's major source of income is agricultural production, the annual income is measured by their net annual income.

income's diminishing returns into account, we take the natural logarithm of the per capita income as the independent variable in our analysis. Being conservative, we also entered income into regression analysis as linear function and dummy variables. The results are shown in Table 2. The three models yield comparable results. To be consistent with previous studies, we choose to use the conventional log function of income in the following analysis.

The second monetary variable in our analysis is *education expenses*. This measurement captures the amount of money that families spent on their children's education during the past year. The mean of the education expenses in our sample is 1,300 yuan.

**Table 2.** Regression of Children's Word Test Score on Family Income

|   | (1)            |     | (2)            |     | (3)            |     |
|---|----------------|-----|----------------|-----|----------------|-----|
|   | coef           | sig | coef           | sig | coef           | sig |
| Constant                                    | 3.52<br>(2.21) |     | 6.77<br>(1.86) | *** | 6.80<br>(1.86) | *** |
| Family Annual Income Per Capita             |                |     |                |     |                |     |
| Log(Family Annual Income Per Capita)        | .45<br>(.15)   | **  |                |     |                |     |
| Linear function (in 10,000 <sup>a</sup> )   |                |     | .71<br>(.25)   | **  |                |     |
| Income Group <sup>a</sup> (<2,505 excluded) |                |     |                |     |                |     |
| 1. 2,505-4,448                              |                |     |                |     | .66<br>(.28)   | *   |
| 2. 4,448-7,867                              |                |     |                |     | .64<br>(.29)   | *   |
| 3. >7,867                                   |                |     |                |     | 1.00<br>(.33)  | **  |
| Control For                                 |                |     |                |     |                |     |
| Grade                                       | Yes            |     | Yes            |     | Yes            |     |
| Gender                                      | Yes            |     | Yes            |     | Yes            |     |
| Structural Factors                          | Yes            |     | Yes            |     | Yes            |     |
| Parents' Characteristics                    | Yes            |     | Yes            |     | Yes            |     |
| R <sup>2</sup>                              | 0.442          |     | 0.442          |     | 0.443          |     |

N= 2954, + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

a. The amount of money is measured in yuan or RMB

b. The coefficient in spline function represents the difference in slope between a group and the group above it.

## Non-monetary Factors

We measure three family characteristics: parents' education, parents' cognitive scores, and number of children. To measure *parents' education*, we retrieve the self-reported years of schooling of children's parents from the adult questionnaire and take the average of them. If one of the parents' information on education is missing, we use the other parent's educational information to measure this variable.

We also control for *parents' cognitive scores*. Albeit with unknown mechanisms, past studies have shown that parents' cognitive ability is a strong predictor of children's development net of other family socioeconomic characteristics (Yeung 2002; Parcel, Dufur, and Zito 2010; Sastry and Pebley 2010). In the survey, adult respondents were given two sets of tests to measure their math and verbal ability. They were asked to carry out basic arithmetic calculations in the math test, and to recognize Chinese characters in the verbal test. Since performance on these two tests is highly dependent on educational level, we standardize the score by respondents' attained education. In this way, the score can better capture cognitive ability net of education. We add up the two standardized scores to measure each adult's cognitive skills, and average the totals for both parents to measure parental cognitive ability. The missing values are imputed with the mean of the sample.

We also measure the quality of parenting with three measurements: academic expectation, educational involvement, and family environment. Parents are providing higher-quality parenting if they are holding higher expectations, involve themselves more than others in educating their children, and create a stimulating environment. Whether this is a good way to characterize high-quality parenting is not beyond doubt. Restrained by the current available data, however, we believe that these three measurements can best represent the quality and style of parenting behaviors.

*Academic expectation* is measured by parents' reported expectation. In the survey, parents were asked the average scores (out of 100) that they expected their children to achieve in the current or the coming semester. We use these scores to measure parents' expectation of their children. A traditional proxy to measure expectation is parents' highest expected education degree for their children. Though similar questions are asked in the survey, we chose to use the expected scores in our analysis for several reasons. First, as the question on the expected scores is asked in a general way, this measurement actually measures parents' average academic expectations of their children. Second, in the questionnaire, the question of the expected highest

educational level is not asked of all the parents with children from ten to fifteen, and thus, we will not have the full adolescent sample if we use it as our measurement of parents' expectations.

*Educational involvement* is also measured by self-reported data. During the survey, parents were given a set of 6 questions about their efforts or devotion to their children's studies in daily life. (This set of questions is summarized in Table A in the Appendix.) After transforming the scoring system and imputing the missing values by sample mean, we generate a composite measurement by taking the sum of the six scores and use it as an overall measurement of parents' devotion to and involvement in their children's education. The composite measurement ranges from six to thirty. The higher the score, the more the parents are involved.

*Family environment* is measured by observed data. During the survey, interviewers were asked a number of questions based on their observations and communications with the respondent. Two of these questions are about respondents' family environment, specifically, how stimulating the home environment is to the children's education, and to what extent the parents would like to communicate with the children. (These questions are summarized in Table B in the Appendix.) We impute the missing values with sample mean and generate a composite score ranging from two to ten based on the two questions. A higher score indicates a more stimulating family environment.

## **ANALYSIS AND RESULTS**

### **Family Income and Children's Verbal Ability**

We turn to regression analysis to test family income's effects on children's verbal achievement. Table 3 presents the results of three regression models using children's scores in the word test as the dependent variable. Model 1 is the baseline model, in which we control only for children's grades and genders. In Model 2, we include structural variables—hukou and province—as controls. In Model 3, we further control for parents' characteristics. The decrease in the coefficient of family income from the first model to the second model suggest that a substantial portion of the association of family income and children's achievement can be accounted for by institutional factors. The significance of structural factors, in addition, indicates that in China, rural-urban division and region play an important role in influencing children's development. The further shrinkage of the coefficient of family's income from Model 2 to Model 3, together with the significance of the coefficient of parents' characteristics, imply that family's non-monetary characteristics are important to Chinese children's achievement.



**Table 3.** Regression of Children's Word Test Score on Family Income, Structural Factors and Family SES

|   | (1)            |     | (2)            |     | (3)            |         |
|---|----------------|-----|----------------|-----|----------------|---------|
|   | coef           | sig | coef           | sig | coef           | Sig     |
| Constant                                | -.41<br>(1.11) |     | 4.45<br>(2.25) | *   | 3.52<br>(2.21) |         |
| Grade                                   | 2.10<br>(.06)  | *** | 2.01<br>(.05)  | *** | 1.94<br>(.05)  | **<br>* |
| Gender (Male=1)                         | -1.02<br>(.21) | *** | -.97<br>(.20)  | *** | -.92<br>(.20)  | **<br>* |
| Log(Family Annual<br>Income Per Capita) | 1.24<br>(.13)  | *** | 0.85<br>(.15)  | *** | .45<br>(.15)   | **      |
| Structural Factors                      |                |     |                |     |                |         |
| Hukou (Urban=1)                         |                |     | 1.30<br>(.28)  | *** | .67<br>(.30)   | *       |
| Fixed Effects of<br>Province            | No             |     | Yes            |     | Yes            |         |
| Parents' Characteristics                |                |     |                |     |                |         |
| Parents' Cognitive<br>Scores            |                |     |                |     | .06<br>(.01)   | ***     |
| Parents' Years of<br>Schooling          |                |     |                |     | .20<br>(.03)   | ***     |
| Number of Children                      |                |     |                |     | -.16<br>(.25)  |         |
| R <sup>2</sup>                          | 0.369          |     | 0.414          |     | 0.442          |         |

N= 2954, + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Economic household production theory argues that family income is an important determinant of parents' ability to invest in children's education. Following this line of reasoning, if monetary resources are important to children's achievement, we should be able to observe that educational investment is significantly associated with children's achievement. We should also expect education investment to channel a large portion of income's effects on children. To examine whether this is true in China, we first fit a regression model between education expenses and children's achievement with all other control variables. The results are shown by Model 2 in Table 4. The insignificant small coefficient of education expenses implies that family's educational investment is not significantly associated with children's achievement.

We then include both family's income per capita and educational expenses in Model 3. Again, educational expenses' effect on children's development is small and insignificant. In addition, compared with Model 1, the coefficient of family's income does not change much when family's education expenses are included. In contrast with what traditional economic theory predicts, this indicates that family's income's significant effects on children's achievement are not mediated through family's monetary investment in education. In other words, children from richer families do not get ahead of their peers from poorer families because of their parents' ability to buy them better educational materials.

**Table 4.** Regression of Children's Word Score on Monetary Resources, Parenting Attitudes and Practices

|  | (1)            |     | (2)            |     | (3)          |     | (4)           |          | (5)           |          |
|--|----------------|-----|----------------|-----|--------------|-----|---------------|----------|---------------|----------|
|  | Coef.          | sig | Coef.          | sig | Coef.        | sig | Coef.         | sig      | Coef.         | sig      |
| Constant                                   | 3.52<br>(2.21) | **  | 6.94<br>(1.87) | *** | 3.50<br>2.21 |     | -2.72<br>2.14 |          | -5.45<br>2.42 | *        |
| Log(Family Income Per Capita)              | .45<br>(.15)   |     |                |     | .43<br>.15   | **  |               |          | .36<br>.15    | *        |
| Education Expenses(in 1,000 <sup>a</sup> ) |                |     | .07<br>(.05)   |     | .06<br>.05   |     |               |          |               |          |
| Parenting Attitudes and Practice           |                |     |                |     |              |     |               |          |               |          |
| Academic Expectation                       |                |     |                |     |              |     | .07<br>.01    | ***<br>* | .07<br>.01    | ***<br>* |
| Educational Involvement                    |                |     |                |     |              |     | .05<br>.02    | *<br>*   | .05<br>.02    | *<br>*   |
| Family Environment                         |                |     |                |     |              |     | .45<br>.09    | ***<br>* | .42<br>.09    | ***<br>* |
| Control For                                |                |     |                |     |              |     |               |          |               |          |
| Grade                                      | Yes            |     | Yes            |     | Yes          |     | Yes           |          | Yes           |          |
| Gender                                     | Yes            |     | Yes            |     | Yes          |     | Yes           |          | Yes           |          |
| Structural Factors                         | Yes            |     | Yes            |     | Yes          |     | Yes           |          | Yes           |          |
| Parents' Characteristics                   | Yes            |     | Yes            |     | Yes          |     | Yes           |          | Yes           |          |
| R <sup>2</sup>                             | 0.442          |     | 0.441          |     | 0.443        |     | 0.457         |          | 0.458         |          |

N= 2954, + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

a. The amount of money is measured in yuan or RMB

### Parenting Attitudes, Parenting Practices and Children's Verbal Ability

As discussed, family SES is the fundamental determinant of children's well-being, and SES can be seen as composed of monetary and non-monetary resources. We then move on to analyze the relationship between family's non-monetary resources and children's development. Our analysis is focused on the relationship between parenting and children's achievement, as we hold that good parents and high quality parenting are of pivotal importance to children.

We first regress children's word scores on parenting attitudes and practices, including all other controls except family income. The results are shown in Table 4, Model 4. All the coefficients of the three measurements on parenting practices are significant, suggesting that good parenting will boost children's well-being. Though we cannot assert causality between parenting practices and children's achievement, as parents may adjust their parenting based on their children's achievement, the results shed some light on the positive effects and relevance of good parenting to children's development.

Though the causality between family's monetary resources, non-monetary resources and children's achievement cannot be assured, comparing the association between each of the two types of resources and children's achievement can still be beneficial. It will, at least, indicate the comparative relevance of different types of families' characteristics in children's development. As indicated by Model 5 in Table 4, children's verbal scores are more responsive to changes in parenting behaviors than to changes in family income. For example, one standard deviation increase (1.25 points) in family environment is associated with 0.525 points increase in children's word scores. To achieve the same amount of change, family income needs to increase by 145%, which is nearly one and half times the family's current income. This is true when we compare income's effects with those of other non-monetary resources as well. We thus argue that non-monetary resources have more leverage concerning children's development than monetary resources.

### **Parenting and Family Income**

One of the previous arguments on the importance of a family's economic resources is that they frame the way parents interact with and raise children. Thus, one needs to remember that the significant association between parenting practices and children's achievement is spurious and is just a mediator of income's significant effects. For instance, parents in better financial situations are less likely to suffer from stresses and other risks for deteriorating parenting capability. We thus need to take things a step further and try to discover whether parenting practices are regulated by a family's economic resources.

Table 5 summarizes the results from correlation analysis of parents' characteristics, family's financial resources, and parenting attitudes and practices. We adjust children's Word Scores by grade and gender and control for institutional variables (hookup and province) in the correlation analysis. Rows 6 to 8 in show the correlation between variables relating to parenting practices and other variables.

**Table 5.** Partial Correlation<sup>a</sup> between Family's Financial Resources, Parents' Characteristics and Parenting Attitudes and Practices

|   | Parents' Characteristics |          |          | Financial Resources |         | Parenting Attitudes and Practices |         |         |
|---|--------------------------|----------|----------|---------------------|---------|-----------------------------------|---------|---------|
|   | 1                        | 2        | 3        | 4                   | 5       | 6                                 | 7       | 8       |
| 1. Parents' cognitive scores            |                          |          |          |                     |         |                                   |         |         |
| 2. Parents' education                   | 0.07***                  |          |          |                     |         |                                   |         |         |
| 3. Number of Children                   | -0.03                    | -0.06*** |          |                     |         |                                   |         |         |
| 4. Log(Family Annual Income Per Capita) | 0.11***                  | 0.26***  | -0.08*** |                     |         |                                   |         |         |
| 5. Education Expenses                   | 0.02                     | 0.13***  | -0.04*   | 0.14***             |         |                                   |         |         |
| 6. Academic Expectation                 | 0.03                     | 0.05**   | -0.02    | 0.02                | 0.02    |                                   |         |         |
| 7. Educational Involvement              | 0.07***                  | 0.19***  | -0.02    | 0.04*               | -0.01   | 0.10***                           |         |         |
| 8. Family Environment                   | 0.09***                  | 0.20***  | -0.05**  | 0.18***             | 0.09*** | 0.08***                           | 0.19*** |         |
| 9. Children's Word Score <sup>b</sup>   | 0.19***                  | 0.14***  | -0.03    | 0.11***             | 0.04*   | 0.14***                           | 0.10*** | 0.15*** |

N= 2954, + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

a. Items 1-8 are residualized by hukou and province

b. Children's Word Score has been adjusted by grade and gender.

Table 5 shows almost no correlation between academic expectation/educational involvement and family income. Though the correlation between family environment and family income is significant, it is small. In contrast, the correlations between parenting practices and parent's education, as well as cognitive ability, are significant. In the meantime, the correlation between educational involvement, family environment and parents' education, though not large, is greater than the correlations between any of these variables and family's income.

We continue our investigation of the relationship between parenting practices, family's monetary resources, and non-monetary characteristics using regression analysis. We regress three measurements of parenting practices on family's income per capita, parents' characteristics, and other extensive controls respectively. The association is significant only in Model 3, where family environment is the outcome variable, but it is fairly small compared to that between family environment and other parents' characteristics. For instance, a 0.06 unit change in family environment is associated with a 1- year increase in parents' education, and a 28.6 percent increase in family's annual per capita income. As for expectations/education involvement, parents from higher income families do not score higher than their lower income counterparts. Worthy of note as well is the negative, though not significant, coefficient in Model 2, indicating that parents with higher incomes are less involved in/dedicated to their children's education.

**Table 6.** Regression of Parenting Attitudes and Practices on Income and Family SES

|                             | Expected Academic Performance |     | Educational Involvement |     | Family Environment |     |
|-----------------------------|-------------------------------|-----|-------------------------|-----|--------------------|-----|
|                             | Coef.                         | Sig | Coef.                   | Sig | Coef.              | Sig |
| Constant                    | 90.94<br>(3.88)               | *** | 19.50<br>(1.79)         | *** | 4.56<br>(.48)      | *** |
| Log(Family Annual Income)   | .13<br>(0.26)                 |     | -.09<br>(.12)           |     | .21<br>(.03)       | *** |
| Parents' Characteristics    |                               |     |                         |     |                    |     |
| Parents' Cognitive Score    | .02<br>(.01)                  | +   | .02<br>(.00)            | *** | .00<br>(.00)       | *** |
| Parents' Years of Schooling | .16<br>(.05)                  | **  | .27<br>(.03)            | *** | .06<br>(.01)       | *** |
| Number of Children          | -.58<br>(.45)                 |     | -.05<br>(.21)           |     | -.09<br>(.06)      |     |
| Control For                 |                               |     |                         |     |                    |     |
| Structural Factors          |                               | Yes |                         | Yes |                    | Yes |
| Grade                       |                               | Yes |                         | Yes |                    | Yes |
| Gender                      |                               | Yes |                         | Yes |                    | Yes |
| R <sup>2</sup>              | 0.074                         |     | 0.149                   |     | 0.144              |     |

N= 2954, + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

All of the preceding evidence indicates that parenting practices are not a function of family income. Compared with income, parents' characteristics, particularly education, are significantly associated with all the measurements relating to parenting practices, though the sizes of such associations are relatively small. All in all, results from the regression analysis suggest that quality of parenting is not based on the abundance of a family's economic resources.

Together with the results from correlation analysis, it is suggested that parents' child-rearing strategies, their willingness to sacrifice, and their devotion to cultivating is not determined by the amount of money they possess. In other words, parents who are economically disadvantaged are likely to provide the same or even higher quality parenting as their richer counterparts. On the other hand, parents' non-monetary characteristics, such as education, are closely correlated with positive parenting. Better educated parents are more willing to pay attention to their children's development, communicate with children, and help children with their studies. As the correlation and association between parents' education and parenting practices are relatively small, however, we are hesitant to fully assert that education accounts for most of the differences in Chinese parenting practices. In addition, as we discussed at the beginning of our paper, Confucian culture promotes education-oriented parenting styles regardless of family's socioeconomic background, and children's achievement is seen as honoring families in Chinese culture. We thus believe that the independence of parenting practices and family's economic resources may constitute a representation of this particular aspect of Chinese culture.

Going back to our starting point, there is little evidence that the significant positive relationship between parenting practices and children's achievement is merely a representation of the relationship between family's income and children's achievement. Good parenting is important to children's development, and it does not depend on family's income in China.

## **DISCUSSION AND CONCLUSION**

The intergenerational transmission of social class advantages or disadvantages via children's educational achievement is an important topic in sociology. Borrowing the framework of fundamental cause theory from the field of health inequality, we hold that family's socioeconomic status can be seen as the fundamental cause of disparities in children's development and achievement. In fact, it is well documented that children from families of lower socioeconomic status fare worse in terms of achievement and development than their

counterparts from higher SES groups. To account for this, two different perspectives have been developed. The first perspective emphasizes the determinant role of family's economic resources in children's development, while the other argues that family's non-monetary characteristics and resources are more important. Until now, the relative importance and nature of the two sets of resources' effects on children have not yet been determined, and few studies have examined this topic outside of the U.S. Capitalizing on the most recent available Chinese Family Panel Studies data, our research examined and compared the relevance of family's monetary and non-monetary resources in children's development and achievement. Our study yields different findings from those of previous studies on the U.S and other western societies.

The answer to our first research question – are family's economic resources, such as income, crucial to children's achievement? -- is both yes and no. The answer is yes in that our analysis shows that higher family income is associated with children's better performance in word tests, and the significance of this relationship persists after we control for other variables. However, our results refute the traditional viewpoint held by economic household reproduction theory that family's economic resources are important because they determine family's ability to invest in children's development and education -- the superior educational goods a family can purchase for their children, the better their children's outcome will be. In fact, our study suggests that the amount of family's educational investment is not associated with children's achievement in China. Education investment also fails to account for the observed significant association between income and children's achievement. These findings carry two implications: (1) family's monetary resources do affect children's achievement, though in China the mechanisms of income's effects may be different from what previous theories have claimed; (2) the observed association between income and children's achievement is not causal, but rather an indication of other latent factors' causal effects on children. In either of the above cases, the importance of family's monetary resources needs to be qualified if the mechanisms and the latent factors are a function of non-monetary resources. Unfortunately, we have been unable to conduct an analysis to test these possibilities in our particular study. With more data available in future, we expect that more nuanced studies will explore these questions further.

As expected, our analysis lends support to the importance of non-monetary resources in children's development. These non-monetary resources include both state-level institutional factors as well as family-level characteristics. On the state level, hukou and province still

bespeak children's achievement. On the family level, which is of our main interest in this study, children's achievement is associated with parenting attitudes and practices. Consistent with previous studies, more dedicated and involved parenting relate positively to children's achievement. In addition, the greater responsiveness of children's achievement to quality of parenting than to income further suggests that good parenting is more important than economic affluence per se. Nevertheless, contrary to what has been documented, parenting behaviors are little correlated with family's monetary resources and economic well-being in China. In other words, parents with less income do not necessarily trail behind richer parents in terms of providing dedicated parenting to their children. Instead of parents' income, our findings show that parents' education and cognitive ability partially account for parenting style.

In conclusion, our results suggest that income in China has an independent positive effect on children's achievement; however, income is not important mainly because it provides the family with more resources to invest in their children. Compared to monetary resources, non-monetary resources, particularly parenting practices, are more consequential in the Chinese context. Superior parenting is not based on a family's financial affluence. These findings refute the view emphasizing the importance of family's economic resources and financial investment in children's achievement and, instead, lend support to the traditional sociological emphasis on the family's intangible assets in inter-generation mobility, as parenting practices seems to be more highly correlated with family's non-monetary characteristics. We argue that the differences between the findings of our study and those of previous studies are rooted in, as well as reflect, the particular features of China's society and social context. As we have argued before, the primary mechanisms channeling family's SES advantage to children's achievement should vary across different social contexts. In a society like China, where non-monetary resources have powerful leverage in social life, non-monetary mechanisms should be more salient in channeling family SES's fundamental effects on children's achievement.

Our findings also yield the policy implication that improving a family's non-monetary features will be beneficial to children's development. Good, dedicated parenting is pivotal to children's well-being, and this is not obtained merely by helping the family financially. More effective policy may need to focus on improving parenting involvement and quality at home, as well as providing children with better resources outside the family to help them overcome barriers caused by economic deprivation.



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### Appendix Table A

| F6 The following questions are related to your caring about your child's study and life. Please answer according to the actual situation <u>last year</u> [Show card]. |  |                                 |                          |          |
|--|--|---------------------------------|--------------------------|----------|
| 1. Very often (6-7 times a week)   | 2. Often (2-3 times a week)  | 3. Sometimes (1-2 times a week) | 4. Rarely (Once a month) | 5. Never |
| F601   | How often did you give up watching TV shows you liked to avoid disturbing your child when he/she was studying? |                                 |                          |          |
| F602   | How often have you discussed what happens at school with your child since this semester started/last semester? |                                 |                          |          |
| F603   | How often did you ask the child to finish homework?  |                                 |                          |          |
| F604   | How often did you check the child's homework?  |                                 |                          |          |
| F605   | How often did you restrict the child from watching TV?   |                                 |                          |          |
| F606   | How often did you restrict the types of TV programs the child could watch?                                     |                                 |                          |          |

### Appendix Table B

| Z301 Home environment (such as child's artwork, books, or other study materials) indicates that the parents care about the child's education. |          |                               |             |                       |
|---|----------|-------------------------------|-------------|-----------------------|
| Z302 The parents take the initiative to actively communicate with the child.  |          |                               |             |                       |
| 1. Extremely agree  | 2. Agree | 3. Neither agree nor disagree | 4. Disagree | 5. Extremely disagree |



# PSC Research Reports

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