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IMPACTS OF PARENTAL RESOURCES ON CHILD EDUCATIONAL OUTCOMES:

ASSETS AND MEDIATING PATHWAYS

by

Youngmi Kim

A dissertation presented to the  
Graduate School of Arts and Sciences  
of Washington University in  
partial fulfillment of the  
requirements for the degree  
of Doctor of Philosophy

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## Abstract

Scholars have begun to pay more attention to the role of parental wealth in children's educational attainment. There is still no consensus on how different types of assets contribute to children's educational outcomes. Also, asset effects on high school dropout are not examined to date, and mediating pathways of social-psychological characteristics are more investigated with educational achievement (e.g. measured by test scores, GPA) rather than educational attainment. In response to these academic gaps, this study investigates (1) the effects of parental assets in child's educational attainment from high school dropout to college degree attainment and (2) the mediating roles played by parental involvement in child's education, child's educational expectations, and child's self-esteem in the impacts of parental economic resources on child's educational attainments.

The study sample (N=632) is drawn from the Child and Young Adult data supplement to the National Longitudinal Study of Youth 1979. Dependent variables are four educational attainments examined for 8 years since 9<sup>th</sup>/10<sup>th</sup> grade: ever dropped out of high school, high school completion, college attendance, and college degree attainment. To measure distinct impacts of different types of assets, independent variables include parental assets (net worth, gross financial assets, gross non-financial assets, and homeownership) and liabilities (secured and unsecured debts), along with income. Other parental and child's characteristics are controlled, such as child's cognitive ability, gender, race, school quality, mother's education and marital status, and urban residence. Logistic regression analyses are employed with weighted data, and the mediating effects are tested using Baron and Kenny (1986)'s approach.

Study findings support significant effects of parental assets in child's education. Income is significantly associated with high school completion, college attendance, and college degree

attainment, but not with high school dropout. It is notable that the significance of income generally disappears when specific measures of assets and liabilities are taken into account. Financial assets, non-financial assets, and homeownership are generally significant predictors across all educational attainments examined, while net worth is significantly associated only with high school dropout. Another major finding is on mediating effects. Child's educational expectations partially mediate the effects of net worth and financial assets on the risk of high school dropout correspondingly. In addition, the effect of financial assets on high school completion is partially mediated by child's educational expectations.

Empirical evidence supports the claim that innovative asset-building programs and policies, such as 529 college savings plans and Child Development Accounts, are essentially relevant and important to secure household assets specific to children's education and afford children more opportunities to achieve higher levels of education.

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## **Chapter I. Introduction**

Parents' monetary and non-monetary resources are critical predictors of child development outcomes and economic well-being. Children whose parents have more economic resources are expected to have a better chance of succeeding in childhood and adulthood. Children who receive non-monetary resources from their parents, such as quality parental care, also have a higher probability of having positive development outcomes.

Low educational attainment often translates into less income and unstable employment in the labor market over the life course. According to Current Population Survey data, the median income of those aged 18 through 65 without a high school diploma is about \$24,000 in 2007, compared to \$40,000 for those with a high school diploma or GED (cited in Cataldi et al, 2009)<sup>1</sup>. The earnings disparity is wider between high school graduates and those with a Bachelor's degree and beyond. Although educational attainment levels have increased during the last few decades, disparities in educational attainment are still of concern to researchers and policymakers.

### **Problem and Significance**

#### **Children in Poor Families**

Poverty has countless negative consequences for all family members in poor households, but children are the most disadvantaged. Growing up poor generates both multiple and cumulative effects on children (Sherman, 1994); they "add up" (p.52) and "interact in ways that amplify their force" (p.53). As a result, poverty can increase problems of children.

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<sup>1</sup> American Community Survey data 2007 reports the median earnings for workers aged 25 and over are \$19,405 for no high school graduate, \$26,894 for high school graduate, \$32,874 for some college or associate's degree, \$46,805 for Bachelor's degree, and \$61,287 for Advanced degree (U.S. Census Bureau, 2009). Another source also indicates family income increases with a higher level of educational attainment; for example, the median income of those with bachelor's degree is \$100,000 in 2007, much higher compared to those without college education (College Board, 2008).

American children face a high risk of poverty. According to Sherman (1994), one out of three children is likely to live in poverty for at least one year before they reach 16 years old. In addition, one in five is poor, and one of every two poor children experiences extreme poverty. More recent reports document that poverty rates among children are higher than in any other age group. Over 35% of the poor are children (DeNavas, Proctor, & Mills, 2004; DeNavas, Proctor, & Smith, 2007).

Changes in earnings or other income sources is a major cause of poverty (Blank, 1997). This vulnerability is aggravated by a disparity of labor market participation between poor and non-poor families in types of occupations and employment status. Poor families are likely to hold the most marginal jobs in low-status occupations, that pay low wages (Schiller, 2004). This disparity may be the result of the working poor's relatively weak human capital. Lack of education and work skills prohibit the working poor from participating in the labor market and surviving with enough income to lift their families out of poverty (Berrick, 1995). The lower-educated are likely to be employed in low-paying, dead-end jobs, which do not offer income promotion and benefits. Although they are employed, employment status is likely to be unstable so that job turnovers happen frequently. With job instability, family responsibilities such as child birth or child care also interrupt the accumulation of career skills and experiences.

Single-parent families face poorer economic conditions than two-parent families (Danziger & Gottschalk, 1995). Families headed by single mothers are at greater risk of poverty and constitute a higher proportion of the poor. According to U.S. Census data in 2000 (as cited in Schiller, 2004), the risk of poverty in female-headed families is more than five times as high as in two-parent families, regardless of whether they are Whites or African Americans. Children under 18 years old are the poorest group by age; African American children, Latino children, and

children living with single-mother families seem to be more vulnerable to poverty (Corcoran & Chaudry, 1997). Consequently, single-mother families with children are considered to have the highest probability of being poor and are likely to be exposed to poverty for a longer-term period. Families headed by African American single mothers (Blank, 1997) and mothers who have never married are at highest risk (Schiller, 2004).

### **Asset Distribution**

Poverty rates are, in part, a result of skewed income distribution and unequal wealth distribution. In the late 20th century, the top 1% earned 17% of the total national income and owned 38% of the total national wealth; the top 20% earned about 56% of the total national income and 83% of the total national wealth (Wolff, 2001). In contrast, the bottom 40% earned 10% of national income and owned less than 1% of national wealth. An examination of changes in assets and income possession between 1983 and 1998 shows that those at the top experienced significant economic growth, particularly in assets, whereas the bottom group showed only a very modest increase.

The growing wealth concentration results from the haves and the have-nots owning different kinds of assets. The rich invest most of their savings in real estate, corporate stock, and financial securities, while the middle class holds two-thirds of their wealth and savings in their homes. The wealth of the rich yields capital gains as a result of increasing stock values since the 1980s; in fact, the increase in stock prices relative to house prices explains 50% of the growing wealth concentration (Wolff, 1995). Although inequality can boost the bigger entire pie of economy with greater output in society, it is accused of promoting negative social consequences in the United States without doubt (Schiller, 2004). The result of rising wealth inequality is that

stable, middle-class economic lives are beyond reach of ordinary people, and consequently, the middle class is shrinking in size (Braun, 1997).

Similar to assets distribution, low-income families own few assets and carry significant debt, such as credit card bills, various loans, and unpaid bills. Using Panel Study of Income Dynamics (PSID) from 1984 to 2001, Wagmiller (2003) finds that the percentage of low-income families living below 200% of the federal poverty line and holding debt has not changed very much, but the amount of debt has considerably increased. For instance, the median debt of the poorest families is \$1,700 in 1984 and \$3,000 in 2001. Debt hardship—defined as total family debt greater than or equal to 40% of total family income—also increased in this period, rising from 42 % in 1984 to 67 % in 2001 among the poorest families.

The typical asset owned by poor households is their home, which is hard to liquidate in an economically difficult time. Even though many poor households (41%) own their own home, their homes have a median value that is 70% lower than the value of homes held by the non-poor (Rector, Johnson, & Youssef, 1999). Holding limited assets and assets with lower values means that poor households find it more difficult to weather economically difficult times and to invest in their family's financial, human, and social capital over the life course.

These challenges are multiplied for single parents, particularly never-married mothers. The lower economic status of single parent families tends to be coupled with low asset ownership. The U.S. Census (2001) reports that, compared to married-couple families/households, single parent households had significantly lower median net worth in 1993 and 1995 and there was no improvement between the two time points. In 1995, households headed by single males and single females reported net worth excluding home equity of 25.3 % (\$16,346) and 23% (\$14,949) respectively of the amount reported by married households.

Another study illustrating the asset poverty rates from 1984 to 1999 reports that non-elderly female-headed families with children show the highest asset poverty rates, whether the asset measure included or excluded home equity (Caner & Wolff, 2004). Most asset-poor single-mother families had a net worth of zero in 1984 and a negative level after then; when home equity was excluded, net worth values were even lower. Without significant assets, single parent families have less of a cushion in times of economic risk and are at higher risk of poverty (Schiller, 2004).

### **Impacts on Child's Outcomes**

Children's access to opportunity depends on available resources. Low-income families must cover many expenses with limited resources, and family resources may be allocated to cover basic needs rather than invested in children. Children in families with greater parental resources can access opportunities for positive outcomes that are less likely to be available to children in poorer families. These disparities in access to opportunity may be replicated across generations.

Child outcomes are not solely influenced by economic resources but also by non-economic parental characteristics, such as quality of parental care and parental involvement. Limited parental resources and parental involvement can result in higher risks of cognitive and behavioral problems for younger children. The strain of single parenthood or limited finances may distract parents, prohibiting them from undertaking activities, including educational activities, with their children. In addition, low-income parents often cannot afford child care while working outside the home, and proper substitute caregivers may be unavailable or hard to find (Berrick, 1995). It may result in limited supervision of children before and after school, which may result in children experiencing more difficulty in school and being exposed to more

risks before and after school (Scott, Edin, London, & Kissane as cited in Lens, 2002).

Adolescents are more likely to take responsibility at home when their parent works outside and they need to add family income through work (Sherman, 1994).

### **Study Aims**

This study's main purpose is to examine the mechanisms by which parental resources—financial and non-financial—influence children's educational outcomes. Particular emphasis is placed on the role of parental assets and the limitations of income-focused research and poverty strategies. Potentially significant mediating mechanisms are also investigated. This study's consideration of parental resources and diverse mediating mechanisms will shed greater light on how disadvantaged parental factors affect children's educational attainment as well as how current research and policy should respond.

Specific aims of this study are as follows.

1. Examine what kinds of parental economic resources—particularly parental assets—are associated with child educational attainment.
2. Examine the impact of parental economic resources on educational milestones: ever dropped out of high school, high school completion, college attendance, and college degree attainment.
3. Examine whether parental involvement, child's educational expectations, and child's self-esteem mediate the effects of parental economic resources on child educational attainment.

## **Chapter II. Theoretical Framework**

This chapter will discuss theoretical perspectives on the relationships between parents' resources and children's outcomes, paying particular attention to the impact of parents' economic resources. The chapter also addresses the impact of parents' non-economic resources, which may explain some impacts not explained by economic resources.

### **Economic Resource Perspectives**

Parental factors are widely believed to be strong predictors of children's educational and socio-emotional outcomes. The idea that parents' favorable socioeconomic status leads to children's better outcome and well-being is mostly based on theoretical perspectives on the intergenerational transmission of economic status. The economic resources model emphasizes the role that parents' financial resources play in influencing children's outcomes (Jencks & Mayer 1990; Loury, 1981). Parents transmit financial resources to their children through bequests, such as an inheritance, and human capital investment, such as education and training. Transmission of parental financial resources to children is directly related to children's life chances in that the lack of material resources restricts children's opportunity. Children growing up in poor families may have limited choices and connections, which may prohibit cognitive and social development (Dahrendorf, 1979).

Three major theoretical perspectives on economic resources will be reviewed: the human capital investment model, structural perspectives including the underclass theory and the residential segregation theory, and the assets for development model. The first two perspectives offer explanations of how parents make decisions about investments in their children and how these decisions are fostered or frustrated by structural barriers. The third perspective offers a way

of expanding the traditional income-based economic view to include other economic resources, particularly assets.

### **Human Capital Investment**

Human capital development is key to socioeconomic success in adulthood. This is especially true in the current global economy that requires more sophisticated training and education. Thus, children's well-being is positively associated with the investment of parents' economic resources in developing their human capital. According to Becker (1979, 1991, 1993), parents invest money to improve their children's human capital because parents want to improve the prospective socioeconomic status of their children, specifically their future earnings. Investment in better schooling is believed to bring high returns in terms of children's future earning potential. As children accumulate human capital, they improve their chances of earning a high income in the labor market. Human capital theory also acknowledges the roles of other family endowments (such as family reputation, connections, and genetic characteristics), market luck, and government policy in determining child's future economic status (Becker, 1991, 1993; Haveman & Wolfe, 1994).

According to human capital theory, parents make a rational decision between their current consumption and optimal investment in their child's human capital, given their economic circumstances, the rate of return, and the child's ability. Actual amount of money and assets spent by parents are important and it matters especially when parents wisely spend their economic resources for diverse outcomes. This decision-making is based largely on altruism, with the majority of parents choosing to maximize their utility by sacrificing their money, time, and effort to invest in their children. Parents make these sacrifices even for adult children, and grandparents may also in their descendants.



Not surprisingly, parents with better financial resources tend to be more willing to spend their resources on their children's human capital development in comparison to their less wealthy counterparts. As a result, children raised with more parental resources have a higher likelihood of succeeding economically in adulthood because of their better education and skills. For families with fewer financial resources, economic deprivation constrains children's futures, primarily by limiting access to the development of human capital. Economically-disadvantaged families live with continuous financial hardship, and day-to-day survival often distracts parents' attention from their children and discourages them from making long-term plans for their children. In addition, given the uncertainty of future earnings in an imperfect capital market, families with limited economic resources are more likely than their more wealthy counterparts to suffer from liquidity constraints, especially when financing college education of children (Ellwood & Kane, 2000; Kane 1994, 1996).

In addition to the role of money and physical resources, Becker and economists recognize that time invested by parents plays an important role in human capital development (Becker, 1991, 1993; Leibowitz, 1974). Time essentially supplements the function of money and vice versa; money or time alone does not result in desirable child outcomes. Parents' time investment is an important element of children's positive outcomes.

Parents' time input can be understood in two ways: quantity and quality. The amount of parents' nurturing and monitoring time plays a critical role in children's school performance (Baumrind, 1966; Becker, 1991, 1993; Maccoby & Martin, 1983). Poor parents are less likely to spend significant time with their children because they must concentrate on economic survival. The quality of time spent with children, however, can offset limitations in quantity; if limited time is allocated to quality care, children's development is positively impacted (Leibowitz,

1974). Because of the importance of limitations on available quality time, some parents may choose to have fewer children in order to concentrate their investment (Becker, 1991; Chiswick, 1988).

Limitations in parents' economic resources not only impact human capital development, but may transmit social and economic status to the next generation Schiller (2004) argues that parents' limitations in social and economic resources replicate poverty in the next generation by restricting children's opportunities. Children whose parents have fewer economic resources tend to have inadequate access to good schools, jobs, and income, and, in turn, these disadvantages prohibit the upward status attainment of their children. Rank's (1994) argument elaborates the economic deprivation perspective by highlighting the intergenerational reproduction of social class; "variations in economic and social class result in significant differences in resources and opportunities for children" (p.180) and consequently, the differences have an effect on children's future life chances and outcomes, particularly the development of human capital. It is no wonder that the limited human capital of children from low-income families prohibits them from getting access to resources and opportunities; as a result, they are likely to have a work history of low-wage jobs, semi or unskilled jobs, part-time jobs, and insufficient benefits. This work pattern is often related to early work experiences that discourage them from additional education or training (Rank, 1994). People with low levels of human capital are at higher risk of economic crisis, transmitting poverty to the next generations, and remaining underprivileged in social and political status if they have a low level of human capital.

### **Structural Perspectives: Underclass and Residential Segregation Theories**

As human capital theory acknowledges, optimal investment in children from parents is dependent on a degree of luck in the labor market. Economic changes in earnings or other

income sources are one of the primary forces that cause low-income families to move in and out of poverty (Blank, 1997). If workers enhance their ability through higher education or skill training, they could achieve better job positions and income mobility. Yet, economic success is not such a simple path, and the demand side of the labor market is a significant determinant of low wages. In fact, economic restructuring over the past decades has transformed the labor demand side; the shifts in labor market conditions have resulted in the expansion of low-paying services and high technology jobs, compared to a decline in manufacturing jobs (Braun, 1997; Schiller, 2004).

Although parents try to make rational decisions for their children, structural barriers often discourage child's development outcomes. Wilson points out how restricted opportunities impact children living in the poor inner-city, while Massey and Denton reveal the influence of concentrated affluence and deliberate residential segregation by class and race/ethnicity. They emphasize intentional discrimination and the restricted opportunities across social, economic, and political dimensions.

Wilson's (1987; 1996) underclass theory emphasizes the isolation and restricted opportunities of the urban poor. These limitations are the result of changes in economic structure and residential segregation. As jobs shifted from urban to suburban areas, low-income workers were unable to follow them due to costs and limitations of transportation. Accordingly, residential segregation creates jobless poor inner-city neighborhoods and perpetuates urban poverty of the so-called underclass, mainly clustered by African Americans suffering from the disappearance of work and marginal low-paying jobs (Massey & Denton, 1993; 1996; Wilson, 1996).

The social isolation of these poor, urban neighborhoods not only makes it difficult to connect to the mainstream society and find legitimate role models for children, but also yields different living arrangements and behaviors. Wilson (1996) elucidates the social constraints: the constraints produce ghetto-related behavior and attitudes, yet those “occur with greater frequency in the ghetto” (p.52) rather than unique to ghettos. In view of that, the urban poor are the discriminated against the access to more opportunities, not being short of life quality in nature. Oscar Lewis (1966) labels the way of life, personality, attitudes, and behaviors of the poor as the culture of poverty and describes it as “a subculture of Western society with its own structure and rationale” (p.19), an adaptation and a reaction of the poor to their insignificant status in capitalistic society, and “a way of life handed on from generation to generation along family lines” (p.19). Both views and explanations from Wilson and Lewis hardly deny the odds that the poor possess socially undesirable characteristics and limitations, whether permanently (inherently) or temporarily. However, the focal point to identify the cause of concentrated poverty and related attitude/behaviors is quite different. While the culture of poverty tends to emphasize the individual flaw of behaviors and attitude, Wilson’s underclass theory highlights the roles of economic structure, joblessness, structural discrimination, and policy in understanding how the urban poor have been socially as well as residentially isolated.

Understanding the concentrated persistent poverty and the concept of the underclass, particularly among African-Americans, would be incomplete without recognition of the issue of *residential segregation*. Massey and Denton (1993; 1996) explain why residential segregation in the United States provides a useful tool to understand both class segregation and racial segregation. They suggest that residential segregation has concentrated affluence poverty, as the economic structure has been rapidly changed by computerization, globalization, and

fragmentation of consumer markets. The strong power of the affluent class has geographically excluded the poor from the rich; they refer to the segregation of the urban poor as the missing link (Massey and Denton, 1993).

What is worse, the residential segregation occurs by other ascribed characteristic, race, regardless of socio-economic status. Although African-Americans achieve the upward mobility in their SES, residential segregation still remains. Spatial segregation played an instrumental role in isolating the ghetto neighborhoods concentrated with the African-Americans in metropolitan areas and creating two divided societies between the White and the Black across country. One study (Charles, 2003) further examines if the deliberate residential exclusion from Whites is observed against other race/immigrants groups, such as Hispanics and Asians. Whereas the residential segregation is still found, Hispanics and Asians tend to overcome rapidly their initial low SES status, become better-off soon, and move into better communities. African Americans are much more disadvantaged from this segregation compared to other racial groups.

Well-constructed institutional practices and public policies facilitate the phenomenon of residential segregation (Massey & Denton, 1993). Discrimination practices are fortified by the self-interest of the majority groups and bring about constant poverty in the United States. Thus, residential segregation leads to negative social, economic, and political consequences for the poor—especially for African Americans—such as low-quality education, restricted employment opportunities, and crime, while it affords increased benefits to the wealthy—especially to Whites.

Along with the budget restrictions, structural barriers decrease the likelihood that lower-income families and families of color will reside in a safe and healthy neighborhood while their children grow up. Living in a low-income neighborhood, however, has implications for children's outcomes.. Children living in poor communities have restricted educational

opportunities because the local schools are under-resourced (Jencks & Mayer, 1990). These inferior educational opportunities lead to children's low educational attainment and even social isolation from the mainstream community (Schiller, 2004). In addition, these effects are especially severe for children who live in areas of concentrated poverty where they encounter few successful role models, limited job networks, and high crime rates (Jencks & Mayer 1990; Wilson, 1987).

### **Assets for Development**

Parents' economic resources are generally categorized into income and assets. Income, which stands for "the flow of economic compensation in a given time period" (Schiller, 2004, p.21), has a variety of forms, such as paychecks, interest payments, and dividends while assets are "the stock of assets one owns" (p.21). People have the propensity to accumulate assets in order to prepare for some expected future expenditures over the life course or buffer unexpected economic difficulties. In this regard, asset accumulation is related to consumption, but generally for future consumption rather than an immediate use. Funding child development is a significant motive for parents to accumulate assets. The understanding of the motive and distinct roles of assets is crucial to find out the mechanisms how parental assets are associated with child outcomes.

The traditional neoclassical core theories on asset accumulation are the life cycle theory/permanent income hypothesis (Ando & Modigliani, 1963; Friedman, 1957; Modigliani & Ando, 1957) and the buffer-stock theory (Carroll, 1997; Carroll & Samwick, 1997; Hubbard, Skinner, & Zeldes, 1994). Both theories are based on two assumptions regarding consumption. One is that people consume in order to maximize pleasure. The other is that people make rational decisions to maintain their consumption level. Life cycle theory and buffer stock theory have

much in common, but each highlights slightly different purposes of asset accumulation behavior. While the life cycle hypothesis is a traditional model of saving assuming a perfect market and income certainty, the buffer stock model is a modified version of the life cycle model taking income uncertainty and an imperfect market into account.

The life cycle hypothesis takes as its premise that income varies by age and life stage and dramatically declines after retirement; thus, consumption in retirement is the main motive for saving. Early in the cycle, people have debt and low earnings; thus, savings and asset accumulation are negative or very low. At the mid-point of the life cycle, earnings rise and people save or accumulate assets to prepare for consumption after retirement. After retirement, asset accumulation tapers off, although consumption remains consistent. This pattern of shifting between asset accumulation and consumption is generally referred to as an inverted U-shaped or hump-shaped pattern (Harrod, 1948; 1966).

In contrast to the life cycle hypothesis, the buffer stock model emphasizes other motives for saving in addition to retirement (Hubbard, Skinner, & Zeldes, 1994). This model states that people save to smooth consumption in case of income fluctuation and unexpected costs from emergencies over most of the working years.

Both the life cycle hypothesis and the buffer stock model are useful. One model alone would not completely explain the motives of asset accumulation, and one theory may be more suited to a particular situation or demographic group than the other. Some empirical studies find, for example, that the buffer-stock model is more applicable to people younger than their late forties and that the life cycle model is more applicable for people in their late forties and older (Caroll 1997; Gourinchas & Parker, 2002). The conventional life cycle model fits well for those with relatively high lifetime earnings in that they tend to possess substantial amount of assets

near retirement. On the other hand, buffer stock model better accounts for the behavior of those with relatively low or moderate lifetime earnings so that they have negligible assets (Hubbard et al, 1994).

These two theories of asset accumulation account for parents accumulating assets to finance their children's access to better opportunities. According to the life cycle hypothesis, parents accumulate savings to prepare for predictable future consumption needs over the life course, including retirement and their children's education. Families who plan for future costs related to their children's development and are willing to pay for these costs will provide almost all necessary economic resources for their children's development in very early childhood. These families may also continue to support their children into young adulthood by lending financial resources that children can use to invest in their human capital. In contrast, families with limited assets are less likely to have financial resources to help their children access development opportunities. According to the buffer stock theory, families who can manage unexpected economic emergencies with accumulated assets are less likely to expose their children to economic hardship; consequently, their children are more likely to have better outcomes. Both the buffer stock theory and the life cycle hypothesis commonly imply that children with more parental assets have better odds for successful outcomes.

Along with the buffer stock and life cycle theories, Oliver and Shapiro (1997) provide a richer framework to understand the role of assets by presenting how parents consume for children at three milestones in a child's life course. Parents make their first contribution during childhood to support their "cultural capital"; support for education is the most common as well as the most expensive form this contribution takes. Parents make their second contribution when a child makes a significant transition into adulthood. Parents may help to fund college attendance,



a marriage, or a first home purchase. Although adult children could pay for these expenses themselves, adult children whose parents are willing to pay or extend a low-interest loan for these expenses are more likely to start a career without financial burdens. The asset transfer between generations may also occur for grandchildren. Grandparents often provide support for child-care costs and other forms of in-kind assistance. Parents make their third contribution in the form of an inheritance at their death. Accordingly, bequest from parents comes from the parent's interest in placing their children "to start from a higher round of the social ladder than on which he began" (Marshall, 1949, p.227-28).

These three forms of asset consumption suggest that the long-term effect of transfers of assets is social stratification. Assets are much stronger than income in reinforcing inequality in society. Moreover, families who rely only on earned income are at increased risk of falling into economic instability, whereas asset holders can buffer the unexpected shock and continue to maintain current living standards.

An additional perspective on assets is the developmental view, which argues that wealth increases capacities and has drawn enormous academic support by a body of scholars (Caner & Wolff, 2004; Conley, 1999; Paxton, 2001; Sen, 1999; Sherraden, 1991). Assets encourage the economic and social development of individuals in the family—children as well as parents. Independent of short-term income, assets make it possible for people to reside in better neighborhoods, quit a job for better career options, or access more opportunities. Sherraden has stimulated interest in models of asset development that can expand these asset benefits to the poor via policy intervention. Sherraden (1991) emphasizes that assets are more important than income for children's outcome; thus, theories of asset development need to capture the long-term and dynamic process beyond consumption, and that non-consumption does not necessarily mean

non-utility. Accumulated assets, such as savings and investment, encourage individuals to control and to plan their life for development in the long-term.

He points out nine strengths of accumulated assets. First, assets improve household stability. Assets provide a cushion for unexpected risks that result in loss of income, such as illness, unemployment, or family breakup. This economic effect buffers various psychological and social problems related to economic risk. Second, assets create a future orientation. Low-income populations are less likely to have a future orientation or long-term plans when they are focused on day-to-day survival. Assets provide support for thinking beyond the next day.

Third, assets stimulate development of other assets, particularly human capital. Asset holding is itself an educational process because people tend to try to increase and maintain the value of assets that they own. Four, assets enable focus and specialization. That increase people's capacities. Five, assets provide a foundation for risk taking. If a person has a sense of security, he or she tends to have better ability to deal with psychological and social risks. Six, assets increase personal efficacy. This is closely related to greater prediction about future and a sense of control. Seven, assets increase social influence. This can reach a variety of social capital, such as networks or information. Eight, assets increase political participation because people with assets want to protect their property.

Finally, assets enhance the welfare of offspring. The final strength of assets is the most important point to explain the association of parents' economic resources with children's better outcomes. The purpose of asset accumulation is generally to make bequests to one's children in order to ensure the continuous security of next generations. In this sense, assets are more effective than income in stabilizing the economic security and advancement of future generations. In considering all the potential roles of assets for development, the asset

development perspective highlights asset effects independent of income and understands assets as more than a storehouse for future consumption.

### **Parents' Non-Economic Resources**

Parents' economic status is evidently crucial for children's outcomes but it alone cannot explain variations in those outcomes. Other characteristics of parents deserve further examination. Recent academic work poses questions about how unmeasured characteristics may mediate the ways in which parental economic status affects children's outcomes. This section will discuss several potential mediating mechanisms as facilitators or barriers to children's outcomes. These mechanisms include parental involvement, parental expectations, and family process.

#### **Parental Involvement**

Both psychologists and sociologists have attended to the importance of the physical and temporal environment for child development. Considerations include how parents allocate time and relevant attention to children and how child development outcomes are enhanced or undermined by resources—which may take diverse forms—and attention from parents..

The home environment perspective, which is based on the human capital investment theory posits that children's development outcomes may be accounted for by parents' active investment in the physical environment, parents' provision of supportive materials, and parents' facilitation of various outdoor activities (Totsika & Sylva, 2004). According to this perspective, greater exposure to intellectually stimulating activities/materials and supportive interactions is more likely to result in desirable academic and socio-behavioral outcomes. Thus parents' involvement is a significant home environment factor influencing child's development, and the effort and time parents invest in the learning stimulation of children and in interacting with

children during supportive activities are effective investment strategies for children (Furstenberg & Hughes, 1995).

When considering parental involvement as a factor in research, most scholars employ the Epstein (1992) framework, which defines parental involvement as: child-rearing skills, school-parent communications, involvement in school volunteer opportunities, involvement in home-based learning, involvement in school decision-making, and involvement in school-community collaborations. Effects of parental involvement can be measured in two different levels, at home or at school, and most studies on the effect of parental involvement focus on educational outcomes (Barnard, 2004; see more in Fan & Chen, 2001).

### **Socialization Perspective: Expectations**

The parent socialization model posits that parents significantly influence their children's future opportunities by expressing of their preferences during the child's transition to adulthood. The values parents hold about education and success in society are transmitted to their children. Social psychologists have confirmed that children's behavior, attitude and belief are in accordance with those of their parents, especially for educational and occupational success (Sewell & Hauser, 1975). Cohen (1987) specifies the socialization process and the parents' effect with two terms, defining and modeling. Defining refers to the ways that parents, whether implicitly or explicitly, define what is desirable or not for their children. Modeling refers to the ways parents act as a role model, with children attempting to emulate their parents' positive aspects, such as college education and occupational success. Empirical evidence shows that parents influence their children's timing when starting a family, marriage choice, post-secondary education, and work behaviors (Axinn & Thornton, 1992; Barber, 2000; Cohen, 1987; Sewell & Hauser, 1975).

The parental expectations and parental involvement constructs are quite similar, and parental expectations could be thought of as a type of resource within the parental involvement construct. In fact, the two constructs have been by no means mutually exclusive in research. While both parental involvement and expectations are generally included as separate constructs and measures in studies, they are not always explicitly distinguished from one other. In some research, parent expectations and involvement are defined within the investment framework as “expression of their (parental) assessment of their ability to supervise and invest in the future of their children” (Zhan, 2006, p. 972). Parental involvement is sometimes used a uni-dimensional concept and sometimes includes parental expectations/aspiration as one of its multifaceted dimensions. This inconsistent definition, both conceptually and operationally, between parental involvement and expectations and simplified use of the concept may have contributed to inconsistent empirical findings (Trivette & Anderson, 1995).

### **Family Process Model**

The family process model—also called the family stress model or family socialization model—accounts for the ways parents monitor and respond to the needs of children, particularly in times of economic stress. The main idea is that economic stress produces stressful family circumstances which may have a detrimental influence on cognitive, behavioral, emotional, and physical development of children (Brooks-Gunn, Duncan, & Maritato, 1997; Conger et al., 1994; Edin & Lein, 1997; McLoyd, 1990; McLoyd et al, 1994; Parker et al., 2004).

The family process model posits a series of mediated relationships among low economic status, economic hardship, family stress, and parenting behaviors in examining the effect of parents’ economic resources on child outcomes (Conger et al., 1994). In other words, economic pressure is linked to stress, which is often expressed as marital conflict or depressive symptoms,

so financially distressed parents are more likely to be hostile toward their children. Earlier research focused on subjective assessment of family stress caused by economic stress (Conger et al., 1992, 1993, 1994, 2002; Guttman & Eccles, 1999), but the construct has been broadened to incorporate actual incidence of material hardship experiences (Gershoff, Aber, Raver, & Lennon, 2007).

The family process model explains how poor parents may have more parenting difficulties as they try to satisfy both their children's economic and emotional needs. The conceptual reasoning by Conger and his colleagues (Conger et al., 1992) is that if parents perceive their economic conditions as getting worse, they will be depressed, emotionally unstable, and pessimistic about their future. Bronfenbrenner (1990) suggests that greater economic resources act as enablers to establish favorable parent-child relationships. If families have fewer socioeconomic resources, they may, for example, live in dangerous and crowded housing; parents in these environments are more likely to report chronic stress and poor mental and physical health status. Thus, parents with fewer socioeconomic resources are more likely to respond negatively to their children and adopt inconsistent discipline (Sherman, 1994). According to this reasoning, single parents are more vulnerable in care-giving roles due to lower levels of support.

Most theoretical reasoning about parenting behavior and economic hardship has defined economic status solely in terms of income. More recently, several scholars have postulated the role of parental assets—independent of income—in positive parenting (Sherraden, 1991; Shoebe & Page-Adams, 2001). While income is used for daily consumption, assets help people increase their future orientation and make long-term plans. Parental assets mediated by positive parenting attitudes and behaviors can lead to better children's outcomes.

Just like parental attitudes and behaviors, children's attitudes and behaviors—possibly formed by parental influences—are important factors in determining educational outcomes. Children with a higher level of expectations and aspirations invest more time and effort in academic achievement and thus have a greater likelihood of higher educational attainment (Cook et al., 1996; Elliott, 2009; Mickelson, 1990; Reynolds & Pemberton, 2001). Similarly, children's self-esteem has a positive effect on educational achievement because it fosters greater academic engagement and self-control (Liu, Kaplan, & Risser, 1992; Sterbin & Rakow, 1996).

Therefore, parental attitudes and behaviors facilitate children's positive outcomes. Parents transmit their behaviors/values to children and children are responsive to the values, beliefs, and attitudes of their parents. While parental involvement in child's education allocates parents' relevant resources and time for the purpose of exposing their children to a variety of opportunities, parental expectations and behaviors can influence children's socialization by fostering positive attitudes and behaviors.

### **Chapter III. Empirical Studies**

Empirical evidence supports the notion that children raised in poor families have restricted access to good cognitive skills, quality schools, and so on. The effect of parents' income on children's outcomes has received the most examination from economists, while the mediating roles of parental socialization and family process have been discussed in both psychological and sociological studies. More recently, research has begun to focus on effects of parents' economic resources and parents' assets and material hardship.

Although wealth inequality is a recent subject of poverty research, most studies are about the skewed distribution, depth of the gap in unequal resources, and comparison with income measures, rather than linking differential impacts of resources to children's outcomes. This chapter will first review the empirical studies that examine effects of parents' economic resources before turning to studies that incorporate the mediating mechanisms of parents' investments by time and involvement, parental socialization, and family process.

#### **Economic Resources and Child Outcomes**

##### **Effects of Parents' Income**

In examining the intergenerational consequences of growing up poor, most empirical research has focused on parents' income as an economic resource. Miller and Korenman finding that children who grew up in poor households experienced less growth in terms of height and weight and had lower scores on cognitive development tests (as cited in Corcoran, 1995). Some research findings suggest that outcomes related to parents' income are more significant in early childhood than adolescence; scholars have demonstrated that parents' income status predicts the development of children's abilities (Duncan & Brooks-Gunn, 1997; Guo, 1998). According to a study by Brooks-Gunn and his colleagues (1996), parents' income for the children's first three



years has a strong effect on children's cognitive test scores at five years old, controlling for mother's education, mother's age, and family structure. This stronger income effect during the early school years holds true particularly when poverty is persistent and deep with incomes of less than half of the poverty threshold (Brooks-Gunn, Duncan, & Maritato, 1997; Duncan, Yeung, Brooks-Gunn, & Smith, 1998).

While some researchers have provided possible differences in effect size of parents' income on children of different ages, parents' income has a strong effect on children's academic achievement throughout childhood. Many studies report that parents' low income is associated with children's years of education, high school graduation, and college attendance, even while controlling for family structure, parents' schooling, parents' work, parents' welfare receipt, and neighborhood characteristics (Brooks-Gunn, Guo, & Furstenberg, 1993; Duncan, 1984; Haveman, Wolfe, & Spalding, 1991; Haveman & Wolfe, 1994; Hill & Duncan, 1987). Thus, parents' low income lessens the amount of children's schooling and, in turn, decreases economic status during adulthood. Duncan and colleagues (1998) suggest that adolescents raised by high-income families tend to go to college more.

Children's academic achievement is linked to their economic success during adulthood. Very limited parental income has larger effects on children's adult economic outcomes than parents' education, parents' welfare use, or family structure (Corcoran, Gordon, Laren, & Solon, 1992). Corcoran's study (1995) suggests that children from poor families tend to have less schooling and to earn a lower income in early adulthood than children from non-poor families. Moreover, children whose families are poor for more than 50% of childhood are at greater risk of experiencing poverty in adulthood.

Dropping out of high school is a serious risk in the educational development trajectory of child. Family risk-factors for high school dropout have been most thoroughly examined in relation to family income, parental employment status, and parents' education. Using event history analysis with a sample of low-income 9<sup>th</sup>-grade youth in an urban school district, Randolph, Fraser, and Orthner (2006) find that time-variant family income is associated with high school dropout status, in contrast to insignificant association by time-invariant income. It is notable that African-American youth have a lower risk of high school dropout, when other characteristics are controlled for. From this finding, the authors suggest that future research should explore protective factors, such as, parental educational support and parenting practices, to capture potential interaction of economic disadvantages and race/ethnicity.

Parents' economic resources result in other children's outcomes as well as educational outcomes. Conger and his colleagues (1992) find that low family income is associated with low self-confidence and negative peer relations along with poor school performance for rural, White adolescents. Other empirical studies have reported that parents' economic hardship, particularly low income, is also associated with diverse problems for children, including poor relationships with peer group (Langer, Herson, Greene, Jameson, & Goff, 1970), symptoms of depression (Gibbs, 1986), or conduct disorders (Kellam, Ensminger, & Turner, 1977). However, generally empirical findings suggest that income seems to have a stronger negative effect on long-term cognitive/academic outcomes compared to other types of child development, such as socio-emotional and behavioral outcomes.

### **Effects of Parental Assets**

While income is a dominant measure of parental economic resources in most empirical studies, emerging empirical research finds a relationship between assets and children's outcomes.

Several operational definitions are used to measure assets in these empirical studies, including homeownership, home value, income from assets, and savings. Parents' homeownership is reported to have a positive effect on children's likelihood of dropping out of high school, graduating from high school, and attending college (Aaronson, 2000; Green & White, 1997; Kane, 1994). Using the PSID, Hill and Duncan (1987) find that parents' income from assets is associated with completed education level. Mayer (1997) finds evidence that children's test scores and achievement are explained more by investment and inheritance income than by family income, using PSID and the National Longitudinal Survey of Youth 79 (NLSY79).

Several studies have examined independent effects of wealth, after controlling for income and other SES. Using logistic regression, Conley (2001) provides evidence that parents' net worth has a significant effect on children's postsecondary education. With availability of the longitudinal data in the PSID including net worth and savings, he examines the role of assets measured in 1984 on the children's post-secondary education attainments by 1995 when children were 19 to 30 years old. Conley finds that children's educational attainments, total years of schooling, post-high school years of schooling, and college attendance and completion are significantly associated with parents' net worth, after controlling for income. Income is associated with total years of schooling only in the model that excludes the net worth variable; this association became insignificant when the net worth variable was added back in.

Using a sample from the PSID, Nam and Huang (2009) investigate whether different types of parental assets have a significant association with three child educational attainments: high school graduation, college enrollment, and college graduation. Their study finds that liquid assets are a significant factor; more interestingly, the association of liquid assets and educational attainment is non-linear. Compared to children from households with a zero level of liquid assets,

those from households with negative liquid assets are more likely to complete high school but less likely to graduate college.

Nam and Huang (2008) also examine whether parental assets demonstrate a different pattern of impact on child educational attainments (high school graduation, college enrollment, and college graduation) between the two cohorts of students. They draw two cohorts of 15-17 year-olds from the PSID—one in 1984 and one in 1994—and follow them until they reach 26. They find that for child high school graduation and child college enrollment, net worth has a significant effect for the '84 cohort, while liquid assets are a significant factor for the '94 cohort. Liquid assets, however, are found to be significantly associated with college graduation for the '84 cohort, and net worth is not significant to explain college graduation for either cohort. The study findings suggest that different asset types are at work for different kinds of educational attainments and that the associations change over time.

Based on the studies using parental assets in explaining child educational attainment, cited above, different thresholds of level of assets deserve attention. While a higher level of asset values is expected to have a positive impact on child educational attainment, the studies also imply that negative or zero level of net worth or liquid assets can result in different impacts on child educational attainment.

### **Non-monetary Resources and Potential Mediating Pathways**

From theoretical explanations and empirical evidence, it is clear that parents' limited economic resources have negative influences on children's socio-emotional, behavioral, and cognitive/academic outcomes but other non-monetary parental characteristics are operative as well. This study is interested in whether parental income and assets are linked to children's outcomes via non-monetary parental characteristics. A large body of empirical research

examines if factors in parents' quantity and quality involvement, socialization, and quality family process are directly or indirectly associated with children's outcomes. That is, these studies investigate if non-financial parental characteristics are similarly critical and especially whether the effect of economic resources works through them: parental involvement, expectations<sup>2</sup>, and child's behaviors and attitudes.

### **Income and Potential Mediators**

Gutman and Eccles (1999) test the mediating mechanisms with the SEM analyses on how financial resources influence academic achievement with a sample of families of seventh graders in Maryland. Focusing on academic achievement measured by GPA in core academic courses, the study examined the mediating pathways of parental involvement (measured by the number of times a parent participates in a school activity) and family process (measured by two indicators: parent-adolescent relationship (conflict) and parents' discipline strategies). Thus, overall mediating pathways examined are from family income to financial strain to either parent school involvement or parent-adolescent relationship to the outcome. The empirical evidence reveals that the two sets of mediators play a role in the relation between financial strain, not income, and child academic achievement. It suggests that lower level of financial concern from better access to economic resources can lead children to better academic achievement through parents' school involvement and positive relationship with them.

Guo and Harris (2000) explore the mediating mechanisms as well as direct effect of financial resources on child intellectual development,<sup>3</sup> using NLSY79. Mediating mechanisms

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<sup>2</sup> In most empirical studies, those mediators are not mutually exclusive and interchangeably used. For instance, the construct of parents' investment is often used to indicate parents' input for time, educational materials, and extracurricular activities, which is similar to the construct of parental involvement. Likewise, parenting practices sometimes broadly cover parental involvement.

<sup>3</sup> Children's age was not clearly expressed.

included are parent investment, parental involvement, and family process; physical environment at home; cognitive stimulation; mother's involvement with child; child health; and child care quality. In their research using SEM, the mother's involvement with child is measured by parenting behavior. The first four factors significantly mediate the poverty effect on child educational outcome, and poverty is not directly associated with children's intellectual outcome after controlling for mediators. Consequently, this study weighs the significant role of parental investment and parenting behaviors relative to the parents' economic resource.

In general, mediating pathways are supported differently by types of children's outcomes. The mediating roles of parents' investment/involvement tend to be supported in the association between economic resources and children's cognitive and academic outcomes. The mediating role of parenting behavior is mostly supported when predicting the association of behavioral outcomes with parental economic resources. Some exceptional findings suggest that parental investment/involvement and positive parent functioning like warm and supportive parenting are associated with behavioral outcomes (Linver, Brooks-Gunn, & Kohen, 2002) and that parenting distress is associated with cognitive outcomes (Mistry, Biesanz, & Taylor, 2004). However, there is little research to support these claims to date.

There are some studies that including the mediating mechanisms simultaneously in the same model and use a sample of younger children. The study by Yeung, Linver, & Brooks-Gunn (2002) integrates two mediating models—parental investment/involvement and family processes (parents' distress and parenting practices)—in examining the effect of parents' income on young children's development, using a nationally representative sample of 3-5 year-old children from the PSID. Child development outcomes are measured by two cognitive achievement outcomes (W-J letter word scores and W-J applied problem scores) and one behavior problem outcome

(BPI). Parents' economic status is measured by two indicators, the average of total family income over multiple years and an income instability variable that captures the proportion of years since the child was 1 year old in which the family experienced a 30% or more decrease in total family income. The mediating constructs of parental investment is mostly measured by the items from the HOME scale: physical home environment, cognitively stimulating materials, and activities with the child. Family process mediators include constructs of economic strain, maternal depressive symptoms, warm parenting practices from the HOME scale, and a spanking index. The study finds that parents' investment in a cognitively stimulating environment mediates the association of income with cognitive outcomes, while maternal emotional distress and parenting behavior mediate the association of income with behavioral outcomes. Income has a direct effect on W-J letter word scores, and income stability has a direct impact on W-J applied problem score and externalizing behavior problems. The findings also demonstrate that the mediators are closely related with one another and should be accounted for together.

Linver and his colleagues (2002) apply three sets of parental mediators for young White and African American children in examining the associations between income and child cognitive and behavior development, with data from a multi-site longitudinal study of the Infant Health and Development Program. The sample is relatively low-birth-weight premature children followed from birth through age 5. Cognitive ability and behavior competence are examined at the age of 3 and 5, using the average of two standardized test scores: the Stanford-Binet Intelligence Scale Form L-M and the Wechsler Preschool at the age of 3 and the Primary Scale of Intelligence at age of 5: the Child Behavior Checklist at two time points of 3 and 5 year-old. The latent construct of economic well-being is measured by five variables, family income and income-to-needs ratio at age 1 and age 2 and persistent poverty status at age 5. Potential

mediators include cognitively stimulating activities measured by the HOME scale (investment/involvement) and parents' emotional distress/parenting behavior (family process: stress to parenting behavior). Parental investment/involvement significantly mediates the relationship of income to both outcomes; parenting behavior mediates the effect of income on behavior problems. Unlike other studies, parental investment and involvement in providing a stimulating cognitive environment significantly mediates the income effect on behavior outcomes and on cognitive development. This finding is explained by parents' depressed mood and negative parenting behavior not being beneficial for children's cognitive outcomes.

While a large body of literature examines direct and indirect effects of parental involvement on young children's cognitive development and academic achievement, some studies pay more attention to a direct effect of parental involvement on high school dropout without focusing on mediating effect. Rumberger (1990) finds lower levels of parental involvement in a child's schooling increases the risk of inappropriate social attitudes and behaviors, low academic achievement, and negative influence by peers, which in turn lead to high school dropout. Supporting a positive effect of parental involvement, Barnard's study (2004) argues that parental involvement in child's early schooling has a long-term effect for success of later educational attainment. She measures the level of parental involvement in school and at home when the child is in elementary school and educational outcomes (high school dropout and high school completion) at the age of 20. Results indicate that parental involvement in school is more likely to decrease the risk of high school dropout and increase the probability of graduating from high school on time.

Another study by Englund and her colleagues (Englund, Byron, and Collins, 2008) emphasizes that parent-child interaction and teacher-child relationship can make a difference in



the risk of high school dropout for children from low-income families. Following low-income youths from birth to age of 23, the study reports that, without parental involvement in child's schooling and supportive relationship between child and parents, academically and behaviorally competent students face a higher risk of dropping out of high school. The findings suggest that parental involvement and relationship with a child can divert a child's educational development trajectory from negative impacts of low socioeconomic status. Hence, parental involvement is assumed to encourage student's motivation and exert significant influence on educational attainment.

### **Assets and Potential Mediators**

There has been a proliferation of research work examining family income and child development outcomes with parent-related mediators and family process mediators, but relatively little work has been done to date on parents' assets.

Using a sample of female-headed households of the National Survey of Families and Household data, Zhan and Sherraden (2003) emphasize the effect of assets, rather than income, on educational outcomes. Assets are measured by homeownership and savings (with a cut-off amount of \$3000) and educational outcomes are measured by the mother's report of child's academic performance between 12-18 years of age and high school graduation status as measured in a five-year follow-up survey. The study not only examines the direct effects of assets on child outcomes but also posits the mediating role of parents' educational expectations as the causal pathway linking parents' asset to children's educational outcomes. Parents' educational expectation is measured by how much education a mother thinks her child will get. Savings have a positive effect on children's high school graduation; home ownership has a significant relationship with child's academic performance; and both asset measures are

positively associated with parent expectations. Parent expectations for child's post-secondary education partially mediates the relationships of savings with high school graduation and home ownership with academic performance. More notably, the income effect becomes insignificant when assets are added to the model. The findings corroborate the distinctive effect of assets on child outcomes (Conley, 2001; Sherraden, 1991) and positive attitude and behavior of parents (Yadama and Sherraden, 1996). The study also points out the need for a reliable measure of assets. It admits that different thresholds in asset accumulation and consideration of homeownership quality can lead to different empirical findings.

Zhan (2006) expands her research by adding the mediating role of parental involvement into the OLS model (2003). The theoretical model is similar to the previous one, but the measures, sample, and the data are slightly different. Child educational outcomes are measured with Peabody Individual Achievement Test (PIAT) math scores and reading scores at the age of 7-14 in 2000, 2 years later than parents' characteristics are measured. Parental involvement is measured by parent involvement in school activities (the number of times a parent takes part in school activities) and supervision (assistance) of children's homework at home. Parents' assets are measured by net worth—total values of assets less total value of debt. Parents' expectation is measured by how many years a mother thinks their child will go in school after high school graduation. The findings support that assets are positively associated with children's educational outcomes, parents' expectations, and involvement in school activities (but not supervision of homework), controlling for income. Mediating pathways are in part supported. Parental expectations partially mediate the asset effect on child outcomes; the significant coefficients of assets decrease after taking parents' expectations into account. Parent supervision of homework is related to children's reading scores only, but parents' involvement is not related to either

reading or math scores. Thus this model does not support the mediating role of parental involvement.

However, Zhan explains that her findings regarding mediating pathways are not very surprising. Some empirical findings have pointed out that the simplistic measures of parental involvement tend to result in inconsistent evidence of parents' involvement (Fan & Chen, 2001). Besides, measures of parental involvement are gathered from children's reports, which may result in incomplete information and measurement errors. Although some argue that a student's rating is the most appropriate report when examining the parents' influence on children's outcomes (Keith, 1991), others argue that children's perception and children's ratings are inconsistent with parents' and teachers' reports and that children's ratings tend to report in a more negative way (Reynolds, 1992). Also, Zhan notes that the different results from two sets of mediators—expectations and involvement—may be the result of measuring expectation by mother's report and involvement by child's report. Therefore, her study raises the important issue of potential disparity in findings, which can be caused by slightly different measures based on the same construct.

Another recent study by Zhan (2009) examines whether household assets and liabilities are associated with children's college degree attainment and also investigates if expectations of both parents and children mediate this relationship. Using the NLSY79 data, Zhan selects children who are 11-14 years old in 1994 and tracks their college degree completion by 2006, around the time when the sample children reaches at least 23 years old. Results indicate that college degree attainment is positively associated with financial assets and non-financial assets and negatively associated with unsecured debt (debts on financial assets). Child's educational expectations are significantly associated with college degree attainment, but the significance

disappears after parental educational expectations are included in the model. Expectations of both children and parents have a positive relationship with financial assets, and no significant mediating effects are found.

Using a sample of school-aged children aged 5 to 14 from NLSY79 data, Orr (2003) studies whether parental assets affects children's academic achievement (measured by math test scores) and if this association is mediated by cultural capital (measured by extra-curricular activities or outings), educational resources provided at home, social capital, child self-esteem, and school quality. She finds that family net worth has a positive effect on math scores, and cultural capital opportunities mediates the asset effect on child academic achievement. Although the study does not find child's self-esteem to be a mediating effect, this variable is found to have a positive effect on educational achievement.

Using a sample of young children aged 12 or younger in the Child Development Supplement data (CDS) of the PSID, Williams Shanks (2007) investigates whether parents' assets are significantly related to children's development, controlling for income,. While Zhan (2003; 2006; 2009) focuses on educational outcome, she examines diverse children's development outcomes and broader perspectives in the mediating pathways. The child development outcomes studied are academic achievement (five variables for reading and math), physical health (five variables), and socio-emotional behavior problems (behavior problem index, positive behavior scale, and three school-based variables). Parents' investment is represented by parents' rating of their neighborhood's suitability for raising children, cognitive stimulating environment and emotional support at home measured by the adapted HOME scale, and the frequency parents read with their children. Based on the perspectives of parents' socialization and family process, parental educational expectations, parental depression, and warmth

(parenting behavior) are also examined. Parents' economic strain, food security, and telephone use are employed as a measure of material hardship. Diverse asset measures include continuous measure and dummy variable of net worth including and excluding major home equity, several types of assets, homeownership, and change in net worth 1994-99. To control for income effects, the average of four years of income is used.

The study's empirical findings are expected. Assets are associated with most development outcomes, and thus it is not surprising that children living in households who are poor, do not have their own home, or possess zero or negative net worth tend to have low scores for most development outcomes. The wealth effect seems to gain strength as children age. However, the wealth effect disappears after including mediating variables in the model.

Using the first wave of CDS in the PSID, Yeung and Conley (2008) study if assets have a significant effect on cognitive abilities in reading and math of school-aged and preschool children (ages 3-12). The study also incorporates several mediating pathways: parenting practices with physical home environment, cognitively stimulating materials, parental warmth, and parents' activities, private school attendance, and child's self-esteem. The findings suggest that asset effects exist but vary by child age and child cognitive outcome. Family assets, particularly liquid assets, have stronger effect on cognitive test scores for school-aged children than for preschoolers; and unsecured debts are negatively associated with reading and math scores for preschoolers and math scores for school-aged children. Family assets are also associated with parent's investment in the physical home environment and parenting practices. However, the study does not suggest strong evidence of significant mediating mechanisms, although the hypothesized mediators are found to be associated with some of the asset measures.

Child's self-esteem is significantly associated with academic achievement for school-aged children (6-12), for example, but the mediating effect is not supported.

Using the same data, Elliott (2009) examines whether child's educational expectations and aspirations mediate the effect of a college savings account on academic achievement in math. Other studies have found that while a child builds educational aspirations and expectations through socialization, educational expectations compared to aspirations are more likely to be affected and vary by family socio-economic conditions and child's academic ability (Cook et al., 1996; Mickelson, 1990; Reynolds & Pemberton, 2001; Elliott, 2009). Based on this point, his study distinguishes aspirations from expectations. Elliott's evidence tells that there is disparity between expectations and aspirations: a larger number of children desire to attend college but a much smaller portion of children expect that they actually can do so. Children with savings accounts specifically for the purpose of college education are more likely to show a higher achievement score in math; more importantly, children's college educational expectations partially mediate the effect of a college savings account on mathematical academic achievement.

In sum, empirical studies that include economic resources and potential mediating pathways generally provide evidence that parental income and assets have a positive effect on child outcomes and potential mediators (e.g. parental non-monetary characteristics or child's characteristics). Mixed findings are reported, however, on mediating effects. Evidence supports the theory that educational expectations mediate the relationship between assets and child's educational outcomes (in most cases, academic achievement measured by test scores), but variations in mediating mechanisms exist by type of potential mediator, child's age, and form of educational outcomes measured.

## **Chapter IV. Study Methods**

This section describes the proposed conceptual model and study methodology used to explore the main research questions. Specific research hypotheses and empirical models are presented with measurement of variables and analytical strategies.

### **Proposed Conceptual Model**

Effects of parental economic resources on children's outcomes have been studied in many research fields theoretically and empirically. While most empirical findings measure the effect of parents' income, there is only limited scholarship identifying possible mediating pathways in children's educational attainment. In addition, more research is needed on the relationship between parental assets and children's outcomes, including identifying mediating pathways in educational attainment. To address these limitations of current research, this study proposes a conceptual model incorporating parental assets and mediating pathways into the income-child educational outcome model.

First of all, this study aims to examine effects of assets on child's educational attainment, along with income. We need to broaden our understanding of distinctive roles of parent's assets, rather than income, in explaining children's attainment at all educational milestones. The research agenda can articulate how income and assets play different roles in children's outcomes. This approach addresses the limitations of income measurement to reflect parents' economic status by introducing assets as an alternative measure of parents' economic resources that complements income measures. This approach is also in line with more recent research that, due to rising costs of higher education and other extra demands in educating child, has expanded the traditional educational attainment model by paying particular attention to the role of wealth (Conley, 2001; Cha, Weagley, & Reynolds, 2005; Morgan & Kim, 2006; Nam & Huang, 2009;

Zhan & Sherraden, 2003; Zhan & Sherraden, 2009). Thus, this study attempts to stimulate research on the intergenerational effects of parental economic status by taking parental assets into account.

Second, this study investigates different effects of various assets and liabilities. Diverse forms of assets and liabilities can lead to different impacts on each educational milestone attained by children, but there is little consensus on how different types of assets make a contribution to parental investment in children's educational outcomes. In this study, asset measures include net worth, financial assets, non-financial assets, homeownership, and liabilities measures include unsecured and secured debts.

Third, in addition to considering various types of parental assets and liabilities, this study raises a question of whether the impact of parental economic resources can vary across different types of educational attainment. Post-secondary education, for example, requires more financial investment compared to high school education. Also, factors influencing one type of educational attainment—high school graduation, for example—may differ from those influencing other milestones, such as high school dropout.

When considering various types of parental assets and liabilities on various educational milestones, it is important to measure outcomes that are appropriate for each stage of childhood. In general, educational outcomes can be categorized into two domains, educational achievement and educational attainment. Educational achievement is measured by standardized test scores or school readiness while education attainment is measured by years of schooling or achievement of educational milestones like college graduation that predict future economic success in occupational status and earning (Haveman & Wolff, 1994; McLanahan & Sandefur, 1994). Brooks-Gunn and her colleagues (1997) find that appropriate development outcomes for children



younger than five are proper health care and intelligence development, whereas appropriate outcomes for children over the age of five are school achievement and social-behavior problems. Depending on the ages of children in studies, appropriate standardized test scores are often used to measure academic outcomes for school-aged children, while educational attainment measures are used for young adults.

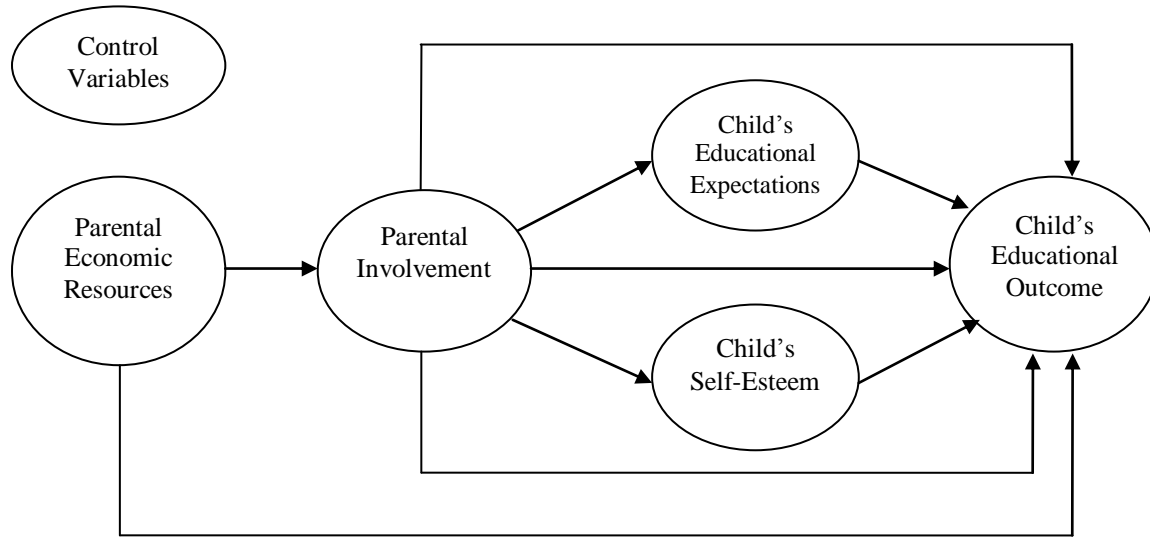
This study focuses on educational attainment during young adulthood. Four educational events are selected as main educational outcomes of interest: ever dropped out of high school, high school completion, college attendance, and college degree attainment. The same sample is followed for several years to see if parental economic resources have different effects on the educational milestones.

Fourth, this study aims to examine potential mediating mechanisms, along with parental economic resources, to account for children's educational outcomes. Mediating effects of social-psychological characteristics of parents and child have been still uncovered. Also, previous studies have investigated the mediating pathways for limited ranges of educational outcomes, such as academic achievement measured by test scores or high school graduation. The mediating pathways need to be tested to find out whether they are consistently supported across different educational outcomes from high school dropout to college degree attainment.

The conceptual model constructed for this study is shown in Figure 1. The link from parental economic resources to children's educational outcomes indicates a direct impact of parental economic status, while the links from parental economic resources to three mediating mechanisms to child educational outcomes indicate indirect impacts. The former link tests economic resource perspectives and the latter examines mediation effects of non-financial parental inputs and child characteristics in children's educational attainment. Building on both

perspectives together, this proposed model will contribute to wider knowledge on children's educational attainment.

Figure 1. Proposed Conceptual Model



### Research Questions

The following five research questions are proposed. Each of the research questions is raised for different types of children's educational outcomes: ever dropped out of high school, high school completion, college attendance, and college degree attainment.

**Research question 1.** What types of parental economic resources are associated with child's educational outcomes, controlling for other factors?

Hypothesis 1-1. Parental income is positively associated with children's educational outcomes.

Hypothesis 1-2. Parental net worth is positively associated with children's educational outcomes.

Hypothesis 1-3. Parental financial assets are positively associated with children's educational outcomes.

Hypothesis 1-4. Parental home ownership is positively associated with children's educational outcomes.

Hypothesis 1-5. Parental non-financial assets is positively associated with children's educational outcomes.

Hypothesis 1-6. Parental unsecured debts is negatively associated with children's educational outcomes.

Hypothesis 1-7. Parental secured debts is negatively associated with children's educational outcomes.

**Research question 2.** Does parental involvement in child's schooling mediate the effect of parental economic resources on child's educational outcomes, controlling for other factors?

Hypothesis 2-1. Parental involvement in child's schooling mediates the association of parental income with child's educational outcomes.

Hypothesis 2-2. Parental involvement in child's schooling mediates the association of parental net worth with child's educational outcomes.

Hypothesis 2-3. Parental involvement in child's schooling mediates the association of parental financial assets with child's educational outcomes.

Hypothesis 2-4. Parental involvement in child's schooling mediates the association of parental home ownership with child's educational outcomes.

Hypothesis 2-5. Parental involvement in child's schooling mediates the association of parental non-financial assets with child's educational outcomes.

Hypothesis 3-6. Parental involvement in child's schooling mediates the association of parental unsecured debts with child's educational outcomes.

Hypothesis 2-7. Parental involvement in child's schooling mediates the association of parental secured debts with child's educational outcomes.

**Research question 3.** Do child's educational expectations mediate the effect of parental economic resources on child's educational outcomes, controlling for other factors?

Hypothesis 3-1. Child's educational expectations mediate the association of parental income with child's educational outcomes.

Hypothesis 3-2. Child's educational expectations mediate the association of parental net worth with child's educational outcomes.

Hypothesis 3-3. Child's educational expectations mediate the association of parental financial assets with child's educational outcomes.

Hypothesis 3-4. Child's educational expectations mediate the association of parental home ownership with child's educational outcomes.

Hypothesis 3-5. Child's educational expectations mediate the association of parental non-financial assets with child's educational outcomes.

Hypothesis 3-6. Child's educational expectations mediate the association of parental unsecured debts with child's educational outcomes.

Hypothesis 3-7. Child's educational expectations mediate the association of parental secured debts with child's educational outcomes.

**Research question 4.** Does child's self-esteem mediate the effect of parental economic resources on child's educational outcomes, controlling for other factors?

Hypothesis 4-1. Child's self-esteem mediates the association of parental income with child's educational outcomes.

Hypothesis 4-2. Child's self-esteem mediates the association of parental net worth with child's educational outcomes.

Hypothesis 4-3. Child's self-esteem mediates the association of parental financial assets with child's educational outcomes.

Hypothesis 4-4. Child's self-esteem mediates the association of parental home ownership with child's educational outcomes.

Hypothesis 4-5. Child's self-esteem mediates the association of parental non-financial assets with child's educational outcomes.

Hypothesis 4-6. Child's self-esteem mediates the association of parental unsecured debts with child's educational outcomes.

Hypothesis 4-7. Child's self-esteem mediates the association of parental secured debts with child's educational outcomes.

### **Data**

Data used come from two sources in the National Longitudinal Survey of Youth 79: (1) NLSY79 main and (2) NLSY79 Child/Young Adults (NLSY79 Child/YA). The NLSY79 main data were first gathered from interviews with 12,686 men and women aged 14-21 in 1979 and were collected annually from 1979 through 1994 and biannually thereafter. Supplementary data on children was collected biannually beginning in 1986. This supplement collects additional information on child educational, social/behavior, and psychological assessments from the

NLSY79 female respondents (mothers of children) and their children. In 1994, the supplement was expanded to include wider range of assessments of “young adult”<sup>4</sup> children aged 15 years old or older (See Center for Human Resource Research (2006), for a fuller description of the data). Thus, NLSY79 Child/YA data include variables on “younger children” aged 14 or younger and “young adults” aged 15 or older.

For this study, variables related to characteristics of mother and family are drawn from the NLSY79 main data and the other variables from the NLSY Child/YA data. The NLSY79 data is chosen because (1) the multi-year longitudinal data enable the examination of educational trajectory and details in school-related performance from younger childhood to young adulthood; (2) the data provide information on diverse measures of parental wealth; (3) rich assessments on child development reported by both mother and child are available.

### **Sample**

This study intends to focus on educational attainment from a beginning in high school. Thus, the sample consists of students who had just entered high school and follows them across time to see whether each educational outcome of interest is attained. The study sample, drawn from the NLSY79 and NLSY79 Child/YA data, consists of children who were enrolled as 9<sup>th</sup> and 10<sup>th</sup> graders in 1996 or 1998. Although students in 10<sup>th</sup> grade are generally not considered an entering high school class, they are included in the two cohorts because they are assumed to have been enrolled as 9<sup>th</sup> graders in 1995 or 1997 when NLSY79 data was not collected due to the biennial cycle of data collection. The sample is selected from two different years, not to compare cohorts, but for the purpose of drawing more sample cases. Although data is also available from

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<sup>4</sup> While children of the NLSY79 female respondents are termed “children of the NLSY79”, children aged younger than 15 are referred to as “younger children” and those at 15 or older are “young adults”.

1994 and 2000, this data was not included because the survey questions used in those years were not identical to those used in 1996 and 1998. . The 1994 survey did not yet include a series of questions concerning parental involvement in child's education that were used beginning in 1996. The 2000 survey did not ask many of the questions in the child supplement because of budget limitations. The information collected in the NLSY79 Child/YA data in 1996 and 1998 provides multi-year education information from high school to post-secondary education that can be used to answer the research questions posed in this study.

This study excludes some cases using the following criteria. First, children who did not live with their mother when they were a 9<sup>th</sup>/10<sup>th</sup> grader in 1996 or 1998 are not included because one important focus of this study is interactions between mother and child. Second, one sample case at age of 23 is excluded because the age is considered too old relative to the other sample cases of this study and it is out of the general age range of high school students. Third, children who did not participate in the survey in 2004 for children sampled in 1996 or 2006 for those sampled in 1998 are excluded<sup>5</sup>. This exclusion is made because this study is designed to track educational outcomes of interest for the same eight-year period<sup>6</sup>. Also, those who had a missing value in independent and mediating variables used are excluded to make the study findings comparable across different empirical models.<sup>7</sup>

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<sup>5</sup> Empirical analyses of this study also employ weights of the last year of observations, 2004 or 2006 (depending on when each child was sampled). Accordingly, when cases do not provide data in that year, they are automatically excluded from the weighted analyses.

<sup>6</sup> The dependent variables, educational outcomes, are measured in 8 years.

<sup>7</sup> Children with any missing (those excluded from the final sample) and those without any missing are compared in terms of demographic characteristics of child and mother, and there is no statistical difference found. Although several bivariate tests indicate that those who are dropped from the study analyses due to missing information are similar to the study sample, missing data is not imputed because data imputation generally requires a completely random pattern of missing (Little & Rubin, 1987) but it cannot be completely guaranteed.

In sum, this study draws its full sample, based on two high school class grades in 1996 and 1998. The final sample includes 632 children<sup>8</sup>, 305 from children sampled in 1996 data and 327 from those sampled in 1998 data. The same number of cases, 632, is used for all the analyses reported in the following section.

## Measurement of Variables<sup>9</sup>

### Dependent Variables

Educational outcomes of interest are examined by whether a child had achieved a particular educational attainment during the eight years since 9<sup>th</sup>/10<sup>th</sup> grade: (1) between 1996 and 2004 for children who are selected from the 1996 data and (2) between 1998 and 2006 for children who are selected from the 1998 data. This study has four educational outcomes as dependent variables: high school dropout, high school completion, college attendance, and college degree attainment.

High school dropout is defined by whether a child has ever dropped out of high school. The dropout status is determined using child's report from series of survey questions. In the NLSY Child/YA data, a child is asked whether he/she has ever dropped out of regular school for at least one month (and returned) or whether he/she stopped attending school if currently not in school, the number of times he/she has dropped out, month and year of the most recent dropout, and the reason(s) for leaving. Because this study is interested in dropouts during high school, not in earlier years of school, dropout status is determined by using the child's report on experience(s) which happened after the interview was conducted in 9<sup>th</sup>/10<sup>th</sup> grade (in either 1996 or 1998, depending on when they are sampled). For instance, although there is a record of

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<sup>8</sup> About 12% of the children are from the same mother: 555 mothers for 632 children.

<sup>9</sup> Variables used is summarized and described in Appendix A.



dropout experience out of regular school before the year of 1996 for children who were in the 9<sup>th</sup>/10<sup>th</sup> grade in 1996, it is not counted as high school dropout. Accordingly, any school dropout before high school (either 1996 or 1998, depending on when a child is sampled as 9<sup>th</sup>/10<sup>th</sup> grader) is not counted. Besides, the high school dropout status used in this study does not necessarily mean a permanent leave from high school. It indicates whether a respondent has ever dropped out of high school since either 1996 or 1998, so those who left school may return to the regular school system later.

High school completion is measured by whether a respondent has received a high school diploma or GED (Graduate Equivalency Diploma) within eight years since 9<sup>th</sup>/10<sup>th</sup> grade. A child is counted as completing high school education when he/she indicates that either a high school diploma has been obtained or a GED/high school equivalency test has been passed.

Likewise, college attendance status is measured by whether a child has ever enrolled in a 2-year or 4-year college, and college degree attainment is measured by this question: “have you obtained any kind of academic degree, for example, an Associate's degree or any kind of college degree?” The two educational outcomes related to post-secondary college education are also observed from an interview with child in either 2004 (for the 1996 sample) or 2006 (for the 1998 sample).

### **Independent Variables**

Four types of parental assets (net worth, gross financial assets, gross non-financial assets, and homeownership), two types of liabilities (unsecured and secured debts), and family income are employed as independent variables to measure parental economic resources. Because distributions of the financial resources are quite skewed, all of the continuous measures are log-transformed in the regression analyses.

Along with raw data on assets and liabilities, NLSY79 main data provide the corresponding variables with the top 2% truncated and missing values imputed. The imputed variables are used for the measures of parental assets and liabilities for this study. Each value of continuous economic measure is inflation-adjusted to 1998 dollars using the Consumer Price Index<sup>10</sup>. Assets and liabilities are obtained from the data collected in either 1996 or 1998 respectively when child is a 9<sup>th</sup> or 10<sup>th</sup> grader.

The total family *net worth* indicates asset values in dollars possessed by child's mother and her spouse (if available): sum of values of home, savings, stocks/bonds, (estate or investment) trusts, business assets, car, IRAs, tax-deferred plans (e.g. 401Ks), CDs, and any other possessions net of debts. The variable net worth is constructed by NLSY79 after combining all asset values and subtracting debts, top-coding the highest 2%, and imputing missing values (Center for Human Resource Research, 2008). In addition to net worth, three specific asset measures are included: gross financial assets, gross non-financial assets, home ownership. The variable *gross financial assets* is created by summing (1) amounts in bank accounts, (2) money assets like CDs or any personal loans, and (3) IRAs/Keoughs, and (4) tax-deferred plans. The variable of *gross non-financial assets* is also calculated to measure total values of both residential (home) and non-residential properties (businesses, farms, or vehicles). *Home ownership* is measured as a dichotomous measure (1=home owner, 0=otherwise).

Together with assets, two types of liability are measured: unsecured debts and secured debts. While *unsecured debts* indicates amounts owed over \$500 to any stores, doctors, hospitals, banks, or anyone else (personal liabilities), *secured debts* measures the total amount of debt owed on non-financial assets (residential and non-residential properties).

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<sup>10</sup> Retrieved from <ftp://ftp.bls.gov/pub/special.requests/cpi/cpi.ai.txt>.

While most empirical studies generally measure assets after subtracting debts, it should be noted that financial and non-financial assets used in this study are not net of debts. NLSY79 data ask a respondent to report amounts of unsecured debts only if they are over \$500. Because of the way the data was collected, this study includes total amounts of both financial assets and that of unsecured debts, rather than net financial assets. Likewise, the two variables of non-financial assets and secured debts are included to be consistent with the manner in which financial assets are used in the study, although net non-financial assets can be calculated by subtracting secured debts from total amounts of non-financial assets.

*Family income* is included as another economic predictor. It is measured in dollars based on all income sources of family members received in the past calendar year. Economists consider the average of multiple years of permanent income to be a more accurate proxy of permanent income than a one-year income measure given short-term fluctuations in income (Mayer, 1997). Therefore, this study computes the mean value of family income over a period of three to five years. Three years of family income collected in 1992, 1994, and 1996 are averaged for children in 9<sup>th</sup>/10<sup>th</sup> grade in 1996; family income collected in 1994, 1996, and 1998 is averaged for children in 9<sup>th</sup>/10<sup>th</sup> grade in 1998<sup>11</sup>. Before computing the mean level of family income, each yearly family income is converted to 1998 dollars by using the CPI.

### **Hypothesized Mediating Variables**

Three variables are included to examine a possible mediating role in the effects of parental economic resources on child's educational outcomes: parental involvement in child's education, child's educational expectations, and child's self-esteem.

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<sup>11</sup> The NLSY79 data has been collected biannually since 1994. Although family income data collected in 1993 are available for those sampled in 1996, income data from the three-year of 1992, 1994, and 1996 are employed to be consistent with income measure for the sample drawn in 1998.

Parental involvement in child education is measured by 15 items on a 4-point Likert scale (0=Never, 1=Rarely, 2=Sometimes, 3=Often). The items regard at-home involvement in child's academic work, home supervision by rules, and communicating about child's school activities. All items are summed up to create an indicator of parental involvement, with higher scores presenting a higher level of parental involvement in a child's education. The standardized Cronbach's alpha coefficient for the created indicator is 0.80 for this study sample.

Child's educational expectations are measured by a question asking "what is the highest grade or year you think you will actually complete?" The survey design allows children to report a grade or year ranging from 1<sup>st</sup> grade (=1) to more than 5 years of college (=18). This variable, which measures "the highest grade respondent *thinks* he/she will complete" is different from the child's educational aspirations, which reflect "the highest grade respondent would *like* to complete." Educational aspirations are not measured in this study.

Child's global level of self-esteem is measured by the Rosenberg self-esteem scale (Rosenberg, 1965). This scale consists of ten items on a four-point scale from strongly disagree (=1) to strongly agree (=4). Five negative statements in the scale are reverse-coded to make higher scores represent a higher level of self-esteem, and all ten individual items are summed to create an overall level of child's self-esteem. The standardized Cronbach's alpha coefficient for the composite indicator is 0.89 in this study sample.

### **Control variables**

A number of other characteristics of mother and child are also included as control variables: demographic and socioeconomic characteristics of child, mother, and family; child's cognitive ability; and child's high school quality. Most of the control variables are measured

when the child is in the 9<sup>th</sup>/10<sup>th</sup> grade, but child's cognitive abilities are measured in earlier childhood before the child reaches the age of 15.

Child's gender is a dichotomous variable where female child is coded to 1 and males to 0, and child's age is measured by years. Child's race is self-identified by the study child. In regression analyses, three racial/ethnic groups (non-African-American/non-Hispanic, African-American, and Hispanic) are dummy-coded, and those who are neither African-American nor Hispanic are used as a reference group. Child's birth order and child's family size are included as a continuous measure to account for the birth order in siblings and the number of family members. Also, child's residence is measured by whether the child lived in an urban (=1) or rural area (=0) when (s)he was in 9<sup>th</sup>/10<sup>th</sup> grade.

Child cognitive ability is measured by three child assessment test scores, PIAT (Peabody Individual Achievement Test) Mathematics, PIAT Reading Recognition, and PIAT Reading Comprehension. The tests are well-known measures to assess a child's academic achievement and ability in mathematics and reading, as taught in general educational setting, for children aged five years or older.<sup>12</sup> In the NLSY79 Child/YA data, children aged 5 to 14 are assessed by tests every other year since 1986. This study utilizes the three test scores standardized to age, which are retrieved from the latest assessment tests before the child ages into the young adult survey<sup>13</sup>.

School quality is reported by the child on how well eight school rating items describe the school, including items related to making friends, teachers, classes, and overall school environment. The items are rated on a 4-point scale (1=very true to 4=not at all true). Every item

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<sup>12</sup> For more detailed information on the tests, see NLSY79 child and young adult data user's guide (Center for Human Resource Research, 2006).

<sup>13</sup> When test scores are missing in the latest year, (for instance, test scores are missing in 1994 data for children who are sampled as 9<sup>th</sup>/10<sup>th</sup> grader in 1996), those scores are tracked down up to the year of 1990 to assess child cognitive ability of younger childhood.

is recoded to make higher score consistently indicate positive rating on school, and the total score summing the eight items is used as a summary indicator to measure school quality. The standardized Cronbach's alpha coefficient is 0.66 in this sample.

*Mother's marital status* is categorized into three groups: never-married; currently married; and separated, divorced, or widowed. In the regression analyses, those who are currently married and living with a spouse are the reference group. *Mother's education* is measured by the highest completed educational level: no high school graduate, high school completion, and some college or higher. The lowest educational level, no high school education, is used as a reference group in the analyses. *Mother's age* is measured by years, as of the interview year in which child is a 9<sup>th</sup> or 10<sup>th</sup> grader in the young adult survey.

### **Data Analysis Strategies**

The descriptive and regression analyses are conducted by using young adult sampling weights provided by NLSY79 Child/YA data. The weighted data analyses adjust the unweighted data for over-representation of African American and Hispanic youth and adjust for the oversample of economically disadvantaged Whites. Thus, the weighted data analyses generate estimates from a nationally representative sample (Center for Human Resource Research, 2008).

### **Regression Analyses**

To explore research questions 1 to 5, regression analyses are conducted with logistic regression and OLS regression analyses. The main analyses regarding the effects of parental economic resources and the hypothesized mediators on child's educational outcomes are conducted with logistic regression, as the educational outcomes of interest are dichotomous measures. OLS regression is additionally used in the process of testing the mediation roles of parental involvement, child's educational expectations, and child's self-esteem because the three

possible mediators are continuous measures. In both logistic regression and OLS regression analyses, the children are clustered by mother's ID to adjust for standard errors caused by multiple children from the same mother sharing common family characteristics (Greene, 2003).

Table 1 shows main logistic regression models for this study. The equivalent five main models shown in the Table 1 are performed for each outcome measure: ever dropped out of high school, high school completion, college attendance, and college degree attainment respectively.

Model 1 is a basic model to answer research question 1 on the relationship between parental economic resources and the educational outcomes of interest. Model 1 has four sub-models by type of economic resources: model 1A, 1B, 1C, and 1D. Model 1A includes only family income among various economic resources; model 1B includes both family income and net worth; model 1C includes family income, financial assets, home ownership, and unsecured debts, instead of net worth; model 1D includes family income, financial assets, non-financial assets, unsecured debts, and secured debts. In other words, model 1A tests only the effect of family income on educational outcomes, while model 1B additionally examines the effect of net worth as well as family income; model 1C and model 1D study whether different types of assets and liabilities have different effects on child's education, along with family income, controlling for other factors.

Model 2 examines the effect of parental involvement on child's educational outcomes, in particular a possible mediating role of parental involvement in the associations between parental economic resources and child's educational outcomes. This model is proposed to answer research question 2. As in the model 1, model 2 has four sub-models: model 2A, 2B, 2C, and 2D by type of parental economic resources. Thus, while model 2A includes family income only, diverse measures of parental assets and liabilities are included in the model 2B to model 2D.

Model 3 estimates whether child's educational expectations are related to child's educational outcomes and also mediates the associations between parental economic resources and child's educational outcomes. This model is assessed to answer the research question 3, and four sub-models (model 3A, 3B, 3C, and 3D) are examined by type of parental economic resources, consistent with the model 1 and model 2.

Model 4 examines the effect of child's self-esteem on educational outcomes and a potential mediating role in the relationship between parental economic resources and child's educational outcomes. The approach using four sub-models by economic resources is applied for the main model 4 as well; model 4A, 4B, 4C, and 4D, which includes different types of economic resources, are performed with child's self-esteem.

Model 5 is further examined with the three mediators entered in the same model. Model 5 includes all constructs shown in Figure 1. Similar to models 1-4, model 5 has four sub-models by different types of economic resources: model 5A, 5B, 5C, and 5D. Model 5 can answer whether the direct effect of parental economic resources and the mediating pathways are consistently found, even after controlling for other mediators.

In sum, models 1-5 have four sub-models (A, B, C, and D) that consider different types of parental economic resources. Model A employs income alone; model B includes income and net worth to take into account the effect of parental assets; model C employs financial assets, unsecured debts, and a dummy indicator of home ownership; model D includes financial assets, non-financial assets, unsecured debts, and secured debts. Using different types of measures of assets and liabilities in models B, C, and D prevent a multicollinearity problem in accounting for the constructs of assets and liabilities. In addition, the equivalent 20 empirical models are



conducted for each educational outcomes child experienced/attained: having ever dropped out of high school, high school completion, college attendance, and college degree attainment.

While the main models 1-5 are tested with logistic regression analyses, the mediating effects hypothesized are additionally estimated in models 2-5 by using the regression strategy of Baron and Kenny (1986). As a first step, the hypothesized mediator is regressed on the major independent variables (parental economic resources) in the OLS regression model, controlling for other covariates, to find significant associations between independent variables and the hypothesized mediating variables. Second, child's educational outcomes are regressed on the independent variables with logistic regression analysis to examine there is any significant association between independent variables (parental economic resources) and dependent variables (educational outcomes). Third, child's educational outcomes (dependent variables) are regressed on both the independent variables (economic resources) and the hypothesized mediators, after controlling for any covariates, in logistic regression models. The third step examines whether the associations between economic resources and child's educational outcomes are no longer significant (or associated at the lower significant level) or the regression coefficients decrease after the hypothesized mediators are entered into the models.

Two additional strategies are used to test the robustness of the results of the five models. First, high school diploma is separately tested to examine if the findings are different from those on high school completion including both high school diploma and GED. Second, model 1-5 are examined with categorical measures of net worth, financial assets, non-financial assets, unsecured debts, and secured debts, in order to (1) investigate whether there is any complicated relationship found with negative or zero assets and (2) account for non-linear relationship between parental assets and child educational outcomes.

**Table 1. Empirical Models by Type of Assets and Mediators**

	M1				M2				M3				M4				M5							
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D				
Control variables	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Family income	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Net worth		*				*				*				*				*				*		
Financial assets			*	*			*	*			*	*			*	*			*	*			*	*
Home ownership			*				*				*				*				*				*	
Non-financial assets				*				*				*				*				*				*
Unsecured debts			*	*			*	*			*	*			*	*			*	*			*	*
Secured debts				*				*				*				*				*				*
Parental involvement					*	*	*	*									*	*	*	*	*	*	*	*
Child's educational expectation									*	*	*	*					*	*	*	*	*	*	*	*
Child's self-esteem													*	*	*	*	*	*	*	*	*	*	*	*

Note: Models 1-5 have four sub-models each (A, B, C, D) that attend to income and various types of assets and liabilities. Model 1A employs income alone; Model 1B includes income and net worth; Model 1C includes income and asset measures of financial assets, home ownership, and unsecured debts; Model 1D includes income, financial assets, non-financial assets, unsecured debts, and secured debts. The same analytical strategy applies to Model 2 to Model 5.

## Chapter V. Results

This section presents the analyses results. Descriptive statistics are provided first, followed by regression results from the logistic and OLS analyses. This section closes with the summary and discussion of findings.

### Descriptive Analyses

Descriptive statistics are presented in Table 2 to understand characteristics of the sample and examine distributions of dependent, mediating, independent, and control variables.

#### Control Variables

The sample includes African-American children (20.31%) and Hispanic children (12.04%) and non-Black/non-Hispanic children<sup>14</sup> (67.65%). There are slightly more male children (52.35%), and most children are either the first (60.77%) or second (28.87%) in birth order. When they were interviewed in the 9<sup>th</sup>/10<sup>th</sup> grade, the majority of children were 15 or 16 year-old. Child cognitive ability was measured by three test scores before they went to high school; the mean of the standardized PIAT math score is 101.24 (median=102), ranging from 65 to 135; the average standardized PIAT reading recognition score is a little higher at 104.56 (median=105; range of 65 to 135), while that of PIAT reading comprehension score is a bit lower with 98.62 (median=99; range of 65 to 135). In general, children are fairly satisfied with school in terms of making friends, teachers, classes, and overall school environment. The mean score of the rating on school quality is 25.09 point, which indicates a positive assessment of the school.

About seven out of ten children (68.64%) lived in urban area when they were in high school, and the average household size is about 4 (mean=4.46; median=4). Most mothers of the study sample are married (71.50%), while a smaller number are separated, divorced, or widowed

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<sup>14</sup> Most children in this category fall in non-Hispanic White (=66.10%).

(21%) or have never married (7.6%). Just over half of the mothers (53.63%) have a high school education while about 35% either attended some college or obtained a college degree. Mother's age ranges from 31 to 41, with an average age of 37.

### **Hypothesized Mediating Variables**

The level of parental involvement in child's education is 27.91 points on average (median=29) with a range of 0 to 44. The mean score suggests that children assess their parents as more likely to be "sometimes" involved in their child's education.

The mean of the highest grade or academic year that the child thinks he/she would actually complete is about 15 (mean=14.95; median=16), indicating some post-secondary education after high school graduation. While about a quarter of children expect to complete high school only, a much larger proportion of children (41.76%) expect to complete a Bachelor's degree.

Global level of self esteem ranges from 20 to 40. The mean score at 32.47 point (median=31) indicates that children show quite a strong level of self-esteem on average.

### **Independent Variables**

The average net family income is approximately \$45,755 with a median of \$38,937 and a range of \$0 to \$731,898. It does not greatly differ from national measures of household income in 1998, which was \$51,855 for average income with a median of \$38,885<sup>15</sup> (U.S. Census Bureau, 1999). Compared to income, net worth is much more skewed in distribution as indicated by the average of about \$79,463 and the median of \$30,500. According to the national statistics estimated by the data from the panel of the Survey of Income and Program Participation (SIPP)

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<sup>15</sup> The data source is Current Population Survey and the value is converted in 1998 dollars. Also, according to the same data source, the median income averaging over three years from 1996 to 1998 is \$37,779 in 1998 dollars. The other national statistics of money value reported in this section is also the amounts converted in 1998 dollars for easier comparison.

(U.S. Bureau of Census, 2003), the median household net worth in 1998 was about \$47,264 in 1998 dollars, which is a bit higher than that of the study sample. About 11.58% of the sample has a negative net worth, which means that over 10% have more debts relative to wealth. Also, 6.06% of parents of the sample children have a net worth value of zero.

The homeowners comprise about 65.9% of the sample, which is very similar to 66.4%, the national statistic from the SIPP (U.S. Census Bureau, 2003). Wide ranges in skewed distribution are consistently found when parental assets and liabilities are broken down into financial assets, non-financial assets, unsecured debts, and secured debts. The average gross financial assets are about \$16,299 (median=\$1,247), and more than one quarter (29.33%) of children have parents without any financial assets. The gross non-financial assets including values of both residential and non-residential properties vary to a larger degree, ranging from \$0 to \$2,230,472, with an average value of \$98,018 (median=\$60,800). The striking difference between financial assets and non-financial assets is that asset-holders with any gross non-financial assets (92.56%) are much more than those of the gross financial assets (70.67%). Considering that homeowners are over 65% of the sample and the average value of a home is about \$64,790 (median \$50,000), a large portion of asset-owners of gross non-financial assets appears to own a home; home value undoubtedly constitutes a large share of non-financial assets.

Distributions of liabilities are also skewed. Amounts of unsecured debts owed to any stores, hospitals, banks, or individual people are about \$4,331 on average (median=\$0). The lowest and highest amounts are \$0 and \$135,054 respectively, and four out of ten (40.23%) have unsecured debts. Compared to unsecured debts, the study sample has a higher average of secured debts, \$46,894 (median=\$24,933), which are liabilities on both residential and non-residential properties. Those with secured debts consist of three quarters of the sample (77.34%).

## Dependent Variables

Less than two fifths of the study sample (17.37%) indicates that they ever dropped out of high school. The rates are fairly high compared to high school dropout rates reported in other statistics,<sup>16</sup> because the measure of the dropout used in this study counts those who left high school temporarily (for more than one month) as well as those who left permanently without a high school diploma.

About 91% of the full study sample completed high school education, receiving either a high school diploma or an equivalent credential GED. Of those who completed high school education, about 9% are those who passed a GED test. These high school graduation rates are very similar to the national statistics; about 90% of nationally representative students who were eighth graders in the 1987-88 academic year completed high school education by the age of 26, about eight years after high school graduation.<sup>17</sup> Similarly, youth aged 20-22 in 2002 indicate a high school completion rate of 87.2%<sup>18</sup> (cited in Mishel & Roy, 2006).

Over 60% of the study sample children (61.23%) ever attended either a two-year or four-year college within the eight years after 9<sup>th</sup>/10<sup>th</sup> grade. According to a recent report on college education (College Board, 2008), the college enrollment rates within a year right after high school graduation are about 66% among high school graduates in 2006, and the enrollment rates of young adults less than 25 year are about 45% among each age group since the mid-1990s.

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<sup>16</sup> While high school dropout rates are reported in a variety of studies, according to the Current Population Survey (cited in U.S. Department of Education, 2009), the percentages of youth aged 15 through 24 who dropped out of grades 10-12 but did not return in the same academic year are around 4~5% in the early 2000. Readers should note, however, that there are wide variations in estimating high school dropout rates depending on computation methods and definitions.

<sup>17</sup> The original data source of the statistics is National Education Longitudinal Study, according to the authors.

<sup>18</sup> The original data source of the statistic is National Longitudinal Survey of Youth 97, according to the authors.

Likewise, in the study sample, over 60% of high school graduates report that they ever attended college.

In contrast to the relatively high rate of college enrollment, only 19.91% of the sample report that they completed a college degree by the time they reached 23 to 26 years old (8 years since they were in the 9<sup>th</sup>/10<sup>th</sup> grade). This discrepancy may reflect that college degree attainment is much more challenging for various reasons than college attendance. At the same time, it might be also caused in part by a relatively short period of observation (eight years) to measure this outcome.

### **Regression Analyses**

Results from the regression analyses are reported in the following order:<sup>19</sup> (1) effects of parental economic resources on child's educational outcomes (model 1), (2) effects of mediators on child's educational outcomes (model 2, model 3, and model 4), and (3) effects of parental economic resources on the hypothesized mediators. After that, the hypothesized mediating effects are assessed mainly on the basis of the findings from (1)-(3). Results for model 5 are additionally presented to examine if the direct effects and mediating pathways are consistently found when the three hypothesized mediators are included in the same models.

As described in the data analyses strategy, each regression analysis has four sub-models by type of parental economic resources. The letters of A, B, C, and D in the model titles (both in text and tables) indicate that each finding is from a different type of parental economic resources; model A includes family income only; model B includes family income and parental net worth; model C includes family income, financial assets, homeownership, and unsecured debts; model

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<sup>19</sup> Bivariate correlations are examined to detect a sign of possible multi-collinearity (the results in detail are not presented). The correlation coefficients between independent variables and mediating variables are mostly weak or modest. Also, all of the independent, mediating, and other control variables are found not to have a multi-collinearity issue.

D includes family income, financial assets, non-financial assets, and unsecured and secured debts. Each Table presents odds ratios or regression coefficients, statistical significance with asterisks, and model fit statistics<sup>20</sup>.

### **Effects of Economic Resources on Child's Educational Outcomes (Model 1)**

Effects of parental economic resources on child's educational outcomes (model 1) are examined by employing logistic regressions. Table 3-1 presents the effects on high school dropout and Table 3-2 the effects on high school completion. In addition, Table 3-3 and Table 3-4 present effects on college attendance and college degree attainment respectively.

#### *Effects on High School Dropout*

Four logistic regression models estimate what types of parental economic resources are associated with a child ever dropping out of high school (see Table 3-1). The four models 1A to 1D significantly fit the data. Among parental economic resources, net worth, financial assets, home ownership, and debts on non-financial assets are significantly associated with child's high school drop-out. Family income does not have a significant association with high school dropout in any of the four models.

When family income and other child and household characteristics are held constant in model 1B, net worth (log) is significantly and negatively associated with high school dropout ( $b=-0.392$ , odds ratio=0.675, SE=0.162,  $p=0.016$ ). When model 1C regresses on family income, financial assets, unsecured debts, home ownership, and other child and household characteristics, financial assets (log) have a significantly negative association with the probability of ever dropping out of high school ( $b=-0.088$ , odds ratio=0.915, SE=0.040,  $p=0.027$ ). Also, all else

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<sup>20</sup> In Tables, likelihood ratio chi-square statistics and odds ratio are reported for logistic regression results, while F value and regression coefficient are reported for OLS regression analyses. The model fits are from unweighted data, whereas odds ratio (or regression coefficients) and statistical significance are estimated from weighted data.



equal, the probability of dropping out of high school is 63% lower for children of homeowners compared to children of non-homeowners ( $b=-1.002$ , odds ratio= 0.367,  $SE=0.323$ ,  $p=0.002$ ).

However, when non-financial assets and secured debts, instead of home ownership, are entered in model 1D, financial assets become insignificant, and secured debts (log) are significant ( $b=-0.128$ , odds ratio=0.880,  $SE=0.447$ ,  $p=0.007$ ). The effect of secured debts on high school dropout is in the opposite direction to what is hypothesized. Even though secured debts usually imply economic burden, the probability of high school dropout decreases as secured debts increase. The negative association of secured debts and high school dropout may be linked to the negative association of home ownership in model C. Given the fact that most homeowners have a high share of debts on home mortgage, this negative association is not surprising.

Significant associations are found between several control variables and high school dropout: PIAT math scores, school quality, child's race, mother's college education, and urban residence. Overall, PIAT math scores measured prior to high school have a negative relationship with the probability of ever dropping out in model 1A ( $b=-0.027$ , odds ratio=0.973,  $SE=0.013$ ,  $p=0.035$ ) and model 1B ( $b=-0.026$ , odds ratio=0.974,  $SE=0.013$ ,  $p=0.043$ ). This significant association, however, tends to disappear when further specified assets and liabilities are controlled for. The association is insignificant after adding financial assets, homeownership, and secured debts into model 1C, while the significance becomes weaker (only at the 0.1 level) in model 1D when specific measures of assets and liabilities controlled for.

Child's assessment of school quality significantly predicts the likelihood of high school dropout in a consistent manner, as shown in models 1A through 1D ( $b=-0.116$ , odds ratio=0.891,  $SE=0.043$ ,  $p=0.007$  in model 1A;  $b=-0.126$ , odds ratio=0.882,  $SE=0.043$ ,  $p=0.003$  in model 1B;  $b=-0.119$ , odds ratio=0.888,  $SE=0.043$ ,  $p=0.006$  in model 1C;  $b=-0.125$ , odds ratio=0.882,

SE=0.045, p=0.006 in model 1D). In model 1D that controls for specific measures of assets and liabilities, African American children have significantly lower odds of ever dropping out of high school than non-African American or non-Hispanic children (b=-0.762, odds ratio=0.467, SE=0.367, p=0.038), unlike the other model 1A-1C.

Compared to children of mothers without a high school education, children of mothers with some college education have a more than 60% lower probability of ever dropping out of high school in model 1A (b=-1.035, odds ratio=0.355, SE=0.480, p=0.031), model 1B (b=-1.205, odds ratio=0.300, SE=0.468, p=0.010), and model 1C (b=-1.047, odds ratio=0.351, SE=0.479, p=0.029). However, the significant association of mother's college education with high school dropout disappears after non-financial assets and secured debts, instead of homeownership, are controlled for in model 1D.

Urban residence is significantly associated with high school dropout (b=0.838, odds ratio=2.312, SE=0.356, p=0.019 in model 1A; b=0.807, odds ratio=2.240, SE=0.361, p=0.026 in model 1B; b=0.767, odds ratio=2.154, SE=0.365, p=0.036 in model 1C; b=0.716, odds ratio=2.045, SE=0.364, p=0.049 in model 1D). Children living in urban areas are much more likely to be exposed to the risk of dropping out of high school.

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TABLE 3-1 ABOUT HERE

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### Effects on High School Completion

Another set of logistic regression analyses are conducted to examine whether parental economic resources have effects on child's high school completion (either high school diploma or GED). Findings are presented in Table 3-2, and each model fit is statistically significant.

Family income (log) is positively associated with child's high school education in models 1A and 1B, but it becomes insignificant in models 1C and 1D. In model 1A, which examines family income alone, when family income increases, the probability that children complete high school education via either a high school diploma or GED test also significantly increases ( $b=0.772$ , odds ratio=2.164,  $SE=0.254$ ,  $p=0.002$ ). Once parental net worth is controlled for in model 1B, the odds slightly decrease from 2.16 to 2.15 ( $b=0.765$ , odds ratio=2.149,  $SE=0.263$ ,  $p=0.004$ ). The odds ratio of family income becomes much smaller and is no longer significant in models 1C and 1D, where more specifically categorized asset measures are included in the analyses.

Among diverse parental assets, financial assets in model 1C are found to be significantly associated with high school completion. Controlling for income, homeownership, and unsecured debts, the probability that children complete high school education increases as the log of financial assets increases ( $b=0.153$ , odds ratio=1.165,  $SE=0.066$ ,  $p=0.021$ ). However, the association becomes marginally significant at the 0.1 level after non-financial assets and secured debts are included in model 1D.

Child's birth order has a significantly negative association with high school completion across the four models ( $b=-0.701$ , odds ratio=0.496,  $SE=0.219$ ,  $p=0.001$  in Model A;  $b=-0.700$ , odds ratio=0.496,  $SE=0.220$ ,  $p=0.001$  in Model B;  $b=-0.662$ , odds ratio=0.516,  $SE=0.227$ ,  $p=0.004$  in Model C;  $b=-0.667$ , odds ratio=0.513,  $SE=0.223$ ,  $p=0.003$  in Model D). The odds of completing high school education are lower for older children than younger ones in birth order, by 49%-51% or so. Also, reading recognition test scores are consistently significant in predicting high school completion ( $b=0.039$ , odds ratio=1.040,  $SE=0.020$ ,  $p=0.044$  in Model A;  $b=0.040$ , odds ratio=1.040,  $SE=0.020$ ,  $p=0.044$  in Model B;  $b=0.043$ , odds ratio=1.044,  $SE=0.019$ ,

p=0.026 in Model C; b=0.046, odds ratio=1.047, SE=0.020, p=0.020 in Model D). In general, mother's college education is a significant predictor in explaining a child's high school completion (b=1.256, odds ratio=3.509, SE=0.605, p=0.038 in Model A; b=1.261, odds ratio=3.530, SE=0.611, p=0.039 in Model B). Children of mothers with a college education are more likely to achieve high school credentials than children of mothers without it. The significant association, however, becomes weaker or disappears after specific measures of parental assets and liabilities are controlled for in models 1C and 1D.

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TABLE 3-2 ABOUT HERE

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Effects on College Attendance

Results on the relationship of college attendance with parental economic resources are presented in Table 3-3. The four logistic regression model fits are significant. Findings suggest that family income is a critical factor in child's college enrollment, but the effect disappears after specific measures of assets and liabilities are controlled for. However, parental assets do not show a significant relationship with the probability of college attendance. The effects of assets are merely significant at the 0.1 level.

The effect of family income on college attendance is significant in model 1A (b=0.577, odds ratio=1.781, SE=0.189, p=0.002) and model 1B (b=0.437, odds ratio=1.548, SE=0.209, p=0.036). All else equal, the probability that children ever attended either a two-year or four-year college increases when log of family income increases. After specific measures of assets and liabilities are controlled for in models 1C and 1D, however, the regression coefficients of family income decrease and are no longer significant.

Even though none of the parental assets and liabilities is associated with college attendance at the 0.5 significance level, financial assets, home ownership, and non-financial assets show a marginally significant association at the 0.1 level. In model 1C with parental wealth collapsed into financial assets, homeownership, and unsecured debts, financial assets (log) are positively associated with college attendance ( $b=0.061$ , odds ratio=1.063,  $SE=0.036$ ,  $p=0.087$ ); a positive association is found between homeownership and college attendance as well ( $b=0.510$ , odds ratio=1.665,  $SE=0.283$ ,  $p=0.072$ ). In other words, higher levels of financial assets and homeownership increase the probability that a child will attend college. In spite of the marginal significance of asset measures, it is important to note that the addition of assets results in a significant decrease in effect of family income.

In model 1D, which replaces a dummy indicator of home ownership with values of non-financial assets and secured debts, non-financial assets (log) are positively associated but marginally significant at the 0.1 level ( $b=0.105$ , odds ratio=1.111,  $SE=0.057$ ,  $p=0.064$ ). In the same model, the marginal significance of financial assets disappears and the effect of family income decreases more substantially.

Regarding child characteristics, child's gender, cognitive ability in math and reading comprehension, and rating of school quality are significantly associated with the probability of college attendance in all of the four logistic regression models. By and large, female children have a greater probability of attending college. As expected, better school quality and higher levels of cognitive ability in math and reading comprehension significantly lead to a greater chance of going to college overall. In addition, the mother's completion of some post-secondary education significantly increases the probability of college attendance.

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TABLE 3-3 ABOUT HERE

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Effects on College Degree Attainment

Table 3-4 shows the analyses results from four logistic regression models on child's college degree attainment. Model fits of models 1A-1D in the Table 3-4 are statistically significant. The major difference from the findings on high school dropout, high school education, and college enrollment is that family income consistently remains significant in the four models, even after parental assets and liabilities are included. The odds ratio of family income (log) is 2.69 in model 1A (b=0.990, SE=0.237, p<0.001), 2.59 in model 1B (b=0.950, SE=0.258, p<0.001), 2.33 in model 1C (b=0.845, SE=0.263, p=0.001), and 2.38 in model 1D (b=0.866, SE=0.276, p=0.001) respectively.

Among parental assets and liabilities, non-financial assets are significantly associated with college degree attainment, as shown in model 1D. When non-financial assets (log) increase by one unit, the odds of college degree attainment for children increase by about 17% (b=0.156, odds ratio=1.169, SE=0.077, p=0.042).

Several child and mother characteristics are significantly associated with the probability of college degree attainment. Similar to the analyses findings on college attendance, child's gender, child's cognitive ability in math and reading comprehension, mother's educational level, and school quality are significant predictors among control covariates, regardless of what kinds of parental economic resources are included in the models. The differences discovered in the college degree attainment models are that mother's marital status and mother's high school education are also significantly related to college degree attainment.

Female children show greater likelihood of attaining a college degree. As predicted, as test scores in PIAT math and PIAT reading comprehension increases, the probability of college degree attainment also increases. Children who make a more positive assessment of their high school are more likely to complete a college education. Children of mothers with high school credentials or college education show a higher probability of attaining college degrees than children of mothers without a high school education. In models C and D, interestingly enough, children of unmarried mothers are more likely to attain college degrees compared to children with married mothers, when other factors are held constant.

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TABLE 3-4 ABOUT HERE

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#### **Effects of the Possible Mediators on Child’s Educational Outcomes (Model 2, 3, and 4)**

Logistic regressions are performed to estimate whether the hypothesized mediators are associated with child’s educational outcomes. Results from the logistic regression analyses with the possible mediators are presented in this order: parental involvement, child’s educational expectations, and child’s self-esteem. As explained in the section of data analyses strategy, model 2 indicates the empirical models including parental involvement, along with parental economic resources (see Tables 4-1, 4-2, 4-3, and 3-4). Similarly, model 3 refers to the models with child’s educational expectations (see Tables 5-1, 5-2, 5-3, and 5-4), and model 4 refers to those with child’s self-esteem (see Tables 6-1, 6-2, 6-3, and 6-4)<sup>21</sup>.

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<sup>21</sup> Table 4-1 through 6-4 show the findings of model 1 (without the hypothesized mediators) as well, along with those of model 2, model 3, and model 4 respectively, in order to help easily compare the findings with and without the mediators.

Effects of Parental Involvement (Model 2)

Model 2 examines the relationship between parental involvement and child's educational outcomes, after controlling for parental economic resources and other covariates. Results for the model 2 are presented in Tables 4-1 to 4-4. In the four tables, model 1 indicates logistic regression models before parental involvement is included, while model 2 indicates logistic regression models after parental involvement is entered into the analyses.

*High school dropout* As seen in Table 4-1, parental involvement is negatively associated with the probability of having ever dropped out of high school. However, the association is not significant in models 2A-2D. Thus, not surprisingly, the study results on the other independent and control variables remain almost the same as well, even after parental involvement is entered into the logistic regression models. The regression coefficients stay nearly the same, and statistical significance is rarely changed.

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TABLE 4-1 ABOUT HERE

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*High school completion* Table 4-2 shows the results of the effect of parental involvement on high school completion, with parental economic resources and other characteristics held constant. While parental involvement shows a positive association with child's high school completion, parental involvement in child's education is not significantly associated in models 2A-2D, similar to high school dropout. After parental involvement is taken into account, regression coefficients of most variables diminish slightly, and small changes in statistical significance are found in two variables. However, in predicting high school completion, secured debts becomes significant at the 0.05 level (b=0.121, odds ratio=1.129, SE=0.062, p=0.049) from the 0.1 level in model D (b=0.110, odds ratio= 1.116, SE=0.058, p=0.057).



Significant effects of mother's college education in model A and model B become weaker after parental involvement is added to each model.

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TABLE 4-2 ABOUT HERE

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*College attendance*                      Effect of parental involvement on college enrollment is presented in Table 4-3. After controlling for parental assets, liabilities, family income, and child/family characteristics, parental involvement is positively but not significantly associated with college enrollment in models 2A-2D. Thus, the addition of parental involvement does not make big differences in the results of models A-D. Most regression coefficients decrease by very small amounts, and statistical associations remain the same regardless of parental involvement.

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TABLE 4-3 ABOUT HERE

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*College degree attainment*                      Table 4-4 shows results from logistic regression models for the effect of parental involvement on child's college degree attainment, after controlling for parental economic resources and other characteristics of child and mother. Consistent with the other educational attainment models demonstrated above, there is no significant association between parental involvement and college degree attainment, while the association is positive as expected. Regression coefficients of most variables decrease modestly, but significant associations stay almost the same whether parental involvement is included in the models or not.

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TABLE 4-4 ABOUT HERE

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Effects of Child's Educational Expectations (Model 3)

The relationships between child's educational expectations and educational outcomes are illustrated in Tables 5-1 to 5-4. Model 1 indicates logistic regression models before the variable of child's educational expectations is included, and the model 3 means logistic regression models after child's educational expectations is entered into the analyses.

*High school dropout* Table 5-1 shows the study findings on high school dropout, both including and excluding child's educational expectations. Across models 3A to 3D, child's educational expectations are significantly associated with high school dropout. As child's educational expectations increase, the probability of ever dropping out of high school decreases. The odds ratio is 0.847 in model 3A (b=-0.167, SE=0.070, p=0.017), 0.861 in model 3B (b=-0.149, SE=0.070, p=0.032), 0.850 in model 3C (b=-0.162, SE=0.070, p=0.020), and 0.836 in model 3D (b=-0.179, SE=0.070, p=0.011). After child's educational expectations are included in each model, regression coefficients of most independent and control variables are more likely to decline. The effects of net worth, financial assets, homeownership, and secured debts remain significant, and the effect sizes do not change greatly when comparing model 1 and model 3. Relative to parental economic resources, the effect of control variables tends to decrease to a larger extent. In particular, significant effects of PIAT math scores, school quality, mother's college education, and urban residence become weaker, as seen in decreases in regression coefficients and statistical significance.

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TABLE 5-1 ABOUT HERE

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*High school completion* Table 5-2 presents the results from the logistic regressions on high school completion explained by child's educational expectations along with parental economic resources and other covariates. Child's educational expectations have a significant and positive association with high school completion. With family income held constant, the probability of high school graduation increases as child's expectations for the highest educational grade completed increase (b=0.438, odds ratio=1.549, SE=0.089, p<0.001; see model 3A). The odds ratio of child's educational expectations is similar at 1.55, controlling for both income and parental net worth (b=0.438, SE=0.090, p<.001; see model 3B). After child's educational expectations are entered in models A-D, the effects of most parental economic resources decrease. In particular, financial assets becomes insignificant at the 0.05 level in model 3C (b=0.129, odds ratio=1.137, SE=0.070, p=0.064), compared to model 1C (b=0.153, odds ratio=1.165, SE=0.066, p=0.021). The decrease in regression coefficients is also found in most control variables. For instance, after child's educational expectations are taken into account, mother's college education becomes an insignificant predictor in models 3A and 3B; the effect size of school quality becomes smaller; marginal association of mother's age is no longer significant. One interesting finding is that the effect size of secured debts increases slightly and becomes significant at the 0.5 level (b=0.110, odds ratio=1.117, SE=0.058, p=0.057 in model 1D; b=0.137, odds ratio=1.147, SE=0.059, p=0.021 in model 3D).

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TABLE 5-2 ABOUT HERE

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*College attendance* Child's educational expectations are significantly associated with child's college attendance (Table 5-3). In models 3A and 3B, child's higher

educational expectations increase the likelihood of college attendance ( $b=0.366$ , odds ratio=1.442,  $SE=0.065$ ,  $p<0.001$  in model 3A;  $b=0.360$ , odds ratio=1.433,  $SE=0.065$ ,  $p<0.001$  in model 3B;  $b=0.374$ , odds ratio=1.454,  $SE=0.068$ ,  $p<0.001$  in model 3C;  $b=0.382$ , odds ratio=1.465,  $SE=0.069$ ,  $p<0.001$  in model 3D), all else equal. After child's educational expectations are entered into the models, the effects of some economic resources become insignificant with a slight decline in regression coefficients: family income and financial assets. The effect of family income becomes insignificant at the 0.5 level (see models 1B and 3B). In the case of financial assets, the effects get smaller (see models 3C and 3D), and the marginal significance vanishes as well in model 3C, after controlling for child's educational expectations. At the same time, however, effects of homeownership (model 3C) and non-financial assets (model 3D) become significant at the 0.05 level. Also, the decreased effects are found in most of the control variables. When child's educational expectations are included in the models, the significance of the association with child's gender gets weaker, the effect size of mother's college education decreases, and the marginal effect of mother's age disappears.

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TABLE 5-3 ABOUT HERE

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*College degree attainment*                      Results on the effect of child's educational expectations on college degree attainment are presented in Table 5-4. Child's educational expectations have a significantly positive association with college degree attainment in models 3A to 3D. When child's educational expectations increase, the odds of attaining a college degree increase ( $b=0.343$ , odds ratio=1.410,  $SE=0.086$ ,  $p<0.001$  in model 3A;  $b=0.344$ , odds ratio=1.411,  $SE=0.088$ ,  $p<0.001$  in model 3B;  $b=0.362$ , odds ratio=1.436,  $SE=0.090$ ,  $p<0.001$  in model 3C;  $b=0.355$ , odds ratio=1.426,  $SE=0.092$ ,  $p<0.001$  in model 3D), controlling for other

factors. When child's educational expectations are held constant, the regression coefficients decrease in family income and non-financial assets but remain significant. Some covariates, which are significantly associated with college degree attainment in model 1, generally stay significant despite some decline in the magnitude of the relationships.

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TABLE 5-4 ABOUT HERE

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*Effects of Child's Self-Esteem (Model 4)*

The relationships between child's self-esteem and educational outcomes (model 4) are presented in Tables 6-1 to 6-4. The model 1 means logistic regression models looking at the effects of parental economic resources only, and the model 4 indicates logistic regression models on the effects of child's self-esteem along with the economic measures.

*High school dropout* Table 6-1 presents findings about the effects of child's self-esteem on the probability of ever dropping out of high school. Child's self-esteem is negatively but not significantly associated with the odds of high school dropout in models 4A to 4D. As a result, effects of the other variables are the same even after child's self-esteem is entered in the models. As shown in model C, financial assets and homeownership are negatively associated with the likelihood of ever having dropped out of high school, whether child's self-esteem is included or not. Likewise, in model D, which controls for non-financial assets and secured debts, the significantly negative association with secured debts is equally found after child's self-esteem is added to model D. Other covariate predictors that show a significant association with high school dropout in model 1 are significant as well in model 4, with either a very tiny decrease or almost no change in regression coefficients.

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TABLE 6-1 ABOUT HERE

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*High school completion*                      Table 6-2 shows the effects of child's self-esteem on high school completion, after controlling for parental economic resources. Child's self-esteem does not have a significant association with high school completion, as with high school dropout (see model 4A, 4B, 4C, and 4D). No major changes are found in the other relationships of independent and control variables with high school completion, between models without child's self-esteem (model1) and those with child's self-esteem (model 4). In terms of statistical significance, minor changes are observed only in PIAT reading recognition. The significant association for this variable at the 0.05 level becomes marginally significant at the 0.1 level in models A and B; however, the regression coefficients for PIAT reading recognition scores do not change much.

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TABLE 6-2 ABOUT HERE

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*College attendance*                      The relationships between child's self-esteem and college attendance are presented in the Table 6-3, along with those between parental economic resources and college attendance. Child's self-esteem is not significantly associated with college attendance in any of the models (see models 4A, 4B, 4C, and 4D). After adding child's self-esteem to the models, most relationships of independent and control variables with college attendance remain similar in terms of statistical association and magnitude of regression coefficients. While most significant associations generally remain the same or show a very minor

reduction in effect size after child's self-esteem is additionally controlled for, mother's age and child's gender becomes significantly associated at the 0.5 level in model 4A.

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TABLE 6-3 ABOUT HERE

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*College degree attainment*                      Table 6-4 presents the results on the associations between child's self-esteem and college degree attainment, in addition to those between parental economic resources and college degree attainment. In contrast to other educational outcomes, a significantly positive association is found between child's self-esteem and college degree attainment, regardless of what kinds of parental economic resources are controlled for. The probability of college degree attainment increases as child's self-esteem gets higher (b=0.112, odds ratio=1.119, SE=0.038, p=0.003 in the model 4A; b=0.116, odds ratio=1.122, SE=0.038, p=0.003 in the model 4B; b=0.115, odds ratio=1.122, SE=0.038, p=0.002 in the model 4C; b=0.121, odds ratio=1.128, SE=0.039, p=0.002 in the model 4D). Even after child's self-esteem is controlled for, family income is consistently significant with some decline in the regression coefficients. When specific measures of assets and liabilities are accounted for in model D, non-financial assets remain significantly associated with college degree attainment. Also, the other variables mostly show similar statistical associations with college degree attainment, whether child's self-esteem is included or not. Unlike the other variables, however, small changes are found with mother's marital status in terms of statistical significance. In models A and B, mother's marital status becomes significant at the 0.5 level after child's self-esteem is included, while it is merely marginally significant at the 0.1 level without child's self-esteem.

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TABLE 6-4 ABOUT HERE

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### **Effects of Economic Resources on the Hypothesized Mediators<sup>22</sup>**

Associations between parental economic resources and the three possible mediators are tested with OLS regressions. Results on economic resources and parental involvement are presented in Table 7, those on economic resources and child’s educational expectations in Table 8, and those on economic resources and child’s self-esteem in Table 9.

Overall, some parental economic resources are significantly related to the hypothesized mediators. Parental involvement has a significant association only with non-financial assets, but the relationship is in a negative direction, which is the opposite of what is expected. Child’s educational expectations are significantly associated with net worth and financial assets respectively. As net worth and financial assets increase, child’s educational expectations tend to increase. However, child’s self-esteem is not significantly associated with any economic resources.

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TABLE 7 ABOUT HERE

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TABLE 8 ABOUT HERE

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TABLE 9 ABOUT HERE

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<sup>22</sup> Results on the associations between parental economic resources and the hypothesized mediators are briefly described, compared to the other analyses findings because the main purpose of estimating the relationships is to use the findings in assessing the mediating effects.



Other variables associated with parental involvement are child's race, mother's college education, and school quality. African-American parents are more likely to be involved in child's education, compared to non-Black/non-Hispanic parents, controlling for other factors. The level of parental involvement in child's education is higher for mothers with some college education than mothers without completed high school education, as expected. Also, better school quality tends to bring more parental involvement in child's education.

In general, covariates with a significant relationship with child's educational expectations are child's age, child's gender, PIAT reading comprehension test scores, mother's age, and mother's college education. Children of mothers with some college education show greater educational expectations. While younger children show higher educational expectations, the older the mother's age, the higher the child's educational expectations. Female children and children with better scores in PIAT reading comprehension are found to have higher educational expectations, but when specific measures of assets and liabilities are taken into account together, the associations become marginally significant at the 0.1 level.

With respect to child's self-esteem, school quality is consistently significant. Children with more positive feelings about school quality show a higher level of self-esteem.

### **Mediating Effects**

The mediating roles are assessed using Baron and Kenny's approach (1986). According to Baron and Kenny (1986), four conditions must be met for a variable to be defined as a mediator; (1) the independent variable is significantly associated with a hypothesized mediator, (2) the independent variable is significantly associated with a particular dependent variable, (3) the hypothesized mediator is significantly associated with the same dependent variable, and (4) the association between independent variable and dependent variable is less strong or no longer

significant after controlling for the hypothesized mediator. The three mediators hypothesized in this study are assessed based on the findings presented in earlier sections.

### Parental involvement

The study evidence indicates that parental involvement does not play a mediating role in the relationship of parental economic resources and child's educational outcomes. Most economic measures are significantly associated with the educational outcomes, but parental involvement does not show a significant relationship with child's educational outcomes.

### Child's educational expectations

The hypothesized mediating effects by child's educational expectations are supported in the effects of net worth and financial assets on high school dropout (see models B and C in Table 5-1) and the effect of financial assets on high school completion (see model C in Table 5-2).

Net worth has a significantly positive association with child's educational expectations ( $b=0.190$ ,  $SE=0.070$ ,  $p=0.007$ ; see the model B in Table 8), when family income and other covariates are controlled for. Also, a significant association is found between net worth and the probability of ever having dropped out of high school ( $b=-0.392$ ,  $SE=0.162$ ,  $p=0.016$ ; see model 1B in Table 3-1 or Table 5-1). Child's educational expectations is significantly related to high school dropout ( $b=-0.149$ ,  $SE=0.070$ ,  $p=0.032$ ; see model 3B in Table 5-1). Recognizing the three conditions are met, the decrease in the regression coefficients from  $-0.392$  (model 1B in Table 5-1) to  $-0.360$  (model 3B in Table 5-1) indicates that child's educational expectations partially mediate the association between net worth and high school dropout.

As with net worth, child's educational expectations partially mediate the effect of financial assets on the probability of ever dropping out of high school. Financial assets have a significant and positive relationship with child's educational expectations ( $b=0.052$   $SE=0.026$ ,

$p=0.046$ ), as presented in model C of Table 8. Financial assets have a significantly negative association with the probability of ever dropping out of high school ( $b=-0.088$ ,  $SE=0.040$ ,  $p=0.027$ ; see model 1C of Table 3-1 or Table 5-1), when controlling for family income, financial assets, debts on financial assets, home ownership, and other child and household characteristics. With the addition of child's educational expectations to the model, the regression coefficient of financial assets decreases from  $-0.088$  to  $-0.080$ , although it is very small amounts (see model C in the Table 5-1). Thus, a partial mediation effect of child's educational expectations is supported in the relationship between financial assets and high school dropout.

In addition, child's educational expectations fully mediate the effect of financial assets on high school completion. A significant association between financial assets and child's educational expectations is found ( $b=0.190$ ,  $SE=0.026$ ,  $p=0.046$ ), as shown in model C in Table 8. Financial assets are significantly associated with high school completion ( $b=0.153$ , odds ratio=1.165,  $SE=0.066$ ,  $p=0.021$ ; see model 1C in Table 3-2 or Table 5-2), when controlling for family income, homeownership, unsecured debts, and other characteristics. When child's educational expectations are included in the same model, the association between financial assets and high school completion becomes insignificant at the 0.05 level with a decrease in regression coefficients from 0.153 to 0.129 (see model C in Table 5-2). This result suggests that the effect of financial assets on high school completion works through child's educational expectations.

The hypothesized mediating effects are not found in the other relationships. Child's educational expectations are significant factors leading to positive educational outcomes from the risk of high school dropout to college degree attainment. Moreover, the addition of child's educational expectations tends to result in smaller effects of parental economic resources (see models 3A, 3B, 3C, and 3D in Table 5-1, 5-2, 5-3, and 5-4). Nonetheless, family income, home

ownership, and non-financial assets and liabilities do not show a significant relationship with child's educational expectations (see Table 8). Accordingly, the mediating role of child's educational expectations is not supported between the other parental economic resources and child's educational outcomes.

### Child's self-esteem

The hypothesized mediating effects by child's self-esteem are not supported in any of the models. There is no significant association between parental economic resources and child's self-esteem (see Table 9), while the effects of some parental economic resources (income, net worth, financial-assets, home ownership, and secured debts) are generally significant on child's educational outcomes. Furthermore, child's self-esteem is not significantly associated with high school dropout, high school completion, or college attendance, while it is a critical factor promoting the likelihood that a child completes college education.

### **Effects of Economic Resources and the Three Hypothesized Mediators (Model 5)**

The same logistic regression models are conducted with all of the three hypothesized mediators included in the analyses (model 5) to examine if the results, both direct effects and mediating effects, are changed when the three hypothesized mediators are controlled for all together. Results of model 1 and model 5 are presented for each educational outcome respectively in Tables 10-1 to 10-4.

*High school dropout*                      Table 10-1 shows the associations with the probability of ever dropping out of high school. While the addition of the three hypothesized mediators does not make a big difference in the results, the negative association between child's educational expectations and high school dropout is consistently significant. Among parental economic resources, parental assets, such as net worth, financial assets, home ownership, and secured debts

are significant even after the three potential mediators are entered into the models. As observed with some decreases in the regression coefficients, the associations of net worth (model B) and financial assets (model C) are found to be partially mediated by child's educational expectations. Also, school quality and urban residence are consistently significant covariates.

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TABLE 10-1 ABOUT HERE

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*High school completion* Table 10-2 demonstrates results on high school completion with all three mediators included. Child's educational expectations significantly predict the likelihood of high school completion and also mediate the effect of financial assets on high school completion. In model C, the significant effect of financial assets decreases and becomes insignificant at the 0.05 level. While there is no huge difference with the three possible mediators taken into account in the same models, secured debts become significant at the 0.05 level, which is consistent with the findings shown in model 2 (with parental involvement) and model 3 (with child's educational expectations). Family income is still significant before specific measures of assets and liabilities are included in the model. Birth order, PIAT reading recognition, and mother's college education are generally significant, although the effect sizes tend to decrease and the associations become weaker.

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TABLE 10-2 ABOUT HERE

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*College attendance* As shown in Table 10-3, child's educational expectations significantly increase the probability of going to college. The effect sizes are mostly a little smaller than those in the high school completion model. Similar to model 3 presented in Table 5-

3, the significant effect of family income disappears and home ownership becomes significant in model 5. Other variables remain quite the same even after the three potential mediators are included in the models. As shown in the model 3 of Table 5-3, PIAT math, school quality, and mother's college education are still significant, while PIAT reading comprehension and child's gender are more likely to become less strong in the associations.

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TABLE 10-3 ABOUT HERE

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*College degree attainment* Table 10-4 shows results on college degree attainment in model 5. Both child's educational expectations and child's self-esteem have a positive and significant association with college degree attainment. As found in the other three educational outcomes, child's educational expectations are significantly associated with college degree attainment, even after controlling for other mediators. Also, consistent with the results presented in Table 6-4, child's self-esteem consistently shows a significant effect on college degree attainment, when including child's educational expectations and parental involvement in the same models. Parental economic measures and other covariates remain similar in model 5, compared to model 1. Income and non-financial assets are significant predictors, although the effect of family income decreases to some degree. Child's gender, cognitive abilities measured by PIAT math and PIAT reading comprehension test scores, school quality, and mother's educational levels stay statistically significant.

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TABLE 10-4 ABOUT HERE

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## Summary

### Effects of parental economic resources on child's educational outcomes

Parental economic resources have somewhat different effects across type of child's educational outcomes. The probability of having ever dropped out of high school is not associated with family income but negatively and significantly associated with net worth, gross financial assets, homeownership, and secured debts. The significant effect of gross financial assets disappears after amounts of gross non-financial assets and secured debts are controlled for. Instead, secured debts have a significant and negative association.

In case of high school completion, income is a significant factor before specific measures of assets and liabilities are controlled for. Once financial assets and homeownership are considered, income is not significant anymore, but gross financial assets are significant. Similar to the high school dropout model, gross financial assets become insignificant after gross non-financial assets and secured debts are taken into account in the same model.<sup>23</sup>

A similar pattern is observed in the effect of family income on college attendance. The significant effect of income disappears after assets and liabilities are controlled for. The notable differences from the findings on high school dropout and high school completion are rather weak effects of parental assets. Four types of assets (net worth, financial assets, non-financial assets, and homeownership) do not have significant impacts on the probability of getting into college at the 0.05 level. Gross financial assets, homeownership, and non-financial assets are only

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<sup>23</sup> Secured debts are likely a significant predictor on high school completion. The significance is just over 0.05, so it tends to become significant at the 0.05 level, when parental involvement and child's educational expectations are included in model 2, model 3, and model 5 respectively.

marginally associated with college attendance at the 0.1 level.<sup>24</sup> Also, liability measures do not have a significant relationship with college attendance even at the 0.1 level.

College degree attainment clearly demonstrates significant relationships with family income and non-financial assets. The total family income shows a consistently significant association with child's college degree attainment in all models. Family income is positively associated with college degree attainment both before and after assets and liabilities are included in the models. Among assets and liabilities, gross non-financial assets have a positive association as well. However, financial assets and debts do not show a significant association.

In addition, the direct effects of different types of parental economic resources generally remain almost the same with a few exceptions, even after the hypothesized mediators (parental involvement, child's educational expectations, and child's self-esteem) are controlled for. In other words, significant associations between parental economic resources and educational outcomes are equally found in most cases, whether each mediator is separately included in model 2, 3, and 4 or all of the three mediators are controlled for in model 5.

### **Effects of the hypothesized mediators on child's educational outcomes**

Out of the three hypothesized mediators, child's educational expectations have a significantly positive relationship with all educational outcomes, and child's self-esteem with college degree attainment only. The findings of significant associations are consistent even when all three potential mediators are entered into the same model (model 5).

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<sup>24</sup> As observed in secured debts on high school completion, homeownership and non-financial assets are likely a significant predictor on college attendance. The significance (p-value) is slightly over 0.05 in model 1 and it becomes significant at the 0.05 level, when child's educational expectations are included in model 3 and model 5 respectively.



Children with lower levels of educational expectations are at higher risk of dropping out of high school. Higher child educational expectations are significantly associated with greater odds of completing high school, attending college, or attaining a college degree.

Likewise, child's self-esteem is a significantly critical factor to finish college education. Children with higher global levels of self-esteem are more likely to complete a college degree.

As expected, parental involvement has a negative relationship to high school dropout and positive associations with high school completion, college attendance, and college degree attainment. However, no statistical significance is observed in the relationships.

### **Mediating effects**

The hypothesized mediating effect of child's educational expectations is supported in the associations between net worth and high school dropout, financial assets and high school dropout, and financial assets and high school completion. The mediating roles are still present even when all of the three hypothesized mediators are included in the same model (model 5).

Net worth and all of child's educational expectations are significantly associated with high school dropout respectively, while net worth is also associated with child's educational expectations. When child's educational expectations are included in the logistic regression model, the effect of net worth on high school dropout stays significant but diminishes to some extent. Similarly, the effect of financial assets on high school dropout is found to work partially through child's educational expectations. While financial assets have a significant relationship with child's educational expectations and both financial assets and child's educational expectations have a significant relationship with high school dropout respectively, the effect size of financial assets on high school dropout decreases when child's educational expectations are controlled for.

Likewise, financial assets and child's educational expectations are significantly associated with high school completion. When child's educational expectations are accounted for, however, the significant association between financial assets and high school completion disappears. Thus, child's educational expectations act as a full mediator in the relationship between financial assets and high school completion.

Unlike child's educational expectations, the mediating role of child's self-esteem is not found. Child's self-esteem is related only to college degree attainment, and significant associations are not observed between parental economic resources and child's self-esteem. Also, the addition of child's self-esteem to the models does not necessarily lead to changes in the effects of economic resources on child educational outcomes.

Also, parental involvement does not show mediating roles in the effects of parental economic resources on child's educational outcomes. Parental involvement has a significant but negative relationship only with non-financial assets, and it is not significantly associated with child's educational outcomes.

### **Robustness Tests**

To check the robustness of the study results, the same models are conducted on high school diploma attainment and with categorical asset measures.

#### **Effects on High School Diploma**

Empirical findings on high school diploma are presented in Tables 11-1, 11-2, and 11-3<sup>25</sup>. Similar to the main models on high school completion including those who have either a high school diploma or GED equivalency, the significant association between family income and high

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<sup>25</sup> Table 11-1 shows results with and without parental involvement, Table 11-2 with child's educational expectations, and Table 11-3 with child's self-esteem. In the three Tables, model 6 indicates logistic regression models on the probability of high school diploma, model 7 for those including parental involvement, model 8 for those including child's educational expectations, and model 9 for those including child's self-esteem.

school diploma is found before assets and liabilities are included in the analyses. Also, birth order and mother's college education are consistently significant predictors.

Several differences of importance deserve attention. Parental assets, such as net worth, financial assets, home ownership, and non-financial assets mostly show a positive and significant relationship with the probability of getting a high school diploma, whether the hypothesized mediators are included or not (models B, C, and D). Stronger effects of parental assets are clearly reported in that family income is no longer significant in any of the models that include assets.

Another notable difference is in the mediating roles of parental involvement and child's educational expectations. Parental involvement is significantly associated with the probability of graduating from high school with a diploma and partially mediates the relationship between financial assets and high school diploma.<sup>26</sup> Child's educational expectations also play a mediating role in the associations between net worth and high school diploma and between financial assets and high school diploma. The significant effects of net worth and financial assets decrease with child's educational expectations controlled for in the models. Also, among the covariates, child's gender, PIAT math scores, and school quality, in addition to birth order and mother's post-secondary education, are important and consistent predictors.

### **Categorical Measures of Assets**

The same analyses with categorical measures of assets show consistent results with the main analyses. Categorical asset groups are classified by zero, moderate, and high levels for financial assets, non-financial assets, unsecured debts, secured debts; an additional categorical

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<sup>26</sup> The mediating effect is assessed at the 0.1 level. When other specific measures of assets and liabilities are controlled for in the OLS regression on parental involvement, financial assets has a significantly positive association with parental involvement at the 0.1 level ( $b=0.182$ ,  $SE=0.097$ ,  $p=0.060$ ; see model D in Table 7). Also, parental involvement is significantly associated with high school diploma as shown in the model D of Table 11-1. The slight decrease in the effect of financial assets from 0.112 (model 6D) to 0.103 (model 7D) indicates that parental involvement act as a partial mediator between financial assets and high school diploma.

group is created for negative net worth. Cut-off points are employed with median, about 75% percentile points, and the same threshold used by previous studies is employed (e.g. \$10,000 financial assets in Nam and Huang (2008)). The findings are very consistent with the main analyses, so the results are not presented here.

### **Discussion**

The primary goal of this study is to examine direct effects of parental economic resources on child's educational outcomes and possible mediating mechanisms of parental involvement, child's educational expectations, and child's self-esteem.

Findings indicate that family economic resources are significantly predictive of every educational attainment but there are some variations in the effect across the type of outcomes. Even after controlling for parental assets, family income has a strong and constant impact on college degree attainment, which is consistent with the study by Nam and Huang (2008). Permanent family income may be a precise proxy to represent family economic status so that it could reflect the extent to which family can afford or support child's college completion. Among parental wealth measures, non-financial assets are significant for predicting college degree attainment, which is consistent with the evidence from Zhan's study using the same source of data (2009). Although most families might not be willing to liquidate non-financial assets, the form of assets implies that they have a greater ability to borrow money when needed and in times of economic difficulties (Nam & Huang, 2008; Zhan, 2009), and non-financial assets can be a symbol of higher socio-economic status and economic security. To pay for expensive college education, the ownership of non-financial assets can help families and children achieve a post-secondary degree.

Asset effects are not very strong in predicting college attendance, but it does not mean that these effects are unimportant. Once specific asset and liability measures are controlled for, income's effect on college attendance becomes insignificant; besides, homeownership and non-financial assets show a relatively stronger effect than income. This suggests that family income is partially correlated with financial assets, homeownership, and non-financial assets, and the asset effects may still outweigh the effect of family income. Accordingly, as in the college degree attainment model, the findings suggest that children from parents with more assets in the form of non-financial assets have a higher likelihood of going to college.

The income effect on high school completion is similar to that on college attendance. The income effect decreases and becomes insignificant when specific measures of assets and debts are controlled for. The form of financial assets, however, is a consistently significant factor. More notable findings are with high school dropout models. Strong asset effects are found with the risk of ever dropping out of high school. Net worth, financial assets, homeownership, and debts on non-financial assets are negatively associated with incidence of high school dropout. This evidence illustrates that disadvantaged economic status increases the exposure to high school dropout, although high school education itself is generally much less expensive compared to college education. Literature on high school dropout shows that a large fraction of students (especially those of an racial/ethnic minority) decide to leave school because they feel the need to financially support family through work or take on family responsibility (Rumberger, 1987). Therefore, the significant associations with several types of assets suggest that children from families who possess assets have a lower chance of being tempted or forced to leave school and thus continue to attend high school even in case of a sudden economic crisis.

Secured debts are significantly associated with the risk of high school dropout in the negative direction and with high school completion (and high school diploma) in the positive direction, even though secured debts indicate economic liability. The direction of the relationships, however, is not a complete surprise because secured debts do not necessarily mean economic burden. Other studies note that the presence of secured debts indicates economic power to purchase non-financial assets despite remaining debts (e.g. home mortgages), and that negative impact might be more likely when the value of secured debts exceeds that of non-financial assets (Carasso & McKernan, 2008; Nam & Huang, 2008; Zhan 2009).

In sum, the consistent impacts of economic resources, even after controlling for other constructs in the same empirical models, emphasize that the respective effects remain critical in every stage of a child's educational attainment.

The finding that parental involvement has an insignificant mediating effect is not unanticipated. Other quantitative studies find inconsistent relationships between parental involvement and academic achievement of high school students. Previous literature has demonstrated that the relationship of parental involvement to educational outcomes can vary by child's age, educational outcome measures, conceptual definition of the construct *parental involvement*, and child's academic ability (Barnard, 2004; Fan & Chen, 2001; Keith 1991; Shumow & Miller, 2001). Consistent research findings are found more often with younger students, such as elementary students. Parental involvement perceived by high school students, in general, is more associated with a global indicator of school grades, rather subject-specific test scores; parental involvement in school is more related to lower rates of high school dropout, high school completion, and years of highest education, compared to parental involvement at home;

perceived parental involvement reported by child are sometimes different from actual amounts of involvement reported by parents or observation by others.

Also, although parental involvement is mostly insignificant for the main outcomes' measures, the robustness tests on receiving a high school diploma, which set GED equivalency aside, show that parental involvement is significantly predictive of receiving a high school diploma at either the 0.05 or 0.1 level and partially mediate the effect of financial assets. This indicates parental involvement at home could be a critical factor in promoting a child's graduation from high school. Another plausible reason for insignificant effect of parental involvement might be because the construct can be confounded by other parental and child's characteristics. In the study sample, parental involvement is indeed quite highly correlated with child's educational expectations and child's self-esteem, and it is still significantly associated with them after controlling for other factors when the other two hypothesized mediators are regressed on parental involvement. Despite unclear evidence on the complex nature of parental involvement, it is encouraging that future studies can continue to examine the issue with the same measure from on-going longitudinal data from the NLSY79.

The mediating effects of child's educational expectations is supported in the effects of net worth and financial assets on the risk of high school dropout as well as the effects of financial assets on high school completion. Similar to the other hypothesized mediators, the inclusion of child's educational expectations does not greatly change the effects of parental economic resources on the outcomes. Nevertheless, child's educational expectations remain a significant factor for each educational milestone in the expected directions. Even when all of the three hypothesized mediators are included, child's educational expectations stand out as strongly associated with educational outcomes. The effects of net worth and financial assets are reported

to work through child's educational expectations, as the significant partial mediating pathways show. In a similar way, financial assets have a significant effect on high school completion through child's educational expectations.

The finding of the mediating effect of child's educational expectations is in line with the reasoning in the integrative model of educational achievement. The comprehensive educational achievement model postulates that distal factors (e.g. family SES, parents' values, or prior achievement) predict positive propensity levels (e.g. child's ability or willingness to learn) and educational opportunities (e.g. school climate, teacher, or courses), and consequently, propensity factors and opportunities result in higher levels of academic achievement (Byrnes & Miller, 2007). Previous quantitative studies have found the mediating effect mostly in terms of child's educational achievement measured by test scores, rather than educational attainment (Elliott, 2009; Zhan, 2006; Zhan, 2009; Zhan & Sherraden, 2003). When children are exposed to available resources, these resources can foster propensity in children to take advantage of learning opportunities and be more motivated to achieve better outcomes. Therefore, the significant mediating role played by child's educational expectations in high school dropout supports the possibility that children with lower levels of assets may adjust their educational expectations because of family circumstances, and this shift in expectations, in turn, may facilitate the decision to leave high school or not to attain high school graduate credentials.

The findings do not support a mediating effect for child's self-esteem in the relationship between parental economic resources and educational attainment. Instead, the findings support the direct effect of child's self-esteem on college degree attainment but do not support an effect on high school dropout, high school completion, or college attendance. The significant association with college degree attainment is observed even after child's educational



expectations are controlled for in the same model. This signals that child's self-esteem might be an important and long-term motivational factor in completing a higher educational degree, although it does not necessarily mediate the effect of parental economic resources. The lack of evidence of a significant mediating effect of child's self-esteem is not different from other studies. The mediating role is not consistently supported in other empirical studies (Orr, 2003; Yeung & Conley 2008) while previous studies show that self-esteem can have a positive impact on educational achievement (Liu, Kaplan, & Risser, 1992; Sterbin & Rakow, 1996; Yeung & Conley, 2008). Besides, although parental financial resources are not directly associated with child's self-esteem, parental involvement has a positive and significant association with child's self-esteem after controlling for other factors,<sup>27</sup> Thus, parental investment in children's schooling can lead to a positive level of self-esteem for children.

Several control variables deserve more discussion. In general, school quality, mother's college education, urban residence, and PIAT math scores are significant predictors of the probability of dropping out of high school. High school completion is significantly associated with PIAT reading recognition, birth order, and mother's college education. Child's gender, PIAT math, PIAT reading comprehension, school quality, and mother's college education are significant predictors for both college attendance and college degree attainment. Mother's high school completion is also significantly associated with child's college degree attainment.

The findings suggest that, consistent with other studies, mother's education has a strong impact on every level of child's educational attainment. This makes sense in that more educated

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<sup>27</sup> Detailed findings (regressing child's self-esteem on parental involvement and other covariates) are not presented in the paper.

mothers tend to make more efforts in child's education by investing monetary resources and providing appropriate role modeling. In addition, the higher probability of high school dropout for children residing in urban area implies that urban neighborhoods are more likely to expose children to various risk factors, such as unsafe environment, negative peer contagion, or low-quality schools. Although this study is not able to account for neighborhood and peer factors, the significant association between urban residence and high school dropout clearly suggest that urban residence signals some potential risk factors for child's high school education. Another related finding is that school quality has significant impacts on high school dropout and college education. As expected, it indicates that children who have positive school environments in terms of friends, class, and teachers have a higher probability of staying in school, going to college, and attaining a college degree.

After controlling for other factors, female children are more likely to go to college and complete a college degree, as found in national statistics and other studies. Women generally show a higher level of educational attainment than men, and women have a higher rate of college degree attainment among young cohorts, although a larger proportion of men have a college or advanced degree in the total population (U.S. Census Bureau, 2009).

While most control variables show significant association, as expected, a few findings are contradictory to existing literature. When specific measures of assets and liabilities are controlled for, African-American children have a significantly lower probability of ever dropping out of high school compared to non-Black and non-Hispanic children. This finding may result from the use of a different measure of high school dropout. This study defines a high school dropout as whether a child ever left school for more than one month. Another and more plausible explanation is that African-American children can have a lower probability of high school

dropout, controlling for other factors. Whereas simple bivariate analyses show significantly higher rates for African-Americans than non-Black and non-Hispanics of ever dropping out of high school, African-Americans are less likely to experience high school dropout in regression analyses controlling for other characteristics. Accordingly, African-American children could be less exposed to the risk of high school dropout as long as they have more assets to finance their education and higher levels of parental involvement, educational expectations, and self-esteem.

Another finding raises a puzzling question: children with unmarried mother are less likely to attain a college degree than those with married mother. Although this finding appears difficult to interpret, several explanations can be suggested. Because mother's marital status is measured when children are in high school, this study does not capture the change in marital status over eight years. Also, never-married mothers and separated/divorced/widowed mothers are categorized into one group against the reference group of married mothers. Given the different natures of the two groups, the unexpected association might be observed between marital status and child's college degree attainment. Besides, because mothers in NLSY79 are rather younger (average age is about 37 when child is in 9<sup>th</sup>/10<sup>th</sup> grade), the married mothers of the study sample children might have different characteristics from other comparative married mothers. In spite of the possible explanations suggested, the relationship between marital status and child's college degree attainment calls for more investigation in future studies.

### **Limitations**

This study is not free from some limitations.

First, this study draws both 9<sup>th</sup> and 10<sup>th</sup> graders as of the data collection time, either 1996 or 1998. The same grade of each cohort, however, can be in a different academic year because

the data collection period varies by cases. For example, 9<sup>th</sup> grader interviewed in April would be in a different high school class cohort from 9<sup>th</sup> grader interviewed in October.

Second, unsecured liability is available in the data only if the debt owed to any stores, doctors, hospitals, banks, or anyone else exceeds \$500. For this reason, relatively smaller amounts, less than \$500, are not able to be identified.

Third, child academic performance in school would be an important explanatory variable in child educational attainment. Although high school grades, such as a GPA, might be a better indicator to measure performance, this study was not able to include it. The potential question available in the data is the GPA earned in the prior year of high school but this was not available for half of the sample (9<sup>th</sup> graders) who had just entered high school. Accordingly, standardized test scores assessing early child cognitive development are instead employed from younger childhood, which is measured at age 10-14.

Fourth, child's educational outcomes are examined for eight years after the data collection in 9<sup>th</sup>/10<sup>th</sup> grade: from 1996 to 2004 for children sampled in 1996 and from 1998 to 2006 for children sampled in 1998. While the length of eight years is reasonably long to follow the outcome measures of high school dropout, high school completion, and college attendance, it is rather short to measure college degree attainment, particularly a four-year Bachelor's degree. One more round of data is possible to utilize for children sampled in 1996 because NLSY79 Child/YA data is currently available up to the year of 2006. However, only eight years of data are used to be consistent for every sample child included in the analyses.

Fifth, this study does not fully include potentially critical factors explaining child's educational attainment. Child's subjective assessment of overall school environment is used to measure school quality, instead of objective school-related variables. Even though coursework-

related factors, teacher's quality, and other objective measures of school quality are critical "proximal causes" (Byrnes & Miller, 2007, p.601) of academic achievement, they are not employed because of limited availability of data. For similar reasons, peer factors and neighborhood indicators are not controlled for.

## **Chapter VI. Implications and Conclusion**

This paper describes why we should care about parent's resources in relation to their children's outcomes, giving particular attention to assets and mediating pathways. This section suggests the implications for research and policy, highlighting contributions to current academic knowledge. First of all, this study provides additional empirical evidence that identifies distinctive roles of parental assets — not income — in explaining child's educational attainment. The research agenda contributes to articulating how income and assets play different roles in relation to child's educational outcomes. Because it is largely agreed upon that income measures have some limitations for estimating parents' economic resources, assets provide an alternative measures of parents' economic resource that complement income measures. Also, the study expands academic knowledge recently advanced, by assets-based research by including different functions of various types of assets and liabilities, not just total amounts of net worth.

Second, this study expands the range of effects of assets on child's educational attainment by investigating the relationship between assets and the risk of high school dropout. To my best knowledge, the impact of parental assets on the probability of dropping out of high school has been not studied to date. High school dropout experience is a serious academic failure which may signal continuous socioeconomic struggles in adulthood, and it also has different implications than a simple examination of outcome of high school graduation. Empirical evidence on strong effects of parental assets on the risk of high school dropout suggests that a greater research endeavor is needed in this area.

Third, this study raises new questions by incorporating the mediating mechanisms of parental involvement, child's educational expectations, and child's self-esteem in the relationship between various types of parental economic resources and child's educational attainment. It is

different from previous studies examining economic resources and non-economic factors separately in different research fields. This attempt will encourage more study of complex nature of the relationships.

Child development outcomes are a result of the efforts of society and government, parents, and children themselves (Haveman and Wolff, 1994). In order to effectively promote parents' capacity to attain better outcomes for their children, society and government should take the lead in providing relevant policy and programs. Such policy and programs are especially important for children of economically disadvantaged families.

Alternative asset-support programs and policy can play a significant role in complementing existing social policy. Current anti-poverty policy in the United States has heavily emphasized income-support programs that provide cash or in-kind services. Existing asset-based policies, such as tax subsidies for corporate and home ownership, have only benefited middle and upper class families (Sherraden, 1991; 2001), and have attended little to promoting accumulation of assets by the poor. According to Sherraden (2001), asset-building policies should aim to include everyone, providing "adequate resources in their accounts for social protection and household development" (p.302), as a complement to income maintenance strategies. Such asset-building strategies have the added benefit of encouraging individuals to control and plan their life in the long-term by means of savings and investment.

More importantly, asset limits in means-tested programs discourage the poor from accumulating the wealth and setting long-term plans because assets are counted when determining the program eligibility or benefits levels. Most low income households are concerned that accumulating assets will result in the loss of public assistance program benefits

because of asset limits set by federal and state governments (Nam, 2008; Powers, 1998). Thus, short-sighted economic strategies focused on income support result in families holding levels of assets that are often not sufficient to buffer economic difficulty. Consequently, poverty status tends to repeat across generations.

In this study, the effect of economic resources does not change greatly even after controlling for non-economic characteristics of parents and child. Empirical evidence from this study suggests that, along with family income, parental assets are critical resources for child's educational attainment and parental assets can enable children to achieve better outcomes in a different way. Hence, innovative policy interventions need to be developed and implemented for low- and moderate-income families, who have limited opportunity to accumulate assets or lack knowledge of how to do so, but are concerned about successful educational attainment of their offspring. Child Development Accounts (CDAs) are emerging as a policy initiative to encourage families to possess and invest in a savings account specifically for their child's future post-secondary education (Mason et al., forthcoming; Sherraden & Clancy, 2008; Williams Shanks, Kim, Loke, & Mesmin, forthcoming). While the idea has been implemented as policy in the United Kingdom, Canada, South Korea, and Singapore (Loke & Sherraden, 2009), a large-scale experiment in the United States—SEED for Oklahoma Kids (SEED OK)—is expected to facilitate empirical findings and policy implications on how CDAs promote savings for child's education and impact even parental educational expectations and parenting practices (Kim & Nam, 2009).

Low- and moderate-income families with limited resources are often placed in the complex contexts with multiple problems. Persistent intergenerational transmission of low socioeconomic status is truly caused by the failure of the welfare state in sensing particular needs



of low- and moderate-income families with children. In the long-term perspective, their children are the most disadvantaged group under this policy regime. Without various interventions to support their specific needs, children's futures will be jeopardized. Much more asset-based research and policy should pay attention to using asset-based policy to support children of low- and moderate-income families to fully develop their potential and minimize prospective social risks.

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## List of Tables

**Table 2. Descriptive Statistics of Variables**

Variables	Mean or percentage
<b>Dependent variables</b>	
Ever dropped out of high school (%)	17.37
High school graduate (%)	90.76
Ever enrolled in college (%)	61.23
College degree attainment (%)	19.91
<b>Independent variables</b>	
Family Income (mean, \$)	45,754.78
<i>Parental Assets</i>	
Net worth (mean, \$)	79,463.43
Financial assets (mean, \$)	16,299.48
Non-financial assets (mean, \$)	98,018.43
Home ownership (%)	65.90
<i>Parental Liabilities</i>	
Unsecured debts (mean, \$)	4,331.26
Secured debts (mean, \$)	46,893.66
<b>Mediating variables</b>	
Parental involvement in child education (mean)	27.91
Child's educational expectation (mean, year/grade)	14.95
Less than 12 (%)	1.16
12 (%)	26.26
13-15 (%)	11.56
16 (%)	41.76
17 or higher (%)	19.27
Child's self-esteem (mean)	32.47
<b>Control variables</b>	
Child age (mean, year)	15.93

Child gender (1=Female, %)	47.65
<i>Child race (%)</i>	
Non-African-American, non Hispanic	67.65
African-American	20.31
Hispanic	12.04
<i>Child's cognitive ability (mean)</i>	
PIAT Math	101.25
PIAT Reading Recognition	104.56
PIAT Reading Comprehension	98.62
School quality (mean)	25.09
Birth order (mean)	
1 (%)	60.77
2 (%)	28.87
3 (%)	8.21
4 (%)	1.47
5 or 6 (%)	0.68
Family size (mean)	4.46
Mother's age (mean, year)	36.85
<i>Mother's marital status (%)</i>	
Never married	7.55
Currently married	71.50
Separated, divorced, or widowed	20.95
<i>Mother's education (%)</i>	
No high school	11.33
High school	53.63
Some college or higher	35.04
Residence (1=Urban, %)	68.64

Note: 1) Descriptive statistics are weighted.

2) Amounts of income, assets, and liabilities are in 1998 dollars.

Table 3-1. Economic Resources on Educational Outcomes: Ever Dropped Out of High School

	Model 1A	Model 1B	Model 1C	Model 1D
Income (log)	0.878	0.951	1.129	1.244
<i>Assets</i>				
Net worth (log)		<b>0.675*</b>		
Financial assets (log)			<b>0.915*</b>	0.950
Non-financial assets (log)				0.922
Homeownership (1=yes)			<b>0.367**</b>	
<i>Liabilities</i>				
Unsecured debts (log)			1.022	1.051
Secured debts (log)				<b>0.880**</b>
Child age	0.960	0.886	0.916	0.893
<i>Child gender (male)</i>				
Female	0.847	0.799	0.917	0.793
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	0.780	0.774	0.566 <sup>ψ</sup>	<b>0.467*</b>
Hispanic	1.678	1.457	1.442	1.345
<i>Child cognitive ability</i>				
PIAT Math	<b>0.973*</b>	<b>0.974*</b>	0.981	0.976 <sup>ψ</sup>
PIAT Reading Recognition	1.000	0.998	0.998	1.001
PIAT Reading Comprehension	0.984	0.984	0.980	0.979
School quality	<b>0.891**</b>	<b>0.882**</b>	<b>0.888**</b>	<b>0.882**</b>
Birth order	1.178	1.173	1.116	1.198
Family size	0.897	0.876	0.859	0.838
Mother's age	0.919	0.928	0.935	0.910
<i>Mother's marital status (Unmarried)</i>				
Married	1.210	1.233	1.674	2.157 <sup>ψ</sup>
<i>Mother's education (No high school)</i>				
High school completion	0.646	0.605	0.679	0.913
Some college or higher	<b>0.355*</b>	<b>0.300*</b>	<b>0.351*</b>	0.518
<i>Residence (rural)</i>				
Urban	<b>2.312*</b>	<b>2.240*</b>	<b>2.154*</b>	<b>2.045*</b>
Likelihood Ratio $\chi^2$	74.897***	82.417***	99.544***	101.302***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 3-2. Economic Resources on Educational Outcomes: High School Completion

	Model 1A	Model 1B	Model 1C	Model 1D
Income (log)	<b>2.164**</b>	<b>2.149**</b>	1.506	1.366
<i>Assets</i>				
Net worth (log)		1.037		
Financial assets (log)			<b>1.165*</b>	1.134 <sup>ψ</sup>
Non-financial assets (log)				0.939
Homeownership (1=yes)			0.903	
<i>Liabilities</i>				
Unsecured debts (log)			1.004	0.983
Secured debts (log)				1.117 <sup>ψ</sup>
Child age	1.181	1.182	1.190	1.121
<i>Child gender (male)</i>				
Female	1.591	1.595	1.416	1.501
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	1.283	1.282	1.325	1.333
Hispanic	0.611	0.614	0.610	0.600
<i>Child cognitive ability</i>				
PIAT Math	1.010	1.010	1.006	1.002
PIAT Reading Recognition	<b>1.040*</b>	<b>1.040*</b>	<b>1.044*</b>	<b>1.047*</b>
PIAT Reading Comprehension	1.028	1.028	1.024	1.023
School quality	1.063	1.063	1.054	1.066
Birth order	<b>0.496**</b>	<b>0.496**</b>	<b>0.516**</b>	<b>0.513**</b>
Family size	1.214	1.213	1.278 <sup>ψ</sup>	1.278 <sup>ψ</sup>
Mother's age	1.191 <sup>ψ</sup>	1.191 <sup>ψ</sup>	1.189 <sup>ψ</sup>	1.201 <sup>ψ</sup>
<i>Mother's marital status (Unmarried)</i>				
Married	0.876	0.876	0.846	0.767
<i>Mother's education (No high school)</i>				
High school completion	1.843	1.850	1.716	1.413
Some college or higher	<b>3.509*</b>	<b>3.530*</b>	3.087 <sup>ψ</sup>	2.512
<i>Residence (rural)</i>				
Urban	0.652	0.653	0.641	0.723
Likelihood Ratio $\chi^2$	113.911***	114.058***	121.450***	127.303***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 3-3. Economic Resources on Educational Outcomes: College Attendance

	Model 1A	Model 1B	Model 1C	Model 1D
Income (log)	<b>1.781**</b>	<b>1.548*</b>	1.409	1.296
<i>Assets</i>				
Net worth (log)		1.635		
Financial assets (log)			1.063 <sup>ψ</sup>	1.052
Non-financial assets (log)				1.111 <sup>ψ</sup>
Homeownership (1=yes)			1.665 <sup>ψ</sup>	
<i>Liabilities</i>				
Unsecured debts (log)			1.026	1.020
Secured debts (log)				1.008
Child age	0.840	0.889	0.860	0.879
<i>Child gender (male)</i>				
Female	1.629 <sup>ψ</sup>	<b>1.692*</b>	1.597 <sup>ψ</sup>	<b>1.692*</b>
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	1.375	1.375	1.644	1.770 <sup>ψ</sup>
Hispanic	0.935	1.069	1.011	1.016
<i>Child cognitive ability</i>				
PIAT Math	<b>1.051***</b>	<b>1.049***</b>	<b>1.045***</b>	<b>1.048***</b>
PIAT Reading Recognition	0.997	0.999	1.000	0.998
PIAT Reading Comprehension	<b>1.029*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.031*</b>
School quality	<b>1.114**</b>	<b>1.121**</b>	<b>1.112**</b>	<b>1.112**</b>
Birth order	0.807	0.822	0.852	0.829
Family size	1.075	1.091	1.114	1.134
Mother's age	1.126 <sup>ψ</sup>	1.119 <sup>ψ</sup>	1.114 <sup>ψ</sup>	1.125 <sup>ψ</sup>
<i>Mother's marital status (Unmarried)</i>				
Married	0.788	0.782	0.677	0.620
<i>Mother's education (No high school)</i>				
High school completion	1.576	1.674	1.581	1.463
Some college or higher	<b>3.489**</b>	<b>3.929**</b>	<b>3.404**</b>	<b>3.003*</b>
<i>Residence (rural)</i>				
Urban	1.096	1.158	1.155	1.155
Likelihood Ratio $\chi^2$	197.067***	206.848***	210.713***	223.273***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 3-4. Economic Resources on Educational Outcomes: College Degree Attainment

	Model 1A	Model 1B	Model 1C	Model 1D
Income (log)	<b>2.692***</b>	<b>2.587***</b>	<b>2.327**</b>	<b>2.378**</b>
<i>Assets</i>				
Net worth (log)		1.124		
Financial assets (log)			1.046	1.043
Non-financial assets (log)				<b>1.169*</b>
Homeownership (1=yes)			1.592	
<i>Liabilities</i>				
Unsecured debts (log)			1.004	1.009
Secured debts (log)				0.931
Child age	1.249	1.262	1.276	1.281
<i>Child gender (male)</i>				
Female	<b>3.590***</b>	<b>3.568***</b>	<b>3.605***</b>	<b>3.539***</b>
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	1.188	1.199	1.369	1.383
Hispanic	0.597	0.620	0.637	0.634
<i>Child cognitive ability</i>				
PIAT Math	<b>1.047**</b>	<b>1.046**</b>	<b>1.042*</b>	<b>1.045*</b>
PIAT Reading Recognition	0.981	0.982	0.983	0.982
PIAT Reading Comprehension	<b>1.030*</b>	<b>1.031*</b>	<b>1.034*</b>	<b>1.031*</b>
School quality	<b>0.147*</b>	<b>1.146*</b>	<b>1.145*</b>	<b>1.142*</b>
Birth order	1.233	1.246	1.302	1.265
Family size	0.848	0.851	0.875	0.886
Mother's age	1.055	1.051	1.039	1.038
<i>Mother's marital status (Unmarried)</i>				
Married	0.518 <sup>ψ</sup>	0.513 <sup>ψ</sup>	<b>0.435*</b>	<b>0.421*</b>
<i>Mother's education (No high school)</i>				
High school completion	<b>4.438*</b>	<b>4.491*</b>	<b>4.694*</b>	<b>4.781*</b>
Some college or higher	<b>7.458**</b>	<b>7.588**</b>	<b>7.918**</b>	<b>7.864**</b>
<i>Residence (rural)</i>				
Urban	0.603	0.616	0.634	0.614
Likelihood Ratio $\chi^2$	117.940***	118.726***	120.174***	123.818***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 4-1. Economic Resources and Parental Involvement on High School Dropout

	A		B		C		D	
	Model1	Model 2	Model1	Model 2	Model1	Model 2	Model1	Model 2
Income (log)	0.878	0.878	0.951	0.952	1.129	1.130	1.244	1.255
<i>Assets</i>								
Net worth (log)			<b>0.675*</b>	<b>0.674*</b>				
Financial assets (log)					<b>0.915*</b>	<b>0.916*</b>	0.950	0.952
Non-financial assets (log)							0.922	0.918
Homeownership (1=yes)					<b>0.367**</b>	<b>0.363**</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.022	1.022	1.051	1.053
Secured debts (log)							<b>0.880**</b>	<b>0.879**</b>
Parental involvement in education		0.996		0.994		0.992		0.984
Child age	0.960	0.960	0.886	0.886	0.916	0.917	0.893	0.892
<i>Child gender</i> (male)								
Female	0.847	0.851	0.799	0.804	0.917	0.925	0.793	0.804
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	0.780	0.789	0.774	0.784	0.566 <sup>‡</sup>	0.573 <sup>‡</sup>	<b>0.467*</b>	<b>0.472*</b>
Hispanic	1.678	1.672	1.457	1.447	1.442	1.426	1.345	1.314
<i>Child cognitive ability</i>								
PIAT Math	<b>0.973*</b>	<b>0.974*</b>	<b>0.974*</b>	<b>0.974*</b>	0.981	0.981	0.976 <sup>‡</sup>	0.976 <sup>‡</sup>
PIAT Reading Recognition	1.000	1.000	0.998	0.999	0.998	0.998	1.001	1.002
PIAT Reading Comprehension	0.984	0.985	0.984	0.984	0.980	0.981	0.979	0.980
School quality	<b>0.891**</b>	<b>0.893**</b>	<b>0.882**</b>	<b>0.885**</b>	<b>0.888**</b>	<b>0.892**</b>	<b>0.882**</b>	<b>0.891**</b>
Birth order	1.178	1.176	1.173	1.171	1.116	1.114	1.198	1.197
Family size	0.897	0.897	0.876	0.875	0.859	0.858	0.838	0.836
Mother's age	0.919	0.920	0.928	0.928	0.935	0.935	0.910	0.909
<i>Mother's marital status</i> (unmarried)								
Married	1.210	1.213	1.233	1.238	1.674	1.684	2.157 <sup>‡</sup>	2.172 <sup>‡</sup>
<i>Mother's education</i> (No high school)								
High school graduation	0.646	0.650	0.605	0.610	0.679	0.687	0.913	0.939
Some college	<b>0.355*</b>	<b>0.360*</b>	<b>0.300*</b>	<b>0.306*</b>	<b>0.351*</b>	<b>0.360*</b>	0.518	0.550
<i>Residence</i> (rural)								
Urban	<b>2.312*</b>	<b>2.316*</b>	<b>2.240*</b>	<b>2.247*</b>	<b>2.154*</b>	<b>2.166*</b>	<b>2.045*</b>	<b>2.057*</b>
Likelihood Ratio $\chi^2$	74.897***	75.560***	82.417***	83.072***	99.544***	100.077***	101.302***	102.350***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>‡</sup> p<0.1

Table 4-2. Economic Resources and Parental Involvement on High School Completion

	A		B		C		D	
	Model1	Model 2	Model1	Model 2	Model1	Model 2	Model1	Model 2
Income (log)	<b>2.164**</b>	<b>2.150**</b>	<b>2.149**</b>	<b>2.125**</b>	1.506	1.504	1.366	1.336
<i>Assets</i>								
Net worth (log)			1.037	1.059				
Financial assets (log)					<b>1.165*</b>	<b>1.162*</b>	1.134 <sup>ψ</sup>	1.126 <sup>ψ</sup>
Non-financial assets (log)							0.939	0.942
Homeownership (1=yes)					0.903	0.944		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.004	0.983	0.980
Secured debts (log)							1.117 <sup>ψ</sup>	<b>1.129*</b>
Parental involvement in education		1.037		1.037		1.036		1.043
Child age	1.181	1.184	1.182	1.186	1.190	1.190	1.121	1.119
<i>Child gender</i> (male)								
Female	1.591	1.528	1.595	1.533	1.416	1.363	1.501	1.457
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.283	1.222	1.282	1.221	1.325	1.292	1.333	1.314
Hispanic	0.611	0.663	0.614	0.669	0.610	0.670	0.600	0.677
<i>Child cognitive ability</i>								
PIAT Math	1.010	1.007	1.010	1.007	1.006	1.004	1.002	1.000
PIAT Reading Recognition	<b>1.040*</b>	<b>1.040*</b>	<b>1.040*</b>	<b>1.040*</b>	<b>1.044*</b>	<b>1.043*</b>	<b>1.047*</b>	<b>1.045*</b>
PIAT Reading Comprehension	1.028	1.028	1.028	1.028	1.024	1.024	1.023	1.025
School quality	1.063	1.041	1.063	1.041	1.054	1.032	1.066	1.039
Birth order	<b>0.496**</b>	<b>0.504**</b>	<b>0.496**</b>	<b>0.505**</b>	<b>0.516**</b>	<b>0.520**</b>	<b>0.513**</b>	<b>0.516**</b>
Family size	1.214	1.211	1.213	1.210	1.278 <sup>ψ</sup>	1.278 <sup>ψ</sup>	1.278 <sup>ψ</sup>	1.282 <sup>ψ</sup>
Mother's age	1.191 <sup>ψ</sup>	1.188 <sup>ψ</sup>	1.191 <sup>ψ</sup>	1.188 <sup>ψ</sup>	0.189 <sup>ψ</sup>	1.189 <sup>ψ</sup>	1.201 <sup>ψ</sup>	1.206 <sup>ψ</sup>
<i>Mother's marital status</i> (unmarried)								
Married	0.876	0.886	0.876	0.885	0.846	0.852	0.767	0.766
<i>Mother's education</i> (No high school)								
High school graduation	1.843	1.730	1.850	1.739	1.716	1.607	1.413	1.283
Some college	<b>3.509*</b>	3.154 <sup>ψ</sup>	<b>3.530*</b>	3.180 <sup>ψ</sup>	3.087 <sup>ψ</sup>	2.779 <sup>ψ</sup>	2.512	2.140
<i>Residence</i> (rural)								
Urban	0.652	0.659	0.653	0.660	0.641	0.645	0.723	0.730
Likelihood Ratio $\chi^2$	113.911***	117.033***	114.058***	117.165***	121.450***	123.973***	127.303***	130.727***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1



Table 4-3. Economic Resources and Parental Involvement on College Attendance

	A		B		C		D	
	Model1	Model 2	Model1	Model 2	Model1	Model 2	Model1	Model 2
Income (log)	<b>1.781**</b>	<b>1.783**</b>	<b>1.548*</b>	<b>1.546*</b>	1.409	1.412	1.296	1.296
<i>Assets</i>								
Net worth (log)			1.635	1.658				
Financial assets (log)					1.063 <sup>ψ</sup>	1.062 <sup>ψ</sup>	1.052	1.050
Non-financial assets (log)							1.111 <sup>ψ</sup>	1.115 <sup>ψ</sup>
Homeownership (1=yes)					1.665 <sup>ψ</sup>	1.677 <sup>ψ</sup>		
<i>Liabilities</i>								
Unsecured debts (log)					1.026	1.025	1.020	1.019
Secured debts (log)							1.008	1.009
Parental involvement in education		1.007		1.010		1.006		0.010
Child age	0.840	0.843	0.889	0.895	0.860	0.864	0.879	0.885
<i>Child gender (male)</i>								
Female	1.629 <sup>ψ</sup>	1.621 <sup>ψ</sup>	<b>1.692*</b>	<b>1.680*</b>	1.597 <sup>ψ</sup>	1.590 <sup>ψ</sup>	<b>1.692*</b>	<b>1.682*</b>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.375	1.356	1.375	1.347	1.644	1.622	1.770 <sup>ψ</sup>	1.737 <sup>ψ</sup>
Hispanic	0.935	0.941	1.069	1.084	1.011	1.018	1.016	1.027
<i>Child cognitive ability</i>								
PIAT Math	<b>1.051***</b>	<b>1.052***</b>	<b>1.049***</b>	<b>1.049***</b>	<b>1.045***</b>	<b>1.046***</b>	<b>1.048***</b>	<b>1.048***</b>
PIAT Reading Recognition	0.997	0.997	0.999	0.999	1.000	1.000	0.998	0.998
PIAT Reading Comprehension	<b>1.029*</b>	<b>1.029*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.030*</b>	<b>1.031*</b>	<b>1.031*</b>
School quality	<b>1.114**</b>	<b>1.110*</b>	<b>1.121**</b>	<b>1.115**</b>	<b>1.112**</b>	<b>1.108*</b>	<b>1.112**</b>	<b>1.106*</b>
Birth order	0.807	0.808	0.822	0.824	0.852	0.852	0.829	0.827
Family size	1.075	1.076	1.091	1.092	1.114	1.114	1.134	1.136
Mother's age	1.126 <sup>ψ</sup>	1.126 <sup>ψ</sup>	1.119 <sup>ψ</sup>	1.119 <sup>ψ</sup>	1.114 <sup>ψ</sup>	1.114 <sup>ψ</sup>	1.125 <sup>ψ</sup>	1.125 <sup>ψ</sup>
<i>Mother's marital status (unmarried)</i>								
Married	0.788	0.786	0.782	0.776	0.677	0.672	0.620	0.612
<i>Mother's education (No high school)</i>								
High school graduation	1.576	1.561	1.674	1.651	1.581	1.568	1.463	1.441
Some college	<b>3.489**</b>	<b>3.424**</b>	<b>3.929**</b>	<b>3.816**</b>	<b>3.404**</b>	<b>3.349**</b>	<b>3.003*</b>	<b>2.916*</b>
<i>Residence (rural)</i>								
Urban	1.096	1.096	1.158	1.159	1.155	1.155	1.155	1.156
Likelihood Ratio $\chi^2$	197.067***	197.602***	206.848***	207.562***	210.713***	210.984***	223.273***	223.895***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 4-4. Economic Resources and Parental Involvement on College Degree Attainment

	A		B		C		D	
	Model1	Model 2	Model1	Model 2	Model1	Model 2	Model1	Model 2
Income (log)	<b>2.692***</b>	<b>2.719***</b>	<b>2.587***</b>	<b>2.602***</b>	<b>2.327**</b>	<b>2.354**</b>	<b>2.378**</b>	<b>2.407**</b>
<i>Assets</i>								
Net worth (log)			1.124	1.136				
Financial assets (log)					1.046	1.043	1.043	1.036
Non-financial assets (log)							<b>1.169*</b>	<b>1.185*</b>
Homeownership (1=yes)					1.592	1.611		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.002	1.009	1.006
Secured debts (log)							0.931	0.929
Parental involvement in education		1.019		1.019		1.018		1.023
Child age	1.249	1.268	1.262	1.283	1.276	1.294	1.281	1.303
<i>Child gender (male)</i>								
Female	<b>3.590***</b>	<b>3.514***</b>	<b>3.568***</b>	<b>3.487***</b>	<b>3.605***</b>	<b>3.545***</b>	<b>3.539***</b>	<b>3.487***</b>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.188	1.143	1.199	1.153	1.369	1.310	1.383	1.315
Hispanic	0.597	0.612	0.620	0.635	0.637	0.649	0.634	0.653
<i>Child cognitive ability</i>								
PIAT Math	<b>1.047**</b>	<b>1.048**</b>	<b>1.046**</b>	<b>1.047**</b>	<b>1.042*</b>	<b>1.043*</b>	<b>1.045*</b>	<b>1.046*</b>
PIAT Reading Recognition	0.981	0.980	0.982	0.981	0.983	0.982	0.982	0.981
PIAT Reading Comprehension	<b>1.030*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.034*</b>	<b>1.034*</b>	<b>1.031*</b>	<b>1.032*</b>
School quality	<b>1.147*</b>	<b>1.136*</b>	<b>1.146*</b>	<b>1.135*</b>	<b>1.145*</b>	<b>1.135*</b>	<b>1.142*</b>	<b>1.129*</b>
Birth order	1.233	1.249	1.246	1.264	1.302	1.318	1.265	1.281
Family size	0.848	0.850	0.851	0.853	0.875	0.876	0.886	0.890
Mother's age	1.055	1.053	1.051	1.048	1.039	1.037	1.038	1.035
<i>Mother's marital status (unmarried)</i>								
Married	0.518 <sup>ψ</sup>	0.505 <sup>ψ</sup>	0.513 <sup>ψ</sup>	0.500 <sup>ψ</sup>	<b>0.435*</b>	<b>0.426*</b>	<b>0.421*</b>	<b>0.402*</b>
<i>Mother's education (No high school)</i>								
High school graduation	<b>4.438*</b>	<b>4.282*</b>	<b>4.491*</b>	<b>4.332*</b>	<b>4.694*</b>	<b>4.520*</b>	<b>4.781*</b>	<b>4.590*</b>
Some college	<b>7.458**</b>	<b>6.971**</b>	<b>7.588**</b>	<b>7.092**</b>	<b>7.918**</b>	<b>7.433**</b>	<b>7.864**</b>	<b>7.298**</b>
<i>Residence (rural)</i>								
Urban	0.603	0.591	0.616	0.616	0.634	0.626	0.614	0.601
Likelihood Ratio $\chi^2$	117.940***	118.500***	118.726***	119.345***	120.174***	120.729***	123.818***	124.571***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup>p<0.1

Table 5-1. Economic Resources and Child's Educational Expectations on High School Dropout

	A		B		C		D	
	Model1	Model 3	Model1	Model 3	Model1	Model 3	Model1	Model 3
Income (log)	0.878	0.887	0.951	0.953	1.129	1.136	1.244	1.281
<i>Assets</i>								
Net worth (log)			<b>0.675*</b>	<b>0.698*</b>				
Financial assets (log)					<b>0.915*</b>	<b>0.923*</b>	0.950	0.962
Non-financial assets (log)							0.922	0.916
Homeownership (1=yes)					<b>0.367**</b>	<b>0.348**</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.022	1.022	1.051	1.052
Secured debts (log)							<b>0.880**</b>	<b>0.875**</b>
Child's educational expectations		<b>0.847*</b>		<b>0.861*</b>		<b>0.850*</b>		<b>0.836*</b>
Child age	0.960	0.906	0.886	0.844	0.916	0.866	0.893	0.833
<i>Child gender (male)</i>								
Female	0.847	0.865	0.799	0.818	0.917	0.944	0.793	0.802
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	0.780	0.833	0.774	0.822	0.566 <sup>‡</sup>	0.602	<b>0.467*</b>	0.493 <sup>‡</sup>
Hispanic	1.678	1.686	1.457	1.461	1.442	1.420	1.345	1.325
<i>Child cognitive ability</i>								
PIAT Math	<b>0.973*</b>	0.976 <sup>‡</sup>	<b>0.974*</b>	0.976 <sup>‡</sup>	0.981	0.983	0.976 <sup>‡</sup>	0.978 <sup>‡</sup>
PIAT Reading Recognition	1.000	1.002	0.998	1.000	0.998	0.999	1.001	1.002
PIAT Reading Comprehension	0.984	0.987	0.984	0.987	0.980	0.984	0.979	0.983
School quality	<b>0.891**</b>	<b>0.898*</b>	<b>0.882**</b>	<b>0.889**</b>	<b>0.888**</b>	<b>0.896*</b>	<b>0.882**</b>	<b>0.890*</b>
Birth order	1.178	1.165	1.173	1.164	1.116	1.118	1.198	1.221
Family size	0.897	0.884	0.876	0.864	0.859	0.846	0.838	0.817
Mother's age	0.919	0.948	0.928	0.954	0.935	0.964	0.910	0.935
<i>Mother's marital status (unmarried)</i>								
Married	1.210	1.271	1.233	1.290	1.674	1.760	2.157 <sup>‡</sup>	<b>2.293*</b>
<i>Mother's education (No high school)</i>								
High school graduation	0.646	0.674	0.605	0.630	0.679	0.710	0.913	0.981
Some college	<b>0.355*</b>	0.393 <sup>‡</sup>	<b>0.300*</b>	<b>0.331*</b>	<b>0.351*</b>	0.379 <sup>‡</sup>	0.518	0.576
<i>Residence (rural)</i>								
Urban	<b>2.312*</b>	<b>2.264*</b>	<b>2.240*</b>	<b>2.193*</b>	<b>2.154*</b>	<b>2.108*</b>	<b>2.045*</b>	1.962 <sup>‡</sup>
Likelihood Ratio $\chi^2$	74.897***	85.475***	82.417***	91.495***	99.544***	110.420***	101.302***	113.022***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>‡</sup> p<0.1

Table 5-2. Economic Resources and Child's Educational Expectations on High School Completion

	A		B		C		D	
	Model1	Model 3	Model1	Model 3	Model1	Model 3	Model1	Model 3
Income (log)	<b>2.164**</b>	<b>2.106**</b>	<b>2.149**</b>	<b>2.117**</b>	1.506	1.480	1.366	1.258
<i>Assets</i>								
Net worth (log)			1.037	0.976				
Financial assets (log)					<b>1.165*</b>	1.137 <sup>ψ</sup>	1.134 <sup>ψ</sup>	1.086
Non-financial assets (log)							0.939	0.963
Homeownership (1=yes)					0.903	1.050		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.004	0.983	0.972
Secured debts (log)							1.117 <sup>ψ</sup>	<b>1.147*</b>
Child's educational expectations		<b>1.549***</b>		<b>1.550***</b>		<b>1.511***</b>		<b>1.558***</b>
Child age	1.181	1.444	1.182	1.442	1.190	1.444	1.121	1.358
<i>Child gender (male)</i>								
Female	1.591	1.592	1.595	1.590	1.416	1.407	1.501	1.544
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.283	1.149	1.282	1.150	1.325	1.221	1.333	1.317
Hispanic	0.611	0.635	0.614	0.632	0.610	0.645	0.600	0.682
<i>Child cognitive ability</i>								
PIAT Math	1.010	1.005	1.010	1.005	1.006	1.002	1.002	1.000
PIAT Reading Recognition	<b>1.040*</b>	<b>1.041*</b>	<b>1.040*</b>	<b>1.041*</b>	<b>1.044*</b>	<b>1.046*</b>	<b>1.047*</b>	<b>1.047*</b>
PIAT Reading Comprehension	1.028	1.023	1.028	1.023	1.024	1.018	1.023	1.021
School quality	1.063	1.043	1.063	1.043	1.054	1.032	1.066	1.041
Birth order	<b>0.496**</b>	<b>0.521**</b>	<b>0.496**</b>	<b>0.521**</b>	<b>0.516**</b>	<b>0.535**</b>	<b>0.513**</b>	<b>0.503**</b>
Family size	1.214	1.225	1.213	1.225	1.278 <sup>ψ</sup>	1.279 <sup>ψ</sup>	1.278 <sup>ψ</sup>	1.308 <sup>ψ</sup>
Mother's age	1.191 <sup>ψ</sup>	1.117	1.191 <sup>ψ</sup>	1.117	1.189 <sup>ψ</sup>	1.110	1.201 <sup>ψ</sup>	1.133
<i>Mother's marital status (unmarried)</i>								
Married	0.876	0.815	0.876	0.815	0.846	0.810	0.767	0.701
<i>Mother's education (No high school)</i>								
High school graduation	1.843	1.583	1.850	1.578	1.716	1.483	1.413	1.083
Some college	<b>3.509*</b>	2.603	<b>3.530*</b>	2.589	3.087 <sup>ψ</sup>	2.375	2.512	1.706
<i>Residence (rural)</i>								
Urban	0.652	0.635	0.653	0.634	0.641	0.630	0.723	0.718
Likelihood Ratio $\chi^2$	113.911***	130.206***	114.058***	130.215***	121.450***	136.409***	127.303***	145.199***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 5-3. Economic Resources and Child's Educational Expectations on College Attendance

	A		B		C		D	
	Model 1	Model 3	Model 1	Model 3	Model 1	Model 3	Model 1	Model 3
Income (log)	<b>1.781**</b>	<b>1.750**</b>	<b>1.548*</b>	1.533 <sup>ψ</sup>	1.409	1.393	1.296	1.243
<i>Assets</i>								
Net worth (log)			1.635	1.630				
Financial assets (log)					1.063 <sup>ψ</sup>	1.049	1.052	1.032
Non-financial assets (log)							1.111 <sup>ψ</sup>	<b>1.128*</b>
Homeownership (1=yes)					1.665 <sup>ψ</sup>	<b>1.941*</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.026	1.024	1.020	1.017
Secured debts (log)							1.008	1.023
Child's educational expectations		<b>1.442***</b>		<b>1.433***</b>		<b>1.454***</b>		<b>1.465***</b>
Child age	0.840	0.956	0.889	0.006	0.860	0.981	0.879	1.007
<i>Child gender (male)</i>								
Female	1.629 <sup>ψ</sup>	1.520	<b>1.692*</b>	1.594 <sup>ψ</sup>	1.597 <sup>ψ</sup>	1.510 <sup>ψ</sup>	<b>1.692*</b>	1.639 <sup>ψ</sup>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.375	1.176	1.375	1.186	1.644	1.415	1.770 <sup>ψ</sup>	1.514 <sup>ψ</sup>
Hispanic	0.935	0.006	1.069	1.142	1.011	1.110	1.016	1.107
<i>Child cognitive ability</i>								
PIAT Math	<b>1.051***</b>	<b>1.051***</b>	<b>1.049***</b>	<b>1.048***</b>	<b>1.045***</b>	<b>1.044***</b>	<b>1.048***</b>	<b>1.048***</b>
PIAT Reading Recognition	0.997	0.993	0.999	0.995	1.000	0.996	0.998	0.993
PIAT Reading Comprehension	<b>1.029*</b>	1.025 <sup>ψ</sup>	<b>1.031*</b>	1.026	<b>1.031*</b>	1.026 <sup>ψ</sup>	<b>1.031*</b>	<b>1.027*</b>
School quality	<b>1.114**</b>	<b>1.102**</b>	<b>1.121**</b>	<b>1.109**</b>	<b>1.112**</b>	<b>1.102*</b>	<b>1.112**</b>	<b>1.103*</b>
Birth order	0.807	0.806	0.822	0.818	0.852	0.836	0.829	0.797
Family size	1.075	1.133	1.091	1.147	1.114	1.180	1.134	1.212
Mother's age	1.126 <sup>ψ</sup>	1.060	1.119 <sup>ψ</sup>	1.054	1.114 <sup>ψ</sup>	1.046	1.125 <sup>ψ</sup>	1.060
<i>Mother's marital status (unmarried)</i>								
Married	0.788	0.696	0.782	0.685	0.677	0.573	0.620	0.510
<i>Mother's education (No high school)</i>								
High school graduation	1.576	1.525	1.674	1.607	1.581	1.534	1.463	1.385
Some college	<b>3.489**</b>	<b>3.175**</b>	<b>3.929**</b>	<b>3.491*</b>	<b>3.404**</b>	<b>3.201*</b>	<b>3.003*</b>	2.698 <sup>ψ</sup>
<i>Residence (rural)</i>								
Urban	1.096	1.204	1.158	1.267	1.155	1.281	1.155	1.312
Likelihood Ratio $\chi^2$	197.067***	229.035***	206.848***	237.554***	210.713***	243.128***	223.273***	258.013***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 5-4. Economic Resources and Child's Educational Expectations on College Degree Attainment

	A		B		C		D	
	Model1	Model 3	Model1	Model 3	Model1	Model 3	Model1	Model 3
Income (log)	<b>2.692***</b>	<b>2.486***</b>	<b>2.587***</b>	<b>2.375**</b>	<b>2.327**</b>	<b>2.143**</b>	<b>2.378**</b>	<b>2.144**</b>
<i>Assets</i>								
Net worth (log)			1.124	1.164				
Financial assets (log)					1.046	1.043	1.043	1.039
Non-financial assets (log)							<b>1.169*</b>	<b>1.188*</b>
Homeownership (1=yes)					1.592	1.898		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.006	1.009	1.009
Secured debts (log)							0.931	0.943
Child's educational expectations		<b>1.410***</b>		<b>1.411***</b>		<b>1.436***</b>		<b>1.426***</b>
Child age	1.249	1.344	1.262	1.355	1.276	1.372 <sup>ψ</sup>	1.281	1.365 <sup>ψ</sup>
<i>Child gender (male)</i>								
Female	<b>3.590***</b>	<b>3.134***</b>	<b>3.568***</b>	<b>3.102***</b>	<b>3.605***</b>	<b>3.208***</b>	<b>3.539***</b>	<b>3.146***</b>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.188	1.104	1.199	1.118	1.369	1.293	1.383	1.302
Hispanic	0.597	0.646	0.620	0.654	0.637	0.679	0.634	0.677
<i>Child cognitive ability</i>								
PIAT Math	<b>1.047**</b>	<b>1.043*</b>	<b>1.046**</b>	<b>1.042*</b>	<b>1.042*</b>	<b>1.037*</b>	<b>1.045*</b>	<b>1.040*</b>
PIAT Reading Recognition	0.981	0.976 <sup>ψ</sup>	0.982	0.976 <sup>ψ</sup>	0.983	0.977 <sup>ψ</sup>	0.982	0.976 <sup>ψ</sup>
PIAT Reading Comprehension	<b>1.030*</b>	1.028 <sup>ψ</sup>	<b>1.031*</b>	1.029 <sup>ψ</sup>	<b>1.034*</b>	<b>1.033*</b>	<b>1.031*</b>	1.031 <sup>ψ</sup>
School quality	<b>0.147*</b>	<b>0.137*</b>	<b>1.146*</b>	<b>1.135*</b>	<b>1.145*</b>	<b>1.136*</b>	<b>1.142*</b>	<b>1.131*</b>
Birth order	1.233	1.252	1.246	1.274	1.302	1.351	1.265	1.305
Family size	0.848	0.891	0.851	0.889	0.875	0.925	0.886	0.925
Mother's age	1.055	1.026	1.051	1.021	1.039	1.010	1.038	1.009
<i>Mother's marital status (unmarried)</i>								
Married	0.518 <sup>ψ</sup>	0.463 <sup>ψ</sup>	0.513 <sup>ψ</sup>	<b>0.457*</b>	<b>0.435*</b>	<b>0.368*</b>	<b>0.421*</b>	<b>0.359*</b>
<i>Mother's education (No high school)</i>								
High school graduation	<b>4.438*</b>	<b>4.268*</b>	<b>4.491*</b>	<b>4.278*</b>	<b>4.694*</b>	<b>4.510*</b>	<b>4.781*</b>	<b>4.260*</b>
Some college	<b>7.458**</b>	<b>6.008**</b>	<b>7.588**</b>	<b>6.050**</b>	<b>7.918**</b>	<b>6.303**</b>	<b>7.864**</b>	<b>5.733*</b>
<i>Residence (rural)</i>								
Urban	0.603	0.590	0.616	0.601	0.634	0.635	0.614	0.604
Likelihood Ratio $\chi^2$	117.940***	131.684***	118.726***	132.388***	120.174***	134.791***	123.818***	137.454***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup>p<0.1

Table 6-1. Economic Resources and Child's Self-Esteem on High School Dropout

	A		B		C		D	
	Model1	Model 4	Model1	Model 4	Model1	Model 4	Model1	Model 4
Income (log)	0.878	0.883	0.951	0.958	1.129	1.133	1.244	1.257
<i>Assets</i>								
Net worth (log)			<b>0.675*</b>	<b>0.672*</b>				
Financial assets (log)					<b>0.915*</b>	<b>0.915*</b>	0.950	0.950
Non-financial assets (log)							0.922	0.921
Homeownership (1=yes)					<b>0.367**</b>	<b>0.367**</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.022	1.021	1.051	1.052
Secured debts (log)							<b>0.880**</b>	<b>0.879**</b>
Child's self-esteem		0.981		0.976		0.983		0.975
Child age	0.960	0.969	0.886	0.897	0.916	0.924	0.893	0.905
<i>Child gender (male)</i>								
Female	0.847	0.839	0.799	0.791	0.917	0.913	0.793	0.785
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	0.780	0.783	0.774	0.777	0.566 <sup>‡</sup>	0.568 <sup>‡</sup>	<b>0.467*</b>	<b>0.466*</b>
Hispanic	1.678	1.665	1.457	1.436	1.442	1.431	1.345	1.326
<i>Child cognitive ability</i>								
PIAT Math	<b>0.973*</b>	<b>0.974*</b>	<b>0.974*</b>	<b>0.975*</b>	0.981	0.982	0.976 <sup>‡</sup>	0.977 <sup>‡</sup>
PIAT Reading Recognition	1.000	1.000	0.998	0.998	0.998	0.998	1.001	1.001
PIAT Reading Comprehension	0.984	0.985	0.984	0.985	0.980	0.981	0.979	0.980
School quality	<b>0.891**</b>	<b>0.894*</b>	<b>0.882**</b>	<b>0.885**</b>	<b>0.888**</b>	<b>0.891**</b>	<b>0.882**</b>	<b>0.886*</b>
Birth order	1.178	1.182	1.173	1.177	1.116	1.121	1.198	1.204
Family size	0.897	0.894	0.876	0.870	0.859	0.856	0.838	0.834
Mother's age	0.919	0.918	0.928	0.927	0.935	0.934	0.910	0.908
<i>Mother's marital status (unmarried)</i>								
Married	1.210	1.211	1.233	1.238	1.674	1.687	2.157 <sup>‡</sup>	2.178 <sup>‡</sup>
<i>Mother's education (No high school)</i>								
High school graduation	0.646	0.645	0.605	0.604	0.679	0.680	0.913	0.916
Some college	<b>0.355*</b>	<b>0.358*</b>	<b>0.300*</b>	<b>0.303*</b>	<b>0.351*</b>	<b>0.354*</b>	0.518	0.528
<i>Residence (rural)</i>								
Urban	<b>2.312*</b>	<b>2.302*</b>	<b>2.240*</b>	<b>2.227*</b>	<b>2.154*</b>	<b>2.142*</b>	<b>2.045*</b>	2.024 <sup>‡</sup>
Likelihood Ratio $\chi^2$	74.897***	76.866***	82.417***	84.658***	99.544***	100.972***	101.302***	102.562***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>‡</sup> p<0.1

Table 6-2. Economic Resources and Child's Self-Esteem on High School Completion

	A		B		C		D	
	Model1	Model 4	Model1	Model 4	Model1	Model 4	Model1	Model 4
Income (log)	<b>2.164**</b>	<b>2.223**</b>	<b>2.149**</b>	<b>2.203**</b>	1.506	1.536	1.366	1.391
<i>Assets</i>								
Net worth (log)			1.037	1.048				
Financial assets (log)					<b>1.165*</b>	<b>1.165*</b>	1.134 <sup>ψ</sup>	1.133 <sup>ψ</sup>
Non-financial assets (log)							0.939	0.941
Homeownership (1=yes)					0.903	0.900		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.001	0.983	0.981
Secured debts (log)							1.117 <sup>ψ</sup>	1.114 <sup>ψ</sup>
Child's self-esteem		0.964		0.964		0.966		0.970
Child age	1.181	1.222	1.182	1.225	1.190	1.224	1.121	1.151
<i>Child gender (male)</i>								
Female	1.591	1.577	1.595	1.583	1.416	1.409	1.501	1.495
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.283	1.252	1.282	1.250	1.325	1.293	1.333	1.310
Hispanic	0.611	0.575	0.614	0.578	0.610	0.573	0.600	0.566
<i>Child cognitive ability</i>								
PIAT Math	1.010	1.012	1.010	1.012	1.006	1.008	1.002	1.005
PIAT Reading Recognition	<b>1.040*</b>	<b>1.039<sup>ψ</sup></b>	<b>1.040*</b>	<b>1.039<sup>ψ</sup></b>	<b>1.044*</b>	<b>1.043*</b>	<b>1.047*</b>	<b>1.046*</b>
PIAT Reading Comprehension	1.028	1.030	1.028	1.030	1.024	1.026	1.023	1.025
School quality	1.063	1.075	1.063	1.075	1.054	1.065	1.066	1.075
Birth order	<b>0.496**</b>	<b>0.500**</b>	<b>0.496**</b>	<b>0.500**</b>	<b>0.516**</b>	<b>0.520**</b>	<b>0.513**</b>	<b>0.517**</b>
Family size	1.214	1.217	1.213	1.216	1.278 <sup>ψ</sup>	1.279	1.278 <sup>ψ</sup>	1.279 <sup>ψ</sup>
Mother's age	1.191 <sup>ψ</sup>	1.188 <sup>ψ</sup>	1.191 <sup>ψ</sup>	1.187 <sup>ψ</sup>	1.189 <sup>ψ</sup>	1.187 <sup>ψ</sup>	1.201 <sup>ψ</sup>	1.199 <sup>ψ</sup>
<i>Mother's marital status (unmarried)</i>								
Married	0.876	0.857	0.876	0.856	0.846	0.840	0.767	0.764
<i>Mother's education (No high school)</i>								
High school graduation	1.843	1.821	1.850	1.830	1.716	1.699	1.413	1.403
Some college	<b>3.509*</b>	<b>3.559*</b>	<b>3.530*</b>	<b>3.590*</b>	3.087 <sup>ψ</sup>	3.117 <sup>ψ</sup>	2.512	2.530
<i>Residence (rural)</i>								
Urban	0.652	0.645	0.653	0.645	0.641	0.630	0.723	0.713
Likelihood Ratio $\chi^2$	113.911***	114.030***	114.058***	114.174***	121.450***	121.512***	127.303***	127.363***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1



Table 6-3. Economic Resources and Child's Self-Esteem on College Attendance

	A		B		C		D	
	Model1	Model 4	Model1	Model 4	Model1	Model 4	Model1	Model 4
Income (log)	<b>1.781**</b>	<b>1.760**</b>	<b>1.548*</b>	<b>1.529*</b>	1.409	1.395	1.296	1.276
<i>Assets</i>								
Net worth (log)			1.635	1.629 <sup>ψ</sup>				
Financial assets (log)					1.063 <sup>ψ</sup>	1.063 <sup>ψ</sup>	1.052	1.052
Non-financial assets (log)							1.111 <sup>ψ</sup>	1.112 <sup>ψ</sup>
Homeownership (1=yes)					1.665 <sup>ψ</sup>	1.652 <sup>ψ</sup>		
<i>Liabilities</i>								
Unsecured debts (log)					1.026	1.026	1.020	1.019
Secured debts (log)							1.008	1.010
Child's self-esteem		1.028		1.032		1.027		1.032
Child age	0.840	0.831	0.889	0.880	0.860	0.853	0.879	0.871
<i>Child gender (male)</i>								
Female	1.629 <sup>ψ</sup>	<b>1.655*</b>	<b>1.692*</b>	<b>1.724*</b>	1.597 <sup>ψ</sup>	1.620 <sup>ψ</sup>	<b>1.692*</b>	<b>1.723*</b>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.375	1.356	1.375	1.355	1.644	1.618	1.770 <sup>ψ</sup>	1.747 <sup>ψ</sup>
Hispanic	0.935	0.935	1.069	1.078	1.011	1.011	1.016	1.015
<i>Child cognitive ability</i>								
PIAT Math	<b>1.051***</b>	<b>1.052***</b>	<b>1.049***</b>	<b>1.049***</b>	<b>1.045***</b>	<b>1.046***</b>	<b>1.048***</b>	<b>1.048***</b>
PIAT Reading Recognition	0.997	0.997	0.999	0.999	1.000	1.000	0.998	0.998
PIAT Reading Comprehension	<b>1.029*</b>	<b>1.029*</b>	<b>1.031*</b>	<b>1.030*</b>	<b>1.031*</b>	<b>1.030*</b>	<b>1.031*</b>	<b>1.030*</b>
School quality	<b>1.114**</b>	<b>1.110**</b>	<b>1.121**</b>	<b>1.117**</b>	<b>1.112**</b>	<b>1.108**</b>	<b>1.112**</b>	<b>1.108*</b>
Birth order	0.807	0.792	0.822	0.804	0.852	0.837	0.829	0.810
Family size	1.075	1.084	1.091	1.102	1.114	1.123	1.134	1.145
Mother's age	1.126 <sup>ψ</sup>	<b>1.131*</b>	1.119 <sup>ψ</sup>	1.124 <sup>ψ</sup>	1.114 <sup>ψ</sup>	1.118 <sup>ψ</sup>	1.125 <sup>ψ</sup>	1.130 <sup>ψ</sup>
<i>Mother's marital status (unmarried)</i>								
Married	0.788	0.785	0.782	0.779	0.677	0.673	0.620	0.613
<i>Mother's education (No high school)</i>								
High school graduation	1.576	1.571	1.674	1.671	1.581	1.578	1.463	1.456
Some college	<b>3.489**</b>	<b>3.433**</b>	<b>3.929**</b>	<b>3.860**</b>	<b>3.404**</b>	<b>3.348*</b>	<b>3.003*</b>	<b>2.936*</b>
<i>Residence (rural)</i>								
Urban	1.096	1.094	1.158	1.154	1.155	1.148	1.155	1.151
Likelihood Ratio $\chi^2$	197.067***	197.382***	206.848***	207.363***	210.713***	210.872***	223.273***	223.428***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 6-4. Economic Resources and Child's Self-Esteem on College Degree Attainment

	A		B		C		D	
	Model1	Model 4	Model1	Model 4	Model1	Model 4	Model1	Model 4
Income (log)	<b>2.692***</b>	<b>2.623***</b>	<b>2.587***</b>	<b>2.460***</b>	<b>2.327**</b>	<b>2.215**</b>	<b>2.378**</b>	<b>2.237**</b>
<i>Assets</i>								
Net worth (log)			1.124	1.201				
Financial assets (log)					1.046	1.053	1.043	1.045
Non-financial assets (log)							<b>1.169*</b>	<b>1.194*</b>
Homeownership (1=yes)					1.592	1.601		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.001	1.009	1.006
Secured debts (log)							0.931	0.933
Child's self-esteem		<b>1.119**</b>		<b>1.122**</b>		<b>1.122**</b>		<b>1.128**</b>
Child age	1.249	1.267	1.262	1.291	1.276	1.298	1.281	1.302
<i>Child gender (male)</i>								
Female	<b>3.590***</b>	<b>4.227***</b>	<b>3.568***</b>	<b>4.219***</b>	<b>3.605***</b>	<b>4.316***</b>	<b>3.539***</b>	<b>4.333***</b>
<i>Child race</i>								
(Non-African American, Non-Hispanic)								
African-American	1.188	1.080	1.199	1.092	1.369	1.247	1.383	1.261
Hispanic	0.597	0.592	0.620	0.627	0.637	0.631	0.634	0.636
<i>Child cognitive ability</i>								
PIAT Math	<b>1.047**</b>	<b>1.052**</b>	<b>1.046**</b>	<b>1.050**</b>	<b>1.042*</b>	<b>1.047**</b>	<b>1.045*</b>	<b>1.049**</b>
PIAT Reading Recognition	0.981	0.977	0.982	0.978	0.983	0.979	0.982	0.977
PIAT Reading Comprehension	<b>1.030*</b>	<b>1.032*</b>	<b>1.031*</b>	<b>1.033*</b>	<b>1.034*</b>	<b>1.035*</b>	<b>1.031*</b>	<b>1.034*</b>
School quality	<b>0.147*</b>	<b>0.139*</b>	<b>1.146*</b>	<b>1.138*</b>	<b>1.145*</b>	<b>1.137*</b>	<b>1.142*</b>	<b>1.133*</b>
Birth order	1.233	1.147	1.246	1.166	1.302	1.223	1.265	1.179
Family size	0.848	0.890	0.851	0.896	0.875	0.923	0.886	0.938
Mother's age	1.055	1.077	1.051	1.070	1.039	1.059	1.038	1.058
<i>Mother's marital status (unmarried)</i>								
Married	0.518 <sup>ψ</sup>	<b>0.463*</b>	0.513 <sup>ψ</sup>	<b>0.457*</b>	<b>0.435*</b>	<b>0.391*</b>	<b>0.421*</b>	<b>0.361*</b>
<i>Mother's education (No high school)</i>								
High school graduation	<b>4.438*</b>	<b>4.506*</b>	<b>4.491*</b>	<b>4.670*</b>	<b>4.694*</b>	<b>4.864*</b>	<b>4.781*</b>	<b>5.138*</b>
Some college	<b>7.458**</b>	<b>7.246**</b>	<b>7.588**</b>	<b>7.591**</b>	<b>7.918**</b>	<b>7.841**</b>	<b>7.864**</b>	<b>8.009**</b>
<i>Residence (rural)</i>								
Urban	0.603	0.598	0.616	0.621	0.634	0.637	0.614	0.612
Likelihood Ratio $\chi^2$	117.940***	123.530***	118.726***	124.794***	120.174***	126.052***	123.818***	129.623***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 7. Economic Resources on Parental Involvement

	Model A	Model B	Model C	Model D
Income (log)	0.244	0.337	0.175	0.338
<i>Assets</i>				
Net worth (log)		-0.420		
Financial assets (log)			0.126	0.182 <sup>ψ</sup>
Non-financial assets (log)				<b>-0.296*</b>
Homeownership (1=yes)			-1.066	
<i>Liabilities</i>				
Unsecured debts (log)			0.103	0.125 <sup>ψ</sup>
Secured debts (log)				-0.052
Child age	-0.461	-0.523	-0.418	-0.470
<i>Child gender (male)</i>				
Female	1.185 <sup>ψ</sup>	1.166 <sup>ψ</sup>	1.119 <sup>ψ</sup>	0.982
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	<b>2.453**</b>	<b>2.440**</b>	<b>2.480**</b>	<b>2.113*</b>
Hispanic	-1.164	-1.328	-1.186	-1.317
<i>Child cognitive ability</i>				
PIAT Math	-0.019	-0.016	-0.018	-0.021
PIAT Reading Recognition	0.019	0.017	0.021	0.027
PIAT Reading Comprehension	0.023	0.023	0.015	0.012
School quality	<b>0.566***</b>	<b>0.562***</b>	<b>0.570***</b>	<b>0.576***</b>
Birth order	-0.386	-0.412	-0.325	-0.219
Family size	-0.144	-0.161	-0.132	-0.197
Mother's age	0.066	0.079	0.058	0.029
<i>Mother's marital status (Unmarried)</i>				
Married	0.733	0.760	0.792	1.223
<i>Mother's education (No high school)</i>				
High school completion	1.613	1.538	1.615	1.946 <sup>ψ</sup>
Some college or higher	<b>3.349**</b>	<b>3.233**</b>	<b>3.138***</b>	<b>3.592**</b>
<i>Residence (rural)</i>				
Urban	0.553	0.483	0.409	0.349
Model Fit (F value)	5.84***	5.67***	5.02***	5.07***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 8. Economic Resources on Child's Educational Expectations

	Model A	Model B	Model C	Model D
Income (log)	0.141	0.099	0.080	0.095
<i>Assets</i>				
Net worth (log)		<b>0.190**</b>		
Financial assets (log)			<b>0.052*</b>	<b>0.054*</b>
Non-financial assets (log)				-0.006
Homeownership (1=yes)			-0.222	
<i>Liabilities</i>				
Unsecured debts (log)			0.002	0.006
Secured debts (log)				-0.025
Child age	<b>-0.367**</b>	<b>-0.339*</b>	<b>-0.348*</b>	<b>-0.349*</b>
<i>Child gender (male)</i>				
Female	<b>0.363*</b>	<b>0.372*</b>	0.336 <sup>‡</sup>	0.325 <sup>‡</sup>
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	0.376 <sup>‡</sup>	0.382 <sup>‡</sup>	0.392 <sup>‡</sup>	0.388 <sup>‡</sup>
Hispanic	-0.113	-0.039	-0.103	-0.099
<i>Child cognitive ability</i>				
PIAT Math	0.014	0.013	0.014	0.013
PIAT Reading Recognition	0.011	0.012	0.011	0.012
PIAT Reading Comprehension	<b>0.018*</b>	<b>0.018*</b>	0.016 <sup>‡</sup>	0.016 <sup>‡</sup>
School quality	0.053 <sup>‡</sup>	0.055 <sup>‡</sup>	0.051 <sup>‡</sup>	0.051 <sup>‡</sup>
Birth order	-0.079	-0.068	-0.046	-0.040
Family size	-0.105	-0.097	-0.098	-0.098
Mother's age	<b>0.162***</b>	<b>0.156***</b>	<b>0.154***</b>	<b>0.150***</b>
<i>Mother's marital status (Unmarried)</i>				
Married	0.234	0.222	0.231	0.242
<i>Mother's education (No high school)</i>				
High school completion	0.205	0.239	0.194	0.244
Some college or higher	<b>0.682*</b>	<b>0.735*</b>	0.639 <sup>‡</sup>	<b>0.710*</b>
<i>Residence (rural) otherwise</i>				
Urban	-0.117	-0.086	-0.124	-0.125
Model Fit (F value)	13.47***	13.52***	11.33***	11.20***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>‡</sup> p<0.1

Table 9. Economic Resources on Child's Self-Esteem

	Model A	Model B	Model C	Model D
Income (log)	0.354	0.415	0.357	0.420
<i>Assets</i>				
Net worth (log)		-0.274		
Financial assets (log)			-0.023	-0.001
Non-financial assets (log)				0.025
Homeownership (1=yes)			0.325	
<i>Liabilities</i>				
Unsecured debts (log)			0.012	0.019
Secured debts (log)				-0.057
Child age	0.192	0.152	0.186	0.191
<i>Child gender (male)</i>				
Female	-0.662	-0.674 <sup>ψ</sup>	-0.649	-0.672
<i>Child race</i>				
(Non-African American, Non-Hispanic)				
African-American	0.629	0.621	0.684	0.592
Hispanic	-0.188	-0.294	-0.161	-0.210
<i>Child cognitive ability</i>				
PIAT Math	0.003	0.005	0.002	0.005
PIAT Reading Recognition	0.016	0.014	0.016	0.016
PIAT Reading Comprehension	0.018	0.018	0.020	0.017
School quality	<b>0.145*</b>	<b>0.143*</b>	<b>0.147*</b>	<b>0.146*</b>
Birth order	0.486	0.469	0.473	0.482
Family size	-0.289	-0.300 <sup>ψ</sup>	-0.284	-0.292
Mother's age	-0.077	-0.068	-0.075	-0.079
<i>Mother's marital status (Unmarried)</i>				
Married	0.270	0.288	0.214	0.327
<i>Mother's education (No high school)</i>				
High school completion	-0.171	-0.220	-0.166	-0.078
Some college or higher	0.451	0.375	0.461	0.549
<i>Residence (rural)</i>				
Urban	-0.118	-0.163	-0.105	-0.161
Model Fit (F value)	3.72***	3.65***	3.29***	3.32***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 10-1. Model 5: Ever Dropped Out Of High School

	A		B		C		D	
	Model1	Model 5	Model1	Model 5	Model1	Model 5	Model1	Model 5
Income (log)	0.878	0.888	0.951	0.956	1.129	1.137	1.244	1.289
<i>Assets</i>								
Net worth (log)			<b>0.675*</b>	<b>0.697*</b>				
Financial assets (log)					<b>0.915*</b>	<b>0.923*</b>	0.950	0.963
Non-financial assets (log)							0.922	0.915
Homeownership (1=yes)					<b>0.367**</b>	<b>0.349**</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.022	1.022	1.051	1.052
Secured debts (log)							<b>0.880**</b>	<b>0.874**</b>
Parental involvement in education		1.008		1.006		1.004		0.997
Child's educational expectations		<b>0.843*</b>		<b>0.861*</b>		<b>0.849*</b>		<b>0.841*</b>
Child's self-esteem		0.993		0.987		0.996		0.990
Child age	0.960	0.907	0.886	0.849	0.916	0.866	0.893	0.839
<i>Child gender (male)</i>								
Female	0.847	0.856	0.799	0.809	0.917	0.940	0.793	0.801
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	0.780	0.820	0.774	0.813	0.566 <sup>‡</sup>	0.599 <sup>‡</sup>	<b>0.467*</b>	0.492 <sup>‡</sup>
Hispanic	1.678	1.694	1.457	1.459	1.442	1.425	1.345	1.311
<i>Child cognitive ability</i>								
PIAT Math	<b>0.973*</b>	0.976 <sup>‡</sup>	<b>0.974*</b>	0.976 <sup>‡</sup>	0.981	0.983	0.976 <sup>‡</sup>	0.978
PIAT Reading Recognition	1.000	1.002	0.998	1.000	0.998	0.999	1.001	1.002
PIAT Reading Comprehension	0.984	0.987	0.984	0.987	0.980	0.984	0.979	0.983
School quality	<b>0.891**</b>	<b>0.895*</b>	<b>0.882**</b>	<b>0.888**</b>	<b>0.888**</b>	<b>0.895*</b>	<b>0.882**</b>	<b>0.893*</b>
Birth order	1.178	1.169	1.173	1.168	0.116	0.120	1.198	1.223
Family size	0.897	0.883	0.876	0.861	0.859	0.845	0.838	0.816
Mother's age	0.919	0.948	0.928	0.952	0.935	0.964	0.910	0.933
<i>Mother's marital status (unmarried)</i>								
Married	1.210	1.268	1.233	1.288	1.674	1.760	2.157 <sup>‡</sup>	2.298 <sup>‡</sup>
<i>Mother's education (No high school)</i>								
High school graduation	0.646	0.667	0.605	0.625	0.679	0.707	0.913	0.985
Some college	<b>0.355*</b>	0.385 <sup>‡</sup>	<b>0.300*</b>	<b>0.326*</b>	<b>0.351*</b>	0.375 <sup>‡</sup>	0.518	0.583
<i>Residence (rural)</i>								
Urban	<b>2.312*</b>	<b>2.247*</b>	<b>2.240*</b>	<b>2.178*</b>	<b>2.154*</b>	<b>2.097*</b>	<b>2.045*</b>	1.960 <sup>‡</sup>
Likelihood Ratio $\chi^2$	74.897***	86.028***	82.417***	92.259***	99.544***	110.706***	101.302***	113.263***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>‡</sup> p<0.1

Table 10-2. Model 5: High School Completion

	A		B		C		D	
	Model1	Model 5	Model1	Model 5	Model1	Model 5	Model1	Model 5
Income (log)	<b>2.164**</b>	<b>2.232**</b>	<b>2.149**</b>	<b>2.240**</b>	1.506	1.542	1.366	1.300
<i>Assets</i>								
Net worth (log)			1.037	0.985				
Financial assets (log)					<b>1.165*</b>	1.139 <sup>ψ</sup>	1.134 <sup>ψ</sup>	1.087
Non-financial assets (log)							0.939	0.968
Homeownership (1=yes)					0.903	1.039		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	0.999	0.983	0.967
Secured debts (log)							1.117 <sup>ψ</sup>	<b>1.143*</b>
Parental involvement in education		1.004		1.004		1.005		1.011
Child's educational expectations		<b>1.578***</b>		<b>1.579***</b>		<b>1.540***</b>		<b>1.573***</b>
Child's self-esteem		0.929		0.929		0.928		0.931
Child age	1.181	1.538	1.182	1.537	1.190	1.527	1.121	1.436
<i>Child gender (male)</i>								
Female	1.591	1.601	1.595	1.599	1.416	1.415	1.501	1.549
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.283	1.073	1.282	1.074	1.325	1.123	1.333	1.222
Hispanic	0.611	0.561	0.614	0.560	0.610	0.561	0.600	0.608
<i>Child cognitive ability</i>								
PIAT Math	1.010	1.007	1.010	1.007	1.006	1.005	1.002	1.004
PIAT Reading Recognition	<b>1.040*</b>	1.039 <sup>ψ</sup>	<b>1.040*</b>	1.039 <sup>ψ</sup>	<b>1.044*</b>	1.043 <sup>ψ</sup>	<b>1.047*</b>	<b>1.044*</b>
PIAT Reading Comprehension	1.028	1.026	1.028	1.027	1.024	1.022	1.023	1.024
School quality	1.063	1.067	1.063	1.067	1.054	1.055	1.066	1.058
Birth order	<b>0.496**</b>	<b>0.530**</b>	<b>0.496**</b>	<b>0.530**</b>	<b>0.516**</b>	<b>0.547**</b>	<b>0.513**</b>	<b>0.516**</b>
Family size	1.214	1.227 <sup>ψ</sup>	1.213	1.227 <sup>ψ</sup>	1.278 <sup>ψ</sup>	1.280 <sup>ψ</sup>	1.278 <sup>ψ</sup>	1.308 <sup>ψ</sup>
Mother's age	1.191 <sup>ψ</sup>	1.101	1.191 <sup>ψ</sup>	1.101	0.189 <sup>ψ</sup>	1.095	1.201 <sup>ψ</sup>	1.118
<i>Mother's marital status (unmarried)</i>								
Married	0.876	0.792	0.876	0.792	0.846	0.805	0.767	0.701
<i>Mother's education (No high school)</i>								
High school graduation	1.843	1.537	1.850	1.534	1.716	1.428	1.413	1.046
Some college	<b>3.509*</b>	2.507	<b>3.530*</b>	2.496	3.087 <sup>ψ</sup>	2.271	2.512	1.628
<i>Residence (rural)</i>								
Urban	0.652	0.627	0.653	0.626	0.641	0.614	0.723	0.706
Likelihood Ratio $\chi^2$	113.911***	130.947***	114.058***	130.956***	121.450***	137.078***	127.303***	146.245***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 10-3. Model 5: College Attendance

	A		B		C		D	
	Model 1	Model 5	Model 1	Model 5	Model 1	Model 5	Model 1	Model 5
Income (log)	<b>1.781**</b>	<b>1.742**</b>	<b>1.548*</b>	1.532 <sup>ψ</sup>	1.409	1.377	1.296	1.237
<i>Assets</i>								
Net worth (log)			1.635	1.589				
Financial assets (log)					1.063 <sup>ψ</sup>	1.051	1.052	1.035
Non-financial assets (log)							1.111 <sup>ψ</sup>	1.121 <sup>ψ</sup>
Homeownership (1=yes)					1.665 <sup>ψ</sup>	<b>1.921*</b>		
<i>Liabilities</i>								
Unsecured debts (log)					1.026	1.026	1.020	1.018
Secured debts (log)							1.008	1.023
Parental involvement in education		0.980		0.984		0.980		0.984
Child's educational expectations		<b>1.466***</b>		<b>1.450***</b>		<b>1.481***</b>		<b>1.482***</b>
Child's self-esteem		0.997		1.001		0.995		1.001
Child age	0.840	0.951	0.889	0.999	0.860	0.981	0.879	1.002
<i>Child gender (male)</i>								
Female	1.629 <sup>ψ</sup>	1.536	<b>1.692*</b>	1.608 <sup>ψ</sup>	1.597 <sup>ψ</sup>	1.530	<b>1.692*</b>	1.652 <sup>ψ</sup>
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.375	1.221	1.375	1.219	1.644	1.475	1.770 <sup>ψ</sup>	1.552 <sup>ψ</sup>
Hispanic	0.935	0.984	1.069	1.116	1.011	1.089	1.016	1.087
<i>Child cognitive ability</i>								
PIAT Math	<b>1.051***</b>	<b>1.051***</b>	<b>1.049***</b>	<b>1.048***</b>	<b>1.045***</b>	<b>1.044***</b>	<b>1.048***</b>	<b>1.048***</b>
PIAT Reading Recognition	0.997	0.993	0.999	0.994	1.000	0.996	0.998	0.993
PIAT Reading Comprehension	<b>1.029*</b>	1.026 <sup>ψ</sup>	<b>1.031*</b>	1.027 <sup>ψ</sup>	<b>1.031*</b>	<b>1.027*</b>	<b>1.031*</b>	<b>1.027*</b>
School quality	<b>1.114**</b>	<b>1.114**</b>	<b>1.121**</b>	<b>1.118**</b>	<b>1.112**</b>	<b>1.115**</b>	<b>1.112**</b>	<b>1.112**</b>
Birth order	0.807	0.806	0.822	0.816	0.852	0.839	0.829	0.799
Family size	1.075	1.133	1.091	1.148	1.114	1.180	1.134	1.211 <sup>ψ</sup>
Mother's age	1.126 <sup>ψ</sup>	1.058	1.119 <sup>ψ</sup>	1.054	1.114 <sup>ψ</sup>	1.044	1.125 <sup>ψ</sup>	1.059
<i>Mother's marital status (unmarried)</i>								
Married	0.788	0.700	0.782	0.691	0.677	0.579 <sup>ψ</sup>	0.620	0.519 <sup>ψ</sup>
<i>Mother's education (No high school)</i>								
High school graduation	1.576	1.567	1.674	1.637	1.581	1.574	1.463	1.412
Some college	<b>3.489**</b>	<b>3.355*</b>	<b>3.929**</b>	<b>3.636*</b>	<b>3.404**</b>	<b>3.384*</b>	<b>3.003*</b>	2.815 <sup>ψ</sup>
<i>Residence (rural)</i>								
Urban	1.096	1.209	1.158	1.269	1.155	1.287	1.155	1.314
Likelihood Ratio $\chi^2$	197.067***	229.684***	206.848***	237.913***	210.713***	244.279***	223.273***	258.908***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1



Table 10-4. Model 5: College Degree Attainment

	A		B		C		D	
	Model1	Model 5	Model1	Model 5	Model1	Model 5	Model1	Model 5
Income (log)	<b>2.692***</b>	<b>2.447***</b>	<b>2.587***</b>	<b>2.302**</b>	<b>2.327**</b>	<b>2.057**</b>	<b>2.378**</b>	<b>2.058**</b>
<i>Assets</i>								
Net worth (log)			1.124	1.219				
Financial assets (log)					1.046	1.051	1.043	1.043
Non-financial assets (log)							<b>1.169*</b>	<b>1.210*</b>
Homeownership (1=yes)					1.592	1.860		
<i>Liabilities</i>								
Unsecured debts (log)					1.004	1.005	1.009	1.008
Secured debts (log)							0.931	0.941
Parental involvement in education		0.994		0.994		0.994		0.999
Child's educational expectations		<b>1.363***</b>		<b>1.362***</b>		<b>1.388***</b>		<b>1.375***</b>
Child's self-esteem		<b>1.095*</b>		<b>1.098*</b>		<b>1.098*</b>		<b>1.105*</b>
Child age	1.249	1.341	1.262	1.358	1.276	1.371 <sup>ψ</sup>	1.281	1.369
<i>Child gender (male)</i>								
Female	<b>3.590***</b>	<b>3.642***</b>	<b>3.568***</b>	<b>3.620***</b>	<b>3.605***</b>	<b>3.783***</b>	<b>3.539***</b>	<b>3.765***</b>
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.188	1.016	1.199	1.032	1.369	1.199	1.383	1.189
Hispanic	0.597	0.632	0.620	0.645	0.637	0.665	0.634	0.667
<i>Child cognitive ability</i>								
PIAT Math	<b>1.047**</b>	<b>1.046**</b>	<b>1.046**</b>	<b>1.045*</b>	<b>1.042*</b>	<b>1.040*</b>	<b>1.045*</b>	<b>1.043*</b>
PIAT Reading Recognition	0.981	0.974 <sup>ψ</sup>	0.982	0.974 <sup>ψ</sup>	0.983	0.974 <sup>ψ</sup>	0.982	0.973 <sup>ψ</sup>
PIAT Reading Comprehension	<b>1.030*</b>	<b>1.029<sup>ψ</sup></b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.034*</b>	<b>1.034*</b>	<b>1.031*</b>	<b>1.033*</b>
School quality	<b>0.147*</b>	<b>1.139*</b>	<b>1.146*</b>	<b>1.138*</b>	<b>1.145*</b>	<b>1.139*</b>	<b>1.142*</b>	<b>1.131*</b>
Birth order	1.233	1.168	1.246	1.194	1.302	1.268	1.265	1.226
Family size	0.848	0.924	0.851	0.923	0.875	0.962	0.886	0.967
Mother's age	1.055	1.047	1.051	1.040	1.039	1.029	1.038	1.028
<i>Mother's marital status (unmarried)</i>								
Married	0.518 <sup>ψ</sup>	0.428*	0.513 <sup>ψ</sup>	<b>0.421*</b>	<b>0.435*</b>	<b>0.345**</b>	<b>0.421*</b>	<b>0.319**</b>
<i>Mother's education (No high school)</i>								
High school graduation	<b>4.438*</b>	<b>4.506*</b>	<b>4.491*</b>	<b>4.578*</b>	<b>4.694*</b>	<b>4.906*</b>	<b>4.781*</b>	<b>4.626*</b>
Some college	<b>7.458**</b>	<b>6.262**</b>	<b>7.588**</b>	<b>6.405**</b>	<b>7.918**</b>	<b>6.727**</b>	<b>7.864**</b>	<b>6.038*</b>
<i>Residence (rural)</i>								
Urban	0.603	0.592	0.616	0.610	0.634	0.641	0.614	0.604
Likelihood Ratio $\chi^2$	117.940***	134.096***	118.726***	135.106***	120.174***	137.348***	123.818***	140.143***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 11-1. Economic Resources and Parental Involvement on High School Diploma

	A		B		C		D	
	Model 6	Model 7	Model 6	Model 7	Model 6	Model 7	Model 6	Model 7
Income (log)	<b>1.779*</b>	<b>1.771*</b>	1.578	1.568	1.088	1.079	0.959	0.925
<i>Assets</i>								
Net worth (log)			<b>1.507***</b>	<b>1.538***</b>				
Financial assets (log)					<b>1.161***</b>	<b>1.158***</b>	<b>1.118*</b>	<b>1.109*</b>
Non-financial assets (log)							1.033	1.048
Homeownership (1=yes)					<b>2.254*</b>	<b>2.436*</b>		
<i>Liabilities</i>								
Unsecured debts (log)					0.981	0.980	0.945	0.942
Secured debts (log)							<b>1.174***</b>	<b>1.186***</b>
Parental involvement in education		1.037 <sup>ψ</sup>		1.041 <sup>ψ</sup>		1.043 <sup>ψ</sup>		<b>1.056*</b>
Child age	0.946	0.951	1.016	1.024	0.947	0.950	0.941	0.950
<i>Child gender (male)</i>								
Female	<b>2.599***</b>	<b>2.537**</b>	<b>2.848***</b>	<b>2.790***</b>	<b>2.414**</b>	<b>2.353**</b>	<b>2.921***</b>	<b>2.873***</b>
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.043	0.967	1.026	0.951	1.288	1.226	1.502	1.471
Hispanic	0.687	0.723	0.816	0.879	0.775	0.837	0.868	0.966
<i>Child cognitive ability</i>								
PIAT Math	<b>1.031*</b>	<b>1.031*</b>	<b>1.031*</b>	<b>1.030*</b>	1.022 <sup>ψ</sup>	1.022 <sup>ψ</sup>	<b>1.028*</b>	<b>1.028*</b>
PIAT Reading Recognition	0.997	0.997	0.999	0.998	0.999	0.999	0.997	0.996
PIAT Reading Comprehension	1.026	1.025	1.026	1.025	1.028	1.026	1.029 <sup>ψ</sup>	1.027 <sup>ψ</sup>
School quality	<b>1.151**</b>	<b>1.128**</b>	<b>1.167***</b>	<b>1.142**</b>	<b>1.159**</b>	<b>1.134**</b>	<b>1.173**</b>	<b>1.140**</b>
Birth order	<b>0.547**</b>	<b>0.547**</b>	<b>0.541**</b>	<b>0.542**</b>	<b>0.577**</b>	<b>0.572**</b>	<b>0.527**</b>	<b>0.514**</b>
Family size	1.118	1.120	1.149	1.151	1.189 <sup>ψ</sup>	1.196 <sup>ψ</sup>	1.212 <sup>ψ</sup>	1.224 <sup>ψ</sup>
Mother's age	1.177 <sup>ψ</sup>	1.178 <sup>ψ</sup>	1.173 <sup>ψ</sup>	1.174 <sup>ψ</sup>	1.171 <sup>ψ</sup>	1.179 <sup>ψ</sup>	<b>1.213*</b>	<b>1.229*</b>
<i>Mother's marital status (unmarried)</i>								
Married	0.632	0.621	0.639	0.625	0.494 <sup>ψ</sup>	0.481 <sup>ψ</sup>	<b>0.381*</b>	<b>0.371*</b>
<i>Mother's education (No high school)</i>								
High school graduation	2.111 <sup>ψ</sup>	2.030 <sup>ψ</sup>	<b>2.292*</b>	2.214 <sup>ψ</sup>	2.065 <sup>ψ</sup>	1.986	1.541	1.445
Some college	<b>3.457*</b>	<b>3.152*</b>	<b>4.251**</b>	<b>3.845**</b>	<b>3.344*</b>	<b>3.036*</b>	2.272 <sup>ψ</sup>	1.919
<i>Residence (rural)</i>								
Urban	0.587	0.575	0.611	0.598	0.657	0.633	0.725	0.703
Likelihood Ratio $\chi^2$	146.124***	150.861***	151.898***	156.713***	171.528***	175.607***	190.244***	196.242***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 11-2. Economic Resources and Child's Educational Expectations on High School Diploma

	A		B		C		D	
	Model 6	Model 8	Model 6	Model 8	Model 6	Model 8	Model 6	Model 8
Income (log)	<b>1.779*</b>	1.699 <sup>ψ</sup>	1.578	1.520	1.088	1.052	0.959	0.907
<i>Assets</i>								
Net worth (log)			<b>1.507***</b>	<b>1.426***</b>				
Financial assets (log)					<b>1.161***</b>	<b>1.144**</b>	<b>1.118*</b>	1.087 <sup>ψ</sup>
Non-financial assets (log)							1.033	1.049
Homeownership (1=yes)					<b>2.254*</b>	<b>2.618*</b>		
<i>Liabilities</i>								
Unsecured debts (log)					0.981	0.980	0.945	0.945
Secured debts (log)							<b>1.174***</b>	<b>1.201***</b>
Child's educational expectations		1.420		1.402		1.411		1.471
Child age	0.946	1.077	1.016	1.150	0.947	1.092	0.941	1.126
<i>Child gender (male)</i>								
Female	<b>2.599***</b>	<b>2.736***</b>	<b>2.848***</b>	<b>2.965***</b>	<b>2.414***</b>	<b>2.459***</b>	<b>2.921***</b>	<b>3.159***</b>
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.043	0.881	1.026	0.870	1.288	1.117	1.502	1.392
Hispanic	0.687	0.672	0.816	0.808	0.775	0.792	0.868	0.937
<i>Child cognitive ability</i>								
PIAT Math	<b>1.031*</b>	1.028 <sup>ψ</sup>	<b>1.031*</b>	1.028 <sup>ψ</sup>	1.022 <sup>ψ</sup>	1.020	<b>1.028*</b>	1.027 <sup>ψ</sup>
PIAT Reading Recognition	0.997	0.994	0.999	0.997	0.999	0.999	0.997	0.996
PIAT Reading Comprehension	1.026	1.019	1.026	1.019	1.028	1.019	1.029	1.020
School quality	<b>1.151**</b>	<b>1.143**</b>	<b>1.167***</b>	<b>1.158**</b>	<b>1.159**</b>	<b>1.147**</b>	<b>1.173**</b>	<b>1.162**</b>
Birth order	<b>0.547**</b>	<b>0.541**</b>	<b>0.541**</b>	<b>0.533**</b>	<b>0.577**</b>	<b>0.554**</b>	<b>0.527**</b>	<b>0.487***</b>
Family size	1.118	1.155	1.149	1.190	1.189 <sup>ψ</sup>	1.234 <sup>ψ</sup>	1.212 <sup>ψ</sup>	1.284 <sup>ψ</sup>
Mother's age	1.177 <sup>ψ</sup>	1.113	1.173 <sup>ψ</sup>	1.112	1.171 <sup>ψ</sup>	1.105	<b>1.213*</b>	1.147
<i>Mother's marital status (unmarried)</i>								
Married	0.632	0.569	0.639	0.575	0.494 <sup>ψ</sup>	<b>0.429*</b>	<b>0.381*</b>	<b>0.324**</b>
<i>Mother's education (No high school)</i>								
High school graduation	2.111 <sup>ψ</sup>	1.977	<b>2.292*</b>	2.146	2.065 <sup>ψ</sup>	1.880	1.541	1.313
Some college	<b>3.457*</b>	<b>2.923*</b>	<b>4.251**</b>	<b>3.606*</b>	<b>3.344*</b>	2.950 <sup>ψ</sup>	2.272 <sup>ψ</sup>	1.871
<i>Residence (rural)</i>								
Urban	0.587	0.590	0.611	0.622	0.657	0.666	0.725	0.758
Likelihood Ratio $\chi^2$	146.124***	167.585***	151.898***	171.736**	171.528***	192.460***	190.244***	215.612***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

Table 11-3. Economic Resources and Child's Self-Esteem on High School Diploma

	A		B		C		D	
	Model 6	Model 9	Model 6	Model 9	Model 6	Model 9	Model 6	Model 9
Income (log)	<b>1.779*</b>	<b>1.766*</b>	1.578	1.562	1.088	1.085	0.959	0.955
<i>Assets</i>								
Net worth (log)			<b>1.507***</b>	<b>1.512***</b>				
Financial assets (log)					<b>1.161***</b>	<b>1.161***</b>	<b>1.118*</b>	<b>1.118*</b>
Non-financial assets (log)							1.033	1.032
Homeownership (1=yes)					<b>2.254*</b>	<b>2.258*</b>		
<i>Liabilities</i>								
Unsecured debts (log)					0.981	0.981	0.945	0.946
Secured debts (log)							<b>1.174***</b>	<b>1.177***</b>
Child's self-esteem		1.016		1.021		1.015		1.024
Child age	0.946	0.937	1.016	1.003	0.947	0.940	0.941	0.927
<i>Child gender (male)</i>								
Female	<b>2.599***</b>	<b>2.628***</b>	<b>2.848***</b>	<b>2.886***</b>	<b>2.414***</b>	<b>2.426***</b>	<b>2.921***</b>	<b>2.953***</b>
<i>Child race (Non-African American, Non-Hispanic)</i>								
African-American	1.043	1.047	1.026	1.030	1.288	1.290	1.502	1.515
Hispanic	0.687	0.695	0.816	0.831	0.775	0.785	0.868	0.891
<i>Child cognitive ability</i>								
PIAT Math	<b>1.031*</b>	<b>1.030*</b>	<b>1.031*</b>	1.030	1.022 <sup>ψ</sup>	1.022 <sup>ψ</sup>	<b>1.028*</b>	1.027 <sup>ψ</sup>
PIAT Reading Recognition	0.997	0.997	0.999	0.999	0.999	1.000	0.997	0.997
PIAT Reading Comprehension	1.026	1.026	1.026	1.025	1.028	1.027	1.029 <sup>ψ</sup>	1.028
School quality	<b>1.151**</b>	<b>1.148**</b>	<b>1.167***</b>	<b>1.163***</b>	<b>1.159**</b>	<b>1.156**</b>	<b>1.173**</b>	<b>1.169**</b>
Birth order	<b>0.547**</b>	<b>0.544***</b>	<b>0.541**</b>	<b>0.538***</b>	<b>0.577**</b>	<b>0.574**</b>	<b>0.527**</b>	<b>0.522**</b>
Family size	1.118	1.119	1.149	1.149	1.189 <sup>ψ</sup>	1.190 <sup>ψ</sup>	1.212 <sup>ψ</sup>	1.212 <sup>ψ</sup>
Mother's age	1.177 <sup>ψ</sup>	1.178 <sup>ψ</sup>	1.173 <sup>ψ</sup>	1.173 <sup>ψ</sup>	1.171 <sup>ψ</sup>	1.172 <sup>ψ</sup>	<b>1.213*</b>	<b>1.215*</b>
<i>Mother's marital status (unmarried)</i>								
Married	0.632	0.636	0.639	0.643	0.494 <sup>ψ</sup>	0.492 <sup>ψ</sup>	<b>0.381*</b>	<b>0.379*</b>
<i>Mother's education (No high school)</i>								
High school graduation	2.111 <sup>ψ</sup>	2.122 <sup>ψ</sup>	2.292*	2.309*	2.065 <sup>ψ</sup>	2.071 <sup>ψ</sup>	1.541	1.544
Some college	<b>3.457*</b>	<b>3.440*</b>	<b>4.251**</b>	<b>4.223**</b>	<b>3.344*</b>	<b>3.325*</b>	2.272 <sup>ψ</sup>	2.232
<i>Residence (rural)</i>								
Urban	0.587	0.588	0.611	0.613	0.657	0.658	0.725	0.729
Likelihood Ratio $\chi^2$	146.124***	147.541***	151.898***	153.512***	171.528***	172.320***	190.244***	191.012***

Note: Category value in parentheses indicates a reference group, unless indicated otherwise. "Log" in parentheses indicates that the continuous measures are log-transformed.

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, <sup>ψ</sup> p<0.1

### Appendix. Description of Variables

Variables	Measures/Survey Items	Values	Time of Measurement <sup>28</sup>	Report by
<b><i>Dependent variables</i></b>				
High school dropout	Whether child ever dropped out of high school	1=Yes, 0=No	From 1996 to 2004 for 96 cohort; from 1998 to 2006 for 98 cohort	Child
High school completion	Whether child received a high school diploma or passed GED/high school equivalency test	1=Yes, 0=No	From 1996 to 2004 for 96 cohort; from 1998 to 2006 for 98 cohort	Child
College attendance	Whether child ever attended a college	1=Yes, 0=No	From 1996 to 2004 for 96 cohort; from 1998 to 2006 for 98 cohort	Child
College degree attainment	Whether child ever attained a college degree (either 2-year or 4 year college degree)	1=Yes, 0=No	From 1996 to 2004 for 96 cohort; from 1998 to 2006 for 98 cohort	Child
<b><i>Independent variables</i></b>				
Family income	Average: Total net family income in <i>past</i> calendar year	In 1998 dollars	1992, 1994, 1996 for children from 1996 data; 1994, 1996, 1998 for children from 1998 data	Mother
<b>Parental Assets</b>				
Net worth	Total net family worth	In 1998 dollars	1996 or 1998 <sup>29</sup>	Mother
Financial assets	Total amount (for you or spouse/partner) in savings or checking accounts, money market funds, credit unions, U.S. savings bonds, IRAs/Keough, Tax-deferred plans, CDs, stocks, or personal loans owed to respondent/spouse.	In 1998 dollars	1996 or 1998	Mother
Home ownership	Whether this (house/apartment) is owned by respondent or	1=Yes, 0=No	1996 or 1998	Mother

<sup>28</sup> In this column, 96 cohort refers to 9<sup>th</sup>/10<sup>th</sup> grade children drawn from 1996 data of NLSY79 Child/YA; 98 cohort refers to 9<sup>th</sup>/10<sup>th</sup> grade children drawn from 1998 data of NLSY79 Child/YA.

<sup>29</sup> In this column, '1996 or 1998' indicates that the measure come from either 1996 or 1998, depending on when a child was sampled as 9<sup>th</sup>/10<sup>th</sup> grader from NLSY79 Child/YA data.

	spouse/partner			
Non-financial assets	The total market value of (1) non-residential properties (all of the real estate, assets in the business including tools and equipment, farm operation including value of land, buildings, house, and the equipment, livestock, stored crops, and other assets), (2) home equity values, and (3) vehicle values	In 1998 dollars	1996 or 1998	Mother
Unsecured debts	Total amount of debts over \$500 respondent/spouse owe to creditors, any stores, doctors, hospitals, banks, or anyone else, excluding 30-day charge accounts	In 1998 dollars	1996 or 1998	Mother
Secured debts	Total amounts of debts on non-financial assets	In 1998 dollars	1996 or 1998	Mother
<b><i>Mediating variables</i></b>				
Parental involvement in child education	Total scores from 15 items : In the current or most recent school year, how often your parents...? 1. Check on whether you have done your homework? 2. Help you with your homework? 3. Give you special privileges because of good grades? 4. Limit privileges because of poor grades? 5. Require you to do work or chores around the home? 6. Limit the amount of time you can spend watching TV or playing video games? 7. Limit the amount of time you go out with friends on school nights? 8. Discuss selecting courses or programs at school? 9. Discuss school activities or events of particular interest to you? 10. Discuss things you have studied in class? 11. Discuss your grades or report card? 12. Discuss plans and preparation for district, state, or national tests (such as the ACT, SAT, or state proficiency exams)? 13. Discuss going to college? 14. Discuss community, national or world events? 15. Discuss things that are troubling you?	- Original scale: 0=Never, 1=Rarely, 2=Sometimes, 3=Often  - Possible range: 0~45	1996 or 1998	Child

Child educational Expectations	As things now stand, what is the highest grade or year you think you will actually complete?	1 (=1 grade) to 18 (= more than 5 years of college) <sup>30</sup>	1996 or 1998	Child
Child self-esteem	Total scores from ten items: 1. I feel that I'm a person of worth, at least on an equal basis with others. 2. I feel that I have a number of good qualities. 3. All in all, I am inclined to feel that I am a failure. 4. I am able to do things as well as most people. 5. I feel that I do not have much to be proud of. 6. I take a positive attitude toward myself. 7. On the whole, I am satisfied with myself. 8. I wish I could have more respect for myself. 9. I certainly feel useless at times. 10. At times I think I am no good at all.	- Original scale: 1= strongly disagree to 4=Strongly agree  - Possible range: 10~40	1996 or 1998	Child
<b><i>Control variables</i></b>				
Child age	Years, as of the end of interview year	Continuous	1996 or 1998	Child
Child gender	Gender	1=Female, 0=Male	1994	Child
Child race	Race/ethnicity (self-identified)	0= White or other, 1=African-American, 2=Hispanic	1996 or 1998	Child
Child cognitive ability				
PIAT Math	Standardized test score	Continuous	Earlier than 1996 or 1998; when child is 14 or younger.	Child
PIAT Reading Recognition	Standardized test score	Continuous		Child

<sup>30</sup> 1=1<sup>st</sup> grade; 2=2<sup>nd</sup> grade 3=3<sup>rd</sup> grade; 4=4<sup>th</sup> grade; 5=5<sup>th</sup> grade; 6=6<sup>th</sup> grade; 7=7<sup>th</sup> grade; 8=8<sup>th</sup> grade; 9=9<sup>th</sup> grade; 10=10<sup>th</sup> grade; 11=11<sup>th</sup> grade; 12=12<sup>th</sup> grade; 13=1<sup>st</sup> year college; 14=2<sup>nd</sup> year college (Associate's degree); 15=3<sup>rd</sup> year college; 16=4<sup>th</sup> year college (Bachelor's degree); 17=5<sup>th</sup> year college (Master's degree); 18=More than 5 years of college (Law degree, Ph.D., M.D, LLD, DDS, JD).

PIAT Reading Comprehension	Standardized test score	Continuous		Child
School quality	Total score from 8 items: 1. It's easy to make friends at this school. 2. Most of the teachers are willing to help with personal problems. 3. Most of my classes are boring. 4. I don't feel safe at this school. 5. Most teachers don't know their subjects well 6. You can get away with almost anything at this school. 7. My schoolwork requires me to think to the best of my ability. 8. At this school, a person has the freedom to learn what interests him or her.	- Original scale: 1=very true to 4=not at all true  - Possible range: 8~32	1996 or 1998	Child
Birth Order	Child's birth order	Continuous	2006 <sup>31</sup>	NLSY
Family size	The number of family members	Continuous	1996 or 1998	Mother
Mother's marital status	Current marital status	0=Unmarried (Never married or 'Separated, divorced, or widowed) 1=Currently married	1996 or 1998	Mother
Mother's age	Years	Continuous	1996 or 1998	Mother
Mother's Education	Educational attainment level	0=No high school graduate, 1=High school completion, 2=Some college	1996 or 1998	Mother
Urban residence	Whether a respondent lives in urban or rural area?	0=Rural , 1=Urban	1996 or 1998	Child

<sup>31</sup> NLSY79 generates the data based on collected information.