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**The Black-White Test Score Gap:  
Lessons from the Panel Study of Income Dynamics**

W. Jean Yeung\*  
Kathryn M. Pfeiffer

New York University

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\*Direct correspondence to W.J. Yeung at New York University, Center for Advanced Social Science Research, Department of Sociology, Rm. 445, 269 Mercer Street, New York, NY 10012.  
Email: [jean.yeung@nyu.edu](mailto:jean.yeung@nyu.edu). Tel: 212-998-8381

Approximately a century ago, DuBois observed that the problem of the century is the problem of the color line (1903). Although the well-being of African Americans has substantially improved since then, inequality between black and white Americans in the past several decades has increased on many indicators of family and child well-being such as family income, employment rates, health, child poverty rates, and teenage pregnancy rates (Danziger and Gottschalk 1994); (McDonough, Duncan, Williams, and . 1999); (McLanahan and Casper 1995). Many scholars and policy makers see education as providing access to societal resources and a way to reduce social disparities. However, the achievement gap between black and white Americans has persisted in contemporary America (National Center for Educational Statistics, 1999).

Since the Coleman report (Coleman 1966) first documented the black-white achievement gap, research based on test results from the National Assessment of Educational Progress (NAEP) conducted from 1971 to 1996 has shown a substantial lag in the achievement of black students. Among other indicators, the study found that 17-year-old blacks had an average reading proficiency equivalent to that of 13-year-old whites (Hallinan 2001). Comparisons of math, science and writing scores revealed similar patterns. Analyses by (Hedges and Nowell 1998), based on results from six major national surveys of students since 1965, showed a decline in differences though a slowed rate of decrease since 1988. Results from the early 1990s indicate that the gap had widened again for high school students (National Center for Education Statistics, 2000). These gaps have been observed to exist before children enter kindergarten, widen as they move through elementary and middle schools, and persist into adulthood (Phillips,

Crouse, and Ralph 1998). Furthermore, even when comparing black and white students who enter school with the same test scores, blacks fall behind as they progress through school.

The early achievement gap between blacks and whites has important consequences for both individual and societal well-being. At the individual level, it is related to one's educational attainment, earnings (Jencks 1998; Johnson and Neal 1998), employment stability, and health (Reynolds and Ross 1998). At the societal level, cognitive achievement gaps have implications for the quality of our next generation, racial relations, the skills of the workforce, and for international competitiveness. The recent increase in achievement gap has raised grave concern to the society as a whole. A better understanding of the causes of this test score gap has both theoretical and policy import.

Until recently, no empirical research has been able to explain away the black-white test score gap. Two studies, based on newly available national data, have demonstrated that the test score gap for preschool children disappears when a longer list of family and school covariates than those included in earlier studies are controlled for. (Fryer and Levitt 2004b) based their findings on data from the Early Childhood Longitudinal Study (ECLS-K) for incoming kindergarteners in 1998, and (Yeung and Conley 2005) examined test scores for children aged 3-5 from the 1997 Panel Study of Income Dynamics (PSID). A follow-up study by (Fryer and Levitt 2004a), however, found that over the first four years of school, blacks lost substantial ground relative to whites, and the gaps could not be explained away by the family and school covariates included in their first paper.

Continuing with this important line of research, this paper aims to (1) examine the pattern of black-white test score differences as children move through higher grades, and (2) investigate the extent to which various groups of individual, family and school characteristics contribute to the

gap. We use data from two waves of Child Development Supplement to the PSID, which collected data from a national sample of children under the age of 13 in 1997 and interviewed them again in 2003, when these children were between the ages of 8 to 17. These data allow us to follow children beyond Grade 3 to high school years for a subgroup of them. Consistent with Fryer and Levitt (2004b), we found that the black-white test score gap widens as children advance through schools, although we found that a set of family and school characteristics is able to explain differences before Grade 3 but not beyond that point. In the next section, we briefly review theoretical and empirical research in this field. This section is followed by a description of data and measures used in our analysis. We then present our results and end the paper with a discussion on theoretical and policy implications of our findings.

### *Theoretical Explanations for the Black-White Achievement Gap*

Three major groups of theories have been developed to explain black-white achievement disparities. These theories can be broadly identified in the literature as: (1) biological determinism, (2) cultural determinism, and (3) structural determinism.

Biological determinism. Researchers such as Gobineau (1915), Terman (1916), and Jensen (1969, 1973) claim that genes are ultimately responsible for the observed differences and that whites have superior cognitive ability compared to blacks. This theory implies that blacks are responsible for their own poor test results. Critics of this biological explanation argue that most standard test instruments are racially biased and discriminate against blacks (Jencks, 1998; Scarr and Weinberg, 1976). Another objection raised by cognitive psychologists is that intelligence is a multidimensional factor that cannot be measured accurately by unidimensional ability tests (Gardner, 1983). Others cite the evidence of an overall increase in IQ scores over time to

support the view that intelligence changes in response to learning opportunities (Fischer, et al., 1996).

(Hernstein and Murray 1994) work *The Bell Curve* rekindled the debate regarding biological determinism. Based on the NLSY data, they concluded that an innate dimension of human intelligence predicts the underachievement of blacks. Their conclusion provoked a strong outcry from the research community as well as the public, with most challenging their interpretation of the results. Fischer and colleagues (Fisher, Hout, Jankowski, Lucas, Swidler, and Vioss 1996), among others, argued that economic success was linked to structural and social factors in society, not to inherited intelligence. To this day, no direct evidence regarding genetic cognitive differences between blacks and whites is available. Indirect evidence from studies of twins, adopted children, or those with other research designs, seems to support the view that the type of environment in which children live has more impact on their test scores than their genes (see for example, (Nisbett 1998).

Cultural determinism blames the low achievement of blacks on their own culture of poverty. Several theories fall under this category. *Cultural deprivation theory* asserts that the underachievement of black Americans is due to blacks' negative and self-defeating attitudes. Proponents of this theory argue that black parents do not provide their children with the kinds of skills and educational aspirations that stress and encourage the value of success in school (Deutsch 1967). Thus, children in black families tend to reject the work ethic and grow up in a culture that is different from mainstream white culture (Loury 1985; Steele 1989). Another theory proposed by (Ogbu 1978) asserts that black students live in a "*culture of oppression*" in which their educational and occupational opportunities are greatly constrained by mainstream society. The argument follows that while blacks may value education, their perception of limited

educational and occupational opportunities leads them to disengage from the learning process and develop a culture that equates academic achievement with “acting white”. Ogbu’s perspective differs from cultural deprivation theory in that it relates structural constraints on behavior to individual motivation and effort. Limited empirical evidence has been found to support this perspective. In a study based on the National Education Longitudinal Study (NELS), (Cook and Ludwig 1998) find that black high school students are not particularly alienated from school and on average spend about the same amount of time on homework as white students. (Ainsworth-Darnell and Downey 1998) show that black students do not perceive fewer educational and occupational opportunities than whites.

Structural determinism Most theories fall in the third category, which seeks to explain the black-white achievement gap in terms of the social structural contexts of home, school, and neighborhood. There is a vast body of literature in different disciplines that investigates how family environment contributes to children’s achievement. Economic theories stress the importance of parents’ *income and time* as input to children’s *human capital* development (Becker 1981; Juster and Stafford 1985). Analyses by (Becker and Lewis 1973) demonstrate that increases in parental incomes lead to relatively large increases in parental expenditures on children which affect what types of experiences parents provide for their children. High-quality day care, schooling, and a more stimulating home environment can all contribute to children’s and adolescents’ learning (Duncan and Brooks-Gunn 1997). Economic distress is also likely to limit the psychological resources parents can bring to bear on raising their children.

Sociological research has shown that parents with different levels of socioeconomic status instill different values in children, have different child-rearing practices, and vary in their aspirations for their children (Brazer and David 1962; Kohn 1969; Lareau 2003; Rubin 1976). A

vast literature on intergenerational mobility shows that family background is a critical predictor of status attainment. Parents' education and occupational status influence children's socioeconomic status (Blau and Duncan 1967; Haveman and Wolfe 1994; Sewell and Hauser 1975) through parents' choices of resources and opportunities for children that reflect their own cultural values, disposition, and skills (Bourdieu 1977; Coleman 1990). High SES parents tend to spend more time and effort in shared activities, are more supportive of their children and are more attentive to children's whereabouts and activities, all of which are found to have a positive influence on children's achievement. As aforementioned, recent research suggests that family background likely explains at least part of the black-white test gap (Jencks and Phillips 1998; Roscigno 2000), and in some cases the entire gap (Fryer and Levitt 2004a; Fryer and Levitt 2004b; Yeung and Conley 2005).

Resarchers also stress the importance of school and neighborhood factors in explaining the black-white test gap. For instance, Roscigno (2000) suggests that private school attendance, social class segregation, lower per-student expenditures for non-Whites, and higher crime rates in the schools of African American students explain part of the racial gap in achievement for students in grades one through eight. In addition, Ferguson (1998) argues that teachers' perceptions, expectations, and behaviors likely explain part of the black-white gap, or at least help sustain it. Finally, Wilson (1998) argues that a broader conception of the environment, rather than individual-level analyses, is needed in order to explain the black-white test gap. Such analyses, according to Wilson, would capture the social structure on inequality, including the role of institutions in opportunity and mobility, the organization and operation of schools, the processes of racial segregation and social isolation in areas with high poverty levels, and government policies related to redistribution, public services, and investment, among other

factors. Some studies provide evidence for the overall importance of neighborhoods in explaining black-white differences in school success (Rubinowitz & Rosenbaum 2000).

In this paper, we use recently available data to examine the extent to which cultural, and structural family and (limited) school factors, as well as a proxy for genetic endowment, predict black-white test score patterns as children move from early to more advanced school years.

### Data

For our analyses, we draw on data from the Panel Study of Income Dynamics (PSID) and the Child Development Supplement (CDS) to the PSID. The PSID is a longitudinal study that began collecting data on a representative sample of families and individuals in the U.S. in 1968. The study continues to track the same families, collecting demographic, economic, and employment information. The CDS began collecting data on a random sample of up to two children aged zero to twelve residing in PSID families in 1997 (CDS-I), with a follow-up wave conducted in 2002 and 2003<sup>1</sup> (CDS-II). The CDS collects information on family and child dynamics, including parent and child characteristics and behavior, child development, home and neighborhood environment, child health, and time use, among other variables.

For our sample, we include those children who received the assessments in both waves of the study. The attrition rate in the second wave of the CDS is about 91%. The entire sample size in 1997 is approximately 3,500 children in 2,400 households. Only children who were ages 3 and above received achievement assessments in 1997, and the response rate for the assessments was about 81%. These children were between the ages of 8-18 in year 2003. No new children were added to the study due to budget constraints. The sample attrition is unfortunate, though

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<sup>1</sup> The majority of the children were interviewed in 2003 (61%) with a small proportion of children interviewed in 2002 (39%). For simplicity, we will refer to CDS II year as 2003 in subsequent text.



characteristic of most panel data. Longitudinal sampling weights developed by the PSID staff are used to help adjust for nonresponse and for the original selection probability.

In terms of sample restrictions, we include children ages three to twelve in 1997, who received the assessments in both waves of the study (n=2227). We include black and white children only due to the limited representation of other racial and ethnic groups in the CDS (n=1959). We further restrict the sample to children whose primary caregiver is their mother and to children with assessment data. The final study sample in this paper is 1794 children, 856 blacks and 938 whites.

We divided the total sample into three cohorts based on grade in school in 1997 as our preliminary analysis indicated that there is an interaction effect between race and birth cohorts on some of the test score measures. The younger cohort includes children who are not yet in school or are attending preschool or kindergarten in 1997. The middle cohort includes children attending grades one to three in 1997. Finally, the oldest cohort includes children attending grades four to eight in 1997.

## Measures

### *Dependent variables*

Children's cognitive skills are conceived broadly to include language skills, literacy and problem solving skills and measured with the Woodcock Johnson Achievement Test-Revised (Woodcock and Johnson 1989). As the name of the test suggests, the W-J test is a measure of children's achievement, not IQ. Children aged 3 and above received Letter-Word, and Passage Comprehension subtests as well as Applied Problems and Calculation subtests in 1997. Children under the age of 6 received only Letter-Word and Applied Problem subscales. For children 6 or

older, the Passage Comprehension and the Letter-Word subscales are combined to form a broad reading scores assessed and Applied Problem and Calculation scores are combined to form a broad math score in 1997. However, in 2003, Calculation subsets were not administered to the children. Applied Problem scores are used in both years as an indicator of the child's math ability. These scores are standardized by children's age. See User Guide for The Child Development Supplement (Hofferth, Davis-Kean, Davis, and Finkelstein 1998) for details about these measures. We have transformed the test scores to have a mean of 0 and a standard deviation of 1 on each of these tests to facilitate interpretation of the test gap coefficients.

### *Independent Measures and Controls*

Parental SES measures include income, education, occupational prestige and wealth. These measures are described individually below in greater detail.

Family income. Our income measure is the total pre-tax income of all family members, inflated to 2001 price levels using the Consumer Price Index (CPI-UX1) and averaged over all of the years since the child's birth through 1996 (for CDS-I) and through 2002 (for CDS-II), one year prior to the time child well-being was assessed. These data are drawn from the annual reports of family income collected in the 1986-2002 waves of the PSID. We use income from multiple years because single-year measures of income are not particularly reliable given yearly fluctuations (single-year measures of income are not particularly reliable given yearly fluctuations, Duncan, Brooks-Gunn, and Klebanov 1994). For our multivariate analysis, we use a logarithmic transformation of family income. Several other functional forms of family income, including dummy variables that capture 5 different income levels, separate income measures for early and middle childhood states, and the proportion of years a child lived in poverty, were also

used in our preliminary analysis. As basic patterns are similar, we show only the results with log family income.

Parental education is measured with years of parents' completed schooling, where 12 years is equivalent to a high school degree. In two-parent families, the higher of the two values is used in the model.

Parental occupational prestige is measured by a Hodge-Siegel-Rossi prestige score (see (Nakao and Treas 1990) and is recorded for the head of the child's household. This scale translates the 1970 three-digit U.S. Census occupational codes used by the PSID into a hierarchical scale with a minimum of seven and a maximum of 82 in our distribution. For those family heads who are not employed, a value of "0" is assigned to the prestige score. In the multivariate analysis, we include a dummy variable that indicates whether the household head is employed or not at the time of the interview.

Wealth. Family wealth data were drawn from measures collected in 1994, 1999, and 2001. The PSID collected information about the value of owner occupied real estate, real estate other than main home, vehicles or other assets on "wheels," farm or business assets, shares of stock in publicly held corporations, mutual funds or investment trusts, including stocks in IRAs, checking and savings accounts, money market funds, certificates of deposit, savings bonds, treasury bills, and other investments in trusts or estates, bond funds, life insurance policies, and special collections. The family wealth is measured as the sum of all above items minus the value of debts other than mortgages, such as credit cards, student loans, medical or legal bills, and personal loans. For models using outcomes from the first wave (CDS-I) in 1997, we use wealth data from 1994. For models using outcomes from the second wave (CDS-II) in 2002, we

average wealth data from 1999 and 2001. As the family wealth distribution is rather skewed, we use wealth quartiles to allow for nonlinear effects.

Demographic controls. An extensive battery of control variables is used in the present study including child's characteristics, parental characteristics, and family characteristics that may be associated with children's achievement and behavior. Characteristics of the child include age, gender, race, birth order and whether the child had a low birth weight. Other family characteristics include family structure, number of children in the family, whether a teen mother, whether mother received AFDC at the time the child was born, region of residence, and whether the family resided in a metropolitan area. We also include a measure of mother's cognitive ability as a rough proxy for the genetic endowment of the child, a measure that Fryer and Levitt (2004) did not have in their models. *Age of child* ranges from 3 to 12 years in 1997, and 8 to 18 in 2003. *Child gender* is coded as 0=boy and 1=girl. *Child's race* was coded as 0=White and 1=Black. *Low birth weight status* was coded as 1=low birth weight (less than or equal to 5.5 lbs. at birth) or 0=birth weight greater than 5.5 lbs.<sup>2</sup> Birth order is measured using the child's location among all the children born to the mother. First-borns are coded as one, those born second are coded as 2, and those born third are coded as 3, etc.

For family characteristics, number of children is a measure of the number of children under the age of 18 living in the household. Family structure is captured using dummy variables for single mother and "other" family type, with both biological parents present the excluded category. Whether mother received AFDC at child's birth is a simple dummy variable coded as 1=yes and 0=no. Mother's age at child's birth is constructed by subtracting the mother's birth year from the child's birth year. A dummy variable indicating whether the mother was a teenager

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<sup>2</sup> A second measure of birth weight was created to indicate whether the child weighed less than 4.5 pounds at birth. As results are similar, we present only one set of the numbers.

when the child was born is included in the analyses. A Beale scale is used to measure the degree of urbanicity. The code ranges from 1 to 10 with 1 indicating Central counties of metropolitan areas of 1 million population or more and 10 indicating completely rural, not adjacent to a metropolitan area. For region, dummy variables are used for the Midwest, South, and West, with the Northeast the excluded category. *Mother's cognitive ability* is assessed with a Passage Comprehension test of the Woodcock Johnson Achievement Test-Revised at the time of the CDS interview. Raw scores on the test range from 6 to 43. This measure is used as a rough proxy for the genetic endowment of the child when other socioeconomic characteristics of the parents and the family are controlled for.

A number of school and family mediators are also used in our models to capture the “cultural” explanations of the test score gap – i.e., black parents do not have high educational expectations or engage/invest in activities that promote high aspirations or a strong work ethic in their children. As these covariates are arguably endogenous to child’s test scores, we use the 1997 measures. Doing this in models for 2003 test scores allows for a lag effect of these mediators. Unfortunately, these data were not collected in the PSID before 1997. One should be cautious in interpreting results from models for the 1997 test scores that include these mediators. The first of these variables indicates whether or not the child attended a private school in 1997. The second indicator assesses parental expectations with a question measured on a 8-point scale - “How much schooling do you expect this child will complete?”, with 1 indicating “11<sup>th</sup> grade or less”, and 8 indicating “MD, Law, Ph.D. or other degree”. The third and fourth variables measure the extent to which parents provide cognitive stimulation and emotional support at home. *Cognitive stimulation* (or cultural capital) is measured with items from the HOME scale, reported by the primary caregiver. HOME scale include age-appropriate items such as how

many books the child has (0=none; 4=20 or more), whether the child has the use of a CD or tape player and at least 5 CDs or tapes (0=no; 1=yes), and how many things of numbers, alphabet, colors and shapes/sizes, the primary caregiver used to help the child learn at home (0=none; 4=all). Another item in the cognitively stimulating materials scale is how many newspapers and magazines the family receives regularly (0=none; 2=3 or more newspapers/magazines). This item is a rough indicator of family engagement in everyday literacy activities, expected to be an important vehicle for parents to transmit cultural capital to their children. For older children, the HOME scale also includes participation in extracurricular activities, frequency of attendance at museums and musical or theatrical performances. To create the cognitive stimulation subscale in the present study, we standardize each item using z-scores and then take the mean of the items. This index is a proxy for the level of cultural capital to which a child has access.

Level of emotional support the child receives is assessed with a subset of the HOME scale. It is a combination of mother's report and interviewer's observation of the interaction between the primary caregiver and the child. On a scale of one to five, the interviewers assess items such as the extent to which the mother showed warmth in tone when talking with child, whether the mother introduced the child by name, how the mother responded verbally to child's speech, questions or request, how often mother's voice conveyed positive feelings about child, and so on.

Two more variables were included, one indicating whether a child watches more than 20 hours of TV per week, the other assessing how often the mother works on homework with the child, measured on a 5-point scale, with 1 indicating "never" and 5 indicating "every day".

## Results

Table 1 reports the weighted descriptive statistics by race for all variables used in our analyses, including both waves of the CDS. As evident in the table, black children's average

scores are lower than white children's average scores on all achievement tests. The average achievement gaps span approximately twelve points for both tests in 1997 and approximately 15 points for both tests in 2003.

Consistent with national statistics, Table 1 reveals significant differences between black and white children in many of the child and family characteristics. On average, white children have families with a significantly higher socioeconomic background relative to black children. In both waves of the CDS, black children have lower average family income and wealth compared to white children. Moreover, average parental education for black children is almost two years lower than mean parental education for their white counterparts. White children also enjoy higher family head occupational prestige levels on average than black children, with the difference close to one standard deviation in both waves. Regarding assets, 40% of white children, compared to 10% of blacks, live in a family that is in the highest quartile of net wealth level in 1997. In 2003, 12% of white children, compared to 45% of blacks, live in a family that is in the lowest quartile.

Five percent of white children have a low birth weight, compared to 11 percent of black children. Blacks also have a higher mean birth order position and live in households with more children than whites. Black children are significantly more likely to live in single-mother households (60% vs. 14% in 1997) and less likely to live in households with both biological parents present relative to white children (33% vs. 82% in 1997) in the sample. In addition, black children are more likely than whites to have a mother who was a teenager (14% vs. 4%) and was receiving the welfare at the time of the child's birth (31% vs. 5%). Geographically, the black children in our sample tend to reside in more urban environments and are more

concentrated in the South than whites. Finally, mothers of white children, on average, score about one and a quarter standard deviations higher than those of white children.

Black-white differences in school and family “cultural” mediators are also significant in our sample. White children are more likely than black children to attend private school. Parents of white children have a higher expectation of completed schooling to their children. White children enjoy higher levels of cognitive stimulation and emotional support on average, relative to black children. A third of black children, as compared to 16% of white children, watch more than 20 hours of TV per week. Parents of white children also work with the children on homework more frequently.

### Multivariate Analysis

Our analyses were conducted separately for three different cohorts based on grade in school in 1997, as our preliminary analysis indicates that there are interaction effects between race and birth cohorts on some of the test score measures. The youngest cohort includes children who were not yet in school or were attending preschool or kindergarten in 1997. The middle cohort includes children attending grades one to three in 1997. Finally, the oldest cohort includes children attending grades four to eight in 1997. We examine the test scores for these children when they were first assessed in 1997, then six years later when they were assessed again in 2003.

Table 2 shows the test score gaps (all statistically significant) between black and white children in 1997 and 2003, expressed in standard deviations and in raw scores, for the three cohorts. For the youngest cohort, the black children scored .78 and .43 of a standard deviation lower (translating to 13.6 and 7.8 points) than white children in Applied Problem and Letter-Word scores respectively. Compared to the ECLS-K data, which show a .6 and .4 standard



deviation in math and reading respectively for children entering the kindergarten in 1998 (Fryer and Levitt, 2004), these gaps are slightly larger. Both the PSID and ECLS-K data, however, show smaller gaps than the NLSY data, which have been shown to have a gap of more than one standard deviation in vocabulary scores between black and white children aged 5-6 (Phillips et al., 1998). For the PSID preschoolers, these gaps grew 6 years later, to a gap of almost one and 0.7 of a standard deviation (or about 16.7 and 13.3 points) by the time these children were in Grades 4 to 6.

For the middle cohort that consists of children who were in grades 1-3 in 1997, the gaps are about .7 and .8 of a standard deviation in 1997. These gaps also grew to one and .9 of a standard deviation by the time these children were in grades 7-9 in 2003. For the oldest cohort that consists of children who were in grade 4 to 7 in 1997, the gaps in 1997 are about .8 of a standard deviation in both tests (about 13 points). The gaps for both tests remain at a similar level six years later. As seen in the table, the rate of growth in the gap is not as large as what Fryer and Levitt claim to average .10 of a standard deviation per school year.

To better understand the extent to which various groups of variables contribute to these test score gaps, we estimate six models for each test score. The first model (I) has only race/ethnicity as a covariate. The second model (II) has only the genetic endowment proxy (mother's verbal test score) as a covariate. We then estimate a series of nested OLS regression models, adding to model I the following group of independent variables subsequently - (1) four parental SES measures – income, education, occupation, and family wealth in Model III, (2) child and other family characteristics in Model IV, (3) genetic endowment proxy (mother's verbal test score) in Model V, and (4) the family “cultural” proxies in Model VI. Results are summarized in Figures 1-3, with detailed estimates in each model presented in Tables 3-14.

***Preschool Cohort (see Figure 1 and Tables 3-6)***

Applied problem score in 1997 – When the four basic family SES variables are added to the model (III), the gap is reduced from .78 to .42 of a standard deviation, though still statistically significant. These four SES variables double the explanatory power of the model (from 10 to 20%). Both family income and parents’ occupational prestige are significant predictors. When the child and other family characteristic are added to the model (IV), the difference remains at a similar level (with these additional variables explain about 4% more of the total variance in the Applied Problem scores). The fact the mother was a teenager when the child was born is negatively related to a child’s AP score. When mother’s test score is added to the model (V), the gap reduced to .3 of a standard deviation, indicating that the genetic endowment of a child is important to be taken into account in the test score gap. However, the gap remains significant in this model, and the  $R^2$  increases only by 1%. Family income and occupation remain significant predictors even though the genetic endowment proxy is also significant. Finally, when the school and “cultural” proxies are added to the model (VI), the black-white difference became non-significant to less than .2 of a standard deviation. Parents’ occupation and whether mother was a teenager when the child was born are significant predictors. Family income and mother’s test score both become non-significant covariates in this final model, indicating their influence on the test scores is mediated through these family cultural proxies.

1997 Letter-word score – In contrast to AP scores, the four basic SES alone reduced the difference from .43 to .08 of a standard deviation, a non-significant level (Model III). Parent’s occupational prestige is the only significant predictor in this model. The  $R^2$  increases from 4% to 11%. Parents’ occupation becomes non-significant, however, when child and other family characteristics are added to the model (IV). In the rest of the models, the race difference remains

non-significant. In model V, mother's test score is a significant predictor, though the magnitude of the coefficient is small (.04 of a standard deviation). When the "cultural" proxies are taken into account (Model VI), though, mother's test score becomes non-significant. Two of the child's own characteristics – birth weight and birth order are the only covariates that remain significant predictors.

2003 Applied Problem score – As noted before, when the AP scores are assessed again six years later when this cohort of children are in grade 4-6, the gap between black and white children has increased to one standard deviation. This gap remains significant after all the variables are controlled for, though the black-white difference drops from .98 to .51 of a standard deviation after the 4 basic SES are controlled for (income and occupational prestige are significant factors). The gap then dropped to .45 of a standard deviation when child, other family characteristics and the genetic proxy is controlled for (model V), and to .35 of a standard deviation after all the covariates are added (model VI). Family income, whether the child has low birth weight, mother's test score, and the frequency of parents working on home work with the child have significant effects in an expected direction. Although the final model explains up to 38% of the total variance in the AP scores in 2003, the black-white difference remains statistically significant.

2003 Letter-Word score – Adding the four basic SES variables reduces the black-white difference in LW scores in grades 4-6 by about half and more than doubled the  $R^2$ . Parent's education and occupation are significant predictors in this model (III). The gap becomes non-significant when mother's test score is added to the model along with child's and other family characteristics (model V). Parents' education also becomes nonsignificant. In the final model (VI), a child's birth weight and birth order, genetic endowment proxy, and how frequently the

mother checks home work are significant predictors. Parents' SES becomes non-significant in the final two models, indicating that child's genetic endowment and some of the cultural explanations are important factors that contribute to the black-white differences. Adding genetic endowment proxy increases the R-sq by 8% and adding the cultural proxies explains an additional 6% of the total variance in LW scores in grades 4-6 for this youngest cohort.

***Middle Cohort - Grade 1-3 in 1997 (see Figure 2 and Tables 7-10)***

Applied problem score in 1997 – The gap is reduced by half, though remains significant, when the four basic SES variables are added to the model (III). The difference became non-significant when child and other family characteristics were added to the model (IV). Parent's education, occupation, and wealth (highest quartile) are positively associated with the AP score in grades 1-3. Girls have lower AP scores by grades 1-3. After mother's test score is added, the gap is reduced to .13 (from .67) of a standard deviation. Parent's SES, child's gender, number of children at home and whether mother was a teenager remain significant predictor of the AP scores. Mother's verbal score is also a significant predictor, though the magnitude of its effect is small (.04 of a standard deviation). In the final model (VI), several of the "cultural" proxies including whether a child attend a private school, parental expectation, and the amount of time a child spends watching TV, have some significant impact in the expected directions (and the R<sup>2</sup> increases by 5% when these proxies are added to the model). In addition to these variables, parent's education and occupational prestige, child's gender, number of child in the family remain significant predictors. In the final step, the gap was reduced to .26 of a standard deviation. Also noteworthy in this final model is that mother's test score does not have a significant net effect on AP scores in 1997, suggesting that the genetic factors can be overestimated if these variables are not taken into account.

Letter-word score in 1997 – As for the youngest cohort, the gap is eliminated once the 4 basic parental SES indicators are added (the R-sq more than doubled - from 10% to 22%) and remains non-significant in the rest of the models. Parent's education is significant in models III and IV but became non-significant when mother's test score is added. Girls score .27 of a standard deviation higher than boys in LW scores. In the final model when the "cultural" proxies are added, the gender differences became non-significant but child's birth weight and birth order, and mother's test scores are significant predictors. Parental expectation is shown to be positively associated with the score. Adding the various groups of covariate increases the R-sq from the 10% in the base model (I) to 41% in the final model (VI), with the biggest increase occurs when family SES and other family and child characteristics are added to the model.

Applied Problem score in 2003 – Six years later, these children in the middle cohort are in grades 7-9 in 2003 with wider gaps in test scores. For the AP scores, the gap was reduced as groups of indicators are added to the models from one standard deviation in model I to .3 of a standard deviation in the final model (VI). However, unlike other test scores discussed earlier, the gap remains significant in all models. After controlling for mother's verbal score, parent's education and occupation remain significant predictors. In the final model, after the "cultural proxies" are added, the R-sq increases substantially to 49% (an 11% increase from the previous model) and mother's verbal score becomes non-significant. How often parents work with child on homework in 1997 are positively associated with the AP scores six years later. Also noteworthy is that girls have lower AP score than boys in middle school, a pattern not seen in earlier years.

Letter-Word scores in 2003 – Like the AP scores in 2003, LW scores for this middle cohort begin with a large difference of almost one standard deviation in middle school. This gap is

reduced when different groups of variables are added to the model – by about a quarter when the four basic SES are added (model III) and by about half when child and other family characteristics are added (IV). However, the difference cannot be explained away even with all the covariates in the final model (VI). A substantial and statistically significant gap remains – black children are .62 of a standard deviation lower than the whites at this stage. The only two significant covariates, other than race, are child’s birth order and how often parents work with the child on homework in earlier years. Even though the R-sq in the final model is quite high - .42, neither parents’ SES nor mother’s test score is significantly associated with the LW score in 2003, when these children were in middle school.

***Oldest Cohort - grade 4 and up in 1997 (see Figure 3 and Tables 11-14)***

A distinct pattern for this oldest cohort is that none of the covariates are able to explain away the gaps in test scores in both 1997 and 2003, except in Letter-Word scores in the final model where the “cultural” proxies are added<sup>3</sup>, even though all the covariates together explain about a third of the total variance in these test scores. For the AP scores in 1997, parent’s education and a high wealth level are significant factors except in the final models. The only other covariates that are significant predictors in the final models are the gender of the child and parental expectation. Girls score about .3 of a standard deviation lower than boys in AP scores in grades 4-7, a pattern also seen for the middle cohort.

For the LW scores in 1997, the gap is eliminated when the family “cultural” mediators are added to the model (VI). Family income, wealth, gender, low birthweight, number of children in the family, mother’s test score, and private school attendance are significant predictors. Parental expectation of child’s educational attainment, the cognitive stimulation and emotional support

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<sup>3</sup> As noted, however, since the cultural proxies may be endogenous in the 1997 models, one should be cautious in interpreting the results from this final model.

that parent provide are positively associated with the score. Girls score significantly higher (.23 of a standard deviation) in LW tests than boys in grades 4-7.

Six years later when this oldest cohort is in high school, the black-white differences cannot be explained away by these covariates (Table 13). For the AP scores in 2003, parental education and occupational prestige and wealth became non-significant predictors of the test scores when mother's verbal score is added, although mother's test score does not have a significant net effect either. Again, a significant gender difference is observed – girls scored a .21 of a standard deviation lower in AP in 2003. Child's birth weight and birth order, whether mother was a teenager when the child was born and parental expectation of child's educational attainment in early years remain significant predictors.

For the LW score in 2003, as in AP scores, the gap remains significant after all covariates are controlled for, though the difference is reduced from .74 to .65 of a standard deviation away. Mother's test score is not significant while family income, parental expectation, and the cognitive stimulation that parents provide for a child are significant predictors.

### Sensitivity Analyses

Using the full models, we examined separate sub-samples of the data in order to better understand the role of a wide range of factors that are associated with the achievement score gaps between black and white students. These sensitivity analyses produced some interesting results, many of which are consistent with patterns reported in Fryer & Levitt (2005). As in Fryer & Levitt (2005), we find that black females fare better against white females than black males fare against white males. Males have larger black-white test gaps than females on all measures of achievement. Sometimes, these gaps are larger than one-half of a standard deviation for boys. In addition, the black-white gap is larger for students residing in metro areas than in non-metro

areas. Students whose parents have a high school education or less have smaller black-white achievement test gaps compared to those whose parents have education beyond high school. A noteworthy difference that is also present in Fryer and Levitt's results is the racial gaps in achievement are much wider in the West than in other regions of the U.S. Sometimes these gaps are as large as .8 of a standard deviation for children in the west. Possible explanations for this regional difference await future research. In brief, the sensitivity analyses suggest that black-white achievement gaps are not always consistent across demographic subgroups and geographical areas.

### Conclusion and Discussion

Based on two waves of the PSID-CDS data for three age cohorts, we find large black-white test score differences in children of all ages. Even before children start formal schooling, black children score .8 and .5 of a standard deviation lower than whites in Applied Problem and Letter-Word tests respectively. Except for the oldest cohort, the gaps for all tests widened when children's cognitive skills were assessed again six years later. We examine the extent to which child's characteristics, home environment (both structural and cultural factors), and a proxy for child's genetic endowment account for these gaps. We find that all differences before grade three can be accounted for by these covariates. From grade 4 and up, however, these variables can no longer explain the test score gaps away, except perhaps in verbal scores for children in grades 4-7 in 1997 when the "cultural" proxies are taken into consideration. This is similar to the pattern reported by Fryer and Levitt based on the ECLS data that by the end of third grade the test-score gap cannot be explained by observable characteristics. As children advance through higher grades, the extent to which these covariates contribute to the test score differences diminishes. In preschool years, the differences were reduced to less than .2 of a standard deviation when all



covariates are controlled for. In the first three years of school, the gaps are reduced to about .3 of a standard deviation, whereas at high school level, the gap remains a statistically significant .5 and .7 of a standard deviation for AP and LW scores respectively after all the covariates are controlled for.

The set of family characteristics that is significant predictors of the black-white test score gap varies across cohorts and across different tests. In general, however, family SES characteristics are important contributors to the gap between the test scores. Family income in preschool years has a significant positive impact on AP scores. Parental occupation and education also have some significant impact on several test scores. Being a teenage mother is negatively associated with several test scores. Several of child's characteristics, such as birthweight, birth order and gender are significant factors to consider. Reducing the risk of teenage childbearing and having low-birthweight babies may be important policy measures in reducing the black-white test score gap. Gender differences in AP tests (girls score lower) start to emerge in the first three years of school and remain prominent in middle and high school years. Gender difference in LW scores (higher score for girls) is observed to be significant only in grades 4-7 when other covariates are controlled for. Our results also show that it is important to consider not only child and family characteristics, but also child's genetic endowment and the "cultural" factors in black and white families such as parental expectations of children's educational attainment and the extent to which parents provide an environment that encourages children to achieve. Directly influencing these family culture and practices maybe an effective way to improve black children's academic performance. It is clear, however, that neither the "biological" nor the "cultural" determinism is a valid theoretical explanation for the black-white test score gap. Structural factors in the family clearly contribute to a substantial portion of the gap in the test scores.

Our analysis leaves us with a critical puzzle - what happens as children get older that diminishes the effects of parental social and economic factors on eliminating the racial gap? Do schools and neighborhood factors become more important, if so, how and why? What about peers? These are clearly important and complicated factors that we have not considered in this paper. Our ability to answer these questions in future research is critical in informing public policies to raise the academic performance level of black students.

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**Table 1: Weighted Descriptive Statistics for Black and White Children**

<b><u>Achievement Tests</u></b>	<b><u>Year</u></b>	<b><u>Blacks</u></b>			<b><u>Whites</u></b>		
		<b><u>N</u></b>	<b><u>Mean</u></b>	<b><u>S.D.</u></b>	<b><u>N</u></b>	<b><u>Mean</u></b>	<b><u>S.D.</u></b>
Letter-Word	97	722	96.48	16.03	813	108.21	17.50
	03	815	94.45	17.26	876	109.65	18.83
Applied Problems	97	719	98.92	14.97	811	111.80	16.84
	03	809	94.75	13.33	874	109.83	15.41
<b><u>Parental SES</u></b>							
Permanent income	97	836	10.04	0.81	925	10.92	0.63
	03	856	10.13	0.74	938	11.00	0.61
Education	97	823	12.52	2.20	922	14.26	2.18
	03	813	12.72	2.17	914	14.32	2.11
Occupational prestige	97	829	26.66	17.12	910	42.70	17.04
	03	846	29.19	16.03	921	43.13	16.33
Net wealth	97						
Highest quartile		835	0.10	0.30	920	0.40	0.49
Second quartile		835	0.19	0.39	920	0.25	0.44
Third quartile		835	0.31	0.46	920	0.23	0.42
Lowest quartile		835	0.40	0.49	920	0.12	0.32
Net wealth	03						
Highest quartile		856	0.07	0.26	938	0.40	0.49
Second quartile		856	0.18	0.38	938	0.29	0.45
Third quartile		856	0.31	0.46	938	0.19	0.39
Lowest quartile		856	0.45	0.50	938	0.12	0.32
<b><u>Child Characteristics</u></b>							
Gender (1=female)	-	856	0.42	0.49	938	0.49	0.50
Whether low birthweight	-	845	0.11	0.32	935	0.05	0.22
Birth order	-	833	2.40	1.43	927	1.87	0.92
<b><u>Other Family and Parental Characteristics</u></b>							
Number of Children	97	856	2.70	1.41	938	2.33	0.89
	03	856	2.49	1.39	938	2.24	0.91
Family Structure							
Both biological parents	97	856	0.33	0.47	938	0.82	0.39
	03	856	0.32	0.47	938	0.73	0.45
Mother only	97	856	0.60	0.49	938	0.14	0.35
	03	856	0.53	0.50	938	0.16	0.36
Other type*	97	856	0.06	0.24	938	0.05	0.21
	03	856	0.16	0.36	938	0.12	0.32
Mom received AFDC at child's birth	-	833	0.31	0.46	912	0.05	0.21
Teen mom	-	836	0.14	0.35	927	0.04	0.20
Urbanicity (10=most rural; 1=most urban)	97	843	3.47	2.55	936	4.12	2.58
	03	856	3.25	2.46	935	3.97	2.47
Region							
Midwest	97	856	0.19	0.40	938	0.27	0.44
	03	856	0.18	0.39	935	0.28	0.45

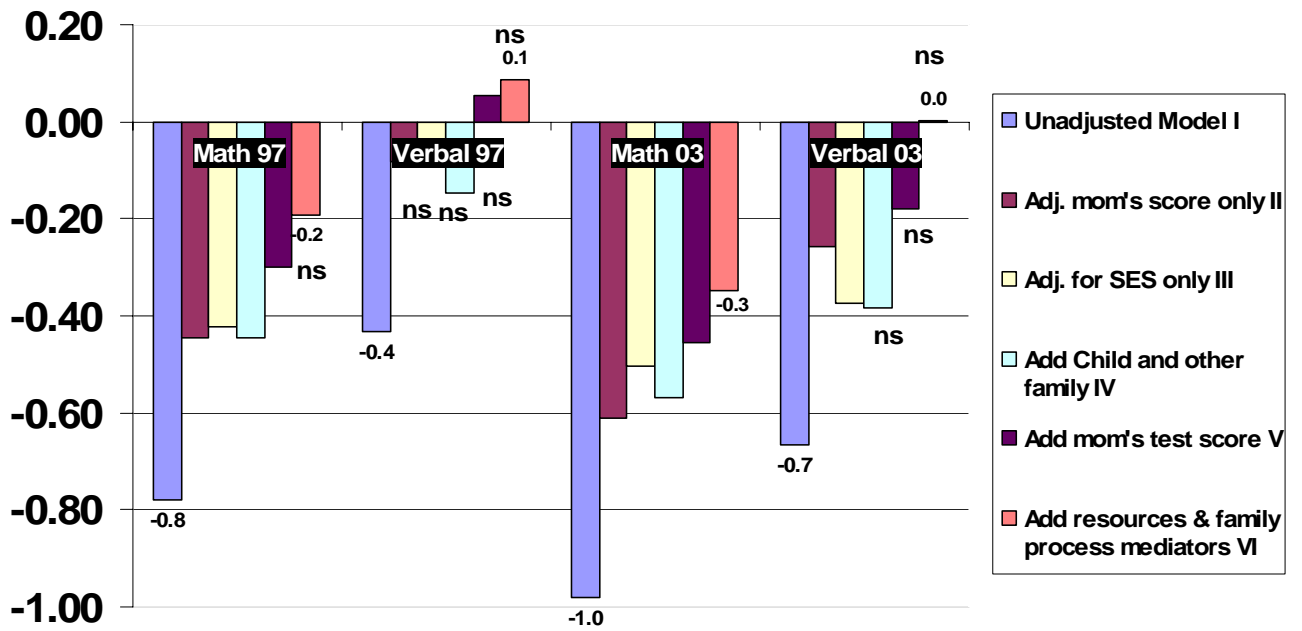
South	97	856	0.58	0.49	938	0.32	0.47
	03	856	0.59	0.49	935	0.30	0.46
West	97	856	0.07	0.25	938	0.20	0.40
	03	856	0.07	0.26	935	0.20	0.40
<b><u>Genetic Endowment</u></b>							
Mother's Verbal test score	97	687	27.76	5.00	800	33.77	3.95
<b><u>School and other Family Mediators</u></b>							
Whether attend private school (0/1)	97	856	0.05	0.22	938	0.10	0.30
Parental educational expectations (1-8)	97	845	4.37	2.06	930	5.51	1.58
Cognitive stimulation (0-14)	97	856	9.43	2.07	938	11.01	1.76
Emotional support at home (0-14)	97	856	9.18	2.08	938	10.68	1.82
Whether weekly TV time GT 20 (0/1)	97	667	0.32	0.47	839	0.16	0.36
Parent work with child on homework (1-5)	03	812	2.16	1.47	885	3.05	1.53

\* Indicates that black-white means are not significantly different at  $p=.05$

**Table 2: Differences in Test Scores between Black and White Children in 1997 and 2003, Expressed in Standard Deviations and Raw Scores (in parentheses)**

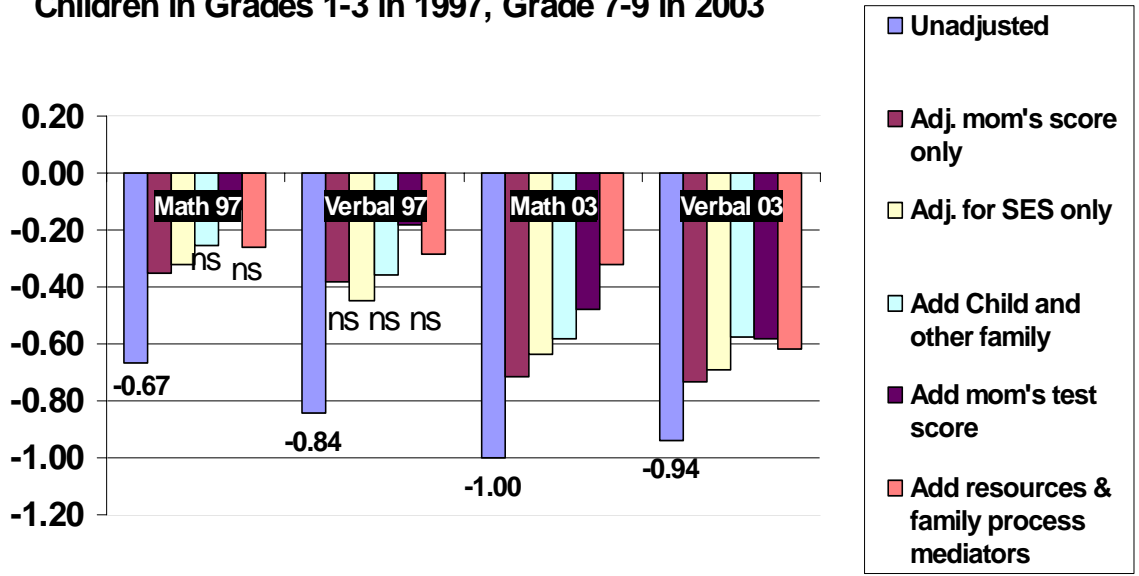
	<b>Applied Problem Score</b>		<b>Letter-Word Score</b>	
	<b>1997</b>	<b>2003</b>	<b>1997</b>	<b>2003</b>
<b>Youngest Cohort (preschool in 1997)</b>	-0.78 (13.55)	-0.98 (16.7)	-0.43 (7.76)	-0.67 (13.32)
<b>Middle Cohort (Grade 1-3 in 1997)</b>	-0.67 (11.92)	-1.00 (16.41)	-0.84 (14.69)	-0.94 (18.2)
<b>Oldest Cohort (Grade 4-7 in 1997)</b>	-0.77 (13.75)	-0.78 (12.75)	-0.77 (13.44)	-0.74 (14.42)

**Figure 1: Black-White Test Score Gap in Standard Deviation  
Preschool in 1997, Grade 4-6 in 2003**

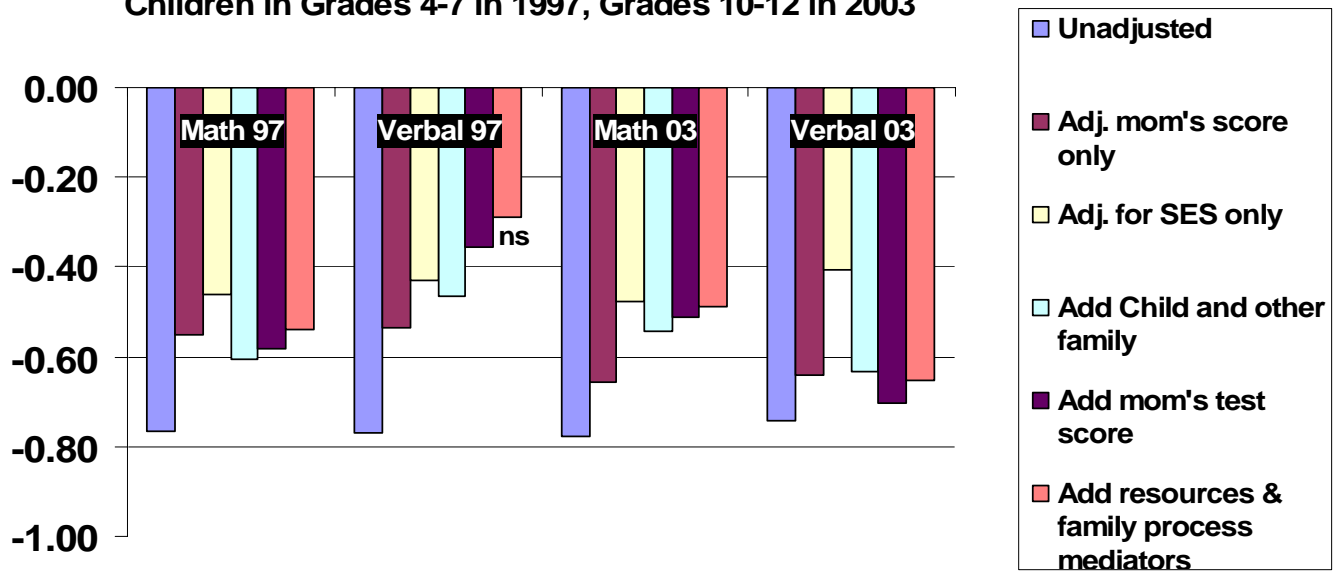




**Figure 2: Black-White Test Score Gap in Standard Deviations, Children in Grades 1-3 in 1997, Grade 7-9 in 2003**



**Figure 3: Black-White Test Score Gap in Standard Deviations, Children in Grades 4-7 in 1997, Grades 10-12 in 2003**



**Table 3: Applied Problem Score for Preschoolers in 1997**

	Model					
	I	II	III	IV	V	VI
<b><u>1. RACE</u></b>	-0.78 (0.11)	*** -0.45 (0.13)	*** -0.42 (0.12)	*** -0.45 (0.14)	** -0.30 (0.15)	* -0.19 (0.17)
<b><u>2. Parental SES</u></b>						
Permanent Income			0.16 (0.08)	* 0.23 (0.10)	* 0.20 (0.10)	* 0.18 (0.12)
Education			0.03 (0.03)	0.03 (0.03)	0.01 (0.04)	-0.01 (0.05)
Occupational Prestige			0.01 (0.00)	** 0.01 (0.00)	* 0.01 (0.00)	* 0.01 (0.00)
Net wealth						
Highest quartile			-0.06 (0.16)	-0.06 (0.15)	-0.09 (0.15)	-0.07 (0.17)
Second Quartile			0.08 (0.16)	0.11 (0.15)	0.13 (0.15)	0.14 (0.17)
Third Quartile			-0.09 (0.13)	-0.10 (0.13)	-0.08 (0.13)	-0.01 (0.15)
<b><u>3. Child Characteristics</u></b>						
Gender (1=female)				-0.06 (0.09)	0.00 (0.10)	-0.01 (0.10)
Whether low birthweight				-0.32 (0.19)	-0.32 (0.20)	-0.40 (0.21)
Birth Order				-0.02 (0.06)	-0.02 (0.06)	-0.04 (0.07)
<b><u>4. Other Family and Parental Characteristics</u></b>						
Number of Children				-0.05 (0.06)	-0.07 (0.07)	-0.02 (0.07)
Family Structure - mother only				0.11 (0.15)	0.10 (0.15)	0.09 (0.17)
- other type				0.27 (0.20)	0.27 (0.19)	0.28 (0.21)
Mom received AFDC while pregnant				0.15 (0.16)	0.16 (0.17)	0.16 (0.19)
Teen mom at birth				-0.49 (0.16)	** -0.49 (0.16)	** -0.46 (0.17)
Urbanicity				-0.01 (0.02)	0.00 (0.02)	0.00 (0.03)
Region -Midwest				0.00 (0.16)	-0.04 (0.17)	0.03 (0.18)
South				0.17 (0.17)	0.14 (0.19)	0.24 (0.19)
West				0.02 (0.16)	-0.02 (0.17)	-0.05 (0.17)
<b><u>5. Genetic Endowment</u></b>						
Mother's Verbal test score		0.05 (0.01)	***		0.03 (0.01)	** 0.02 (0.02)
<b><u>6. School and other Family Mediators</u></b>						

Whether attend private school	0.33
	(0.31)
Parental expectations	0.03
	(0.03)
Cognitive Stimulation	0.08
	(0.05)
Emotional Support at home	-0.01
	(0.04)
Time watching TV	0.02
	(0.13)

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<b>R-Squared</b>	0.10	0.16	0.20	0.24	0.25	0.25
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**Table 4: Letter-Word Score for Preschoolers in 1997**

	Model					
	I	II	III	IV	V	VI
<b><u>1. RACE</u></b>	-0.43 (0.09)	*** -0.08 (0.11)	-0.08 (0.12)	-0.15 (0.14)	0.06 (0.15)	0.09 (0.17)
<b><u>2. Parental SES</u></b>						
Permanent Income			0.14 (0.09)	0.15 (0.10)	0.08 (0.10)	0.05 (0.12)
Education			0.04 (0.03)	0.04 (0.03)	0.03 (0.03)	0.02 (0.03)
Occupational Prestige			0.01 (0.00)	** 0.01 (0.00)	0.01 (0.00)	0.01 (0.00)
Net wealth						
Highest quartile			-0.02 (0.16)	-0.02 (0.15)	-0.01 (0.15)	0.01 (0.18)
Second Quartile			-0.04 (0.14)	0.04 (0.13)	0.07 (0.14)	0.06 (0.16)
Third Quartile			-0.06 (0.12)	-0.10 (0.12)	-0.06 (0.12)	-0.06 (0.14)
<b><u>3. Child Characteristics</u></b>						
Gender (1=female)				0.09 (0.09)	0.13 (0.09)	0.14 (0.09)
Whether low birthweight				-0.43 (0.12)	*** -0.40 (0.13)	** -0.42 (0.14)
Birth Order				-0.09 (0.06)	-0.08 (0.06)	-0.13 (0.06)
<b><u>4. Other Family and Parental Characteristics</u></b>						
Number of Children				0.04 (0.07)	0.03 (0.07)	0.07 (0.07)
Family Structure - mother only				0.09 (0.15)	0.01 (0.16)	-0.05 (0.19)
- other type				0.15 (0.27)	0.15 (0.26)	-0.10 (0.21)
Mom received AFDC while pregnant				0.11 (0.13)	0.08 (0.11)	0.09 (0.13)
Teen mom at birth				-0.12 (0.13)	-0.09 (0.13)	-0.07 (0.14)
Urbanicity				-0.04 (0.02)	* -0.04 (0.02)	* -0.03 (0.02)
Region -Midwest				-0.26 (0.15)	-0.24 (0.15)	-0.28 (0.15)
South				-0.03 (0.14)	-0.01 (0.15)	0.04 (0.16)
West				-0.14 (0.15)	-0.14 (0.15)	-0.16 (0.16)
<b><u>5. Genetic Endowment</u></b>						
Mother's Verbal test score			0.05 (0.01)	***	0.04 (0.01)	** 0.03 (0.02)
<b><u>6. School and other Family Mediators</u></b>						

Whether attend private school						0.34 (0.32)
Parental expectations						0.04 (0.04)
Cognitive Stimulation						0.03 (0.03)
Emotional Support at home						-0.04 (0.04)
Time watching TV						-0.06 (0.12)
<b>R-Squared</b>	0.04	0.11	0.14	0.21	0.24	0.28

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**Table 5: Applied Problem Score in 2003 for 1997 Preschoolers**

	Model		I		II		III		IV		V		VI	
<b><u>1. RACE</u></b>	-0.98	***	-0.61	***	-0.51	***	-0.57	***	-0.45	**	-0.35	**		
	(0.13)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)	
<b><u>2. Parental SES</u></b>														
Permanent Income					0.34	***	0.43	***	0.39	***	0.35	***		
					(0.09)		(0.09)		(0.10)		(0.11)			
Education					0.00		-0.01		-0.01		-0.03			
					(0.03)		(0.03)		(0.03)		(0.04)			
Occupational Prestige					0.01	**	0.01		0.00		0.00			
					(0.00)		(0.00)		(0.00)		(0.00)			
Net wealth														
Highest quartile					0.12		0.10		0.00		0.09			
					(0.14)		(0.14)		(0.18)		(0.17)			
Second Quartile					-0.08		-0.10		-0.13		-0.01			
					(0.13)		(0.14)		(0.16)		(0.17)			
Third Quartile					-0.03		-0.07		-0.09		-0.14			
					(0.16)		(0.15)		(0.16)		(0.15)			
<b><u>3. Child Characteristics</u></b>														
Gender (1=female)							-0.14		-0.15		-0.14			
							(0.10)		(0.10)		(0.10)			
Whether low birthweight							-0.39	**	-0.41	**	-0.47	***		
							(0.14)		(0.14)		(0.14)			
Birth Order							0.02		-0.01		-0.03			
							(0.06)		(0.06)		(0.06)			
<b><u>4. Other Family and Parental Characteristics</u></b>														
Number of Children							0.01		0.00		-0.01			
							(0.05)		(0.06)		(0.06)			
Family Structure - mother only							0.20		0.20		0.18			
							(0.13)		(0.14)		(0.16)			
- other type							0.08		-0.01		0.08			
							(0.17)		(0.17)		(0.18)			
Mom received AFDC while pregnant							0.10		0.05		0.17			
							(0.18)		(0.19)		(0.19)			
Teen mom at birth							-0.25		-0.23		-0.13			
							(0.18)		(0.18)		(0.20)			
Urbanicity							-0.01		0.01		0.01			
							(0.02)		(0.02)		(0.02)			
Region -Midwest							0.09		0.05		-0.08			
							(0.15)		(0.15)		(0.17)			
South							0.21		0.24		0.21			
							(0.14)		(0.14)		(0.16)			
West							0.12		0.07		-0.02			
							(0.15)		(0.16)		(0.16)			
<b><u>5. Genetic Endowment</u></b>														
Mother's Verbal test score			0.07	***					0.04	***	0.03	*		
			(0.01)						(0.01)		(0.01)			
<b><u>6. School and other Family Mediators</u></b>														

Whether attend private school						-0.18 (0.19)
Parental expectations						0.07 (0.03)
Cognitive Stimulation						0.04 (0.04)
Emotional Support at home						-0.01 (0.03)
Time watching TV						-0.14 (0.14)
Parent checks homework						0.16 ** (0.05)
<b>R-Squared</b>	0.15	0.25	0.27	0.29	0.34	0.38

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**Table 6: Letter-Word Score in 2003 for 1997 Preschoolers**

	Model									
	I	II	III	IV	V	VI				
<b><u>1. RACE</u></b>	-0.67 (0.09)	***	-0.26 (0.11)	*	-0.37 (0.11)	***	-0.38 (0.16)	*	-0.18 (0.15)	0.00 (0.13)
<b><u>2. Parental SES</u></b>										
Permanent Income			0.13 (0.10)		0.11 (0.10)		0.04 (0.10)		0.04 (0.11)	
Education			0.07 (0.03)	*	0.06 (0.03)	*	0.05 (0.03)		0.04 (0.03)	
Occupational Prestige			0.01 (0.00)	*	0.00 (0.00)		0.00 (0.00)		0.00 (0.00)	
Net wealth										
Highest quartile			0.00 (0.16)		-0.07 (0.16)		-0.22 (0.18)		-0.28 (0.19)	
Second Quartile			-0.12 (0.14)		-0.22 (0.15)		-0.25 (0.16)		-0.30 (0.17)	
Third Quartile			-0.09 (0.14)		-0.17 (0.15)		-0.24 (0.16)		-0.28 (0.17)	
<b><u>3. Child Characteristics</u></b>										
Gender (1=female)					-0.04 (0.09)		-0.05 (0.09)		-0.02 (0.09)	
Whether low birthweight					-0.32 (0.13)	**	-0.33 (0.13)	**	-0.47 (0.14)	***
Birth Order					-0.08 (0.05)		-0.09 (0.05)		-0.10 (0.05)	*
<b><u>4. Other Family and Parental Characteristics</u></b>										
Number of Children					0.07 (0.05)		0.06 (0.05)		0.04 (0.06)	
Family Structure - mother only					-0.03 (0.15)		-0.11 (0.16)		-0.14 (0.18)	
- other type					-0.04 (0.18)		-0.15 (0.17)		-0.15 (0.18)	
Mom received AFDC while pregnant					-0.15 (0.14)		-0.27 (0.13)	*	-0.19 (0.14)	
Teen mom at birth					-0.37 (0.16)	*	-0.31 (0.15)	*	-0.28 (0.15)	
Urbanicity					-0.03 (0.02)		-0.03 (0.02)		-0.02 (0.02)	
Region -Midwest					-0.05 (0.12)		0.03 (0.12)		-0.13 (0.13)	
South					0.18 (0.15)		0.25 (0.14)		0.29 (0.15)	
West					0.00 (0.13)		0.00 (0.13)		-0.08 (0.14)	
<b><u>5. Genetic Endowment</u></b>										
Mother's Verbal test score			0.07 (0.01)	***			0.05 (0.01)	***	0.04 (0.01)	***
<b><u>6. School and other Family Mediators</u></b>										

Whether attend private school							-0.28 (0.17)
Parental expectations							0.05 (0.03)
Cognitive Stimulation							0.05 (0.03)
Emotional Support at home							0.03 (0.04)
Time watching TV							-0.17 (0.11)
Parent checks homework							0.14 (0.05) **
<b>R-Squared</b>	0.09	0.22	0.20	0.24	0.32	0.38	

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**Table 7: Applied Problem Score for Children in Grades 1-3 in 1997**

	Model						
	I	II	III	IV	V	VI	
<b><u>1. RACE</u></b>	-0.67 (0.11)	*** -0.35 (0.13)	** -0.32 (0.16)	* -0.25 (0.16)	-0.13 (0.16)	-0.26 (0.18)	
<b><u>2. Parental SES</u></b>							
Permanent Income			-0.03 (0.10)	0.00 (0.10)	-0.04 (0.10)	-0.14 (0.12)	
Education			0.08 (0.03)	* 0.06 (0.03)	* 0.06 (0.03)	* 0.07 (0.03)	
Occupational Prestige			0.01 (0.00)	* 0.01 (0.00)	* 0.01 (0.00)	* 0.01 (0.00)	
Net wealth							
Highest quartile			0.52 (0.20)	** 0.47 (0.18)	** 0.45 (0.18)	0.27 (0.20)	
Second Quartile			0.20 (0.20)	0.13 (0.17)	0.21 (0.17)	0.15 (0.18)	
Third Quartile			0.13 (0.17)	-0.01 (0.16)	-0.06 (0.17)	-0.02 (0.17)	
<b><u>3. Child Characteristics</u></b>							
Gender (1=female)				-0.33 (0.11)	** -0.28 (0.12)	* -0.33 (0.12)	**
Whether low birthweight				-0.37 (0.23)	-0.32 (0.22)	-0.39 (0.21)	
Birth Order				0.02 (0.07)	0.04 (0.07)	0.11 (0.07)	
<b><u>4. Other Family and Parental Characteristics</u></b>							
Number of Children				-0.12 (0.06)	* -0.15 (0.06)	** -0.16 (0.07)	*
Family Structure - mother only				0.13 (0.16)	0.17 (0.17)	0.25 (0.21)	
- other type				0.22 (0.24)	0.22 (0.22)	0.17 (0.23)	
Mom received AFDC while pregnant				0.11 (0.18)	0.09 (0.19)	-0.05 (0.21)	
Teen mom at birth				-0.59 (0.21)	** -0.65 (0.23)	** -0.38 (0.25)	
Urbanicity				0.00 (0.02)	0.01 (0.02)	0.01 (0.02)	
Region -Midwest				-0.03 (0.16)	0.06 (0.17)	0.05 (0.17)	
South				-0.06 (0.15)	-0.03 (0.16)	-0.06 (0.16)	
West				-0.36 (0.19)	-0.28 (0.19)	-0.32 (0.17)	
<b><u>5. Genetic Endowment</u></b>							
Mother's Verbal test score		0.06 (0.01)	***		0.04 (0.01)	** 0.02 (0.01)	
<b><u>6. School and other Family Mediators</u></b>							

Whether attend private school						0.31 *	(0.16)
Parental expectations						0.11 **	(0.04)
Cognitive Stimulation						0.04	(0.04)
Emotional Support at home						0.05	(0.05)
Time watching TV						-0.27 *	(0.14)
<b>R-Squared</b>	0.08	0.16	0.21	0.29	0.32	0.37	

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**Table 8: Letter-Word Score for Children in Grades 1-3 in 1997**

	Model					
	I	II	III	IV	V	VI
<b><u>1. RACE</u></b>	-0.84 ***	-0.38	-0.45	-0.36	-0.18	-0.28
	(0.18)	(0.20)	(0.26)	(0.21)	(0.19)	(0.20)
<b><u>2. Parental SES</u></b>						
Permanent Income			0.10	0.23	0.13	0.00
			(0.13)	(0.13)	(0.13)	(0.15)
Education			0.10 *	0.09 *	0.08 *	0.08
			(0.04)	(0.04)	(0.04)	(0.05)
Occupational Prestige			0.01	0.01	0.01	0.01
			(0.01)	(0.01)	(0.01)	(0.01)
Net wealth						
Highest quartile			-0.05	-0.09	-0.12	-0.20
			(0.26)	(0.20)	(0.20)	(0.21)
Second Quartile			0.21	0.14	0.17	0.17
			(0.22)	(0.20)	(0.20)	(0.21)
Third Quartile			-0.12	-0.24	-0.31	-0.33
			(0.21)	(0.22)	(0.22)	(0.23)
<b><u>3. Child Characteristics</u></b>						
Gender (1=female)				0.23	0.27 *	0.23
				(0.12)	(0.13)	(0.14)
Whether low birthweight				-0.42	-0.37	-0.48 *
				(0.22)	(0.23)	(0.24)
Birth Order				-0.21 **	-0.21 **	-0.16 *
				(0.07)	(0.07)	(0.07)
<b><u>4. Other Family and Parental Characteristics</u></b>						
Number of Children				-0.05	-0.09	-0.09
				(0.07)	(0.07)	(0.08)
Family Structure - mother only				0.36	0.30	0.16
				(0.20)	(0.20)	(0.23)
- other type				-0.18	-0.24	-0.28
				(0.38)	(0.36)	(0.36)
Mom received AFDC while pregnant				0.25	0.09	-0.15
				(0.29)	(0.24)	(0.27)
Teen mom at birth				-0.30	-0.33	0.01
				(0.21)	(0.21)	(0.24)
Urbanicity				0.03	0.04	0.03
				(0.03)	(0.03)	(0.03)
Region -Midwest				-0.38 *	-0.21	-0.16
				(0.16)	(0.16)	(0.18)
South				-0.07	0.05	0.07
				(0.18)	(0.18)	(0.18)
West				-0.45	-0.32	-0.23
				(0.23)	(0.22)	(0.22)
<b><u>5. Genetic Endowment</u></b>						
Mother's Verbal test score		0.09 ***			0.06 ***	0.04 *
		(0.01)			(0.02)	(0.02)
<b><u>6. School and other Family Mediators</u></b>						

Whether attend private school						0.26 (0.17)	
Parental expectations						0.14 (0.04)	**
Cognitive Stimulation						0.04 (0.04)	
Emotional Support at home						-0.03 (0.05)	
Time watching TV						0.09 (0.18)	
<b>R-Squared</b>	0.10	0.20	0.22	0.34	0.38	0.41	

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**Table 9: Applied Problem Score in 2003 for Children in G 1-3 in 1997 (Grades 6-8 in 2003)**

	Model						
	I	II	III	IV	V	VI	
<b><u>1. RACE</u></b>	-1.00 (0.11)	*** -0.72 (0.13)	*** -0.64 (0.15)	*** -0.58 (0.16)	*** -0.48 (0.16)	** -0.32 (0.17)	*
<b><u>2. Parental SES</u></b>							
Permanent Income			0.05 (0.11)	0.02 (0.11)	-0.06 (0.12)	-0.07 (0.12)	
Education			0.09 (0.03)	** 0.08 (0.03)	** 0.08 (0.03)	* 0.07 (0.03)	*
Occupational Prestige			0.01 (0.00)	0.01 (0.00)	* 0.01 (0.00)	* 0.01 (0.00)	
Net wealth							
Highest quartile			0.23 (0.21)	0.22 (0.19)	0.34 (0.19)	0.10 (0.21)	
Second Quartile			0.06 (0.20)	0.06 (0.18)	0.20 (0.18)	0.08 (0.21)	
Third Quartile			-0.09 (0.18)	-0.15 (0.18)	-0.15 (0.18)	-0.19 (0.16)	
<b><u>3. Child Characteristics</u></b>							
Gender (1=female)				-0.23 (0.11)	* -0.21 (0.12)	-0.29 (0.11)	**
Whether low birthweight				-0.47 (0.24)	* -0.42 (0.25)	-0.55 (0.26)	*
Birth Order				-0.02 (0.05)	-0.05 (0.05)	-0.01 (0.06)	
<b><u>4. Other Family and Parental Characteristics</u></b>							
Number of Children				-0.03 (0.05)	-0.02 (0.06)	-0.03 (0.07)	
Family Structure - mother only				-0.05 (0.16)	0.08 (0.18)	0.05 (0.18)	
- other type				-0.05 (0.16)	0.01 (0.17)	0.06 (0.16)	
Mom received AFDC while pregnant				0.15 (0.22)	0.04 (0.23)	0.05 (0.26)	
Teen mom at birth				-0.41 (0.18)	* -0.42 (0.21)	* -0.12 (0.22)	
Urbanicity				0.01 (0.03)	0.02 (0.03)	0.01 (0.02)	
Region -Midwest				-0.14 (0.15)	0.08 (0.15)	-0.01 (0.15)	
South				0.10 (0.15)	0.21 (0.16)	0.25 (0.16)	
West				-0.13 (0.18)	0.03 (0.18)	-0.03 (0.18)	
<b><u>5. Genetic Endowment</u></b>							
Mother's Verbal test score		0.07 (0.01)	***		0.03 (0.01)	** 0.01 (0.02)	
<b><u>6. School and other Family Mediators</u></b>							

Whether attend private school							-0.06 (0.14)
Parental expectations							0.06 (0.04)
Cognitive Stimulation							0.08 (0.04)
Emotional Support at home							0.05 (0.04)
Time watching TV							-0.17 (0.17)
Parent checks homework							0.23 *** (0.05)
<b>R-Squared</b>	0.17	0.26	0.28	0.32	0.38	0.49	

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**Table 10: Letter-Word Score in 2003 for Children in G 1-3 in 1997 (Grades 6-8 in 2003)**

	Model					
	I	II	III	IV	V	VI
<b><u>1. RACE</u></b>	-0.94 *** (0.14)	-0.73 *** (0.16)	-0.69 *** (0.21)	-0.52 ** (0.19)	-0.58 ** (0.19)	-0.62 *** (0.19)
<b><u>2. Parental SES</u></b>						
Permanent Income			-0.14 (0.14)	-0.05 (0.13)	-0.19 (0.16)	-0.23 (0.17)
Education			0.08 (0.05)	0.06 (0.04)	0.03 (0.04)	0.05 (0.04)
Occupational Prestige			0.02 (0.01)	** 0.02 (0.00)	*** 0.01 (0.00)	** 0.01 (0.00)
Net wealth						
Highest quartile			0.24 (0.22)	0.19 (0.23)	0.41 (0.26)	0.21 (0.28)
Second Quartile			0.22 (0.22)	0.13 (0.20)	0.31 (0.22)	0.21 (0.24)
Third Quartile			0.13 (0.21)	-0.02 (0.21)	0.06 (0.23)	-0.01 (0.22)
<b><u>3. Child Characteristics</u></b>						
Gender (1=female)				0.16 (0.12)	0.23 (0.13)	0.21 (0.13)
Whether low birthweight				-0.34 (0.31)	-0.30 (0.33)	-0.48 (0.34)
Birth Order				-0.20 (0.06)	*** -0.21 (0.06)	*** -0.20 (0.07)
<b><u>4. Other Family and Parental Characteristics</u></b>						
Number of Children				0.02 (0.06)	0.04 (0.06)	0.02 (0.06)
Family Structure - mother only				0.06 (0.18)	0.17 (0.20)	0.18 (0.21)
- other type				-0.03 (0.17)	0.06 (0.19)	0.06 (0.20)
Mom received AFDC while pregnant				0.04 (0.20)	-0.07 (0.23)	-0.26 (0.31)
Teen mom at birth				-0.46 (0.19)	* -0.39 (0.22)	-0.19 (0.25)
Urbanicity				0.02 (0.03)	0.02 (0.04)	0.03 (0.04)
Region -Midwest				-0.19 (0.14)	-0.04 (0.16)	-0.09 (0.16)
South				0.16 (0.16)	0.30 (0.19)	0.34 (0.20)
West				-0.34 (0.17)	* -0.20 (0.17)	-0.13 (0.19)
<b><u>5. Genetic Endowment</u></b>						
Mother's Verbal test score		0.06 *** (0.02)			0.04 ** (0.02)	0.03 (0.02)
<b><u>6. School and other Family Mediators</u></b>						

Whether attend private school						0.27 (0.18)	
Parental expectations						0.07 (0.04)	
Cognitive Stimulation						-0.02 (0.05)	
Emotional Support at home						-0.03 (0.05)	
Time watching TV						-0.15 (0.18)	
Parent checks homework						0.16 (0.05)	***
<b>R-Squared</b>	0.14	0.21	0.22	0.31	0.35	0.42	

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**Table 11: Applied Problem Score for Children in Grades 4-7 in 1997**

	Model											
	I		II		III		IV		V		VI	
<b><u>1. RACE</u></b>	-0.77	***	-0.55	***	-0.46	***	-0.61	***	-0.58	***	-0.54	***
	(0.08)		(0.09)		(0.10)		(0.12)		(0.12)		(0.12)	
<b><u>2. Parental SES</u></b>												
Permanent Income					-0.03		-0.01		-0.02		-0.16	
					(0.08)		(0.10)		(0.10)		(0.11)	
Education					0.07	**	0.07	**	0.06	*	0.03	
					(0.02)		(0.02)		(0.03)		(0.03)	
Occupational Prestige					0.00		0.00		0.00		0.00	
					(0.00)		(0.00)		(0.00)		(0.00)	
Net wealth												
Highest quartile					0.28	*	0.39	**	0.37	**	0.24	
					(0.14)		(0.14)		(0.15)		(0.15)	
Second Quartile					0.01		0.06		0.04		0.01	
					(0.15)		(0.14)		(0.14)		(0.14)	
Third Quartile					-0.13		0.00		-0.03		-0.11	
					(0.13)		(0.14)		(0.14)		(0.14)	
<b><u>3. Child Characteristics</u></b>												
Gender (1=female)							-0.27	**	-0.26	**	-0.28	**
							(0.09)		(0.09)		(0.09)	
Whether low birthweight							0.18		0.17		0.16	
							(0.17)		(0.18)		(0.22)	
Birth Order							-0.01		0.00		-0.02	
							(0.05)		(0.05)		(0.05)	
<b><u>4. Other Family and Parental Characteristics</u></b>												
Number of Children							0.04		0.03		0.03	
							(0.06)		(0.07)		(0.06)	
Family Structure - mother only							0.06		0.11		0.01	
							(0.13)		(0.14)		(0.15)	
- other type							-0.13		-0.12		-0.10	
							(0.18)		(0.20)		(0.22)	
Mom received AFDC while pregnant							0.07		0.03		-0.09	
							(0.11)		(0.13)		(0.14)	
Teen mom at birth							-0.06		-0.10		-0.21	
							(0.23)		(0.22)		(0.16)	
Urbanicity							-0.03		-0.03		-0.03	
							(0.02)		(0.02)		(0.02)	
Region -Midwest							0.10		0.12		0.19	
							(0.13)		(0.13)		(0.14)	
South							0.14		0.16		0.23	
							(0.12)		(0.13)		(0.12)	
West							-0.02		0.03		0.12	
							(0.15)		(0.16)		(0.15)	
<b><u>5. Genetic Endowment</u></b>												
Mother's Verbal test score			0.04	***					0.02		0.02	
			(0.01)						(0.01)		(0.01)	
<b><u>6. School and other Family Mediators</u></b>												

Whether attend private school						0.12 (0.16)
Parental expectations						0.19 *** (0.03)
Cognitive Stimulation						0.03 (0.03)
Emotional Support at home						-0.02 (0.03)
Time watching TV						0.00 (0.11)
<b>R-Squared</b>	0.12	0.15	0.21	0.25	0.25	0.37

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**Table 12: Letter-Word Score for Children in Grades 4-7 in 1997**

	Model										
	I	II	III	IV	V	VI					
<b><u>1. RACE</u></b>	-0.77	***	-0.54	***	-0.43	***	-0.46	***	-0.36	*	-0.29
	(0.10)		(0.13)		(0.13)		(0.14)		(0.16)		(0.16)
<b><u>2. Parental SES</u></b>											
Permanent Income			0.00		-0.11		-0.17		-0.36	**	
			(0.13)		(0.12)		(0.13)		(0.13)		
Education			0.07	*	0.08	**	0.06	*	0.05		
			(0.03)		(0.03)		(0.03)		(0.03)		
Occupational Prestige			0.01		0.01		0.01		0.01		
			(0.00)		(0.00)		(0.00)		(0.00)		
Net wealth											
Highest quartile			0.41	*	0.46	**	0.47	**	0.45	*	
			(0.19)		(0.19)		(0.19)		(0.19)		
Second Quartile			0.08		0.08		0.04		0.10		
			(0.16)		(0.17)		(0.17)		(0.17)		
Third Quartile			0.01		-0.01		-0.03		-0.04		
			(0.16)		(0.16)		(0.16)		(0.17)		
<b><u>3. Child Characteristics</u></b>											
Gender (1=female)					0.26	**	0.30	**	0.23	*	
					(0.10)		(0.10)		(0.10)		
Whether low birthweight					0.46		0.53	*	0.59	*	
					(0.27)		(0.28)		(0.26)		
Birth Order					0.03		0.04		0.01		
					(0.05)		(0.06)		(0.05)		
<b><u>4. Other Family and Parental Characteristics</u></b>											
Number of Children					-0.16	**	-0.18	***	-0.16	**	
					(0.05)		(0.05)		(0.05)		
Family Structure - mother only					-0.09		-0.09		-0.29		
					(0.14)		(0.15)		(0.17)		
- other type					-0.22		-0.22		-0.14		
					(0.22)		(0.23)		(0.26)		
Mom received AFDC while pregnant					-0.01		-0.02		-0.08		
					(0.17)		(0.18)		(0.18)		
Teen mom at birth					-0.19		-0.20		-0.31		
					(0.17)		(0.18)		(0.21)		
Urbanicity					-0.02		-0.03		-0.03		
					(0.02)		(0.02)		(0.02)		
Region -Midwest					-0.19		-0.17		-0.08		
					(0.14)		(0.15)		(0.14)		
South					0.14		0.13		0.22		
					(0.14)		(0.14)		(0.14)		
West					-0.04		0.01		0.13		
					(0.16)		(0.17)		(0.16)		
<b><u>5. Genetic Endowment</u></b>											
Mother's Verbal test score			0.04	**			0.03	*	0.03	*	
			(0.01)				(0.01)		(0.01)		
<b><u>6. School and other Family Mediators</u></b>											

Whether attend private school						-0.19 (0.16)	
Parental expectations						0.13 (0.03)	***
Cognitive Stimulation						0.08 (0.03)	*
Emotional Support at home						-0.10 (0.04)	*
Time watching TV						-0.12 (0.12)	
<b>R-Squared</b>	0.09	0.12	0.20	0.27	0.28	0.33	

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**Table 13: Applied Problem Score in 2003 for Children who were in Grades 4-7 in 1997**

	Model		I		II		III		IV		V		VI	
<b><u>1. RACE</u></b>	-0.78	***	-0.66	***	-0.47	***	-0.54	***	-0.51	**	-0.49	**		
	(0.10)		(0.14)		(0.12)		(0.15)		(0.16)		(0.17)			
<b><u>2. Parental SES</u></b>														
Permanent Income					-0.15		-0.08		0.00		-0.14			
					(0.12)		(0.12)		(0.11)		(0.13)			
Education					0.06	**	0.06	*	0.06		0.03			
					(0.02)		(0.03)		(0.03)		(0.03)			
Occupational Prestige					0.02	**	0.01	*	0.01		0.00			
					(0.01)		(0.01)		(0.00)		(0.00)			
Net wealth														
Highest quartile					0.31		0.37	*	0.08		0.14			
					(0.17)		(0.18)		(0.18)		(0.18)			
Second Quartile					0.19		0.19		-0.12		-0.13			
					(0.17)		(0.17)		(0.17)		(0.17)			
Third Quartile					0.11		0.10		-0.09		-0.03			
					(0.13)		(0.15)		(0.15)		(0.16)			
<b><u>3. Child Characteristics</u></b>														
Gender (1=female)							-0.32	***	-0.26	**	-0.21	*		
							(0.09)		(0.10)		(0.11)			
Whether low birthweight							0.31		0.42	*	0.42	*		
							(0.20)		(0.21)		(0.21)			
Birth Order							-0.02		-0.03		-0.04			
							(0.05)		(0.05)		(0.05)			
<b><u>4. Other Family and Parental Characteristics</u></b>														
Number of Children							0.03		0.05		0.07			
							(0.06)		(0.08)		(0.08)			
Family Structure - mother only							0.09		-0.11		-0.10			
							(0.12)		(0.14)		(0.15)			
- other type							0.16		-0.23		-0.36			
							(0.25)		(0.18)		(0.20)			
Mom received AFDC while pregnant							0.10		0.19		0.20			
							(0.13)		(0.15)		(0.16)			
Teen mom at birth							-0.29		-0.45	**	-0.62	**		
							(0.15)		(0.16)		(0.20)			
Urbanicity							0.00		0.01		0.00			
							(0.02)		(0.02)		(0.03)			
Region -Midwest							-0.17		-0.19		-0.14			
							(0.13)		(0.15)		(0.15)			
South							-0.04		-0.08		-0.19			
							(0.16)		(0.14)		(0.14)			
West							-0.34	*	-0.27		-0.13			
							(0.15)		(0.17)		(0.17)			
<b><u>5. Genetic Endowment</u></b>														
Mother's Verbal test score			0.01						0.00		0.00			
			(0.02)						(0.02)		(0.02)			
<b><u>6. School and other Family Mediators</u></b>														

Whether attend private school						0.08 (0.14)	
Parental expectations						0.21 (0.04)	***
Cognitive Stimulation						0.01 (0.04)	
Emotional Support at home						-0.06 (0.04)	
Time watching TV						-0.09 (0.11)	
Parent checks homework						0.06 (0.04)	
<b>R-Squared</b>	0.12	0.10	0.22	0.27	0.24	0.34	



**Table 14: Letter-Word Score in 2003 for Children who were in Grades 4-8 in 1997**

	Model											
	I		II		III		IV		V		VI	
<b><u>1. RACE</u></b>	-0.74	***	-0.64	***	-0.41	**	-0.67	***	-0.70	***	-0.65	**
	(0.12)		(0.13)		(0.14)		(0.19)		(0.19)		(0.22)	
<b><u>2. Parental SES</u></b>												
Permanent Income					-0.18		-0.14		-0.14		-0.27	*
					(0.15)		(0.13)		(0.12)		(0.14)	
Education					0.08	**	0.09	**	0.05		-0.01	
					(0.03)		(0.03)		(0.03)		(0.03)	
Occupational Prestige					0.02	**	0.02	**	0.01	*	0.01	
					(0.01)		(0.01)		(0.01)		(0.01)	
Net wealth												
Highest quartile					0.55	**	0.40		0.34		0.21	
					(0.21)		(0.21)		(0.22)		(0.21)	
Second Quartile					0.30		0.07		0.02		-0.15	
					(0.19)		(0.21)		(0.24)		(0.22)	
Third Quartile					0.40	**	0.27		0.12		0.00	
					(0.15)		(0.17)		(0.19)		(0.18)	
<b><u>3. Child Characteristics</u></b>												
Gender (1=female)							0.09		0.23	*	0.14	
							(0.10)		(0.11)		(0.12)	
Whether low birthweight							0.00		0.20		0.29	
							(0.15)		(0.18)		(0.17)	
Birth Order							0.04		0.06		0.04	
							(0.07)		(0.07)		(0.07)	
<b><u>4. Other Family and Parental Characteristics</u></b>												
Number of Children							-0.07		-0.06		-0.07	
							(0.05)		(0.05)		(0.06)	
Family Structure - mother only							-0.10		-0.13		-0.06	
							(0.17)		(0.20)		(0.23)	
- other type							0.19		-0.11		-0.22	
							(0.20)		(0.18)		(0.19)	
Mom received AFDC while pregnant							0.38		0.45		0.50	
							(0.33)		(0.38)		(0.41)	
Teen mom at birth							0.06		-0.05		-0.18	
							(0.21)		(0.20)		(0.22)	
Urbanicity							-0.01		-0.01		-0.03	
							(0.03)		(0.03)		(0.03)	
Region -Midwest							-0.21		-0.21		-0.23	
							(0.13)		(0.15)		(0.16)	
South							0.44	**	0.33	*	0.30	
							(0.16)		(0.16)		(0.18)	
West							-0.22		-0.16		-0.04	
							(0.16)		(0.17)		(0.19)	
<b><u>5. Genetic Endowment</u></b>												
Mother's Verbal test score			0.02						0.02		0.03	
			(0.01)						(0.02)		(0.02)	
<b><u>6. School and other Family Mediators</u></b>												

Whether attend private school						0.04 (0.17)	
Parental expectations						0.16 (0.04)	***
Cognitive Stimulation						0.08 (0.04)	*
Emotional Support at home						-0.06 (0.05)	
Time watching TV						-0.04 (0.16)	
Parent checks homework						0.04 (0.04)	
<b>R-Squared</b>	0.08	0.10	0.20	0.28	0.26	0.32	

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