

Isolating Mechanisms for the Racial Divide in Education and the Labor Market: Evidence from Interracial Families*

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Abstract

Differences between blacks and whites in test scores and labor market outcomes are stark. While much catchup occurred post-Civil rights, convergence has slowed. We examine how differences across education and labor market outcomes vary by maternal race and own race with identification coming from families where the race of the mother differs from the race of the child. While black students with white mothers come from families with similar demographics to black students with black mothers, their education and labor market outcomes are very different. There are no significant differences in test scores, grades, college graduation, and wages between black and white males with white mothers, yet large differences exist between these groups and black males with black mothers. These results are insensitive to alternative measures of own-race, using skin tone instead of own race, and including school fixed effects.

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1 Introduction

Differences between blacks and whites in test scores and labor market outcomes are stark. During the recent recession, black unemployment rates have risen to more than double white unemployment rates. For full-time workers, the median black male has weekly earnings that are less than 80% of their white counterparts.¹ Test scores also show large gaps, with National Assessment of Education Progress data showing that blacks score over 0.7 standard deviations lower than whites on both reading and math tests. While some convergence on test scores occurred through the 1980's, this convergence has stalled (Neal (2006)).

Explanations for these disparities generally fall under three main categories: discrimination, resources and culture.² Evidence of ethnic discrimination in the labor market has been found in audit studies (see Bertrand and Mullainathan (2004) and Oreopoulos (2009)).³ Whether this is indicative of taste-based discrimination, where employers are willing to sacrifice profits to avoid hiring workers of a particular race, or statistical discrimination, where individuals are penalized for belonging to groups that on average have lower levels of human capital, is unclear.

Differences in resources available for children are clearly an important piece of the puzzle. Blacks have significantly less wealth than their white counterparts (Altonji, Doraszelski and Segal (2000)); limiting the investments black parents can make in their children. Home investments in children, particularly at a young age, have been found to be especially important for future test scores and help explain some of the racial disparities (Todd and Wolpin (2007) and Cunha, Heckman, Lochner and Masterov (2006)). Differences in resources also result in blacks living in poorer neighborhoods with worse schools. Test scores, which serve as a proxy for skills, can explain a significant portion of the black-white gap in wages (Neal

¹See BLS (2011a) and BLS (2011b)

²Herrnstein and Murray (1994) advocated a fourth explanation, genetics, but this has been widely dismissed. See Currie and Thomas (1995) and Heckman (1995).

³These studies find contemporaneous evidence of unequal treatment but their relevance to discrimination in the labor market has been questioned by Heckman (1998) who points out that even if many employers discriminate, minorities outcomes may be unaffected if they can sort to non-discriminating employers.

and Johnson (1996) and Carneiro, Heckman and Masterov (2005)). However, discrimination and skills cannot be nicely disentangled if perception of later life discrimination by parents results in less investment in their children.⁴ Further, discrimination may also occur within schools, resulting in less-skilled minorities.⁵ But beyond financial resources, some elements of culture can also work against convergence. Blacks may face pressures against “acting white” and, while studies of acting white have focused on adolescents (Ruebeck, Averett and Bodenhorn (2009) and Austen-Smith and Fryer (2005)), culture may result in differential parental investments across races earlier in the life-cycle.⁶

We seek to disentangle the importance of these mechanisms by comparing children in mono-racial households with children in multiracial households. Children from multiracial families might be exposed to some mechanisms (e.g. discrimination), but not others (e.g. parenting-culture or poor schools). We focus on how a child’s own race and maternal race affect education and labor market outcomes.⁷ The presence of a number of individuals in multiracial families in the National Longitudinal Study of Adolescent Health (Add Health) allows us to identify the extent to which the effect of “race” is driven by one’s own race versus maternal race. In particular, the data provide a sufficient number of students with black fathers and white mothers to disentangle these effects for blacks.⁸

On average, black children with white mothers share many attributes with black children with black mothers. Both primarily come from single mother households and neither sees much involvement or material support from fathers when compared to the children of whites and Hispanics. Both groups of black adolescents come primarily from lower income households and see similar levels of welfare participation when they are young. To the degree that

⁴Rangel (2007) finds that Brazilian parents invest more in their fairer-skinned children.

⁵Weighed against discrimination in schools playing a major role is the fact that black-white test score gaps emerge at a very young age. See Fryer and Levitt (2004b).

⁶See Chua (2011) for an account of one woman’s experience raising children in a Chinese household.

⁷Throughout we refer to Hispanic as a “race” although it is an ethnicity, simply for the sake of brevity in referring to multiracial, mixed-ancestry, and mixed-ethnicity families. We outline the classification scheme we adopt below.

⁸Marriages between black men and white women are significantly more likely than marriages between white men and black women. See Fryer (2007) for a review.

discrimination based on skin tone remains an issue once they are older and join the labor force, both are likely subject to discrimination since the two groups overlap substantially in terms of skin tone.

However, black adolescents with black mothers have substantially poorer adolescent outcomes than black adolescents with white mothers and this extends to labor market outcomes when they become adults. At the same time, there are no significant test score gaps between black (or Hispanic) males with white mothers and white males, nor is there any difference in math, science, or overall grades. Labor market outcomes show similar patterns. These results survive numerous robustness checks, including using interviewer reports of the student's race as well as skin tone of the student: differences in male outcomes across races and skin tones disappear once we account for maternal race. Finally, the school-based nature of the Add Health data permits controlling for school fixed effects and the results are robust here as well.

Our results suggest a number of insights. First, the lack of differences in outcomes between black and white children with white mothers suggests virtually no role for discrimination on skin color. This does not rule out discrimination along dimensions correlated with skin color such as names or the use of African-American vernacular English to the extent that differences across language or names varies with maternal race.⁹ Second, our comparisons of black children with white mothers to black children with black mothers suggests substantial differences in effective investments across races that likely do not stem from differences in economic resources. These differential investments may operate through culture or through differences in effectiveness of time spent with their children in conveying human capital. Finally, interracial marriages are becoming increasingly common, particularly among black men and white women (Fryer (2007)). By focusing on the race of the individual when examining differences in outcomes we may see evidence of black-white convergence due to averaging in more black individuals raised by white mothers. This convergence, however,

⁹See, Fryer and Levitt (2004a) for the importance of names and Grogger (2009) for the importance of language.

will not necessarily be a sign of actual educational progress.

The only other study we are aware of that examines differential effects of own race and maternal race is Ruebeck et al. (2009). Their study focuses on behaviors and attitudes, not measures of education or labor market outcomes. A related set of studies look at mixed-race children and compare their outcomes to children that label themselves as only white or only black. Harris and Thomas (2002) show that picture vocabulary test scores and grade point averages are higher among mixed-race blacks than other blacks. The recent work of Fryer, Kahn, Levitt and Spenkuch (2010) finds that mixed-race blacks are significantly more likely to engage in drug use than either those who label themselves as only black or only white, and present a Roy model rationalizing this behavior. While work on mixed-race children is related to our work, the effect of being a mixed-race child may be substantially different than having a parent of a different race than one's own. While many mixed race children likely have parents of different races, many children with parents of different races identify themselves as a single race.¹⁰ While the "one drop rule" does not literally hold in U.S. survey data, several studies¹¹ find that children with one white and one black parent often identify themselves as black. Adopted children also may be of a race that does not match the race of their parents.

The rest of the paper proceeds as follows. In section 2, we describe the Add Health data and the demographic characteristics of households with children and mothers of different race combinations. We examine differences in educational outcomes as a function of own-race and maternal race in section 3. Section 4 performs a similar analysis of wages. Section 5 conducts a series of robustness checks to confirm that maternal race is indeed a much larger driving factor behind cross-racial differences in outcomes than own-race. Section 6 discusses the implications of these findings.

¹⁰Add Health data showed 22% of black students with a white biological mother self-identified as only black. The data from the 2000 Census (Ruggles, Alexander, Genadek, Goeken, Schroeder, and Sobek (2010)) showed 39% of black youth with white biological mothers identified as only black (the difference is likely due to Census' worse measurement of biological relationships).

¹¹See Roth (2005) for work identifying how the change in the U.S. Census between 1990 and 2000 revealed the prevalence of the "one-drop" rule prior to the change.

2 Add Health Data

We use data from the National Longitudinal Study of Adolescent Health (or Add Health). The data is nationally representative; it is a school-based sample of seventh to twelfth grade students in 1995 within a randomly sampled set of 80 communities across the United States.¹² The first wave of the data, collected in the academic year 1994-95, attempted to survey all individuals at the selected schools.

The data includes a subsample of students who were administered a more detailed survey; in this sample the children's parents were also administered a survey. These in-home interviews provide information on race of the mother as well as assessments from the Add Health Picture Vocabulary Test (AHPVT).¹³ Follow-up surveys were conducted in 1995-96, 2001-02 and 2008. Wave III (2001-02) includes transcript data and weighting for non-release of transcripts, along with current education and labor market participation and wages. Wave IV (2008) provides information for completed education and labor market activity. Add Health also contains various non-representative over-samples so throughout we use the cross-sectional probability weights provided in the data to correct for the non-random sample design.¹⁴ We document the patterns of attrition across waves in Table 18 in the appendix.

2.1 Definition of Race

The question design in the Add Health survey allows us some leeway in how we define our race variables. To identify separately the effect of own race and maternal race, we need to observe a sizable number of students for whom own race and maternal race are not the same. We use a classification system that splits an individual's survey response into four distinct groups as follows: if the respondent indicates that he is of Hispanic or Latino origin, then

¹²A school pair, consisting of a high school and a randomly selected feeder school (middle school or junior high school from the same district) were taken from each community.

¹³AHPVT is an abbreviated version of the Peabody Picture Vocabulary Test; a non-written test consisting of identifying pictures with verbal responses. It is designed to measure verbal scholastic aptitude.

¹⁴One particular group, students from highly educated black families, was of concern for the results below, however sensitivity analysis showed this small group is in not driving the results.

we classify him as Hispanic. If he marks that his race is black/African American but does not mark Hispanic, then we classify him as black. If he marks white but not Hispanic or black, then we classify him as white. If he marks a race category that does not fall into any of the above groups, then his race is other. We drop all other-race individuals, and those whose mother is coded as having an other race, since this group is a mixture of high and low performing minorities, notably Asians and Native Americans.¹⁵ For students, we define race from the Wave I In Home Questionnaire, when the key outcomes at Wave I were measured. For mothers, we take responses from the Parent Questionnaire when the surveyed parent is female and from the race of the surveyed parent's spouse (resident mother) when the parental respondent is male. Table 1 shows a cross tabulation of student and maternal race.

We exploit the separate reporting of parent's race accessed in the parent survey and child's race assessed in the Wave I survey. An alternative is to use the fact that Add Health allows respondents to choose more than one race in the questionnaires; Fryer, Kahn, Levitt and Spenkuch (2010) and Harris and Thomas (2002) define mixed race children as children who took advantage of the multiple race classification in Add Health. Since our focus is on maternal race, we do not adopt this classification system, although results for regressions presented below are robust to different classification systems.¹⁶ Ultimately we also exploit the interviewer-reported perception of the child and maternal race to verify that our results are not driven by the particular classification scheme we adopt.

¹⁵Specifications for all outcomes were very similar when we included these observations, with the exception of AHPVT results for women.

¹⁶A key issue is that different classification systems yield different numbers of individuals at the various waves in the data. For instance Fryer, Kahn, Levitt and Spenkuch (2010) use a strict definition based on child reporting, which yields around 300 individuals in the Add Health in school sample. However our outcomes of interest do not come from the in-school survey, but in the smaller in-home sample. Applying this strict definition in the home sample results in many fewer observations. For this reason we do not require double correct reporting for a child race to be identified as being from a multiracial household.

2.2 Descriptive Statistics

There are some striking differences in family characteristics across single race and multiracial families. Table 2 shows how mother's characteristics vary by race of the mother and the child for the Wave I in-home sample. For the table, we focus on families with a white mother and those with either a black or Hispanic mother in order to maintain reasonable sample sizes. We star (*) differences from the white mean which are significant at the 5% level, and (†) denotes differences from the own-group mean for multiracial individuals (blacks and Hispanics).

Black students with white mothers come from families with demographics that are very similar to black students with black mothers. Income, the probability of being on welfare, and the probability of being a single parent are all very similar between black students with white mothers and black students with black mothers; all are different, often significantly so, between the corresponding family characteristics of white students. The one exception is years of schooling: blacks with white mothers have slightly more education than blacks with black mothers, though this difference is not significant. In contrast to black students, the demographic characteristics of Hispanic students with white mothers fall solidly between those of white students and Hispanic students with Hispanic mothers.

An important concern given our classification based on adolescent and maternal race is that fathers' characteristics and involvement may differ systematically between single race and multiracial families. The Add Health data contain a section designed to assess the relationship of adolescents to their biological fathers, and we report a series of responses at Wave I by maternal race groups in Table 3.¹⁷ White students generally see more involvement from their fathers as well as having more educated fathers. Black students, regardless of the race of their mother, see significantly lower child support. Looking down the columns for black students, no significant differences between blacks with black mothers and blacks with white mothers are present. Although not significant, the means for questions regarding

¹⁷Looking at only boys, descriptive statistics showed almost identical patterns to those in Table 3.

current involvement of fathers of black children with white mothers show less communication and co-residence than fathers of black children with black mothers.

For Hispanics, the patterns are similar. Hispanics are less likely to be living with their fathers and are less likely to know anything about their fathers regardless of the race of their mother. Hispanics with white mothers, however, have even less involvement with their fathers than Hispanics with Hispanic mothers as they are significantly less likely to live with their fathers and to speak with them weekly. Weighed against the lower involvement is that Hispanic students with white mothers have fathers with more education, though less education than the fathers of white students.

Next we examine neighborhood and school characteristics across groups in Table 4. At the Census block-group level we can see black children with white mothers primarily live in more mixed race neighborhoods. Compared to the overall average, blacks with white mothers live in neighborhoods with more blacks and fewer whites (74% to 80%). Poverty is more severe in the neighborhoods where blacks with black families live. Characteristics are similarly in between white and minority levels for Hispanics. Looking at school-level averages for income and racial make-up, we can see the same trends reflected at the school level that we see at the block-group level for blacks with white mothers. This suggests there are not large neighborhood differences within schools. Finally, we include as a measure of school quality the average Add Health Picture Vocabulary Test score at the school. Again, blacks and Hispanics from multiracial families come from schools with scores between the minority and white averages, though significantly higher than the minority-school averages. Overall the neighborhood and school characteristics suggest school differences may be important in explaining outcome gaps.

While black students with white mothers tend to come from families with similar demographics to other black students, their outcomes are similar to white students. Table 5 shows average outcomes conditional on race of the student and race of the mother. White students and black students with white mothers have significantly higher test scores, math grades and

overall GPA's, and, for male students, are more like to have finished college and have higher wages. For all these measures there is no significant difference between white students and black students with white mothers. The only case where black students with white mothers look more like black students with black mothers is on grades in science classes. Hispanics with white mothers also see significantly higher test scores than Hispanics with Hispanic mothers and have test scores that are not significantly different from white students. On the other outcome measures, however, Hispanics with white mothers fall in between Hispanics with Hispanic mothers and white students.

3 Pre-Market Outcomes

Given the differences in means presented above, we examine the relationship between test scores, high school GPA across different subjects and college completion with a large set of controls. We document the persistence of outcome gaps for blacks and Hispanics which are mainly concentrated among same-race families. We sequentially add controls beginning with own race and few baseline demographics, and adding more characteristics of the family environment, the mother, and father. Further, one of the advantages of the Add Health data set is that its school-based design makes it possible to control for school fixed effects.

3.1 Picture Vocabulary Test Scores

We first consider PVT scores. Denote Y_i as the individual i 's PVT score. Our full specification takes the following form:

$$\begin{aligned}
 Y_i = \alpha_0 + \sum_r \alpha_{1r} I(\text{Race}_i = r) + \sum_r \alpha_{2r} I(\text{MomRace}_i = r) + \alpha_3 X_{i1} \\
 + \alpha_4 X_{i2} + \sum_j \alpha_{5j} I(\text{School}_i = j) + \varepsilon_i
 \end{aligned}
 \tag{1}$$

where r indicates race and j denotes school, X_{i1} denotes controls for gender and age and X_{i2} denotes controls for characteristics of the mother and the father. We then estimate the parameters by ordinary least squares. The PVT scores in the Add Health data are normed to mean 100, standard deviation 15.

Results are presented in Table 6 separately for boys and girls. Focusing first on boys in the upper-panel, column (i), includes only controls for race and age, showing significant test score gaps for minorities. In column (ii), similar to the descriptive statistics, maternal race is a much stronger correlate of the test score gap than own race. Note that to obtain the total effect of being black with a black mother, the two coefficients must be added. Even with a specification with very limited controls results in no significant test score gap between male black students with white mothers and male white students. The coefficient on Hispanic is still significant, but is less than half the magnitude of the coefficient on Hispanic mother. Having a black mother or a Hispanic is associated with a 0.8 and 0.6 standard deviation decrease in test scores respectively.

Characteristics of the mother, characteristics of the father, and school fixed effects are added in columns (iii) through (v). We control for the large set of maternal and paternal characteristics outlined above.¹⁸ Arriving at column (v), the only significant test score gaps which persist are concentrated among those with black or Hispanic mothers. F-tests show the set of maternal race indicators are jointly powerful predictors of test scores for all specifications. The R^2 in columns (iii) and (v) show the set of characteristics we observe for mothers along with school fixed effects, are also important determinants of test scores. We see evidence that those with black mothers attend worse schools as the coefficient on black mother falls by 3.5 points, or 1/5 of a standard deviation, after including school fixed effects. Column (iv), however, shows that controlling for father's characteristics has little impact on the racial gaps. These results suggest that the channel through which race affects outcomes—beyond that due to schools and income— is in fact due to maternal race as

¹⁸Specifications including characteristics of the resident father, which captures non-biological fathers, showed very similar results.

opposed to own race or father inputs.

Turning to girls in the lower panel, we see much the same pattern: maternal race is a stronger predictor of test score gaps than own race. With the full set of controls in column (v), the coefficients on Hispanic and black are small and insignificant while the coefficients on Hispanic mother and black mother remain large, negative, and significant. As with males, controlling for school quality lowers the black mother coefficient significantly. The F-tests still show the set of maternal race indicators are strong predictors of test scores for girls.

3.2 Grade Point Average

We now turn to grades, taking the entire transcript history and constructing a panel data set for individuals for each year of their high school career. Add Health gives grades at three levels: math, science, and overall. Within the math and science classes, the level of course is also given (e.g. algebra, chemistry, etc.), which allows us to control for course fixed effects. This is important as there is likely to be selection into courses. Letting k indicate the level of the course and t the year in school (e.g. 10th grade), we separately estimate specifications for math, science and overall GPA as follows:

$$G_{ikt} = \beta_{0kt} + \sum_r \beta_{1r} I(\text{Race}_i = r) + \sum_r \beta_{2r} I(\text{MomRace}_i = r) + \beta_3 X_{i1t} + \beta_4 X_{i2} + \sum_j \beta_{5j} I(\text{School}_i = j) + \varepsilon_{ikt} \quad (2)$$

where G_{ikt} indicates the grade individual i received in course k at time t , X_{i1t} includes the individual's year in school, and β_{0kt} are course-year specific fixed effects. We then estimate the parameters by ordinary least squares.

We first focus on grades in math classes as what algebra means at one school is likely to be more similar to algebra at another school and hence the selection issues are likely to be similar across algebra courses. Results for math grades are given in Table 7. For black boys in the upper-panel, the results mirror those for PVT scores. Namely, the coefficient on

own-race black becomes small and insignificant with the inclusion of maternal race while the coefficient on black mom is large and negative, around -0.40 of a grade-point. These gaps persist with additional controls, including school fixed effects. For Hispanic boys, both the coefficient on Hispanic mother and the coefficient on Hispanic are negative but insignificant when maternal race is added in column (ii). However, once schools fixed effects are included, the coefficient on Hispanic moves to zero while the coefficient on Hispanic mother is negative and marginally significant. Throughout, F-tests validate the controls for mother's race.

The same patterns do not hold for girls. While adding maternal race in column (ii) shows negative effects for having a black and Hispanic mom that are marginally significant, adding the full set of controls in column (v) shows no significant differences for either race of the mother or race of the student, though column (vi) and (vii) shows that controlling for either student race or mother race individually does result in significant negative effects for blacks, but not Hispanics. F-tests on controls for mother's race fail.

Similar patterns among boys and girls are seen for overall GPA and science GPA in Table 8 where we only report results with the full set on controls. For boys, race of the student is irrelevant for either overall grades or science grades conditional on race of the mother. Male students with black or Hispanic mothers, however, see significantly lower grades and F-tests justify the controls for mother's race. The F-tests, however, are rejected for girls as none of the maternal race coefficients are significant.

3.3 Educational Attainment

Given the lack of power and the complications introduced by fertility decisions, we focus on males for our longer term outcomes, beginning with college completion. We denote the

latent utility of completing college as S_i^* and decompose it as follows:

$$S_i^* = \delta_0 + \sum_r \delta_{1r} I(\text{Race}_i = r) + \sum_r \delta_{2r} I(\text{MomRace}_i = r) + \delta_3 X_{i1} + \delta_4 X_{i2} + \sum_j \delta_{5j} I(\text{School}_i = j) + \varepsilon_i \quad (3)$$

where ε_i is distributed $N(0, 1)$. Letting S_i denote the observed college graduation at Wave IV and normalizing the utility of not attending college to zero results in a probit model. The average age is 28 in Wave IV so most schooling has been completed.

Table 9 gives probit estimates of the effect of race on completion for men. Column (i) shows negative and significant coefficients on own race black and Hispanic that disappear in column (ii) when mother's race is added. The coefficient on black mother is negative and significant regardless of the set of controls while for Hispanics the significance disappears with additional controls. Again, the F-tests show maternal race is jointly a strong predictor of college completion, even conditional on school fixed effects in column (v).

4 Wages

We next examine racial differences in wages. We use a cross section of wages at Wave IV, when the mean age of respondents is 29. Ninety five percent of this sample is between the ages of 26 and 32, and only 1.3% is currently attending school and not working full time. We focus only on men¹⁹ and estimate log-wage regressions conditional on currently working.²⁰ A difference from the previous sections is that we also run a specification that includes lagged measures of achievement/ability, cumulative GPA, test scores, and completed education in the labor market regressions.

¹⁹Estimated female black-white wage gaps were insignificant and half the size of the male gap once we controlled for mothers characteristics. Conditioning on maternal race did not change those results.

²⁰Focusing instead on earnings (where the sample is then all those who have positive earnings) yields identical findings.

Denoting W_{it} as the log-wage of i at time t , we specify log wages as follows:

$$\begin{aligned}
 W_{it} = & \gamma_0 + \sum_r \gamma_{1r} I(\text{Race}_i = r) + \sum_r \gamma_{2r} I(\text{MomRace}_i = r) + \gamma_3 X_{i1} \\
 & + \gamma_4 X_{i2} + \sum_j \gamma_{5j} I(\text{School}_i = j) + \gamma_6 Y_i + \varepsilon_{it}
 \end{aligned}
 \tag{4}$$

where X_{i1} and X_{i2} again capture maternal and paternal characteristics and Y_i are lagged achievement measures.

Results are given in Table 10. Column (i) shows an average black wage gap of over 20%. Column (ii) adds race of the mother and results in the negative effects of own-race for blacks from column (i) shifting almost completely to the coefficient on black mom. For Hispanics, including maternal race shrinks the own race coefficient, and Hispanic mom is negative, and neither is statistically significant. Columns (iii) - (vi) sequentially add controls, and the coefficient on black mother shrinks slightly, until we include lagged achievement measures, when it drops substantially. Including school fixed effects explains more variation in wages, but does not significantly alter the wage gaps across and within races.²¹ For blacks, only when we condition on test scores, GPA, and completed education does the black mother coefficient move below the 5% significance level.

In column (vii) we remove maternal race but keep the full set of controls. The literature on the black wage-gap generally finds estimates on the order -10%.²² When we remove maternal race in column (vii) it appears black wage gap is insignificant, but this is in fact masking heterogeneity in the wage gap, since in column (viii) we see a negative and significant wage gap return among those blacks with black mothers.

²¹The slight increase in the black-mother wage gaps from including school fixed effects may be picking up other unobserved neighborhood characteristics like the local labor market.

²²Fadlon (2010) finds a wage gap of -12% for the NLSY97, which has a similar age distribution to our sample here. See Lang and Lehmann (2010) for a review of how these wage-gaps fit with the literature on discrimination.

5 Robustness Checks

5.1 Robustness to Definition of Race

Given that multiracial families are identified from self-reported race, the potential endogeneity of these self-reports may be a concern. The Add Health data contain interviewer reports on the likely race of the respondent for both students and parents. Classification by interviewers included white, black/African American, or another race. This classification misses Hispanics who could be assigned to any of the three groups. Nonetheless, with this information we can assess how well our findings with respect to blacks hold up under a more arguably exogenous classification scheme, where we condition on agreement between the interviewer and adolescent self-report for black, white and other. This strategy removes almost all students who self identify as Hispanics.²³

In Table 11, we report results for the black coefficients using self-reported maternal race and interviewer reported child race. For wages, education, test scores and math grades we see the same patterns as before for black boys. Namely, large negative coefficients for blacks from black families that dwarf own race effects. We interpret these results as evidence that the patterns observed above are not simply a product of endogenous self-identification patterns among adolescents from multiracial families, but represent real differences in outcomes in our sample.

In Table 12 we also drop Hispanics and other mixed ancestry families to demonstrate the robustness of the estimates across different sub-samples. In column one, we only include three groups, blacks with black mothers, whites with white mothers, and blacks with white mothers. The qualitative results from above hold, demonstrating that the group of black students with white mothers is driving the estimates above. The second column uses only white mothers and shows there are no significant differences in outcomes between blacks and

²³Results using agreement between maternal race and interviewer reported maternal race were very similar to the self-reported race results presented above for GPA and AHPVT. For the outcomes measured at Wave IV, education and wages, the sample of multiracial blacks whose parent and own-race reports agreed with the interviewer reports was too small to be informative.

whites with a white mother.

5.2 Robustness to Skin Color

A possible explanation for our results on the black-white wage gap could be skin color. The difference between own and maternal race coefficients in Table 10 are identified from multiracial families. One potential channel for these effects is that there is less discrimination against children from multiracial families, perhaps because they more frequently have a lighter skin tone.²⁴ The Add Health data had the interviewer describe the respondent’s skin color in Wave III as “Black, Dark brown, Medium brown, Light brown or White.”

A cross tab of skin-tone and maternal race is given in Table 13, which shows that the lighter skinned categories contain a significant number of Hispanics and those of other races. In the lower panel we present the distribution of skin-tone for self-identified blacks, split by maternal race. There is substantial overlap in the distribution, with roughly 30% of each group having a “medium brown” skin-tone, and “light-brown” and “dark brown” groups also showing non-trivial overlap. Nonetheless the distribution is shifted toward lighter skin-tones for blacks with white mothers.

In Table 14 we replace self-identified race with interviewer reported skin color, and sequentially add controls as before, beginning with maternal race. In column (i) we can see a monotonic relationship between skin-tone and wages, with much lower wages for dark skinned individuals. As we add maternal race the size and significance of these gaps diminish. Additional controls shrink the skin-color wage gaps until they are essentially zero in column (vi); the wage-gap for those with black mothers is still large and significant. Finally, column (vii) shows that removing maternal race yields results similar to the prior literature, though now the wage gap is concentrated entirely among those with darker skin tones.

²⁴Rangel (2007) examines this question in Brazil and finds differential investment among children within the same family but with different skin colors.

5.3 Robustness to Time Use and Birth Outcomes

Add Health contains many other variables that might explain the outcome gaps between children with white mothers and children with black or Hispanic mothers. We investigate whether maternal and own-race coefficients move in response to characteristics of the child's birth, other mother characteristics and behaviors, and how the parent and child interact regarding homework and behavioral problems. These variables are summarized in Table 15. A number of differences between the two groups of blacks appear. White mothers of black children are home less frequently, work more, and encourage more independence. They also engage more frequently in discussions about school and discipline. Black and white children of white mothers have similar birth weights, both of which are significantly higher than black children of black mothers.

In Table 16 we document cross-racial patterns in maternal and child-time use. Mothers of white children work less often and for fewer hours conditional on working than black parents. White mothers with black children do work significantly more than either black or white mono-racial families.²⁵ This work translates into less time with children both before and after school. Recent work by Eide, Showalter and Stevens (2010) points towards sleep as an important factor contributing to academic achievement. In our data multiracial black children get less sleep than whites but more sleep than blacks, and we confirm that blacks get significantly less sleep than whites (around 20 minutes). Finally, looking at child time usage we see for TV and video games multiracial blacks fall between whites and blacks. Hobbies are key predictor of academic success, and less time is spent here for all minority groups, but minorities with white mothers see higher means than minorities from mono-racial families.

Table 17 we measure whether this large set of controls changes the cross-racial test score gaps already documented. We sequentially add groups of variables to see how the AHPVT gap changes for males and females, with column (i) replicating the results from the

²⁵This appears to be at odds with Table 2 in 20% of this same group received welfare. 7.5% of black mothers reported currently working for pay while receiving AFDC in the prior month, while 9.1% white mothers with black children did likewise.

final column of Table 6. Many authors have exploited the emotional support and cognitive stimulation HOME Scores from the National Longitudinal Survey of Youth 1979, to explain cognitive production and achievement.²⁶ Since a number of the questions overlap between these indices and the Add Health survey instrument, we include what variables overlap as controls in column (ii).²⁷ In column (iii) we add time use information which includes how often the residential mother is home before and after school and at bed time, along with the hours working for pay, these have a small impact on maternal race coefficients. In column (iv) we add birth weight and breastfeeding information which causes the largest drop in the maternal race coefficient for blacks. Contemporaneous measures of parenting during adolescence, whether the residential mother and/or father discussed grades, school work, or discipline are added in column (v).

While the gaps in AHPVT and other outcomes show some decreases with these additional controls, large gaps between children with white mothers and children with black or Hispanic mothers remain.²⁸ The Add Health gaps are measured between 12-18 years of age, with an average age of 16. It seems clear, as Heckman (2011) points out, that these high school test score gaps must then be a function of parental choices and resource constraints earlier in the life-cycle.

6 Discussion

Across a number of adolescent academic outcomes, we have seen stark differences between minorities with a white parent and those with a same-race parent, particularly for males. For blacks these differences are remarkable given the similarity in household resources, family structure, and paternal involvement among black students with white mothers and black

²⁶See, for example, Carneiro, Heckman and Masterov (2005), Cunha, Heckman, Lochner and Masterov (2006), and Todd and Wolpin (2007).

²⁷We include the frequency of engaging in hobbies, arts, or playing music, whether the mother encourages independence, and whether the child is involved in no extra-curricular activities.

²⁸Following the discussion in Fryer and Levitt (2004b), we experimented with many school quality measures, none of which had significant impacts on the coefficients for most outcomes. This result is consistent with Fryer and Levitt (2006).

students with black mothers. These differences persist later in life, showing up in lower male college completion and wage rates for blacks with black mothers relative to blacks with white mothers even with controls for school fixed effects. At the same time, there are no unexplained differences in either educational or post-high school outcomes between black or Hispanic males with white mothers and whites.

Empirical evidence also suggests that if any group sees gains from additional resources in school, it is minorities, and, in particular, blacks. Krueger and Whitmore (2002) survey the literature on the effects of class size on test scores, finding that small class sizes are more beneficial for minority students and in particular more beneficial for blacks.²⁹ Neal (1997) shows benefits from attending Catholic schools for urban minorities that do not appear to be present for whites. Howell and Peterson (2002) summarize the literature on school vouchers, finding the benefits are greatest for blacks.

A natural question is then why school resources are more important for blacks than for other groups, and what can reconcile these two findings? Todd and Wolpin (2003) point out that cognitive achievement depends on both investments at home and at school and the two can serve as substitutes.³⁰ One potential explanation for the disparate effects of school resources across maternal race is the ability of parents to substitute other inputs for poor schools. Namely, the effects on white households of having poor teachers may be undone by the actions of their parents in a way that does not occur in black households. A similar substitution may be going on for black students with white mothers. In the debate between Peterson, Myers and Howell (1998), Peterson and Howell (2004), and Krueger and Zhu (2004a), Krueger and Zhu (2004b) on the effectiveness of vouchers, one of the points of the contention between first set of authors and the last two was how race was coded. Namely, when black is defined as having a black mother, the effects are stronger (and more likely to be statistically significant) than if black is defined as having either a black mother or father.

²⁹Krueger and Whitmore (2001) show that the small classes resulting from the Tennessee STAR experiment raised the likelihood of taking the SAT or ACT with the effects being strongest for blacks.

³⁰See, for example Das, Dercon, Habyarimana, Krishnan, Muralidharan and Sundararaman (2011) and Liu, Mroz and van der Klaauw (2010) .

That fact that the results seem to be different depending upon whether race is coded as race of the mother or race of the child is suggestive that race of the mother may have an effect on outcomes distinct from its effect through the race of the child. This same pattern is supported by the findings in this paper which points towards differential investment patterns across mothers of different races.

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Tables

Table 1: Cross Tabulation of Student Race and Maternal Race^a

Race	Maternal Race					Total
	White	Black	Hispanic	Other	Missing	
White	8844	15	86	94	1849	1088
Black	144	3348	37	60	1080	4669
Hispanic	355	41	2253	61	815	3525
Other	86	6	21	799	538	1450
Missing	52	20	22	59	87	240
Total	9481	3430	2419	1073	4369	20772

^aBoth races are self-reported in separate survey instruments.

Table 2: Mean Mother's Characteristics^a

	Group					
	White Students	Black with white mom	Black with black mom	Hispanic with white mom	Hispanic with Hispanic mom	All
Income (\$1000)	50.3 (1.9) [8016]	33.0* (4.5) [120]	30.0* (2.2) [2488]	48.5† (5.4) [285]	29.5* (1.4) [1708]	45.2* (1.7) [14019]
On welfare	0.064 (0.008) [8918]	0.211 (0.093) [131]	0.194* (0.016) [2912]	0.112† (0.031) [318]	0.179* (0.021) [2066]	0.097* (0.009) [16003]
Single parent	0.220 (0.009) [8940]	0.621* (0.052) [132]	0.558* (0.020) [2918]	0.255 (0.033) [319]	0.284* (0.029) [2074]	0.282* (0.012) [16057]
Mother's age	41.3 (0.2) [8061]	39.6 (1.2) [123]	41.4 (0.4) [2835]	40.7 (0.5) [312]	40.6* (0.3) [2012]	41.3 (0.2) [14429]
Mother's schooling	13.31 (0.106) [9077]	13.47 (0.392) [117]	12.94 (0.183) [2681]	12.71*† (0.285) [291]	11.00* (0.201) [1862]	13.02* (0.103) [16865]
Biological Mother	0.897 (0.005) [9010]	0.870 (0.041) [130]	0.871* (0.010) [2893]	0.851† (0.033) [315]	0.934* (0.007) [2048]	0.888* (0.005) [16163]
Household Size	3.324 (0.047) [8318]	3.455 (0.181) [132]	3.619* (0.081) [2933]	3.687*† (0.149) [319]	4.193* (0.033) [2080]	3.481* (0.035) [14955]
Number Siblings	1.296 (0.033) [8318]	1.422 (0.191) [132]	1.482* (0.065) [2933]	1.506*† (0.097) [319]	1.868* (0.086) [2080]	1.394* (0.027) [14955]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. Means all measured in Parent Survey at Wave I. Household size is co-residents at Wave I and siblings includes all non-biological siblings co-residing.

Table 3: Mean Father Characteristics^a

	Group					
	White Students	Black with white mom	Black with black mom	Hisp. with white mom	Hisp. with Hisp. mom	All
Biological Dad						
Know anything about?	0.945 (0.005) [10029]	0.928 (0.039) [132]	0.849* (0.012) [2933]	0.875* (0.027) [319]	0.878* (0.016) [2080]	0.922 (0.005) [18865]
Currently live with?	0.667 (0.010) [9686]	0.225* (0.056) [131]	0.323* (0.022) [2924]	0.485*† (0.043) [316]	0.598* (0.031) [2056]	0.606 (0.013) [18070]
Ever live with?	0.926 (0.005) [9496]	0.731* (0.058) [130]	0.670* (0.017) [2876]	0.828* (0.031) [313]	0.870* (0.014) [2028]	0.883 (0.007) [17396]
Speak with weekly?	0.789 (0.008) [9006]	0.384* (0.097) [110]	0.559* (0.010) [2342]	0.683*† (0.043) [256]	0.769 (0.020) [1780]	0.753 (0.009) [16374]
Schooling	13.57 (0.118) [8997]	13.23 (0.461) [109]	12.95* (0.136) [2284]	13.18† (0.323) [264]	11.97* (0.175) [1685]	13.36* (0.102) [15970]
Child support	126.33 (5.64) [3107]	68.57* (22.82) [89]	58.48* (4.93) [1783]	101.97 (29.15) [164]	48.46* (7.27) [781]	99.37 (4.98) [6594]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. All variables measured at Wave I. Child support is the monthly payment.

Table 4: Mean Location Characteristics^a

Block Group	Group					
	White Students	Black with white mom	Black with black mom	Hisp. with white mom	Hisp. with Hisp. mom	All
% Population White	0.921 (0.008) [8238]	0.739*† (0.035) [132]	0.368* (0.029) [2906]	0.835*† (0.021) [318]	0.671* (0.033) [2072]	0.802* (0.020) [14835]
% Population Black	0.048 (0.006) [8238]	0.202*† (0.032) [132]	0.596* (0.031) [2906]	0.065 (0.017) [318]	0.100 (0.014) [2072]	0.136* (0.017) [14835]
% < 1989 Poverty	0.108 (0.008) [8238]	0.151† (0.028) [132]	0.269* (0.015) [2906]	0.126† (0.013) [318]	0.200* (0.015) [2072]	0.142* (0.009) [14834]
School Level						
% Students Black	0.098 (0.013) [8044]	0.264*† (0.054) [131]	0.555* (0.048) [2896]	0.136 (0.024) [308]	0.166 (0.022) [2010]	0.176* (0.022) [14550]
Average Income	48.4 (1.807) [7445]	42.6† (4.390) [120]	35.3* (2.212) [2488]	45.7† (2.567) [285]	36.5 (2.158) [1708]	45.3 (1.674) [13029]
Average AHPVT	102.5 (0.494) [7987]	99.9† (2.173) [127]	94.7* (1.300) [2794]	99.3*† (1.738) [306]	94.2* (1.231) [1995]	100.3* (0.680) [14321]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. All variables measured at Wave I. Block group means are from the 1990 Census.

Table 5: Mean Outcomes^a

Wave I	Group					
	White Students	Black with white mom	Black with black mom	Hispanic with white mom	Hispanic with Hispanic mom	All
AHPVT	104.6 (0.5) [9590]	101.6† (2.9) [127]	91.9* (1.1) [2794]	102.1† (1.7) [306]	90.5* (1.1) [1995]	100.7* (0.7) [18001]
Wave III						
Overall GPA	2.72 (0.01) [24953]	2.54† (0.12) [289]	2.16* (0.03) [6445]	2.54*† (0.08) [690]	2.36* (0.04) [4536]	2.59 (0.01) 44545
Math GPA	2.36 (0.01) [21455]	2.15† (0.12) [260]	1.79* (0.03) [5783]	2.18*† (0.09) [590]	1.93* (0.04) [3927]	2.23 (0.01) [38931]
Science GPA	2.49 (0.02) [19610]	2.15* (0.16) [231]	1.88* (0.04) [5212]	2.26* (0.09) [523]	2.06* (0.04) [3263]	2.35 (0.01) [34728]
Wave IV						
Finished College	0.30 (0.02) [3882]	0.35† (0.09) [52]	0.16* (0.03) [947]	0.27 (0.06) [114]	0.15* (0.02) [772]	0.27 (0.03) [6929]
Wages	19.63 (0.40) [3604]	20.07† (2.09) [43]	15.87* (0.70) [780]	17.39 (1.34) [100]	18.41 (0.78) [652]	19.11 (0.38) [6231]
FT Employment	0.944 (0.009) [3882]	0.886 (0.073) [52]	0.881* (0.029) [948]	0.877 (0.076) [114]	0.932 (0.024) [722]	0.931* (0.009) [6930]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. AHPVT is measured at Wave I; GPA is measured from transcripts at Wave III; completed education measured at Wave IV for males. The unit of observation for the GPA outcome is the individual-year; these standard errors are clustered at the individual level. Wages and full-time employment come from male respondents at Wave IV.

Table 6: Add Health PV Test Score Regressions^a

	Boys						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Black	-12.825 (1.106)	-1.306 (2.298)	-0.559 (2.091)	-0.555 (1.857)	-2.327 (1.623)	-7.631 (0.810)	
Black mom		-12.319 (2.650)	-11.095 (2.246)	-9.819 (1.974)	-6.303 (1.886)		-8.475 (0.914)
Hispanic	-12.282 (1.236)	-4.456 (1.375)	-1.988 (1.292)	-1.288 (1.307)	-0.639 (1.088)	-4.997 (0.907)	
Hispanic mom		-9.527 (1.695)	-7.646 (1.523)	-7.364 (1.686)	-6.608 (1.536)		-7.116 (1.188)
R ²	0.145	0.161	0.267	0.306	0.399	0.394	0.399
F-test		23.19	24.76	20.75	12.64		49.17
p-value		0.000	0.000	0.000	0.000		0.000
	Girls						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Black	-11.813 (1.148)	-2.651 (3.468)	-0.682 (2.532)	-0.600 (2.539)	-1.233 (1.643)	-6.087 (0.945)	
Black mom		-9.598 (3.565)	-9.298 (2.635)	-8.294 (2.597)	-5.631 (1.707)		-6.810 (0.964)
Hispanic	-11.787 (0.987)	-4.150 (1.477)	-2.786 (1.416)	-2.132 (1.396)	0.370 (1.585)	-3.963 (1.226)	
Hispanic mom		-9.501 (1.757)	-7.142 (1.597)	-6.684 (1.549)	-6.821 (1.494)		-6.512 (1.139)
R ²	0.126	0.139	0.235	0.274	0.383	0.378	0.383
F-test		14.51	11.76	10.56	12.77		27.99
p-value		0.000	0.000	0.000	0.000		0.000
Mother Char.'s	no	no	yes	yes	yes	yes	yes
Father Char.'s	no	no	no	yes	yes	yes	yes
School FE	no	no	no	no	yes	yes	yes

^aDependent variable is the normalized Add Health version of the Peabody Picture Vocabulary Test. Sample size is 6288 for boys and 6913 for girls. F-test tests if model should include two maternal race indicators: black and Hispanic. All regressions include child age. White and white mom are omitted. Mother characteristics include income, on welfare, single parent, mother's age, mother's education, and biological mother. Biological father's characteristics are indicators for: child know's anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment. Missing indicators are used for non-race variables.

Table 7: Pooled Math GPA Regressions^a

	Boys						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Black	-0.409 (0.051)	-0.006 (0.107)	0.066 (0.103)	0.139 (0.100)	0.187 (0.104)	-0.161 (0.069)	
Black mom		-0.438 (0.113)	-0.415 (0.108)	-0.499 (0.111)	-0.419 (0.114)		-0.245 (0.074)
Hispanic	-0.228 (0.056)	-0.114 (0.099)	-0.091 (0.094)	-0.087 (0.087)	0.001 (0.084)	-0.129 (0.067)	
Hispanic mom		-0.132 (0.103)	-0.085 (0.100)	-0.180 (0.095)	-0.190 (0.091)		-0.185 (0.072)
R ²	0.142	0.144	0.163	0.175	0.231	0.229	0.231
F-stat		7.63	7.31	10.73	7.96		7.40
P-value		0.001	0.001	0.0000	0.000		0.001
	Girls						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Black	-0.491 (0.040)	-0.167 (0.182)	-0.150 (0.171)	-0.132 (0.169)	-0.135 (0.153)	-0.201 (0.052)	
Black mom		-0.337 (0.186)	-0.263 (0.175)	-0.259 (0.176)	-0.072 (0.156)		-0.198 (0.053)
Hispanic	-0.390 (0.052)	-0.225 (0.099)	-0.203 (0.094)	-0.194 (0.091)	-0.164 (0.087)	-0.115 (0.059)	
Hispanic mom		-0.195 (0.107)	-0.096 (0.101)	-0.040 (0.100)	0.073 (0.097)		-0.072 (0.067)
R ²	0.145	0.146	0.170	0.183	0.234	0.234	0.234
F-stat		2.87	1.34	1.09	0.49		6.89
P-value		0.057	0.262	0.338	0.611		0.001
Course X Year FE	yes	yes	yes	yes	yes	yes	yes
Mother Char.'s	no	no	yes	yes	yes	yes	yes
Father Char.'s	no	no	no	yes	yes	yes	yes
School FE	no	no	no	no	yes	yes	yes

^aWhite and white mom are omitted, child age is included in all regressions. Sample size is 13101 boys' course-years and 15528 girls' course-years. F-test tests if model should include two maternal race indicators: black and Hispanic. Mother characteristics include income, on welfare, single parent, mother's age, mother's education, and biological mother. Biological father's characteristics are indicators for: child know's anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment. Missing indicators are used for non-race variables.

Table 8: Pooled Overall and Science GPA Regressions^a

	Overall GPA		Science GPA	
	Boys	Girls	Boys	Girls
Black	0.063 (0.083)	-0.120 (0.126)	-0.032 (0.112)	-0.261 (0.199)
Black mom	-0.251 (0.092)	-0.034 (0.128)	-0.337 (0.127)	0.041 (0.201)
Hispanic	0.046 (0.072)	-0.151 (0.063)	0.041 (0.087)	-0.268 (0.109)
Hispanic mom	-0.155 (0.074)	0.054 (0.074)	-0.214 (0.093)	0.050 (0.127)
N	14898	17817	11663	14086
R ²	0.348	0.359	0.243	0.216
F-stat	5.13	0.37	4.90	0.08
P-value	0.0059	0.6897	0.0075	0.9204

^aAll regressions include child age, mother's characteristics, father's characteristics, and a school fixed effect. Overall GPA regressions include dummies for math level, science level, and year of course taking. Science GPA regressions have a course-by-year fixed effect. White and white mom are omitted. F-test tests if model should include two maternal race indicators, black and Hispanic. Mother characteristics include income, on welfare, single parent, mother's age, mother's education, and biological mother. Biological father's characteristics are indicators for: child knows anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment. Missing indicators are used for all non-race variables.

Table 9: Men's College Completion, Probit^a

	Specification						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Black	-0.358 (0.107)	0.131 (0.209)	0.274 (0.234)	0.405 (0.254)	0.249 (0.286)	-0.210 (0.105)	
Black Mom		-0.532 (0.221)	-0.523 (0.250)	-0.675 (0.272)	-0.563 (0.319)		-0.347 (0.124)
Hispanic	-0.424 (0.096)	-0.093 (0.144)	0.179 (0.171)	0.285 (0.181)	0.288 (0.205)	0.110 (0.122)	
Hispanic Mom		-0.411 (0.156)	-0.245 (0.183)	-0.271 (0.188)	-0.255 (0.209)		-0.047 (0.120)
F-test		5.38	2.63	3.43	1.89		4.01
p-value		0.006	0.076	0.036	0.155		0.021
Mother Char.'s	no	no	yes	yes	yes	yes	yes
Father Char.'s	no	no	no	yes	yes	yes	yes
School FE	no	no	no	no	yes	yes	yes

^aSample size is 4974. F-test tests if model should include two maternal race indicators: black and Hispanic. All regressions include child age. White and white mom are omitted. Mother characteristics include income, on welfare, single parent, mother's age, mother's education, and biological mother, plus missing indicators. Biological father's characteristics are indicators for: child know's anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment.

Table 10: Male Log-Hourly Wage Regressions^a

	Specification							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Black	-0.253 (0.041)	-0.035 (0.100)	0.018 (0.095)	0.042 (0.095)	0.054 (0.093)	0.028 (0.087)	-0.108 (0.061)	
Black Mom		-0.234 (0.099)	-0.207 (0.097)	-0.211 (0.102)	-0.212 (0.107)	-0.157 (0.096)	-0.1314 (0.065)	
Hispanic	-0.071 (0.037)	-0.017 (0.068)	0.061 (0.070)	0.105 (0.068)	0.023 (0.067)	0.006 (0.069)	-0.020 (0.042)	
Hispanic Mom		-0.064 (0.075)	-0.023 (0.076)	-0.019 (0.076)	-0.062 (0.078)	-0.035 (0.079)	-0.0312 (0.049)	
R ²	0.0278	0.0292	0.0795	0.0955	0.1659	0.2141	0.2136	0.2141
F-test		2.41	2.27	1.96	1.34		2.06	
p-value		0.094	0.107	0.145	0.266		0.132	
Mother Char.'s	no	no	yes	yes	yes	yes	yes	yes
Father Char.'s	no	no	no	yes	yes	yes	yes	yes
School FE	no	no	no	no	yes	yes	yes	yes
PVT, GPA & Completed Ed.	no	no	no	no	no	yes	yes	yes

^aHourly wages for respondents with positive earnings in the prior calendar or at the current job, measured at Wave 4. Sample size is 4549. F-test tests if model should include two maternal race indicators: black and Hispanic. All columns control for respondent age. Mother's characteristics include age, education, income, on welfare, and single, and an indicator for non-biological mother. Biological father's characteristics are indicators for: child know's anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment.

Table 11: Robustness Check: Interviewer Reported (IR) Race^a

		Specification				
Male Outcome:		(i)	(ii)	(iii)	(iv)	(v)
<i>AHPVT</i>	IR Black	-13.052 (1.109)	-2.105 (3.044)	-0.731 (2.796)	-0.455 (2.509)	-2.849 (2.106)
	Black Mom		-11.598 (3.434)	-10.935 (3.041)	-9.703 (2.632)	-5.363 (2.308)
<i>Wages</i>	IR Black	-0.264 (0.042)	-0.067 (0.117)	0.015 (0.119)	0.015 (0.125)	0.025 (0.124)
	Black Mom		-0.207 (0.118)	-0.205 (0.119)	-0.185 (0.127)	-0.215 (0.138)
<i>College Grad.</i>	IR Black	-0.376 (0.112)	-0.084 (0.269)	0.087 (0.309)	0.152 (0.338)	0.064 (0.376)
	Black Mom		-0.312 (0.274)	-0.330 (0.324)	-0.424 (0.358)	-0.364 (0.415)
<i>Math GPA</i>	IR Black	-0.413 (0.052)	-0.091 (0.125)	0.036 (0.128)	0.110 (0.124)	0.251 (0.139)
	Black mom		-0.345 (0.132)	-0.380 (0.133)	-0.473 (0.134)	-0.470 (0.147)
<i>Overall GPA</i>	IR Black	-0.424 (0.043)	-0.140 (0.104)	-0.010 (0.103)	0.061 (0.104)	0.168 (0.100)
	Black mom		-0.303 (0.110)	-0.343 (0.108)	-0.392 (0.112)	-0.332 (0.107)
<i>Science GPA</i>	IR Black	-0.621 (0.060)	-0.280 (0.173)	-0.089 (0.161)	-0.010 (0.159)	0.091 (0.140)
	Black mom		-0.363 (0.179)	-0.400 (0.167)	-0.494 (0.171)	-0.436 (0.153)
<i>AHPVT-Females</i>	IR Black	-12.053 (1.162)	-7.864 (3.424)	-3.934 (2.588)	-4.272 (2.331)	-1.965 (1.653)
	Black Mom		-4.337 (3.327)	-6.301 (2.614)	-4.904 (2.448)	-5.048 (1.797)
Mother Char.'s		no	no	yes	yes	yes
Father Char.'s		no	no	no	yes	yes
School FE		no	no	no	no	yes

^aInterviewer assessment that child's race is white or black must agree with self-report. Maternal race is self-reported, results include an indicator for mom's race Hispanic. AHPVT and GPA always include controls for female and age; GPA regressions also include course-by-year indicators. All regressions include child age and wave of survey. Wage and completed education regressions come from Wave IV. Standard errors are clustered at the school level for wage, education and AHPVT results and at the individual level for GPA results. Number of observations for each set of results is: wages, 3757; education 4051; AHPVT, 5618-males, 5652-females; Math GPA, 10729; Overall GPA, 12195; and Science GPA, 9713.

Table 12: Robustness Check: Sub-samples^a

Male Outcome:		Only:	
		Blacks and Whites ^b	White Mothers
<i>AHPVT</i>	Black	-1.507 (1.910)	-1.628 (1.941)
	Black Mom	-6.428 (2.148)	-
<i>Wages</i>	Black	0.059 (0.114)	0.037 (0.111)
	Black Mom	-0.254 (0.135)	-
<i>College Grad.</i>	Black	0.150 (0.342)	0.115 (0.326)
	Black Mom	-0.460 (0.377)	-
<i>Math GPA</i>	Black	0.240 (0.122)	0.222 (0.125)
	Black mom	-0.465 (0.135)	
<i>Overall GPA</i>	Black	0.151 (0.095)	0.115 (0.097)
	Black mom	-0.314 (0.104)	
<i>Science GPA</i>	Black	0.013 (0.141)	-0.015 (0.149)
	Black mom	-0.360 (0.156)	
<i>AHPVT-Females</i>	Black	-1.109 (1.619)	-0.091 (1.995)
	Black Mom	-5.808 (1.855)	-
Mother Char.'s		yes	yes
Father Char.'s		yes	yes
School FE		yes	yes

^aAHPVT and GPA always include controls for female and age; GPA regressions also include course-by-year indicators. All regressions include child age and wave of survey. Wage and completed education regressions come from Wave IV. Standard errors are clustered at the school level for wage, education and AHPVT results and at the individual level for GPA results.

^bThese specifications only include blacks with black mothers, whites with white mothers and blacks with white mothers.

Table 13: Cross Tabulation of Student's Skin Tone and Maternal Race^a

Maternal Race	Skin Tone				Total
	White	Light Brown	Medium Brown	Dark Brown/Black	
White	6,706	337	83	38	7,164
Black	10	311	772	1,383	2,476
Hispanic	824	625	200	72	1,721
Total	7,540	1,273	1,055	1,493	11,361
Black Students					
Black Mom	6	295	767	1356	2,424
%	0.3	12.2	31.6	55.9	100.0
Non-Black Mom	14	48	32	26	120
%	11.7	40.0	26.7	21.7	100.0

^aSkin tone is interviewer reported at Wave III, race is self-reported from Wave I.

Table 14: Robustness Check: Male Hourly Wages with IR Skin Color^a

IR Skin Color	Specification						
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Light Brown	-0.074 (0.045)	-0.011 (0.052)	0.015 (0.052)	0.029 (0.048)	0.030 (0.049)	0.065 (0.047)	0.037 (0.045)
Medium Brown	-0.093 (0.049)	0.045 (0.071)	0.072 (0.070)	0.076 (0.068)	0.084 (0.069)	0.104 (0.066)	0.047 (0.061)
Dark Brown or Black	-0.292 (0.046)	-0.080 (0.084)	-0.054 (0.083)	-0.038 (0.081)	-0.034 (0.079)	0.008 (0.068)	-0.085 (0.061)
Maternal Race							
Black Mom		-0.231 (0.074)	-0.173 (0.070)	-0.165 (0.076)	-0.152 (0.081)	-0.144 (0.074)	
Hispanic Mom		-0.078 (0.050)	0.021 (0.047)	0.059 (0.042)	-0.056 (0.051)	-0.047 (0.050)	
R ²	0.025	0.03	0.082	0.097	0.168	0.218	0.217
F-test		4.79	4.41	4.34	2.20	2.22	
p-value		0.001	0.014	0.015	0.115	0.113	
Mother Char.'s	no	no	yes	yes	yes	yes	yes
Father Char.'s	no	no	no	yes	yes	yes	yes
School FE	no	no	no	no	yes	yes	yes
PV Test, GPA, Completed Ed.	no	no	no	no	no	yes	yes

^aHourly wages are for respondents with positive earnings in the prior calendar year or at the current job. Indicators for the interviewer's race are included, with an indicator for skin color missing. F-test tests if model should include two maternal race indicators: black and Hispanic. Respondent age is included in all columns. Mother's characteristics include age, education, income, on welfare, and single, and an indicator for non-biological mother. Biological father's characteristics are indicators for: child know's anything about, child lives with, child ever lived with, child speaks to weekly, HS diploma, some college, college degree, no child support requirement, missing race, missing education, and monthly child support payment. Sample size is 4719 and differs from wage sample because of those with missing skin color are dropped.

Table 15: Mean Parenting Channels^a

	Group					
	White Students	Black with white mom	Black with black mom	Hispanic with white mom	Hispanic with Hispanic mom	All
AH HOME Score						
Independence	0.823 (0.005) [8055]	0.780† (0.039) [123]	0.892* (0.008) [2859]	0.841 (0.028) [309]	0.795 (0.017) [2009]	0.829 (0.005) [14476]
Hobby Frequency	2.54 (0.036) [8317]	2.39 (0.191) [132]	2.15* (0.058) [2931]	2.27 (0.136) [319]	2.21* (0.071) [2077]	2.46* (0.032) [14944]
Birth						
Birth weight	7.47 (0.023) [7997]	7.50† (0.097) [119]	6.97* (0.036) [2678]	7.11* (0.159) [289]	7.34 (0.069) [1933]	7.36* (0.024) [14031]
Never Breastfed	0.264 (0.008) [8055]	0.192 (0.054) [119]	0.134* (0.013) [2766]	0.305 (0.037) [294]	0.302 (0.022) [2006]	0.253 (0.008) [14290]
Mom's Discussions						
About grades?	0.624 (0.009) [8066]	0.683 (0.082) [123]	0.615 (0.013) [2858]	0.584 (0.036) [310]	0.606 (0.021) [2014]	0.623 (0.008) [14495]
About behavior?	0.34 (0.009) [8066]	0.469*† (0.055) [123]	0.283* (0.015) [2858]	0.392 (0.037) [310]	0.330 (0.019) [2014]	0.333 (0.007) [14495]
About school?	0.145 (0.007) [8066]	0.168 (0.050) [123]	0.134 (0.013) [2858]	0.176 (0.038) [310]	0.118 (0.012) [2014]	0.140 (0.006) [14495]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. Means all measured at Wave I. AH HOME questions are similar to NLSY79 HOME score questions, independence is whether the mother encourages independence, agree or strongly agree; hobby frequency includes music, art and reading, weekly. Discussion questions are from the prior 4 weeks.

Table 16: Mean Parenting Channels: Time Use^a

	Group					
	White Students	Black with white mom	Black with black mom	Hispanic with white mom	Hispanic with Hispanic mom	All
Mom						
Currently works	0.780 (0.012) [8058]	0.898*† (0.034) [122]	0.753 (0.020) [2843]	0.743 (0.039) [309]	0.661 (0.032) [2010]	0.764 (0.010) [14464]
Hours worked	36.53 (0.282) [6146]	40.67* (1.130) [107]	38.08* (0.489) [2169]	35.68 (1.000) [215]	36.32 (0.400) [1325]	36.85 (0.213) [10846]
Mom home:						
Before school	0.608 (0.011) [8054]	0.477 * (0.061) [123]	0.579 (0.016) [2855]	0.560 (0.044) [209]	0.552* (0.022) [2014]	503 (0.009) [14479]
After school	0.249 (0.010) [8051]	0.087*† (0.029) [123]	0.349* (0.017) [2856]	0.270† (0.043) [309]	0.403* (0.023) [2015]	0.281* (0.009) [14478]
At bedtime	0.746 (0.009) [8064]	0.835 (0.046) [123]	0.802* (0.012) [2863]	0.782† (0.036) [309]	0.885* (0.010) [2017]	0.768* (0.008) [14502]
Child						
Hours of Sleep	7.931 (0.043) [8303]	7.752 (0.238) [132]	7.651* (0.055) [2918]	7.888 (0.105) [319]	7.901 (0.092) [2072]	7.877 (0.036) [14905]
Hours per week:						
Radio	16.63 (0.441) [8926]	14.58 (3.080) [132]	16.14 (0.891) [2923]	18.83† (1.670) [319]	15.30 (0.699) [2074]	16.37 (0.382) [14909]
TV	14.20 (0.355) [8298]	17.30*† (1.306) [132]	20.44* (0.782) [2914]	15.66 (1.429) [318]	16.74* (0.548) [2072]	15.48* (0.345) [14895]
Video games	2.666 (0.121) [8311]	3.456 (0.668) [132]	3.56* (0.265) [2927]	2.863 (0.702) [319]	2.713 (0.229) [2077]	2.827 (0.111) [14933]
Hobbies	1.543 (0.022) [8317]	1.443 (0.110) [132]	1.306* (0.034) [2930]	1.383* (0.079) [319]	1.347* (0.042) [2077]	1.492* (0.019) [14943]

^aStandard errors for means in parentheses, sample sizes in brackets. * denotes significantly different from the white-student mean at the 5% level. † denotes significantly different from the own-minority group mean (black or Hispanic) at the 5% level. Means all measured at Wave I. Maternal time use questions are indicators for always home at specified time. Hours of sleep is the typical hours per night, other activities are measured in hours during the last week.

Table 17: Robustness Check: AHPVT and Parenting^a

	Boys					
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Black	-2.327	-2.145	-2.139	-2.201	-2.035	-2.026
	(1.623)	(1.587)	(1.588)	(1.575)	(1.602)	(1.607)
Black Mom	-6.303	-6.325	-6.079	-6.249	-6.099	-6.158
	(1.886)	(1.841)	(1.849)	(1.804)	(1.825)	(1.844)
Hispanic	-0.639	-0.539	-0.503	-0.526	-0.513	-0.441
	(1.088)	(1.063)	(1.035)	(1.008)	(1.010)	(1.011)
Hispanic Mom	-6.608	-6.582	-6.162	-6.318	-6.336	-6.484
	(1.536)	(1.526)	(1.500)	(1.479)	(1.496)	(1.503)
R ²	0.399	0.410	0.421	0.430	0.434	0.437
	Girls					
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Black	-1.231	-1.315	-1.175	-1.429	-1.302	-1.225
	(1.638)	(1.541)	(1.499)	(1.508)	(1.555)	(1.523)
Black Mom	-5.634	-5.322	-5.388	-5.653	-5.439	-5.743
	(1.703)	(1.619)	(1.625)	(1.605)	(1.623)	(1.570)
Hispanic	0.367	0.163	0.218	0.138	-0.029	0.118
	(1.588)	(1.420)	(1.399)	(1.372)	(1.418)	(1.383)
Hispanic Mom	-6.820	-6.508	-6.253	-6.330	-6.102	-6.308
	(1.495)	(1.503)	(1.523)	(1.504)	(1.548)	(1.522)
R ²	0.383	0.409	0.418	0.425	0.430	0.433
Mother Char.	yes	yes	yes	yes	yes	yes
Father Char.	yes	yes	yes	yes	yes	yes
School FE	yes	yes	yes	yes	yes	yes
AH Home Score controls	no	yes	yes	yes	yes	yes
Time use-Mom	no	no	yes	yes	yes	yes
Time use-Child	no	no	no	yes	yes	yes
Birth Mechanisms	no	no	no	no	yes	yes
Parenting Discussions	no	no	no	no	no	yes

^aSample size for boys is 6288, for girls 6913. Standard controls used are mother's characteristics and father's characteristics. Add Health HOME score controls are discussed in the appendix. Mother's time use: mother works for pay, hours mother works for pay, mother home before school (6 categories), mother home after school (6 categories), mother home at bed time (5 categories); child time use is hours of sleep in a typical night, hours per week spent with radio, TV, video games and hobbies; birth mechanisms: birth weight and breastfeeding (3 categories); and parenting interactions: in prior month residential mother and/or father had discussions with child regarding: behavior problems, grades, or school projects/homework. School quality if the school fixed effect from a regression of AHPVT on school indicators for the entire same-gender sample.

Table 18: Descriptive Statistics-Waves I, III and IV^a

	Male Sample		
	Wave 1	Wave 3	Wave 4
Mean Age	15.83	22.21*	28.73*
Work	-	0.678	0.964*
Enrolled in School	-	0.369	0.160*
Wave I Family Background Mean			
White Income (\$1000)	50.3	50.8	50.8
Black Income	30.0	29.4	29.5
Mixed Black-White Income	33.0	36.5	35.7
White On Welfare	0.064	0.059	0.061
Black On Welfare	0.194	0.192	0.192
Mixed Black-White On Welfare	0.211	0.137	0.225
Race			
Black	0.150	0.150	0.151
Hispanic	0.118	0.157	0.118
Other	0.042	0.042	0.031
Mother Black	0.144	0.144	0.142
Mother Hispanic	0.102	0.101	0.099
Mother Other	0.042	0.044	0.040
# Black, Mother White	132	86	101
N	14943	11494	11907

^aTable reports weighted means using the relevant cross-sectional wave weight correcting for non-random oversampling and attrition. Valid maternal race report is required to enter the table, otherwise missing values are assigned at the mean of the observed distribution.