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SCORE GAP DURING THE SCHOOL
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ABSTRACT

The Dynamics of the Racial Test Score Gap During the School Years in Britain

We investigate the racial gap in test scores between white and non-white students in Britain both in levels and differences across the school years. We find that there is a substantial racial gap in test scores, especially between ages 7 and 11, and a less severe one between ages 11 and 16. It thus seems that nonwhites are losing ground at school, especially during the first five years. We then investigate the reasons behind this racial gap and its evolution. We focus on racial differences in parents' involvement in education. We find that a non-negligible part of the test score racial gap can be explained by these cultural differences. In particular, we show that if non-white parents would invest in education of their 11 year-old children as much as white parents do, then the racial test score gap in reading and mathematics would be reduced by 18.1 and 7.2 percent, respectively.

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1 Introduction

The racial gap in student achievement in the United States is by no means a new development. For years, evidence of disparities in achievement have shown up in test scores, grades, drop-out and graduation rates, and almost every relevant indicator of academic performance. There are significant differences in measures of performance among African American, Latino, and Native American students who generally fall on the lower end of the achievement spectrum, with larger numbers of White and Asian students more likely to be found at the higher end.¹ Also, important differences in test scores between blacks and whites appear at early ages and persist. Indeed, during the school years (especially the first two years), blacks lose substantial ground relative to other races (Phillips et al., 1998; Fryer and Levitt, 2004).

There are a number of reasons that are being advanced to explain the continuing and growing black-white education achievement gap. Sharp differences in family incomes are a major factor² as well as students' background and family (e.g., Brooks-Gunn et al. 1996; Phillips et al. 1998). Also, public schools in many neighborhoods with large black populations are underfunded, inadequately staffed, and ill equipped to provide the same quality of secondary education that is offered in predominantly white suburban school districts (e.g., Cook and Evans, 2000; Ferguson, 1998). Other researchers stipulate that black students in predominantly white schools who study hard are often the subject of peer ridicule. They are accused of "acting white" by other blacks (Fordham and Ogbu, 1986; Austen-Smith and Fryer, 2005; Fryer and Torelli, 2005). This so-called ghetto chic in the form of peer pressure to shun academic pursuits undoubtedly has a dragging effect on average black Scholastic Assessment Test (SAT) and other test scores. The late John Ogbu, professor of anthropology at Berkeley, believed that broad cultural attributes among blacks — such as parental style, commitment to learning, and work ethic — bear a heavy responsibility for the black-white educational gap. Ogbu wrote in his last book in 2003 that even black students in the affluent homes of doctors and lawyers are looking at rappers in ghettos as their role models. Students talk the talk about what it takes to be a good student, Ogbu wrote, but few put forth the effort required to get good grades. This type of behavior is typical, Ogbu said, of racial minorities adapting to oppression and the lack of opportunity. Ogbu, much as Bill Cosby has done recently, also placed the blame on black parents. He believed that many black parents are not offering sufficient guidance, do not spend enough time helping with homework, and do not pay adequate attention to their children's

¹See, for example, Carneiro and Heckman (2003) and Neal (2006).

²In 2005, 28 percent of all black SAT test takers were from families with annual incomes below \$20,000. Only 5 percent of white test takers were from families with incomes below \$20,000. At the other extreme, 7 percent of all black test takers were from families with incomes of more than \$100,000. The comparable figure for white test takers is 27 percent.

educational progress.

In the present paper, we investigate further this issue by analyzing how parents' attitude towards education affects the racial gap in test scores in the UK at different school years.

More precisely, we exploit the unique characteristics of the National Child Development Study, which is a longitudinal survey interviewing a sample of British persons at age 7, 11 and 16 (and even after), and containing very detailed information on cohort's members family environment and background, parental behavior, attitudes, school and education. We are thus able to investigate the evolution of the racial test score gap at different children's ages, using a set of "non standard" controls, focussing in particular on the parental interest in the child's education.³

We find that, at age 7, there is substantial gap between white and nonwhites both in mathematics and reading test scores that cannot be totally explained by observable characteristics, which include family structure, socio-economic status, measures of school and neighborhood quality. Between 7 and 11 years, this gap widens, with whites and nonwhites showing an even diverging path when the reading performance is considered (i.e., increasing for whites and decreasing for nonwhites). Between 11 and 16 years, however, while the average white students' performance remain roughly constant, the one of nonwhite increases substantially, thus shrinking again the gap when students reach the age of 16. We investigate if the existence of strong *cultural differences in parenting and attitude towards education between races* may explain this racial gap both in levels and in differences across the school years. We find that a non-negligible part of the test score racial gap can be explained by these cultural differences. In particular, we show that if nonwhite parents would invest in education of their 11 year-old children as much as white parents do, then the racial test score gap in reading and mathematics would be reduced by 18.1 and 7.2 percent, respectively.

We then investigate the *evolution* of the white-nonwhite gap in academic achievement in UK. Changes in parental interest over time are found to be key factors in shaping the children's progress in academic performance between school years. This evidence is stronger when reading test scores are considered than when using mathematics test scores. Indeed, the children performance in mathematics might be mainly driven by unobserved ability and genetic factors whereas performance in reading is more likely to be affected by parental care.

We interpret our results as follows. Observable family background variables (parental inputs)

³Our study is quite novel for the UK. Indeed, most papers on racial gap in education are snapshots on a sample of students (see, e.g. Bradley and Taylor, 2004; Gillborn and Mirza, 2000; Modood, 2005). A notable exception is Wilson et al. (2005) where the focus is on the evolution in test scores between different ethnic groups and whites in England. However, they consider only quite standard personal and school controls. Using a different dataset, our paper has a clear distinct objective since we focus on differences in parenting to explain the level and evolution of the racial gap in Britain.

might be important prior to reaching school age. In the early years of school (i.e. the period investigated by Fryer and Levitt, 2004),⁴ school quality is a critical input into educational gains. As children grow older (especially when they become teenagers between 11 and 16), the importance of largely unobservable factors, such as peers pressure or role models increases steadily. Because racial differences along these dimensions are well documented, they might contribute in explaining the evolution of the racial gap in academic performance over the teenage years. At the end of compulsory schooling, for instance, the nonwhite parents' interest in their children school performance increases (regardless of the culture of their ethnic group) because these exams are important both for further education and drop-out teenagers. This change in parenting practice might account for a least a part of the narrowing of the racial achievement gap.

The remainder of the paper is organized as follows. In the next section, we discuss our data and provide some descriptive statistics on the racial gap in test scores and in cultural differences in parental interest and student's motivation. Section 3 presents the estimation results. Finally, Section 5 concludes.

2 Data and descriptive statistics

Our empirical analysis is based on data from the National Child Development Study (NCDS). It is a longitudinal survey that follows all British persons who were born between the 3rd and 9th of March 1958, with follow-up surveys in 1965 at age 7 (NCDS sweep one), in 1969 at age 11 (NCDS sweep two), in 1974 at age 16 (NCDS sweep three), in 1981 at age 23 (NCDS sweep four), and in 1991 at age 33 (NCDS sweep five). For the purpose of this paper, we obviously exploit only the first three waves, which report children test scores at school and parents' involvement during these years. This dataset contains detailed parental and child information, as well as data on family background, home environment and school quality. It also reports area of residence identifiers for cohort's members residential addresses in 1974 (NCDS sweep three), which allows us to match NCDS data with the 1971 Census data, obtaining a detailed picture of the residential neighborhood community when cohort's members were teenagers (age 13). We consider as nonwhites all the individuals born in India or Pakistan, West Indies, other areas of Asia or Africa or having at least one parent born in

⁴Indeed, Fryer and Levitt (2004) explore the sources of the racial differences in academic performance in the US for the first two years of school. They show that among entering kindergartners, the black-white gap in test scores can be essentially explained by racial groups differences in observable characteristics of the children and their environment. However, the gap between white and black children grows over the first years of school, even conditional on observable factors. The hypothesis that seems to receive more empirical support is that black students attend lower quality schools.

one of the previous areas of the world. Nonwhites are roughly 13 percent of the total population in our final sample (2,904 whites and 369 nonwhites).⁵ As with most longitudinal surveys, attrition and incomplete information is an issue in the NCDS. In addition, the sample selection requirements for the purpose of this paper are quite stringent. However, comparing descriptive statistics of the whole sample and our selected one, it does not appear that we lose representativeness. Table 1 reports our sample descriptive statistics. Interestingly, it appears that the average nonwhite pupil never goes to a public library, hardly ever reads in his/her spare time and, on the contrary, he/she seems to go out in the evening more than 3 to 4 times a week. In contrast, the average white pupil at least sometimes goes to a public library, reads quite often in his/her spare time and scarcely goes out in the evening. In addition, less than 20% of nonwhites appears to borrow books from the library while this percentage more than doubles for white pupils.

[Insert Table 1 here]

Racial gap in test scores

Table 2 reports the raw information on white and nonwhites academic performance in the different waves. The values of the individual test scores have been normalized to have zero mean and a standard deviation of one for the overall sample on each of the tests (mathematics and reading) and time periods. This implies that these standardized scores are now comparable across time. At age 7, white students score on average 0.35 standard deviations above the mean on the math exam, whereas nonwhite students perform 0.23 standard deviations below the mean on that test, yielding a white-nonwhite gap of 0.58 standard deviations. This gap increases to 0.66 standard deviations at age 11 and it goes back to 0.57 at age 16. Looking at the figures on the reading test scores, it appears that the initial white-nonwhite gap is smaller (0.42 standard deviations) but it shows a bigger increase than the one in arithmetic test scores at age 11 (0.75 standard deviations), reducing then substantially at age 16 (0.50 standard deviations). Figure 1a shows this evidence graphically. Specifically, it depicts the mean standardized test scores (both in mathematics and reading, for both races) by age. It appears clearly their common nonlinear (first decreasing and then increasing) pattern over time.

[Insert Table 2 and Figure 1a here]

Racial gap in parental interest and student's motivation

We measure parental involvement in child's education using two alternative proxies.⁶ Our first proxy exploits the qualitative information on *parental interest* in the child's education provided

⁵Small sample sizes for each ethnic group prevent us to perform an analysis distinguishing between different ethnic groups.

⁶Various indicators of parental involvement are available in the NCDS. However, most of them (e.g. how often

by the NCDS data. In particular, the school questionnaire of different NCDS sweeps (1965, 1969, 1974) contains the following question to the teacher or headmaster: “With regard to the child’s educational progress, do the mother/father appear: over concerned about the child’s progress and/or expecting too high a standard? (coded as 4) Very interested? (coded as 3) To show some interest? (coded as 2) To show little or no interest? (coded as 1)”, and it is stated to ring the appropriate definition (only one for each parent). We rank the parents according to the highest level of involvement reported in each couple.⁷ Our second proxy is instead based on the available information on *parental initiative* to discuss the child’s educational progress with a school staff member. In particular, the school questionnaire of different NCDS sweeps (1965, 1969, 1974) contains the following question: “Since September, have the parents taken the initiative to discuss the child, even briefly, with you (headmaster) or any member of your teaching staff?” We use a dummy variable taking value of one if at least one parent took such initiative. The interesting feature of these two measures of parental involvement in child’s education is that it is not answered by the parents themselves but by the children’s teacher and headmaster.

Table 3 (top panel) collects some suggestive evidence about racial cultural differences in parenting using these two measures.

Firstly, it documents that white and nonwhite parents show a different interest in their children’s education. Indeed, regardless on the way parental involvement is measured and at which age of the child it is calculated, more than 75 percent of white children have parents who are highly interested in their education whereas this percentage is never higher than 35 percent for nonwhite children. Secondly, it reveals that while white’s parental interest in children’s education remains roughly constant over the school years (the differences in means are statistically significant only between the years 11 and 16 when using the second proxy), nonwhite parents show a different level of interest at different children ages (the differences in means are always statistically significant).⁸ Figure 1b plots these values. Specifically, it depicts parental interest (using both proxies, for both races) by age. It appears in particular a marked nonlinear (first decreasing and then increasing) pattern over time of nonwhite’s parental interest.⁹

[Insert Figure 1b here]

Interestingly, the racial difference in parental interest over the school years seems to follow the parents read to child) are not reported in all sweeps. We consider the information on parental effort in child’s education that is available for all three points in time (1965, 1969, 1974).

⁷Non-response is not an issue here. Missing values are reported in less than 5 % of the observations.

⁸See also Table 7.

⁹The use of the average values of parental interest as measured by our first proxy coded 1 to 4 leaves the graphs qualitatively unchanged.

evolution of the racial test score gap. This evidence is clearly shown in Figure 1c, which plots the racial gap in test scores (average between arithmetic and reading results) and parental interest (average level between the two proxies) by age. It is striking to observe the similarity in shape of the two curves.¹⁰

[Insert Figure 1c here]

Because one may argue that black parents do not prioritize education just because they are not educated themselves, Table 3 also reports the inter-race differences in parental interest for high- and low- educated parents. All variables on parental involvement in children's education have a (statistically significant) lower mean value for children of low educated parents than of high educated ones. However, it is striking to see that there are still large (statistically different) inter-race differences, even after controlling for parental education. This suggests that the different priorities given to education by white and nonwhite parents can in fact be related to cultural differences. Jencks and Phillips (1998) also found that, while substantial socioeconomic differences between minority and white families in the US is a key factor in achievement differentials, the gap between minority and white students is present or even greater among middle-income than low-income families, suggesting that contributing factors other than income may involve parenting practices. This confirms in some sense the provocative conclusions of Ogbu (2003) described in the introduction where he was placing the blame on black parents because they did not spend enough time helping with homework and did not pay adequate attention to their children's educational progress.

Let us turn our attention to the lower panel of Table 3. In order to further document cultural differences between races, we report some evidence on differences in attitude towards education between white and nonwhite students. We find that they display different degrees of motivation in education. Indeed, almost 35 percent of nonwhite students consider school as largely a waste of time and more than 60 percent confess to have played truant in the school year. These figures contrast with the corresponding 10 and 30 percent for white students. Using an index of academic motivation based on the students' answers to a set of questions on attitudes towards education, we find that the average white pupil is almost twice as motivated as a nonwhite one. Also, when pupils are asked if they would like to go on with full time education (e.g., to go to college) after school or if they would rather look for a job (answer to question 10 in Table 3), almost half of the nonwhites declare to prefer finding a job whereas less than 20 percent of whites show a similar preference. In addition,

¹⁰Clearly, the school performance and parental interest racial gaps are not comparable in absolute values at each age, as they are measured in different units (standard deviations and percentage points, respectively). We look here at the changes in the gaps over time (shapes of the curves).

children are subsequently asked at what age they are likely to leave school. We find that, although expectations seems to matter, these inter-race differences are qualitatively maintained, regardless of the students' actual possibilities on education attainment. Indeed, Table 3 also reports the descriptive statistics controlling for the students' expectations about their education achievement. Specifically, we consider the percentages of students who would like to go on in full-time education after school (to go to college or university) splitting the sample between those who think that they are very likely to leave full-time education after 18 years old or over (i.e., those who actually have the possibility to go to college or university) and the others. By doing so, we attempt to rule out the possibility that inter-race differences in motivation are only the consequence of inter-race differences in income and family background, providing stronger evidence that cultural differences do in fact matter. The figures reveal that, within race, students expecting to go to college put more effort in schooling and manifest higher desire to actually go to college, but between races, we still find that whites seem to be more motivated students than nonwhites, for the same level of education achievement probability.

[Insert Table 3 here]

Taken as a whole, these evidence, not surprisingly, point to the fact that whites and nonwhites value academic achievement differently and that there might be an important association between white-nonwhite cultural differences and the racial gap in school performance. In the next section we investigate further this suggestive evidence.

3 Estimation results

Do racial differences in rearing children really matter in explaining the interracial school achievement gap? And, to what extent their impact (if any) is also responsible for the evolution of the racial gap over the school years? In order to answer to these two questions, we proceed as follows. Section 3.1 investigates the sources of the racial test scores gap at age 7, 11 and 16 separately. Section 3.2 then presents the same analysis when differences in the gap (between age 7 and 11 and between 11 and 16) are considered. In both analysis (in levels and differences) we use the Oaxaca decomposition to assess the portion of the gap that it is explained by different observable characteristics across races and the part which is left unexplained. In particular, we will focus our attention on the assessment of the contribution of parental involvement.

3.1 Understanding racial school performance differences at each age

We start by performing a standard analysis of the racial test score gap, i.e. the estimation of a regression model where individual test scores are expressed as a function of a set of regressors, using alternative (increasing) sets, at different points in time. Because different covariates show a different impact for whites and nonwhites,¹¹ we perform the analysis separately for whites and nonwhites (instead of including a race dummy among the regressors to capture the estimated racial gap). Table A1 shows the complete list of estimation results for the model specification which includes the more extensive set of covariates when using test scores in mathematics as dependent variable.¹² It can be seen, for instance, that nonwhite children are less responsive (in terms of standard deviations) to changes in variables related to the family socio-economic status (e.g., parental education, income, social class) and indicating difficulties in the home environment (e.g., domestic tension, alcoholism, parental health problems, household financial problems) than whites. On the other hand, they are more responsive to changes in variables capturing the quality of school and residential neighborhood (e.g., students and teachers quality, school composition and type, percentage of neighborhood high skill population, quality of play areas nearby and local unemployment rate) than whites. Interestingly, non standard controls such as reading attitude or the use of public library show a significant impact. For instance, a one standard deviation increase in the frequency a child reads in the spare time leads to an increase of 0.0071, 0.0095, 0.0062 for whites and of 0.0102, 0.0299, 0.0154 of a standard deviation in mathematics test scores for nonwhites at ages 7, 11 and 16 respectively (the impact on reading test scores is clearly (slightly) higher). As will be detailed below, these effects are however smaller in magnitude than the ones found for our proxies of parental involvement.

Table 4 collects the estimation results for our target variable, i. e. parental investment in their children education, by race and age, using our two alternative proxies (i.e., parental interest and parental initiative). Because our qualitative results appear to be robust in respect of the chosen proxy (i.e. they remain qualitatively the same when using our two alternative proxies), we will present our evidence using the results obtained using the first proxy only, i.e. parental interest.

Observe that the estimated coefficient of parental interest is statistically significant for all ages both for whites and nonwhites and for both disciplines, indicating that parental interest has a non

¹¹Conventional statistical tests reject always the use of cross-equation restrictions with our data. Neglecting this issue might lead to a biased estimation of the racial gap, which will be overstated (or understated) depending on whether the effect of a regressor is higher (or lower) for nonwhites in respect of whites.

¹²The corresponding results for reading test scores (complete list of controls for whites and non whites in the different yeras) are available upon request. Table 4 however contains the estimation results on our target variable, i.e. parental interest, from these regressions.

negligible effect in shaping children’s school performance. Looking at Table 4 in more detail, we find that for whites the impact of parental interest remains roughly constant across the school years. To be precise, a one standard deviation increase in parental interest raises test scores in mathematics by 0.0140, 0.0188 and 0.0111 of a standard deviation at age 7, 11 and 16 respectively. For reading test scores, this range is 0.0244, 0.0154, 0.0265.

For nonwhites, the impact of parental interest is higher than for whites at every age, for both test scores and, more interestingly, its relative magnitude varies largely across ages. To be precise, a one standard deviation increase in parental interest at age 7 raises test scores in mathematics by 0.0201 standard deviations, while this effect is equal to 0.0651 at age 11 and of 0.0421 at age 16. For reading test scores, these values are higher and their pattern is even more marked across ages. They are equal to 0.0450, 0.1504 and 0.1005 at age 7, 11 and 16 respectively.

[Insert Table 4 here]

We do not report all the estimation results for all the controls of our experiments obtained using different model specifications when gradually increasing the number of regressors.¹³ The interesting result is that although we use an impressive amount of information on individuals’ socio-economic status, school and neighborhood quality, we are not able to completely explain the racial gap on the basis of racial differences in traditional observable variables. However, as soon as we include in the model specification covariates that can be considered as proxies for a broad set of environmental and behavioral factors, such as indicators of reading attitudes or parental effort in investing in their children education, the unexplained portion of the racial gap shrinks substantially.

We illustrate this evidence by using the familiar Oaxaca technique (Oaxaca, 1973) of decomposing any difference in a dependent variable between two groups into the part that is explained by different observable characteristics across groups (i.e., population’s differences in observed variables), and the proportion that is due to the same characteristics having a different effects between the two groups (such as unobserved cultural differences).¹⁴

In particular, taking the average test score of white and nonwhite students at years 7, 11 and 16 ($t = 7, 11, 16$) the difference in the white-nonwhite gap (for each age separately) can be expressed as:

$$\bar{S}_t^W - \bar{S}_t^{NW} = (\bar{X}_t^W - \bar{X}_t^{NW})\hat{\beta}_t^{NW} + \bar{X}_t^W(\hat{\beta}_t^W - \hat{\beta}_t^{NW}), \quad t = 7, 11, 16 \quad (1)$$

¹³The complete list of estimation results for each age and for all the different sets of controls both for whites and nonwhites are available upon request. The signs of the estimated coefficients of all the covariates remain unchanged across model specifications.

¹⁴Note that this part may also include the effects of omitted variables.

where \bar{S}^W (\bar{S}^{NW}) is the average schooling performance of whites (nonwhites) at age t , \bar{X}^W (\bar{X}^{NW}) is a row vector of average values for the observable characteristics of whites (nonwhites) at age t , and $\hat{\beta}^W$ ($\hat{\beta}^{NW}$) is the vector of coefficient estimates for whites (nonwhites) at age t from a regression analysis run separately for each group (from Table A1). The first term in the decomposition represents the part of the white-nonwhite school performance gap that is due to intergroup differences in average values of the observables while the second term corresponds to the portion of the gap that is “unexplained”, i.e. which is due to differences in the estimated coefficients between the two groups.

Table 5 presents the results of this decomposition. We focus our attention on the main message of this paper, which is in the finding of a possible important role played by interracial parental interest differences in explaining the racial test score gap.

Table 5a reports the percentages of racial gap explained by observable variables (first term in equation (1)) and the one due to unobservable factors (second term in equation (1)) at the different ages when the model specification includes the more extensive set of controls (see Table A1), with the exclusion of parental interest. Table 5b then displays the added contribution (in terms of percentage of explained gap) stemming from the inclusion of parental interest among the explanatory variables.

Table 5a shows a substantial proportion of the gap left unexplained (i.e., due to unobservable factors) at every point in time, which is sharply increasing between age 7 and 11 and then decreasing between age 11 and 16, both for mathematics and reading scores. Indeed, looking at the reading test scores of 7 years-old children, it appears that 84.5 percent of the racial difference in school performance can be attributed to differences in observed characteristics between races. However, when children are 11 years old, this proportion sharply decreases to 57.1 percent and then raises to 62.1 percent at age 16.

To what extent can the unexplained portion of the gap be attributed to racial differences in parental interest (which were not included in the model specification used in Table 5a, thus resulting as unobservable factors)? Table 5b reveals an important effect of parental interest in explaining the racial test score gap at every age, which in fact is first increasing and then decreasing with children’s age. Thus, if parental interest were the responsible of the unexplained portion of the racial gap in Table 5a, the residual test score gap after its inclusion among the covariates should remain constant. Table 5b shows that, although not remaining constant, the residual test score gap has in fact a less-marked pattern. In other words, accounting for racial differences in parental involvement in education decreases the unexplained proportion of the racial gap in test scores at every age and this reduction is more marked at age 11, i.e. when racial differences in parental interest are more pronounced (see Table 3). Thus, racial differences in parental interest (cultural

differences) seem to contribute to explain the extent of the gap at different ages.

[Insert Table 5 here]

Table 5 also shows that the importance of parental interest in explaining the racial test score gap is larger for reading than arithmetic tests (see also Table 4). This is not unreasonable, given that math skills might be strongly related to ability and genetic characteristics whereas children reading performance are more likely to be the result of living habits, role models and parental investment in their children education.

Clearly, parental interest can proxy for a broad set of environmental and behavioral factors and we strongly caution against a causal interpretation of its estimated coefficient.¹⁵ Our findings has to be interpreted as a suggestive evidence that racial differences in behavioral factors of the kind considered in this exercise, largely usually unobserved, might be the responsible of at least a part of the racial differences in academic performance. The extent of the effects might be large. Our estimation results show that, for instance, if nonwhite parents would invest in education of their 11 year-old children as much as white parents do, then the racial test score gap in reading and mathematics would be reduced by 18.1 and 7.2 percent, respectively.

[Insert Table 6 here]

3.2 Understanding racial school performance differences across ages

Having assessed the importance of parenting practice in explaining the racial gap at different school years, we now investigate their relevance in explaining its evolution over time. Instead of considering separate cross sections in the different years, we now exploit the panel structure of our dataset and follow each student over time. Specifically, we measure a pupil's progress through the tests following the Department for Education and Skills value-added approach. It consists of taking all pupils who achieved a particular grade at a given stage, and then compute the average score for that group at the following stage. An individual pupil's value added from a first to a second stage is then the difference between his/her own grade at the second stage and the average for his/her group. This implies that each student will achieve positive value-added if he/she is more able or

¹⁵Our analysis was however also been performed using the information provided by the NCDS data on the mothers' attitude towards pregnancy in the antenatal period (namely, whether the mother who declares being a smoker prior to pregnancy quits smoking after four months of pregnancy and the mother's total number of antenatal visits without abnormality during pregnancy) as instruments for parental involvement in the child's education. Indeed, these variables should be predictors of parental care and uncorrelated with children's future school performance. The qualitative results remain unchanged, providing further support to the validity of our findings.

has more positive factors than others who scored the same mark at the previous stage. We can thus consider the differences in value added rates between whites and nonwhites between age 7 and 11 and between age 11 and 16.

Table 7 shows summary statistics on these raw data. It can be seen that, on average, white students tend to increase their performance across years (showing a positive value added), while nonwhite students on average seem to loose in academic performance over time. However, when considering the (average) relative performance between races it appears that the racial gap is decreasing over time. To be precise, the racial gap in average value added decreases from 0.028 to 0.016 for math test scores and from 0.033 to 0.012 for reading test scores (see also Table 9).

Let us now analyze in more detail the differences in parental involvement across ages by race. We take differences between age 11 and 7 and between 16 and 11 from Table 3 within each race and we then explicitly calculate the racial gap of this differences. The results are reported in Table 7. Firstly, it appears that changes in parental involvement are much more marked for nonwhites than for whites, regardless of the proxy used. Nonwhite parents' (average) investment in their children education shows a noticeable change between age 7 and 11 (a decrease of 0.12 and 0.06 for the different proxies), which is even more pronounced between age 11 and 16 (an increase of 0.22 and 0.14 for the different proxies). These changes cannot be compared in magnitude with the changes in white parents' involvement (+0.01 and -0.03 between age 7 and 11 and +0.01 and +0.09 for each proxy respectively). Looking at the racial gap (last rows) it appears that the extent of the racial differences in parental involvement is larger between age 11 and 16.

[Insert Table 7 here]

Table 8 collects the estimation results for our target variable, i.e. (differences in) parental investment in their children education, by race and across ages, using our two alterative proxies (i.e., parental interest and parental initiative). These results correspond to those listed in Table 5, i.e. they are the results of a OLS regression run on the same model specification with a different dependent variable (a pupil's value-added across consecutive waves instead of the pupil's test scores in levels in each wave) and using differences of the covariates instead of levels.¹⁶ As before, our results remain qualitatively the same when using our two alternative proxies. Thus, we continue to present our evidence using the results obtained using the first proxy only.

As in Table 5, it appears that the estimated coefficient of parental interest is statistically

¹⁶The complete list of estimation results for the model specification which includes the more extensive set of covariates (i.e. the table corresponding to Table A1) is available upon request. The results are qualitatively unchanged, suggesting that pupils' school attainment at each age and its change across ages are influenced by the same factors in the same directions.

significant for all ages both for whites and nonwhites and for both disciplines, indicating that parental interest is not only important in determining children’s school performance at the different ages, but also in influencing its growth rate. Also, the impact of parental interest remains higher for whites than for nonwhites. Differently from Table 5, where the impact of white parents’ interest on their pupils’ school performance between ages 7 and 11 and between 11 and 16 were the same, here we find a noticeable change of this effect across ages both for whites and nonwhites. Specifically, a one standard deviation increase in white (differences in) parental interest raises a pupil’s value added in mathematics by 0.0040 of a standard deviation between age 7 and 11, whereas this impact is roughly doubled (+0.0086) when it is calculated between age 11 and 16. For reading test scores, these effects are 0.0068 and 0.0164 between ages 7-11 and 11-16 respectively. For nonwhites, we obtain +0.0055 and +0.0088, and +0.0101 and +0.0175 between ages 7-11 and 11-16 for math and reading test scores respectively. In summary, from a comparison of the results in table 5 and 8 it appears that parental involvement is important in shaping both the level and the progress of a pupil’s school performance over the school years. For whites however its effect on the level of the child’s school performance is the same regardless of the age at which it is measured, while the effect on the changes in the child’s school performance is more pronounced in shaping the differentials in education attainment between age 11 and 16.

[Insert Table 8 here]

As before (equation (1)), taking the average value added of white and nonwhites students between years 7 and 11 ($t = 1$) and between 11 and 16 ($t = 2$), we use the Oaxaca decomposition of the difference in the white-nonwhite gap:

$$\overline{\Delta S}_t^W - \overline{\Delta S}_t^{NW} = (\overline{\Delta X}_t^W - \overline{\Delta X}_t^{NW})\hat{\beta}_t^{NW} + \overline{\Delta X}_t^W(\hat{\beta}_t^W - \hat{\beta}_t^{NW}), \quad t = 1, 2.$$

where the same notations of model (1) applies. This approach allows us to investigate the importance of racial differences in different variables in determining the evolution of the racial test score gap over time, rather than its levels. Table 9 has the same structure as Table 6. It points to the following evidence. Although there is a much higher proportion of the gap that is not explained by observables, parental interest remains an important factor in shaping such a difference, especially between ages 11 and 16. One can see that an additional 5.4 (6.1) percent of the difference in racial gap test score in arithmetic (in reading) between ages 7 and 11 can be explained by parental interest differences while this amount raises to 9.2 (9.5) percent between 11 and 16. Indeed, child’s age 11 to 16 is the period where cultural differences between whites and nonwhites in parenting and attitude towards education are the strongest (see Tables 7 and 3).

[Insert Table 9 here]

4 Conclusion

By using the National Child Development Study (NCDS) in Britain, which gives detailed information on children's test scores and parents' involvement in education at different school years for both whites and nonwhites, we investigate to what extent the racial gap in school performance both in levels and differences can be explained by racial cultural differences in parenting. We find that cultural differences do play an important role in explaining the racial test score gap at different school years but also between different years. In particular, we show that if nonwhite parents would invest in education of their 11 year-old children as much as white parents do, then the racial test score gap in reading and mathematics would be reduced by 18.1 and 7.2 percent, respectively. We will not go as far as Ogbu (2003) who mainly blame black parents for test score racial gap accusing them of not spending enough time helping with homework and not paying adequate attention to their children's educational progress. However, our analysis does not prove him wrong. Our empirical results are in line rather than in contrast with his thesis.

Based on the present research, some recommendations can be proposed for closing the achievement gap. At the community level, an obvious recommendation that has been advocated elsewhere is to provide academically successful role models, publicly recognize achievement, and encourage schools to infuse multicultural perspectives into the academic curriculum to counter students' idea that to achieve is to act white and to help students develop a sound self-concept and identity. The schools, in turn, need to develop strategies to help parents take a greater role in the academic life of their children, and to help them learn to be academically self-motivated and persistent. For example, schools can help black parents to intervene when their children are not placed in advanced academic tracks or in gifted and talented programs.¹⁷ In this respect, parents need to be helped in working with teachers to monitor and effectively enhance their children's academic progress.

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Appendix 1: Description of control variables¹⁸

Cohort's member characteristics

special education: dummy variable taking value one if the child has been ascertained as in need of special education (speech defect, physically handicapped, partially sighted or hearing, delicate, etc...). Source: NCDS1

birth order: child's position in birth order (with respect to brothers and sisters). Source: NCDS2

birth weight: weight of baby in ounces at birth. Source: NCDS1 (Perinatal Mortality survey)

female: dummy variable taking value one if the child is female. Source: NCDS1

free school meals: dummy variable taking value one if the child receives free school meals. Source: NCDS2

use of public library: variable taking value of 1 if the child never goes to a public library in the last twelve months, 2 if he/she goes sometimes and 3 if he/she goes often. Source: NCDS2

books from library: dummy variable taking value one if the pupil borrows books from library. Source: NCDS2

reading attitude: answer to the question: "how often child reads in the spare time", coded as 1=no chance, 2=hardly ever, 3=sometimes, 4=often. Source: NCDS3.

going out attitude: answer to the question: "how often child goes out in evening", coded as 1=never or rarely, 2=1,2 times a week, 3= 3,4 times a week, 4=5 or more times a week. Source: NCDS3.

truancy: dummy variable taking value one if the child has played truancy in the last school year. Source: NCDS3

School characteristics

students quality: proportion of boys or girls studying for GCE and SCE O-levels¹⁹ in the school. Source: NCDS3

school composition: percentage of children with non-manual fathers in the school (9 bands, 8 dummies). Source: NCDS3

school uniform: answer to the question: "Does the school have a uniform?", coded as 1=no, 2=not compulsory, 3=compulsory for certain age groups, 4=yes, compulsory. Source: NCDS3

¹⁸The main NCDS sweep data source is reported. In order to maintain sample sizes, this information is often complemented with data coming from earlier or later sweeps to replace missing data. A parent is the mother or the father or a person acting as mother or father respectively.

¹⁹GCE (General Certificate of Education) and SCE (Scottish Certificate of Education) O-levels (Ordinary levels) were taken at age 16 mainly by pupils in grammar schools and independent schools - nationally the top 20% of the population by ability.

teachers quality: number of teachers with more than 6 whole years of experience. Source: NCDS2

teachers-students ratio: number of full time (or full time equivalent of part time) teachers in school over total number of enrolled pupils. Source: NCDS2

Family structure

parents age: (average of) parents' age in 1974. Source: NCDS1

single parent: dummy variable taking value one if there is no regular father figure or there is no natural mother. Source: NCDS2

house size: number of rooms in household accommodation. Source: NCDS3

family size: number of people in household. Source: NCDS3

mother's age at child's birth: mother's age at the birth of the child in years. Source: NCDS1

Parental education and income

parents income: weekly net wage of father or mother if no father (or person acting as that parent), 12 bands, mid-points of each range considered. Source: NCDS3

parent education: parent's completed years of schooling (derived from age left full-time education). Source: NCDS3

parents employed: dummy variable taking value one if both parents are working. Source: NCDS3

parents social class: social class of father or mother if no father (or person acting as that parent): professional, intermediate status, skilled non-manual, skilled manual, semi-skilled manual, semi-skilled non-manual, unskilled (7 classes, 6 dummies). Source: NCDS2

household financial problems: dummy variable taking value one if the family experienced financial difficulties. Source: NCDS2

parental interest: variable taking value of 4 if the parents are over concerned about the child's education progress and/or expecting too high a standard, 3 if very interested, 2 if they shows some interest and 1 if they shows little or no interest (we take the highest level between each parent). Source: NCDS1,2,3.

parental initiative: dummy variable taking value one if the parents (at least one) have taken initiative to discuss the child's school progress during the last year with a member of the school staff. Source: NCDS1,2,3.

Home environment

parent health problems: dummy variable taking value one if at least one parent suffered from chronic or serious disability or ill-health, including any hospital in patient admission of 2 weeks or longer. Source: NCDS2

household health problems: dummy variable taking value one if the family experienced health-related difficulties (serious ill-health of a member of the household, including death of mother or father). Source: NCDS2

council house: dummy variable taking value one if the family lived in council provided accommodation. Source: NCDS3

domestic tension: dummy variable taking value one if the family experienced domestic tension. Source: NCDS1

alcoholism: dummy variable taking value one if alcoholism is a problem in the family. Source: NCDS1

parental English fluency: dummy variable taking value one if the quality of mother's spoken English is poor (or none). Source: NCDS1

English spoken at home: dummy variable taking value one if English is the usual language spoken at home. Source: NCDS2

accommodation tenure: dummy variable taking value one if it is a owner occupied house. Source: NCDS1

household persons per room: number of persons per room in the house, coded as 1=up to 1, 2=over 1 to 1,5, 3=over 1,5 to 2, 4=over 2. Source: NCDS2

Residential neighborhood (Census Ward level variables or otherwise specified)

quality of play area nearby: dummy variable taking value one if the mother is unsatisfied or very unsatisfied with play areas in the neighborhood. Source: NCDS2

high skilled population: proportion of over-18s persons with A-levels (highest grade at age 16 exams) or above qualifications. Source: Census 1971

total population: total population present. Source: Census 1971

nonwhite population: nonwhites residents over total residents. Source: Census 1971

unemployment rate: unemployed over economically active population. Source: Census 1971

amenities: proportion of households lacking or sharing hot water and/or inside toilet and/or bath. Source: Census 1971

persons per room: proportion of households having 1.5 or more persons per room. Source: Census 1971

council housing: proportion of households residing in council houses. Source: Census 1971

car access: proportion of households with no car. Source: Census 1971

distance to jobs: proportion of workers travelling to jobs by train. Source: Census 1971

Appendix 2: Additional estimation results

Table A1: OLS estimates of the responsiveness of math test scores to covariates by race and age
 dep. var. Mathematics test scores

Variable	Whites	Nonwhites	Whites	Nonwhites	Whites	Nonwhites
	age 7		age 11		age 16	
parental interest	0.0213** (0.0102)	0.0410*** (0.0125)	0.0264** (0.0126)	0.1543*** (0.0377)	0.0151** (0.0075)	0.1162*** (0.0275)
special education	-0.0255** (0.0104)	-0.0299*** (0.0099)	-0.0279** (0.0121)	-0.0344*** (0.0101)	-0.0303** (0.0097)	-0.0505** (0.0241)
birth order	-0.0007 (0.0112)	-0.0002 (0.0121)	-0.0005 (0.0116)	-0.0003 (0.0137)	-0.0009 (0.0095)	-0.0004 (0.0120)
birth weight (*100)	0.0001** (0.00005)	0.0001** (0.00005)	0.0001** (0.00005)	0.0001** (0.00002)	0.0001** (0.00005)	0.0001** (0.00003)
female	0.0105** (0.0051)	0.0095*** (0.0012)	0.0115** (0.0057)	0.0055** (0.0026)	0.0125** (0.0064)	0.0044** (0.0021)
free school meals	-0.0066 (0.0091)	-0.0077 (0.0092)	-0.0044 (0.0102)	-0.0065 (0.0177)	-0.0045 (0.0075)	-0.0055** (0.0025)
use of public library	0.0007** (0.0003)	0.0085*** (0.0006)	0.0004** (0.0002)	0.0043*** (0.0003)	0.0003** (0.0001)	0.0037*** (0.0002)
books from library	0.0502* (0.0307)	0.0066** (0.0032)	0.0524** (0.0256)	0.0026* (0.0015)	0.0563* (0.0323)	0.0065** (0.0034)
reading attitude	0.0034*** (0.0010)	0.0035*** (0.0012)	0.0042*** (0.0015)	0.0134*** (0.0035)	0.0028** (0.0013)	0.0425*** (0.0027)
going out attitude	-0.0210** (0.0100)	-0.0096** (0.0046)	-0.0177** (0.0081)	-0.0069*** (0.0017)	-0.0312*** (0.0095)	0.0094** (0.0047)
truancy	-0.0065** (0.0031)	-0.0071 (0.0078)	-0.0049 (0.0057)	-0.0065 (0.0077)	-0.0095 (0.0097)	-0.0095 (0.0101)
students quality (*100)	0.0009*** (0.0003)	0.0098*** (0.0003)	0.0005** (0.0002)	0.0038** (0.0019)	0.0002** (0.0001)	0.0025*** (0.0002)
school composition	0.0121*** (0.0010)	0.0294*** (0.0102)	0.0105*** (0.0016)	0.0279*** (0.0103)	0.0098** (0.0025)	0.0176** (0.0088)
school uniform	0.0066*** (0.0021)	0.0101*** (0.0012)	0.0055** (0.0026)	0.0099** (0.0047)	0.0045** (0.0022)	0.0077** (0.0037)
teachers quality	0.0165** (0.0078)	0.0259** (0.0128)	0.0122** (0.0066)	0.0240** (0.0121)	0.0102** (0.0051)	0.0203** (0.0100)
teachers-students ratio	0.0363* (0.0220)	0.0404** (0.0201)	0.0341 (0.0326)	0.0388 (0.0387)	0.0325 (0.0375)	0.0395 (0.0398)
parents age (*10)	-0.0111** (0.0053)	-0.0009** (0.0004)	-0.0182** (0.0090)	-0.0092** (0.0045)	-0.0202** (0.0105)	-0.0103** (0.0052)
single parent	-0.1212** (0.0577)	-0.0943** (0.0412)	-0.1445** (0.0712)	-0.0999** (0.0466)	-0.1479** (0.0707)	-0.1005*** (0.0327)
house size	0.0005 (0.0152)	0.0007 (0.0175)	0.0006 (0.0196)	0.0008 (0.0139)	0.0007 (0.0175)	0.0007 (0.0217)
family size	-0.0066 (0.0063)	-0.0101 (0.0125)	-0.0055** (0.0027)	-0.0151 (0.0177)	-0.0031** (0.0016)	-0.0191 (0.0204)
mother's age at child's birth	0.0112** (0.0055)	0.0184** (0.0090)	0.0122** (0.0060)	0.0177** (0.0037)	0.0134** (0.0067)	0.0166** (0.0082)
parent education (*10)	0.0010** (0.0051)	0.0005** (0.0002)	0.0009*** (0.0003)	0.0001** (0.00005)	0.0016** (0.0007)	0.0008** (0.0004)
parents income (*100)	0.1911** (0.0801)	0.0005*** (0.0001)	0.2522** (0.0172)	0.0004*** (0.0001)	0.2713** (0.01307)	0.0007*** (0.0001)
parents social class (*100)	0.0111** (0.0055)	0.0002*** (0.00001)	0.0154** (0.0072)	0.0002*** (0.00003)	0.0095** (0.0045)	0.0001*** (0.00002)
parents employed	0.0305** (0.0141)	0.0155*** (0.0012)	0.0467* (0.0282)	0.0235*** (0.0077)	0.0288** (0.0112)	0.0117*** (0.0032)
household financial problems	-0.0444* (0.0270)	-0.0066 (0.0071)	-0.0606 (0.0126)	-0.0021 (0.0077)	-0.0655* (0.0393)	-0.0050 (0.0075)
parent health problems	-0.0505** (0.0202)	-0.0065** (0.0031)	-0.0544** (0.0236)	-0.0022** (0.0011)	-0.0567** (0.0283)	-0.0061 (0.0062)

household health problems	-0.0605 (0.0210)	-0.0014 (0.0212)	-0.0699 (0.0312)	-0.0074 (0.0232)	-0.0554 (0.0275)	-0.0064 (0.0325)
council house	-0.0564** (0.0221)	-0.0122 (0.0125)	-0.0594 (0.0326)	-0.0155 (0.0156)	-0.0691* (0.0416)	-0.0199 (0.0189)
domestic tension	-0.0777** (0.0313)	-0.0091** (0.004)	-0.0801** (0.0401)	-0.0051** (0.0026)	-0.0765** (0.0357)	-0.0033 (0.0036)
alcoholism	-0.0576** (0.0228)	-0.0061** (0.0031)	0.0574** (0.0212)	-0.0017** (0.0008)	0.0507** (0.0209)	0.0012*** (0.0006)
parental English fluency	0.1627 (0.2102)	0.1019*** (0.0125)	0.1515 (0.2012)	0.1214*** (0.0370)	0.1210 (0.2007)	0.1511*** (0.0427)
English spoken at home	0.2021 (0.3010)	0.1616*** (0.0415)	0.1918 (0.3016)	0.1575*** (0.0355)	0.2112 (0.2880)	0.1702*** (0.0444)
accomodation tenure	0.0061 (0.0152)	0.0012 (0.0155)	0.0101 (0.0176)	0.0099 (0.0144)	0.0098 (0.0175)	0.0055 (0.0211)
household persons per room	-0.0244* (0.0147)	-0.0231 (0.0225)	-0.0233 (0.0226)	-0.0210 (0.0317)	-0.0266* (0.0160)	-0.0202 (0.0275)
quality of play area nearby	0.0306*** (0.0101)	0.1215*** (0.0275)	0.0292** (0.0143)	0.1561*** (0.0365)	0.0183** (0.0089)	0.1109*** (0.0323)
high skilled population (*10)	0.0018** (0.0090)	0.0109*** (0.0025)	0.0033** (0.0012)	0.0155*** (0.0037)	0.0022** (0.0010)	0.0144*** (0.0027)
nonwhite population	-0.0111** (0.0055)	-0.0211** (0.0102)	-0.0100** (0.0045)	-0.0198** (0.0099)	-0.0155** (0.0075)	-0.0256** (0.0127)
total population (*1000)	0.0001** (0.00004)	0.0002** (0.0001)	0.0003** (0.0002)	0.0008** (0.0003)	0.0003** (0.0002)	0.0007** (0.0003)
unemployment rate	-0.1526** (0.0712)	-0.2771*** (0.0612)	-0.1212** (0.0601)	-0.2444*** (0.0535)	-0.1841** (0.0905)	-0.2863*** (0.0702)
amenities	-0.2525* (0.1530)	-0.5061 (0.4012)	-0.2002 (0.2022)	-0.4444 (0.4377)	-0.2210* (0.1339)	-0.4881 (0.5025)
persons per room	-0.1651 (0.2015)	0.2882 (0.3012)	-0.1447 (0.2016)	0.3333 (0.3403)	-0.1241 (0.2105)	0.3003 (0.3252)
council housing	-0.0212** (0.0102)	-0.0481** (0.0225)	-0.0264** (0.0132)	-0.0466** (0.0237)	-0.0313** (0.0157)	-0.0555** (0.0252)
distance to jobs	0.0044** (0.0021)	-0.0111** (0.0051)	0.0022** (0.0012)	-0.0242** (0.0123)	0.0055** (0.0025)	-0.0166** (0.0082)
car access	-0.0101** (0.0043)	-0.0349 (0.0429)	-0.0095 (0.0106)	-0.0301 (0.0379)	-0.0044 (0.0045)	-0.0279 (0.0288)
R^2	0.5801	0.6304	0.4522	0.5224	0.4812	0.5713

Notes:

- regional dummies and school dummies (private, grammar, secondary modern, comprehensive) are included

- standard errors in parentheses

-coefficients marked with one (two) [three] asterisks are significant at 10 (5) [1] percent level

Table 1: Summary Statistics by Race

Variable	Whites	Nonwhites	Min.	Max.
special education	0.23 (0.56)	0.13 (0.64)	0	1
birth order	0.133 (1.66)	2.43 (1.04)	1	10
birth weight	117.37 (31.05)	105.35 (39.57)	26	212
female	0.49 (0.52)	0.55 (0.54)	0	1
free school meals	0.23 (0.34)	0.19 (0.46)	0	1
use of public library	2.32 (1.03)	1.09 (0.68)	1	3
books from library	0.42 (0.23)	0.19 (0.54)	0	1
reading attitude	3.26 (1.34)	2.19 (1.43)	1	4
going out attitude	1.32 (0.53)	3.49 (0.94)	1	4
truancy	0.39 (0.34)	0.84 (0.26)	0	1
students quality	29.99 (16.34)	12.84 (21.12)	0	100
school composition	4.89 (2.34)	3.01 (1.13)	1	9
school uniform	2.98 (1.26)	1.39 (1.34)	1	4
teachers quality	1.59 (2.35)	0.78 (2.25)	0	9
teachers-students ratio	0.06 (0.34)	0.03 (0.26)	0.01	0.1
parents age	41.09 (8.26)	37.19 (10.02)	32	71
single parent	0.003 (0.054)	0.09 (0.17)	0	1
house size	4.98 (1.46)	3.79 (1.92)	1	35
family size	4.22 (1.66)	5.12 (1.88)	0	17
mother's age at child's birth	25.68 (8.82)	23.71 (10.12)	16	44
parent education	14.25 (2.31)	10.13 (2.02)	6	25
parents income	24.00 (11.12)	15.71 (12.15)	2	69
parents social class	3.97 (1.55)	2.88 (2.10)	1	7
parents employed	0.77 (0.38)	0.58 (0.26)	0	1
household financial problems	0.08 (0.24)	0.15 (0.25)	0	1
parental interest	2.27 (0.42)	1.48 (0.24)	1	4
parental initiative	0.46 (0.43)	0.26 (0.32)	0	1
parent health problems	0.05 (0.22)	0.04 (0.31)	0	1

household health problems	0.09 (0.17)	0.07 (0.27)	0	1
concil house	0.08 (0.24)	0.04 (0.12)	0	1
domestic tension	0.11 (0.10)	0.16 (0.17)	0	1
alcoholism	0.05 (0.37)	0.09 (0.51)	0	1
parental English fluency	0.02 (0.01)	0.21 (0.21)	0	1
English spoken at home	0.97 (0.04)	0.51 (0.17)	0	1
accomodation tenure	0.44 (0.10)	0.26 (0.32)	0	1
household persons per room	1.11 (0.91)	3.16 (0.41)	1	4
quality of play area nearby	0.31 (0.41)	0.45 (0.37)	0	1
high skilled population (%)	13.11 (4.05)	10.97 (3.04)	3.51	69.12
nonwhite population (%)	0.17 (0.14)	0.29 (0.20)	0.02	0.98
total population (thousands)	59.79 (73.29)	80.12 (90.33)	7.08	267.44
unemployment rate	0.05 (0.03)	0.10 (0.04)	0.02	0.18
amenities	0.17 (0.09)	0.25 (0.14)	0.00	0.46
persons per room	0.02 (0.04)	0.09 (0.08)	0.001	0.15
council housing	0.29 (0.34)	0.20 (0.24)	0	0.79
distance to jobs	0.39 (0.25)	0.57 (0.16)	0	0.70
car access	0.25 (0.46)	0.32 (0.22)	0.09	0.76

Table 2: Racial differences in academic performance over the school years

Variable	Whites	Nonwhites
arithmetic test score age 7	0.35 (0.64)	-0.23 (0.49)
reading test score age 7	0.24 (0.72)	-0.18 (0.85)
arithmetic test score age 11	0.30 (0.59)	-0.36 (0.64)
reading test score age 11	0.27 (0.78)	-0.48 (0.99)
arithmetic test score age 16	0.28 (0.61)	-0.29 (0.69)
reading test score age 16	0.26 (0.75)	-0.24 (0.89)

Notes:

Mean values and standard errors (in parenthesis)
are reported

t -tests for differences in means are performed.

All differences of mean values are statistically
significant at the 1% level.

Table 3: Racial differences in attitude towards education and parenting

Variable	Whites	Nonwhites	Whites	Nonwhites	Whites	Nonwhites
concerning parents	Entire sample		High educated parents*		Low educated parents*	
1) Parental interest at age 7	0.81 (0.59)	0.24 (0.30)	0.93 (0.39)	0.34 (0.41)	0.66 (0.49)	0.19 (0.30)
2) Parental initiative at age 7	0.79 (0.21)	0.22 (0.37)	0.86 (0.23)	0.24 (0.27)	0.55 (0.33)	0.15 (0.27)
3) Parental interest at age 11	0.82 (0.48)	0.12 (0.30)	0.88 (0.47)	0.15 (0.31)	0.48 (0.47)	0.10 (0.25)
4) Parental initiative at age 11	0.76 (0.34)	0.16 (0.24)	0.86 (0.41)	0.23 (0.23)	0.61 (0.24)	0.12 (0.17)
5) Parental interest at age 16	0.83 (0.29)	0.34 (0.28)	0.83 (0.19)	0.38 (0.32)	0.58 (0.25)	0.29 (0.32)
6) Parental initiative at age 16	0.85 (0.35)	0.30 (0.27)	0.87 (0.35)	0.35 (0.19)	0.45 (0.36)	0.24 (0.17)
concerning childrens			High expectations**		Low expectations**	
7) Is school a waste of time?	0.07 (0.51)	0.34 (0.27)	0.02 (0.43)	0.21 (0.26)	0.09 (0.43)	0.42 (0.23)
8) Truancy	0.28 (0.37)	0.62 (0.39)	0.17 (0.21)	0.51 (0.17)	0.37 (0.40)	0.72 (0.29)
9) Motivation to study	0.75 (0.35)	0.39 (0.17)	0.84 (0.31)	0.46 (0.19)	0.67 (0.40)	0.34 (0.21)
10) Higher education	0.81 (0.39)	0.48 (0.35)	0.86 (0.47)	0.58 (0.41)	0.64 (0.40)	0.35 (0.21)

Notes:

-Mean values and standard errors (in parenthesis) are reported

-t-tests for differences in means are performed.

* The information on the parents' education is derived from the age the parents left school, which is reported in 1974 (NCDS sweep three). We consider students with high-educated parents the ones having parents that left school at an age greater than 18 years and students with low-educated parents otherwise.

** We consider students with high expectations on education achievement the ones reporting that the age they are likely to leave full-time education is 18 years or over (NCDS sweep three) and students with low expectations otherwise.

1)-3)-5) parental interest at age 7-11-16. NCDS1-2-3 school interview: "With regard to the child's educational progress, do the mother/father appear: over concerned about the child's progress and/or expecting too high a standard? Very interested ? To show some interest? To show little or no interest ?." We consider the percentage of children having each parent over concerned or very interested.

2)-4)-6) parental initiative at age 7-11-16. NCDS1-2-3 school interview: "Since September, have the parents taken the initiative to discuss the child, even briefly, with you (headmaster) or any member of your teaching staff?" We consider the percentage of children having at least one parent that took such initiative.

7) NCDS3 individual interview: We consider the percentage of students reporting "very true" or "usually true" the statement: "I feel school as largely a waste of time".

8) NCDS3 individual interview: "Have you stayed away from school at all this year when you should have been there?" We consider the percentage of children having "yes" to this question.

9) NCDS3 individual interview. Students are asked if they think "very true", "usually true", "cannot say ", "usually untrue" or "not true at all " the following statements: I am quite in my classroom and get on with my work, I think homework as a bore, I find it difficult to keep my mind on my work, I never take work seriously, I do not like school, I think there is no point in planning for the future you should take things as they come, I am always willing to help the teacher. On the basis of these answers, the data set contains a derived variable as an indicator of academic motivation. We report mean values and standard deviations for whites and nonwhites.

10) NCDS3 individual interview. We consider the percentage of students reporting they would prefer to continue with full time education (e.g., to go to college) instead of taking a job after school.

Table 4: Estimated effect of parental investment in child's education on test scores by race and age

Variable	Whites	Nonwhites	Whites	Nonwhites	Whites	Nonwhites
	age 7		age 11		age 16	
	dep. var.: test scores in maths					
parental interest	0.0213** (0.0102)	0.0410*** (0.0125)	0.0264** (0.0126)	0.1543*** (0.0377)	0.0151** (0.0075)	0.1162*** (0.0275)
parental initiative	0.0366*** (0.0121)	0.0218*** (0.0075)	0.0291** (0.0137)	0.1613*** (0.0355)	0.0183*** (0.0042)	0.0917*** (0.0237)
	dep. var.: test scores in reading					
parental interest	0.0418*** (0.0124)	0.1594*** (0.0475)	0.0286*** (0.0102)	0.5515*** (0.1102)	0.0442*** (0.0099)	0.3578*** (0.0507)
parental initiative	0.1245*** (0.0254)	0.1114*** (0.0193)	0.0636*** (0.0201)	0.6913*** (0.1037)	0.0654*** (0.0200)	0.4028*** (0.0993)

Table 5: Decomposition of racial differences in test scores

test score gap relative to nonwhites		Table 5a	
		part of gap explained by observables	part of gap left unexplained
whites			
	arithmetic		
age 7	0.58	75.3%	24.7%
age 11	0.66	65.7%	34.3%
age 16	0.57	68.2%	31.8%
	reading		
age 7	0.42	84.5%	15.5%
age 11	0.75	57.1%	42.9%
age 16	0.50	62.1%	57.9%
		Table 5b	
		additional contribution by group differences in parental interest	part of gap left unexplained
	arithmetic		
age 7	0.58	1.1%	23.6%
age 11	0.66	7.2%	27.1%
age 16	0.57	5.4%	26.4%
	reading		
age 7	0.42	4.9%	10.6%
age 11	0.75	18.1%	24.8%
age 16	0.50	14.2%	23.7%

Table 6: Racial differences in value added in academic performance between consecutive waves

Variable	Whites	Nonwhites
arithmetic test score age 7-11	0.020 (0.004)	-0.008 (0.009)
reading test score age 7-11	0.021 (0.006)	-0.012 (0.002)
arithmetic test score age 11-16	0.014 (0.012)	-0.002 (0.005)
reading test score age 11-16	0.006 (0.005)	-0.006 (0.009)

Notes:

Mean values and standard errors (in parenthesis) are reported

t -tests for differences in means are performed.

All differences of mean values are statistically significant at the 1% level.

Table 7: Evolution over time of racial differences in parental involvement

Change in	Whites	Nonwhites	Whites	Nonwhites
	age 7-11		age 11-16	
parental interest	0.01 (0.06)	-0.12 (0.10)	0.01 (0.04)	0.22 (0.25)
parental initiative	-0.03 (0.04)	-0.06 (0.05)	0.09 (0.04)	0.14 (0.08)
Racial (differences) gap in				
parental interest	0.13		-0.21	
parental initiative	0.03		-0.05	
Notes:				
Mean values and standard errors (in parenthesis)				
are reported				
t -tests for differences in means are performed.				
All differences of mean values are statistically				
significant at the 1% level.				

Table 8: Estimated effect of parental investment in child's education on value added by race and age

Variable	Whites	Nonwhites	Whites	Nonwhites
	age 7-11		age 11-16	
dep. var.: value added in maths				
parental interest	0.0027** (0.0012)	0.0005*** (0.0002)	0.0026*** (0.0011)	0.0002*** (0.00005)
parental initiative	0.0031** (0.0015)	0.0008*** (0.0002)	0.0018** (0.0090)	0.0006*** (0.0002)
dep. var.: value added in reading				
parental interest	0.0007*** (0.0002)	0.0002*** (0.00004)	0.0021*** (0.0006)	0.0006*** (0.0001)
parental initiative	0.0012*** (0.0005)	0.0025*** (0.0007)	0.0004*** (0.0001)	0.0022*** (0.0006)

Table 9: Decomposition of racial differences in value-added

value added gap relative to nonwhites		Table 9a	
		part of gap explained by differences in observables	part of gap left unexplained
whites			
arithmetic			
age 7-11	0.028	41.5%	58.5%
age 11-16	0.016	35.2%	64.8%
reading			
age 7-11	0.033	38.4%	61.6%
age 11-16	0.012	27.5%	72.5%
		Table 9b	
		additional contribution by group differences in parental interest differences	part of gap left unexplained
arithmetic			
age 7-11	0.028	5.4%	53.1%
age 11-16	0.016	9.2%	55.6%
reading			
age 7-11	0.033	6.1%	55.5%
age 11-16	0.012	9.5%	63.0%

Figure 1a: Differences in test scores between black and white students

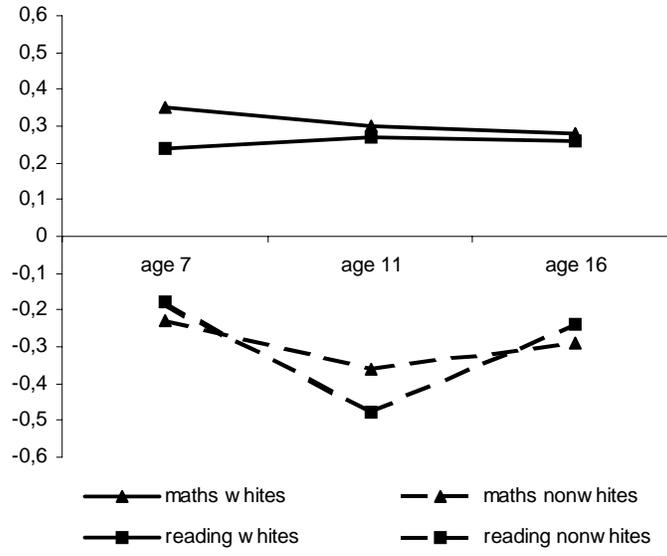


Figure 1b: Differences in interest and involvement between black and white parents

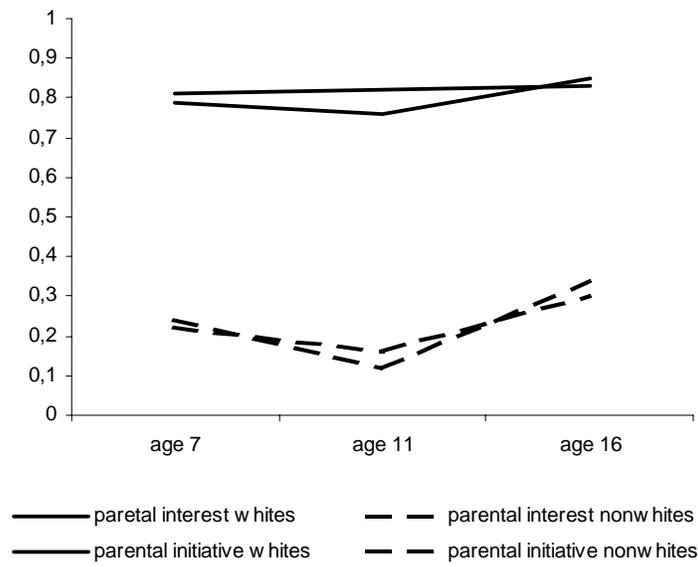


Figure 1c: Differences in test scores and parental interest between blacks and whites

