

Academic Achievement: Outside Influences or Black/White Differences

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1. Introduction

Standardized tests are extremely important in this day and age. These tests are used for everything from programs like “No Child Left Behind” and “Race to Read to Learn” to hiring programs at large corporations. It is for these reasons that it is vital to know whether standardized tests are biased against minorities, specifically black students.

In the past, black and white students have been shown to perform differently in standardized tests, but what are never fully discussed are the factors behind this apparent racial difference. Is it simply because of the race of the student, or do other aspects of life affect how a student performs?

Numerous studies have been written looking at test scores and the effects of race. The main theories are those of student role performance, school effects, and family structure. Some studies are based on student role performance, which studies how the student is evaluated on the performance of the student role. Other studies are concerned with school effects, which looks at items such as private versus public schools, ratio of students to teachers, number of single parent families in the school, and percentage of minority students. Still other studies are concerned with family influence, with such variables as family size, socioeconomic status, and number of older siblings.

Student role performance, school effects, and family background are looked at to give a holistic view of the student and their scores on the standardized test. This paper studies student achievement in eighth grade by race while controlling for other characteristics of the student’s life. The National Educational Longitudinal Study of 1988 is used to compare black and white students’ standardized test scores to compare these factors.

2. Methodology and Results

There are three factors affecting the dependent variable of test scores. These are the categories student role performance, school effects, and family variables. Within each group are several hypotheses to be tested. For student role performance the two are: Students that complete more hours of homework will have higher test scores and students that regularly miss class will have lower test scores. The two hypotheses for school effects are: Attendance at a public school will result in lower test scores and lower white to black student ratios will result in lower test scores. The last hypothesis deals with family variables: Children from families with a high socio-economic status will have higher test scores.

An ordinary least squares (OLS) regression will be run to create the multiple regression tables. The variables are compared to the independent variable, net of other factors. This allows for comparisons to be made both across groups and within groups. A modified Chow test of difference will be used to determine effect size between the black and white student groups. The ordinary least squares (OLS) regression table is regressed on test scores. The saturated model is statistically significant, explaining 42% of the variance. Net of all other factors, being a black student lowered scores significantly (-4.550).

Deviance is predicted to have a bigger effect on white students, because students of other races will simply quit school, this did show as predicted (-5.014 vs. -3.555). White students had lower test results if they were handicapped in any manner (-3.987 vs. -2.160). A common theory is that spending more time on homework would result in higher test scores. This was true for both races with black students having slightly lower test scores (0.199 vs. 0.341). Getting held back a grade resulted in lower scores for white students (-6.618 vs. -4.407).

Public school attendance resulted in lower test scores, but was better for white students (-1.036 vs. -3.140). This was still worse than if the student attended a private school. It has been studied how schools need to have a majority of white students to have higher test scores. In this study the percentage of minorities in the school affected black students more, but there was no meaningful difference. Attending a school with a large percentage of students in single parent homes affected white students negatively, but black students positively.

Being a member of a large family negatively affected both white and black students, but was worse for white students. Family SES had positive effects for both groups, but was greater for whites (0.156 vs. 0.097). Many have theorized that having older siblings benefits younger students, but test scores were lower for both groups, with white having a larger drop.

OLS Regression Analysis

| Variables: | Full Sample | | | White non-Hispanic | | | Black non-Hispanic | | | |
|--|-------------|--------------|--------|--------------------|--------------|--------|--------------------|--------------|-------|--------|
| | unstd. | ¹ | std. | unstd. | ¹ | std. | unstd. | ¹ | std. | |
| Independent Variables: | | | | | | | | | | |
| Student Role Performance Factors: | | | | | | | | | | |
| black (0,1): | -4.550 | *** | -0.128 | | | | | | | |
| female (0,1): | -0.340 | ** | -0.013 | -0.459 | | -0.018 | 0.200 | | 0.011 | |
| deviant (0,1): | -4.850 | *** | -0.188 | -5.014 | *** | -0.198 | ^ | -3.555 | *** | -0.171 |
| handicap(0,1): | -3.748 | *** | -0.114 | -3.987 | *** | -0.123 | ^ | -2.160 | *** | -0.091 |
| # of hours spent on homework per week: | 0.333 | *** | 0.120 | 0.341 | *** | 0.128 | ^ | 0.199 | *** | 0.082 |
| # of times school missed in past month: | -0.383 | *** | -0.046 | -0.406 | *** | -0.049 | | -0.285 | ** | -0.051 |
| held back a grade (0,1): | -6.116 | *** | -0.201 | -6.618 | *** | -0.210 | ^ | -4.407 | *** | -0.225 |
| School Factors: | | | | | | | | | | |
| public school (0,1): | -1.272 | *** | -0.033 | -1.036 | *** | -0.028 | ^ | -3.140 | *** | -0.085 |
| ratio of students to teachers: | -0.096 | *** | -0.033 | -0.099 | *** | -0.035 | | -0.042 | | -0.019 |
| # of school rules from 0-8: | -0.132 | * | -0.016 | -0.113 | * | -0.014 | | -0.158 | | -0.021 |
| % minority students in school (0,1): | -0.022 | *** | -0.046 | -0.022 | *** | -0.031 | | -0.030 | *** | -0.094 |
| % in single parent home (0,1): | -0.004 | | -0.006 | -0.010 | * | -0.013 | | 0.008 | | 0.020 |
| Family Factors: | | | | | | | | | | |
| size of family: | -0.115 | * | -0.012 | -0.131 | * | -0.013 | | -0.119 | | -0.020 |
| family SES: | 0.149 | *** | 0.328 | 0.156 | *** | 0.342 | ^ | 0.097 | *** | 0.264 |
| # of siblings older than R: | -0.206 | *** | -0.023 | -0.242 | *** | -0.027 | | -0.071 | | -0.013 |
| (Constant): | 68.837 | *** | | 68.738 | *** | | | 65.027 | *** | |
| Adjusted R-sq. | 0.420 | *** | | 0.377 | *** | | | 0.282 | *** | |

1=***p<0.001; **p<0.01; *p<0.05

2=significant difference between whites and blacks at the .05 significance level

3. Discussion

It was hypothesized that for this model students that spend more hours on homework will have higher test scores, students that are absent from class regularly will have lower test scores, attending a public school will result in lower test scores for students, a lower white to black student ratio will result in lower test scores, and children from families with a high socio-economic status will have higher test scores.

All of these hypotheses were supported by this research, some more than others. Homework significantly increased test scores for the full model as well as both segments. Missing school lowered test scores by a significant amount for all groups. Attendance at a public school significantly lowered test scores for all groups, and there was a sizeable difference between black and white students. Schools with a high percentage of non-white students resulted in significantly lower test scores for all groups. Students from families with a high SES had higher test scores with significance at all levels, but a large difference between black and white students.

Looking across the OLS table, some differences are obviously showing that black students fare worse than white students, such as attendance at a public school. Other variables seem to point to white students being worse off such as that of handicap level. It is only when all factors are taken into account together that a full picture can be seen. In this case, it points to black students having lower test scores, net of all other factors.

Policies need to be put into place to assist students, especially black students, which have been held back a grade. This is the most important variable in the black non-Hispanic model. It is only slightly less important to the white non-Hispanic students. Deviance also needs to be addressed for the black students, as it is the second most important variable. White students are affected the most by the family's SES which is not easily changed. They would also benefit from programs to assist those held back and reduce the deviance.

4. Acknowledgements

The sociology graduate department was invaluable in preparing this body of work. Without the program, nothing could have been completed.