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'Race', Parental Occupation and Academic Performance in a Public School Population

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Abstract: "Races" of humans exist only as socially defined constructs. It is widely believed that there is a difference in educational achievement between the major "races" in America - "blacks" and "whites". The objective here was to test the veracity of this belief by studying a population that was relatively homogenous on parental occupation. This study found that in a population of 133 13 to 14 year old science students in an affluent public middle school, there was no gap between the academic achievement of students categorized as "black" and students categorized as "white". Stratifying by parental occupation eliminated any distinction. "Asian" students outperformed all other students. Solving the inequities in education should involve consideration of parental occupation.

Keywords: *Race, social class, parental occupation, academic achievement, controlled, prospective.*

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Introduction

In the fields of Biology and Anthropology it is well established that there are no races of humans (Boyd, 1955; Marks, 2002; Olson, 2002). In Sociology race is a social construct: "physical differences that groups and cultures consider socially significant" (ASA, 2019; Muller-Wille, 2014). It is widely reported that there is a gap between the performance of "whites" and that of "blacks" in the educational system (Capraro et al., 2000; Jencks and Phillips, 1998; Reardon, 2008; Reardon et al., 2014; Rothstein and Wozy, 2013). These studies are of performance on standardized tests. It is not obvious as to whether this gap applies to actual classroom performance, which is reported to be more important for success in college (Allensworth & Clark, 2020) and in life. This reported "black-white" gap has been a part of the educational culture since 1966 (Hill, 2016). Preliminary measurements for this study suggested that there was no such gap among the science students at a particular high economic status public middle school. This became the hypothesis: when controlled for parental occupation, there is no gap in the educational achievement of "blacks" and "whites".

This study is significant in that: 1. it stratifies for parental occupation, and finds no "black-white" performance gap, 2. it focuses on actual classroom performance, 3. it confirms "asian" dominance, here in classroom performance instead of standardized test performance. These results suggest that 1. collecting data on parental occupation could be useful for improving education, 2. studying actual classroom performance might be more useful than focusing attention on standardized test scores, and 3. refocusing away from "race" could be of societal benefit.

Methodology

Instruments and Participants

There are two instruments in this study: measures of academic achievement, and their comparison to well-established categorization schemes. The academic measures are micro-measurements; actual performance of students on assessments. The categorization schemes are the governmentally defined racial categories Montgomery County Public Schools (MCPS, 2019), and the NRS Social Grade system (NRS, 2020). Neither of these needed proofing by the analysts,

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due to their widespread acceptance. In addition, the students were bifurcated on an axis of foreign-born vs. native parentage. This methodology is less well-established, but seemed relevant to widespread current interest in issues of immigration.

The participants were 133 science students, 13 to 14 years old, at a single school in a single high-affluence area. The participants were male and female, heterogeneous on ethnic backgrounds, immigrant status of their parents, and slightly on social grade. It was hoped that the relative homogeneity of social grade would help shed light on the relationship of "race" to academic success.

This study was prospective, controlled, randomized, double-blind (at least on the first assessment), and statistically significant. There were twelve classes of 8th grade science at the school that year. The students in this study constituted five of the twelve classes; assignment to the various classes was done before the school year began, by the counseling department. One of the assessments, the first one, was given county-wide to all students in 8th grade science. The remaining two assessments were given to all twelve sections at the school.

The statistical analysis was based on an assumption that the school in question represents a population: that of public school systems in wealthy, high social class zip codes, those in the top 10% for median income. All comparisons are 2-sided comparisons of means.

Analysis of Data

The school in this study is a neighborhood middle school of 1050 students ages 11 to 14. For ease of discussion, the school is labeled Calvin Coolidge Middle School, and its zip code 00000. Coolidge is in a large suburban county with a unified school district. The district has more than 11,700 teachers and 144,000 students. It is one of the twenty largest school districts in the United States. Zip code 00000 is the wealthiest in the county. A single school of over 1000 students is of sufficient sample size to generalize to larger populations.

There are a number of sociological variables readily available for study in this population. Here, the focus is on school performance as it relates to "race", origin, and social grade.

The district categorizes students by "race", dividing students into five categories - Asian, Black, Hispanic, Mixed Heritage, and White. The categories - like any other division by "race" (Boyd, 1955; Marks, 2002) - are necessarily fuzzy. The individual student's family is free to choose what category the student is placed in. There is no choice to opt out of the five official categories. Geographic guidelines for parental use in "racially" categorizing students are published but not enforced.

There are 133 students in the classes in this study distributed over five sections of eighth grade science. Fifty students (38%) are categorized Asian. Fifty-six (42%) are considered White. The remainder are Black (12 students, 9%), Hispanic (5, 4%) and Mixed (10, 8%). This study concerns itself with the official categories and their relevance for school performance.

Two further stratifications of the population were performed. The students were asked their parents' professions. The results were compared to markers of social class. 100% of the students were found to lie in the American upper middle class, the top 20% of the U.S. population ("Social Class," 2017). This is not surprising; the housing prices in the catchment area are more than five times the American average. Zip code 00000 is among the thirty wealthiest in the United States (Zipwho, 2017). Using the British National Readership Survey (NRS) social grades gave nuance to the results (NRS, 2020). Sixteen of the students (13%) are classifiable as class B: intermediate managerial, administrative or professional, and the remaining 87% in class A: higher managerial, administrative or professional, when based on the higher status of the two parents.

The other stratification was by birthplace of the parents. Students were asked their own birthplace and those of both parents. The students' own birthplace gave no interesting results, as only twelve students were foreign-born. Of these, six are the children of embassy personnel, and the remainder have been in American schools the entire time of their schooling. The parental birthplaces were divided into two groups: both parents foreign-born, and at least one parent American-born. Sixty-six students fell in the foreign-born-parents category, and Sixty-seven students into the American-born-parents.

Results

"Race" and Academic Achievement

Table 1. Test Scores and Quarter Grades by Governmental Racial Category

	Assessment 1	Assessment 2	Assessment 3	Quarter Average
Overall n=133				
average	8.07	8.32	14.93	89.52%
stdev	1.55	1.49	1.96	0.06
"asian" n=50				
average	8.41	8.56	15.58	91.44%
stdev	1.54	1.47	1.64	0.05
"black" n=12				
average	8.00	8.00	14.67	88.92%
stdev	1.52	1.52	1.53	0.04
"hispanic" n=5				
average	6.80	12.60	79.70%	
stdev	1.96	1.96	2.58	0.13
"mixed heritage" (MU) n=10				
average	7.60	8.45	14.75	87.87%
stdev	1.79	1.70	11.74	0.04
"white" n=56				
average	7.97	8.28	14.65	89.10%
stdev	1.43	1.37	2.10	0.06
All non-"asian" students n=83				
average	7.86	8.17	14.54	88.36%
stdev	1.52	1.49	2.04	0.07
Scores/Grades by Governmental Racial Category, "asians" vs. all other students				
Test 1	p=0.0428		Significant to 95%	
Test 2	p=0.1374		Not significant	
Test 3	p=0.0023		Significant to 99.8%	
1st Quarter Average	p=0.0064		Significant to 99%	

The averages for the first assessment of the year, a ten point county-wide standardized multiple-choice assessment, are shown in the first column of Table 1. The average on this assessment was 8.00 for the "black" population and 7.97 for the "white" population. This is not the usual finding of a black-white test score gap (Reardon, 2008).

The next two tests were written by the teachers at the school. They consisted of short answer and essay questions. The different test designs did not affect the results. The results are shown in table 1. For example, on the third test, the "white" average was 14.65 (86%), the "black" average was 14.67 (86%). Quarterly grades are also shown in table 1; the pattern is the same.

On the first assessment, the "asian" average is higher than other groups. The "asian" average of 8.41 (n=50) is greater than the overall average of the other students of 7.86 (n=83) with $p=0.0428$. We are 95% confident that the "asian" students' scores are different from those for all other students. The number of "hispanic" students is too small for significance. Females average 8.08 on the assessment, males 8.05. The "asian" students continued to dominate all scores and grades throughout the study. The level of confidence for the difference in the scores of "asian" students compared to all other students was over 99% for the last assessment and the quarter grade. That the "asian" students outperformed all other students accords well with others' findings (Hsin & Xie, 2014; Wahala, 2017).

The data was tested for the possibility that having foreign-born parents was important. Sixty-six of the students in the sample had both parents foreign-born. Sixty-seven had at least one parent born in the United States. The children of foreign-born parents consistently outperformed the children in the American-born parents category. The results were not statistically significant.

Parental Occupation and Grades/Scores

Eleven students were unable to answer the question of what their parents do for work. This left 122 students for whom the parents' profession is known. 100% of these are classifiable in the top social class by American standards ("Social Class," 2017). Comparing the 122 sets of professions to the more exacting British National Readership Survey NRS social grades, sixteen students (13%) are classified as class B: intermediate managerial, administrative or professional, and the remaining 106 students (87%) are in class A: higher managerial, administrative or professional,

when based on the higher status of the two parents (NRS, 2020). Table 2 shows assessment and quarter grades by social grade.

Table 2. Test Scores and Quarter Grades by Parental Occupation categorized by

British National Readership Survey NRS social grade				
	Assessment 1	Assessment 2	Assessment 3	Quarter Average
Grade A n=106				
average	8.13	8.38	15.03	89.97%
stdev	1.55	1.48	1.97	0.06
Grade B n=16				
average	7.78	7.97	14.77	88.53%
stdev	1.22	1.32	1.85	0.06

Table 3. Test Scores and Quarter Grades by Social Grade and Racial Category

British National Readership Survey NRS social grade				
	Assessment 1	Assessment 2	Assessment 3	Quarter Average
"asians" Grade A n=35				
average	8.63	8.71	15.86	92.73%
stdev	1.54	1.50	1.50	0.04
"asians" Grade B n=12				
average	7.79	8.04	14.90	88.37%
stdev	1.12	1.25	1.70	0.07
All non-"asian" students Grade A n=71				
average	7.89	8.21	14.62	88.61%
stdev	1.51	1.45	2.06	0.06
All non-"asian" students Grade B n=4				
average	7.75	7.75	14.38	89.03%
stdev	1.71	1.71	2.50	0.06
All students other than "asian" Grade A n=87				
average	7.87	8.17	14.65	88.59%
stdev	1.46	1.42	2.01	0.06
p-values for Scores/Grades for "asian" students, by Social Grade, Grade A vs. Grade B				
Test 1	p=0.0899		Slightly significant, to greater than 90%	
Test 2	p=0.1719		Not significant	
Test 3	p=0.0304		Significant to 95%	
1st Quarter Average	p=0.0109		Significant to 99%	
p-values for Scores/Grades by Governmental Racial Category and Social Grade, Grade A Asians vs. All other students				
Test 1	p=0.0117		Significant to 99%	
Test 2	p=0.064		Slightly significant, to greater than 90%	
Test 3	p=0.0017		Significant to 99.8%	
1st Quarter Average	p=0.0003		Significant to 99.97%	

On the first assessment, the average for the 106 social grade A students was 8.13. The sixteen social grade B students had an average of 7.78. As in all other cases above, the trend did not change for the other two tests and the quarter average. The gap narrowed somewhat. None of the differences between the 106 social grade A students and the 16 social grade B students has a p value better than p=0.30.

Twelve of the sixteen social grade B students are categorized as "asian". Thirty-five of the 106 grade A students are "asian". The 35 social grade A "asian" students had an average on the first test of 8.63. The twelve social grade B "asian" students had an average on the first test of 7.79. The null hypothesis is rejected at p=0.0899. That is, there is a greater than 90% probability that the difference between the two groups is real. When the 35 social grade A "asian" students are compared to the entire 87 other students whose parental profession is known, p=0.0117. That is, there is a 99% probability that the difference between the two groups is real. In other words, it is a combination of "asian" categorization and parental occupation that leads to the strongest performance. These results continue for the remaining two assessments and the quarterly grade.

Discussion and Conclusions

The hypothesis that drove this study, that there is no difference between the academic performance of "black" students vs "white" students when stratified by parental occupation, has not been nullified. All but one of the "white" students and all but two of the "black" students are from the highest social grade families; stratification was achieved by studying the population at this particular high socio-economic status school (Cashin, 2015).

This is an important result for three reasons. Firstly, this result may point a way forward for achieving better educational outcomes for the disadvantaged. Fifty years of maintaining that there is a gap between the performance of "black" and "white" students is, perhaps, enough (Hill, 2016; Wexler, 2019). The gap could be a function of improper stratification.

Secondly, this research may point a way forward for using actual student performance in school to measure educational outcome, instead of test scores. There is some evidence that standardized test scores are correlated to later success in college (Gambino, 2012). There is stronger evidence that overall success in high school is a more important predictor of college success, and that standardized test scores and high school success are not strongly correlated (Allensworth & Clark, 2020). The literature on "racial" gaps focuses on standardized test scores without properly examining whether test scores are a measure of success, either in school or in life (Capraro et al., 2000; Hill, 2016; Jencks & Phillips, 1998; Reardon, 2008; Reardon et al., 2014; Rothstein & Wozny, 2013). Actual performance in school was measured here, and no "black-white" gap was found.

Thirdly, and most optimistically, perhaps this research will help overcome racism, at least to some extent. Since there are no actual races of humans, defining humans into races might be the cause of problems that could be avoided. The school administration believes there are races of humans (Cooper-Martin, 2012). The teachers' union believes there are races of humans (Orfield, 2008). Darwin (1871/2004) believed that there are races of humans, and that some races had greater intellectual ability than others. Social Darwinism survives to the present (Rohatynskyj, 2019). In the fields of Biology and Physical Anthropology, it is well established that there are no races of humans (Marks, 2002; Olson, 2002; Boyd, 1955). "Races have to be imagined into existence" (Wayne, 2014). Were as much attention paid to parental occupation as there is to "race", as is indicated in this study, it is hoped that this would have a salutary effect on education and even on other aspects of culture. After all, today's children can have a different occupation than that of their parents.

The "asian" students in the study outperformed the other students. "Asian" students of social grade A especially dominated all other students. This "asian" dominance is in actual classroom performance. The inclusion of this result is useful to show that the study sample is of sufficient size to show distinctions where they exist. This helps confirm the equality of academic performance between "blacks" and "whites".

There are various explanations in the literature as to reasons for "asian" dominance (Hsin & Xie, 2014). All of the "asian" parents in this study are immigrants, but they are remarkably heterogeneous. The "asian" parents grew up speaking ten different languages. On the basis of experience with this school population, the authors are inclined to believe that the "Tiger Parent" hypothesis explains part of the results: "asian" performance is a result of different parenting aspirations between some of the "asian" parents - all of whom are immigrants - and the other parents, who immigrated from other parts of the world or are American born (Guo, 2014). However, it is unclear who is included in the "Tiger Parent" group. Sixteen of the "asian" students are from mainland Chinese backgrounds, and six are Taiwanese. The remainder - Korean, Hindi, Bengali, Tamil, and so forth - appear to have cultural expectations that differ from both American and Chinese ones. A thorough explanation of "asian" dominance requires further analysis.

Suggestions

The study should be repeated with a population with a different economic profile. Working with a relatively economically homogeneous population has allowed the identification of a persistent flaw in the educational system. It seems to the authors that categorizing humans by "race" when the human species has no races is damaging to education. On the intake form for public school attendance, a question could be substituted asking parental occupation instead of "race". Perhaps educational efforts could be concentrated on closing a real gap in educational achievement.

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