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HEREDITY, ENVIRONMENT, AND RACE DIFFERENCES IN IQ
A Commentary on Rushton and Jensen (2005)

Richard E. Nisbett
University of Michigan

J. P. Rushton and A. R. Jensen (2005) ignore or misinterpret most of the evidence of greatest relevance to the question of heritability of the Black–White IQ gap. A dispassionate reading of the evidence on the association of IQ with degree of European ancestry for members of Black populations, convergence of Black and White IQ in recent years, alterability of Black IQ by intervention programs, and adoption studies lend no support to a hereditarian interpretation of the Black–White IQ gap. On the contrary, the evidence most relevant to the question indicates that the genetic contribution to the Black–White IQ gap is nil.

Rushton and Jensen's (2005) article is characterized by failure to cite, in any but the most cursory way, strong evidence against their position. Their lengthy presentation of indirectly relevant evidence which, in light of the direct evidence against the hereditarian view they prefer, has little probative value, and their "scorecard" tallies of evidence on various points cannot be sustained by the evidence.

The Current Difference in Intelligence Between Blacks and Whites

One of the most serious misrepresentations in Rushton and Jensen's (2005) article is their claim that the current difference in IQ between Blacks and Whites is slightly more than 15 points, or 1 standard deviation. The best evidence we have indicates that that value is out of date and that the Black–White IQ gap has lessened considerably in recent decades (Grissmer, 1994; Grissmer, Flanagan, & Williamson, 1998; Grissmer, Williamson, Kirby, & Berends, 1998; Hedges & Nowell, 1998; Nisbett, 1995, 1998). We do not have actual IQ scores available to establish this point but rather various ability tests, most of which are highly correlated with IQ—some as high as .8 to .9. Though IQ scores would be preferable to speak directly to the question of IQ change, such data are unavailable in the form of a national random sample. In contrast, several probability samples of U.S. elementary and high school students are available. These include, over the period 1965–1994, the Equality of Educational Opportunity (EEO) survey, the National Longitudinal Study, the High School and Beyond survey, the National Education Longitudinal Study, and the National Assessment of Educational Progress program (NAEP).

Hedges and Nowell (1998) found improvement on almost all tests for African American 12th graders compared with other 12th graders over the period 1965–1994. The best estimates in terms of the stability the scores provide, and in terms of their correlations with IQ, are in the form of composites, for example,

Correspondence concerning this article should be addressed to Richard E. Nisbett, Department of Psychology, University of Michigan, Ann Arbor, MI 48109. E-Mail: nisbett@umich.edu

reading + vocabulary + mathematics for the EEO survey. The Black–White gap on these composites over the period decreased on average by 0.13 standard deviation per decade, yielding an estimate of a reduction of the gap by around 0.39 standard deviation over the period. The largest study, conducted by the NAEP, indicated that, if trends were to continue, the gap in reading scores would be eliminated in approximately 25 years and the gap in science scores in approximately 75 years.

Grissmer, Flanagan, and Williamson (1998) found comparably large gains on the NAEP for Blacks in elementary school, junior high, and high school. Whites gained slightly in both math and reading between 1971 and 1996, but Blacks gained much more, narrowing the gap by 0.2 to 0.6 standard deviations. This would yield estimates of obliteration of the gap somewhere between 20 and 60 years from now, except that the gains were concentrated among the students, at all age groups, who entered school in the period between 1968 and 1980. Students entering prior to that period and after that period showed no gains. It would take us far afield to discuss why the gains occurred when they did, but the main relevance is that the old estimate of 1 standard deviation in ability scores no longer applies. The gap is substantially less than that at the present time, probably more like 0.6–0.7 standard deviation or approximately 10 IQ points.

The Effects of Intervention

A second misrepresentation by Rushton and Jensen (2005) flows from their statement that the Head Start program leads only to immediate and not to long-term gains. Because no other early childhood intervention programs are mentioned, the implication is that such programs are not effective over the long run. But in fact, more ambitious interventions produce very significant gains that last as long as until age 15, the oldest age tested to this point to my knowledge (S. L. Ramey & Ramey, 1999). For example, Campbell and Ramey (1994) provided Black infants with an 8-hr per day intervention involving exercises designed to enhance cognitive, language, perceptual–motor, and social development. Mothers of the children had an average IQ of 85. At age 12, 56% of control children had IQs in the normal range (above 85), about what would be expected based on the mothers' IQ and assuming that the fathers' IQ was in the same vicinity. But 87% of children exposed to the intervention had IQs in the normal range. Only 13% of intervention-exposed children were of borderline IQ, and none were even mildly retarded. In contrast, 37% of control children were of borderline intelligence, and 7% were at least mildly retarded.

Other early intervention programs have shown IQ effects of intervention programs in the range of 4–5 points, which are sustained until at least age 8–15 (e.g., S. L. Ramey & Ramey, 1999). Effects on academic achievement can also be substantial. Ramey and his colleagues found an intervention program resulted in 12% placement in special education classes at some point by the age of 15 as compared with 48% for control children (C. T. Ramey et al., 2000). They found that 30% of children who had participated in an intervention program had been retained in a grade by age 15 as compared with 56% of control children. By now, there are many studies showing significant, sometimes marked and sustained, effects of early intervention programs. But Rushton and Jensen (2005) choose to

cite only one failure, and by implication to allow it to stand as the only relevant finding.

It should also be noted that it is not merely early intervention that increases IQ and school achievement. Programs at every age level from infancy to college can be effective (Bennett, 1987; Herrnstein, Nickerson, De Sanchez, & Swets, 1986; Selvin, 1992; Steele et al., 2004; Treisman, 1992). There is thus very good reason to believe that steps can be taken—some not terribly expensive—to improve test and academic performance of Blacks.

Direct Tests of Heritability of the Black–White IQ Difference

Most important, Rushton and Jensen (2005) ignore or misrepresent a large literature dealing with the most direct sort of evidence, which relates to the influence of European ancestry on Black intelligence. U.S. "Black" populations contain as much as 30% European genes. This means that an individual who is identified as Black could have anywhere from 100% African ancestry to mostly European ancestry (true of as much as 15% of some U.S "Black" subpopulations; Herskovits, 1930). This allows us to identify the extent to which percentage African ancestry, variously assessed, is associated with IQ. Five different types of studies allow for an estimation of the effect of relatively African versus relatively European genes on IQ. I report these below in increasing order of what I take to be their probativeness.

Skin Color

There are numerous studies of the association between skin color and IQ. Skin color can be used as at least a weak proxy for racial admixture. We can ask whether lighter, presumably more European, skin is associated with higher IQ. Of course, if it were, this would constitute only modest support for the genetic hypothesis because there would be valid grounds for assuming that more social and economic advantages accrued to people with relatively light skin than to people with relatively dark skin and that these advantages would be reflected in higher IQs. In fact, however, the correlation between lightness of skin and IQ, averaged over a large number of studies reviewed by Shuey (1966), is in the vicinity of .10. The average correlation between IQ and judged "Negroidness" of features is even lower.

Self-Reports of European Ancestry

Another way to determine the genetic origins of the Black–White difference is to examine the tails of the distribution of Black IQ. We can ask whether Blacks having a significant degree of European heritage are more likely to have high IQ scores. The extreme high-end tail of the IQ distribution should be especially telling, because on the hereditarian theory one would expect people at the tail to be particularly likely to have substantial European ancestry. Jenkins (1936) identified 63 children in a sample of Black Chicago schoolchildren with IQs of 125 or above, and 28 with IQs of 140 or above. Degree of European ancestry was assessed on the basis of self-reports about parents and grandparents. Children with IQs of 125 or above, as well as those with IQs of 140 or above, were slightly less likely to have substantial European ancestry than was estimated to be characteristic of the U.S. Black population as a whole at the time. The results are consistent

with a model of zero genetic contribution to the Black–White gap. Rushton and Jensen do not mention this study.

Children in Postwar Germany Born to Black and White American Soldiers

Eyferth (1961) examined the IQs of several hundred German children fathered by Black GIs during the post-1945 occupation and compared them with the IQs of children fathered by White GIs. The children of the Black GIs had an average IQ of 96.5. The children of the White GIs had an average IQ of 97. Because the (phenotypic) Black–White gap in the military was similar to that for the U.S. population, these data imply that the Black–White gap in the U.S. population as a whole is not genetic, even in part (Flynn, 1980, pp. 87–88). The results seem particularly telling because it seems highly likely that environmental conditions were inferior for Black children.

How do Rushton and Jensen (2005) treat this study, so telling on the face of it? They give it only two sentences of description and then proceed to critique it on two main grounds. First, 20% to 25% of the "Black" fathers were North African. But one would have to assume preposterously high IQ scores on the part of the North African portion of the Black population to make up for the substantial difference between offspring of Blacks and Whites predicted by their hereditarian theory. Second, Rushton and Jensen assume that Black soldiers were more rigorously selected than Whites and so might have had IQs nearly as high as those of the White soldiers. Blacks in the military did indeed have higher IQs than did Blacks in the general population, but the same was true of White soldiers compared with the general White population. Flynn (1980) has argued that the evidence indicates that the gap in IQ between Black and White soldiers was the same as that in the U.S. population at large.

Mixed-Race Children Born to Either a Black or a White Mother

If the Black–White IQ gap is largely hereditary, then children having one Black and one White parent should have the same IQ on average, regardless of which parent is Black. But if one assumes that mothers are particularly important to the intellectual socialization of their children and if the socialization practices of Whites are more favorable to IQ development than those of Black mothers, then children of White mothers and Black fathers should have higher IQs than children of Black mothers and White fathers. This could of course not have a plausible genetic explanation. In fact, it emerges that children of White mothers and Black fathers have IQs 9 points higher than children with Black mothers and White fathers (Willerman, Naylor, & Myrianthopoulos, 1974). This result in itself suggests that most of the Black–White IQ gap is environmental in origin. But because mothers are not the only environmental influence on the child's IQ, the 9-point difference might be regarded as a very conservative estimate of the environmental contribution to the gap.

What do Rushton and Jensen (2005) have to say about this study? Because the White mother–Black father pairs averaged 1 year more of education than the Black mother–White father pairs, they conclude the study is uninterpretable! Of course, there can be no basis for assuming that 1-year's difference in education on

the part of the parents could possibly translate into an expected 9 IQ point difference for the children.

Studies Measuring European Ancestry Through Blood Group Indicators

Different races have different frequencies of various blood groups. If the hereditarian model is correct, Blacks having more blood groups characteristic of Europeans should have higher IQs. But Sandra Scarr and her colleagues (Scarr, Pakstis, Katz, & Barker, 1977) found that the correlation between IQ and "European" heritage among Blacks as measured by blood groups was only .05 in a sample of 144 Black adolescent twin pairs. They found a typical correlation of .15 between skin color and IQ, which suggests that the comparable correlations between skin color and IQ in other studies are due not to more European genes on the part of light-skinned Blacks but to social and economic advantages accruing to individuals with lighter skin.

Another blood-group study, by Loehlin, Vandenberg, and Osborne (1973), also examined the association between Europeanness and IQ in a sample of Blacks. In this study, the estimated Europeanness of *blood groups* (rather than the Europeanness of individuals, estimated from their blood groups) was correlated with IQ in two small samples of Blacks (Loehlin et al., 1973). A .01 correlation between IQ and the extent to which blood group genes were more characteristic of European than African populations was found. In another small sample, they found a nonsignificant, –.38 correlation, such that blood groups associated with Europeanness predicted lower IQ scores.

How do Rushton and Jensen (2005) deal with these data, so apparently damning of an even partially hereditary model? They report that "these studies failed to choose genetic markers with large allele frequency differences between Africans and Europeans" (p. 262). Of course, on the hereditarian hypothesis, the markers would have to have been worthless to yield a zero difference between the populations studied.

Rushton and Jensen (2005) add only a few studies to the list above concerned with racial admixture, and those have extremely weak findings, poor methodology, tangential relevance, or a combination of the three. For example, they cite one study by Lynn (2002), which found a correlation of .17 between self-report of skin color as "very dark," "dark brown," "light brown," or "very light" and a 10-word vocabulary test score. Another study, by Rowe (2002), is merely yet another showing that Blacks have lower IQ scores than Whites. Still other studies ask us to believe that average IQ scores of 70 (in the retarded range) for samples of Africans and for the Black children in a particular Georgia county could possibly be an accurate reflection of genotypic IQ in pure African populations. This would mean that an individual 2 standard deviations from the mean would only manage to reach an IQ of 100, which is average for Western White populations.

Rushton and Jensen (2005) end the empirical part of their article with a scorecard. The scorecard results: hereditarian model (+); culture-only model (0). But any sensible reading of the directly relevant research would have to conclude that there is no support whatever in these studies for an even partially hereditarian model. On the contrary, the converging methodologies provide strong evidence that the genetic contribution to the Black–White IQ

gap is close to zero and do not even suggest a direction for any possible genetic contribution.

Adoption Studies

There are three major adoption studies that address the question of genetic contribution to the Black–White IQ difference. The first two reported below receive one sentence each of description from Rushton and Jensen (2005); the third receives seven paragraphs.

Assignment of Black Adoptees to Families of Different Races

Under the hereditarian model, it should make relatively little difference whether Black children are adopted by Black families or by White families. Under an environmental model that assumes that White families are especially likely to intervene in their children's socialization in ways that result in their having high IQs, it should make a substantial difference whether the Black child is raised with a Black or White family. And in fact, it does. Moore (1986) found that Black children raised by Black middle-class families had mean IQs of 104, whereas Black children raised by White middle-class families had mean IQs of 117.

Though it is possible that self-selection of some kind might have operated to produce this difference, it could only have happened if genotypically less intelligent children were more likely to be assigned to the Black families than to the White families. But there is no reason to assume that this was the case, or at least that it could possibly account for the results by itself. It seems extraordinarily unlikely that adoption agencies could have engineered IQ differences in placement on the order of 13 points.

Moore's (1986) study also provides some evidence about socialization for intelligence. White mothers were more supportive of their children's intellectual explorations and more forgiving of mistakes than were Black mothers, who tended to be highly critical.

Assignment of Black and White Adoptees to the Same Environment

Tizard, Cooperman, and Tizard (1972) studied Black and White children assigned to a highly enriched institutional environment. At age 4 or 5, the White children had IQs of 103, the Black children IQs of 108, and mixed-race children IQs of 106. The Black children were West Indian and the White children were English, and though it is possible that the Black children were born to more intelligent parents than the White children, Flynn (1980) has argued that the difference could have been only enough to eradicate the Black advantage in IQ score, not to turn the advantage to the Black children.

Assignment of Black and White Adoptees to Different White Families

The study to which Rushton and Jensen (2005) allocate so much space is the single adoption study that provides any support whatever to the hereditarian position. This is a study by Scarr and Weinberg (1976; Weinberg, Scarr, & Waldman, 1992), which examined adoptees into White families who had two White biological parents, two Black biological parents, or one Black and one White parent. The study is more difficult to interpret than the other two, one of

which assigns Black children, who were probably equivalent in expected IQ, to either Black or White middle-class families and the other of which assigns both Black and White children to the same environment. The Scarr and Weinberg study held neither race nor expected IQ nor adoptive setting constant. An additional problem with the Scarr and Weinberg study is that the Black children were adopted at a later age than the others, which would prompt an assumption of lower initial IQ for them. In addition, the Black children's mothers had lower educational levels than did those of the other two groups, which also would prompt an assumption of lower initial IQ. Finally, the "quality of placement" was higher for White children than for other children. All of these facts combined mean that it is not possible to know what to predict under either a hereditarian model or a pure environmental model.

The average IQ of the White children at age 7 to 8 years was 112, that of mixed-race children 109, and that of Black children 97. The results are consistent with the assumption that the middle-class family environment resulted in a substantial gain in IQ for all groups. They do not rule out a genetic contribution to explain the gap because the Black children had lower IQs than those of either of the other two groups. Because of the likelihood that the Black children had lower IQs to begin with, for both genetic and nongenetic reasons, however, the results do not give strong support to the hereditarian model. At age 17 the White children had IQs (as measured by another test) of 106, the mixed-race children 99, and the Black children 89. These results are not materially different, in terms of size of the gap, from those at age 7 to 8. The Black children at the earlier point had IQs 15 points lower than those of the White children and at the later point had IQs 17 points lower. The gap was 3 points at age 7 to 8 between White children and mixed-race children and 7 points at age 17.

Rushton and Jensen (2005), however, wish to emphasize the relative difference at the two ages. Because the genetic influence on IQ asserts itself progressively over the life span, they maintain that the greater gap at the later age is reflective of a genetic contribution to the gap. In fact, Rushton and Jensen give as one of their main reasons for reviewing the Scarr and Weinberg study in such depth is that it continues out to the older ages (the other two reasons being that it is the "largest" and "best-known"). There are several flaws with the developmental argument. First, the relative magnitude of differences at the two ages are slight, and second, and more important, the life span data that Rushton and Jensen themselves cite do not support the claim that more of the IQ variance at age 17 is genetically driven than at earlier ages. Evidence of a greater genetic contribution to IQ occurs only after the age of 20 (see their Figure 3). Finally, Weinberg et al. (1992) noted that the scores of the adolescent Black and mixed-race children have to be interpreted in light of the fact that these children as a group had severe adjustment problems, a fact that Rushton and Jensen do not mention.

The Scarr and Weinberg study thus provides nothing more definite than the likelihood that middle-class environments raise the IQs of children of all racial combinations. Many aspects of design weakness have to be overlooked to infer any support at all for the hereditarian model.

How do Rushton and Jensen (2005) assess the adoption results across the two studies showing unambiguous lack of support for the hereditarian model and the one study showing at most ambiguous support for it? Their scorecard results: hereditarian model (++); culture-only model (–)!

The rest of Rushton and Jensen's (2005) article consists of reports of brain size and reaction time correlates and other indirect evidence. If the direct evidence were not so strongly supportive of a purely environmental explanation of the Black–White difference in IQ, then such findings would have relevance to an understanding of the difference. But when direct evidence points so clearly to the conclusion that there is no hereditary basis for the difference, indirect correlational evidence has little meaning.

Conclusion

In short, Rushton and Jensen (2005) ride roughshod over the evidence concerning the question of whether the Black–White IQ gap has a hereditary basis. The most directly relevant research concerns degree of European ancestry in the Black population. There is not a shred of evidence in this literature, which draws on studies having a total of five very different designs, that the gap has a genetic basis. Adoption studies give scarcely more support to the heritability position. Finally, Black and White IQ scores have converged in recent decades, and in addition, we know that intervention programs can produce substantial and lasting effects on Black IQ. The most obvious policy relevance of this set of findings is that at-risk children—those born to impoverished women, especially those likely to be unable to provide a stimulating environment, and in particular children who have low birth weight or other factors predisposing to low IQ—should be exposed to the most extensive intervention programs that it is practical to provide. This group happens to include a disproportionate percentage of Black infants, but race need not, and perhaps should not, be made a criterion for inclusion.

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