Jensen and Intelligence

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Jensen's Contributions to the study of intelligence are discussed. The paper considers his writing on the topic of racial differences in scores on tests of intelligence. The paper concludes with a discussion of his research on the correlates of the *g* vector.

JENSEN AND RACE

...It is a peculiar sensation this double consciousness, this sense of seeing oneself through the eyes of others, of viewing one's soul by the tape of a world that looks on in amused contempt and pity. One ever feels his twoness—an American, a Negro;...

W.E.B. DuBois, *Souls of Black Folks*

This quotation, taken from a book published in 1903, is a doubly apt introduction to Jensen's work on race and intelligence. It reminds us of the effects of beliefs about racial differences on African-Americans who experience "the sense of seeing oneself through the eyes of others...by the tape of a world that looks on in amused contempt..." It is also descriptive of the perception of Jensen's work by many in the field of Psychology. Just as those he writes about are forced to see themselves through his lens, others see him through the lens of someone whose views about racial differences they may abhor or reject.

Jensen's contributions to an understanding of individual differences in intelligence extend far beyond a discussion of racial differences, but it is his work on race that often serves to define his contributions. Therefore, a discussion of his work on race is an apt beginning to an evaluation of his overall contributions. Jensen (1974; 1977) published one of the best studies demonstrating that extremely poor schooling could result in a cumulative deficit in the intellectual functioning of African-Americans. He used a sibling control design to demonstrate that African-American children attending schools in the segregated south in the 1950s exhibited a cumulative decline in intelligence relative to the intelligence of their younger siblings. He also found that this effect was not present for African-American children attending schools in Berkeley, California. These studies are illustrative of Jensen's imaginative ability to obtain data that address a critical issue. Jensen's results are

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INTELLIGENCE 26(3): 243-247
ISSN: 0160-2896

buttressed by an analysis of the consequences of deprivation of formal education associated with the decision of the Prince Edward County School Board in Virginia to avoid compliance with a court ordered desegregation plan (Green, Hoffman, Morse, Hayes, & Morgan, 1964). Green et al. found that African-American children who were deprived of the opportunity to attend public schools exhibited declines in intelligence of approximately six points per year for each year of deprivation of formal schooling. Jensen's results and the results of the Green et al. analysis are probably the two most convincing studies in the literature indicating that educational influences can reduce the intellectual functioning of African-Americans.

Robert Sternberg once wrote that he did not know why Jensen used his formidable psychometric knowledge and talent to address this particular issue (Sternberg, 1985). The choice of any of our research topics is mysterious and not illuminated by somewhat simplistic and reductionist analyses of political motives. I rather think, perhaps wrongly, that my interest in the field of intelligence derives in part from a personal and moral imperative I feel that compels me to differ with Jensen with respect to his views on race and intelligence. Nevertheless, I believe that anyone who wishes to write about the issue of race and intelligence must acknowledgeJensen's formidable contributions to this topic and his comprehensive knowledge of this area of research. Jensen's book on bias in testing is an extraordinarily thorough and scholarly analysis of the issue of test bias (Jensen, 1980). I like to compare this book with another book that I admire greatly, Paul Meehl's monograph on Statistical vs. Clinical Prediction (Meehl, 1954). Both books serve to define the principal issues that must be understood in addressing the topics that they consider. Both books develop their arguments with unusual clarity and sophistication. And, to a remarkable extent, the conclusions reached in both books have stood the test of time and become part of the canon of empirically established generalizations that define our knowledge of important topics. Jensen established what is now close to the received wisdom of knowledgeable students of intelligence - tests of intelligence are equally valid indices of the performance of individuals who differ with respect to their racial identification. In several technical senses of the term, they are not biased - a conclusion endorsed in the recently published report of the American Psychological Association's task-force on intelligence composed of individuals with diverse views of the field (Neisser et al., 1996).

I do not agree with Jensen's argument, developed in great detail in his forthcoming book on *g*, that genetic differences contribute to differences in performance on tests of intelligence between African-American and other racially identified groups (Jensen, 1998). I believe that his argument in favor of a genetic hypothesis is not well grounded and I hope to publish an analysis of my reasons for not accepting his arguments. It is easy for those who know little about Jensen's views or the detailed analysis of research he presents in support of his views to dismiss his arguments out of hand. It is hard to dismiss his arguments (but I believe possible to do so) if one reads him carefully and is informed about the literature. I believe that the reasons for group differences in scores on tests of intelligence can not be ascertained from the available data. Whether a determination of the reasons for the group differences in scores would be theoretically or socially useful is hard to know—it may depend in part on the reasons for the difference and what we can do to remediate the difference or to minimize its impact. And, whatever our differences may be about this issue, there is at least one belief about race and intelligence that we all share—within group racial differences are larger than between group differences.

Race does not define a person's score on a test of intelligence (or, for that matter, any other characteristic other than race).

I remember reviewing a paper by Jensen dealing with an analysis of the relationship between head circumference and the *g* vector that included data derived from two different racial groups (Jensen, 1994). In my review I noted that his discussion of his findings was not well-supported by his analyses and I suggested that he needed to rewrite his discussion to present a somewhat more cautious and weaker conclusion than he had presented. Jensen, on this occasion, agreed with me, and wrote a very generous letter to the editor of the Journal thanking me for my suggested emendations and changed the article to reflect my criticisms. I think that this episode is illuminating. Jensen is not an ideologue or a person who is not able to respond to criticism in a fair way. He is a scientist with formidable technical skills who strives for an understanding of the topics that he addresses. In this regard, his work is a model of scientific decorum. We should all strive to emulate his ability to test our beliefs against a recalcitrant reality that often is resistant to our ability to represent it in distorted ways. In the long run, if we are clever and honest, it will impose its structure and truth on us rather than ours on it.

G VECTORS

In my opinion, Jensen's most important contribution to the field is contained in his new book on the *g* factor (Jensen, 1998). In the first paper dealing with *g*, Spearman attempted to determine the *g* loadings of different measures of intelligence (Spearman, 1904). For much of this century, it has been understood that tests differed in their *g* loadings and there was a consensus about the kinds of tests that had the highest *g* loadings. Carroll's comprehensive re-analysis of the canon of correlation matrices derived from diverse measures of intelligence provides ample support for the proposition that tests with high loadings on *gf* have higher *g* loadings than other tests (Carroll, 1993). So, too, Marshalak, Lohman, and Snow's multidimensional scaling analysis of tests of ability demonstrates that tests with high loadings on *gf* such as the Ravens have higher *g* loadings than other tests (Marshalek, Lohman, & Snow, 1983). An examination of the contents and intellectual processes required for correct solution of tests that have high *g* loadings provides a basis for speculations about the nature of *g*.

Jensen (1998) has taken the analysis of *g* beyond the realm of metaphorical speculation. He derives *g* loading values for test batteries and then uses the vector of *g* loadings as a parametric index that can be related to other measures. These analyses provide a nomological network of laws and relations surrounding *g* that serves to specify the theoretical meaning of *g* construed as a hypothetical construct that is a variable component of different measures of intelligence.

Jensen (1998) links the *g* vector to several biologically relevant vectors. He notes that Pedersen et al. (1992) obtained heritability values for different tests in a battery of tests of intelligence administered to a sample of older Swedish adult MZ and DZ twins reared together and apart. The vector defining the heritability of the tests is correlated with the vector defining the independently ascertained *g* loadings, $r = .77$. Jensen provides additional evidence based on Wechsler sub-test *g* loadings indicating that the vector of *g* loadings is correlated with the vector of heritability values for Wechsler sub-tests.

Jensen reports other results indicating that the *g* vector is linked to biological indices. He analyzed data on head size and intelligence and obtained a vector for different tests of intelligence that represented the correlations between measures of head size and scores on different tests of intelligence (Jensen, 1994). This vector was correlated with the *g* loading vector. Head size is an imperfect index of brain size and the relationship between head size and intelligence indicates that intelligence is related to brain size. This establishes that the *g* vector is linked to a biological index of intelligence.

Jensen (in press) reanalyzed the data obtained from a French adoption study reported by Capron and Duyme (1989). This study used a complete cross-fostering design to study the effects of variations in social class background of biological and adopted parents on the IQ of adopted children. Previous analyses of these data indicated that children's IQ was influenced in an additive manner by the social class background of both adoptive and biological parents. The latter influence was found to be stronger than the former. Jensen obtained a vector defining the magnitude of the difference in Wechsler sub-test scores for adopted children reared in high and low social class families. He also obtained another vector defining the difference in sub-test scores of the Wechsler test for adopted children whose biological parents differed in social class background. This latter vector correlated with the vector defining *g* loadings for the sub-test scores, $r = .53$. The comparable correlation between the *g* loading vector and the vector of differences in sub-test scores defined by the social class background of an adopted child's adopted parents was .01. These data indicate that the nature of the influence of biological and adopted parents on an adopted child's IQ is different. The former influence varies with the *g* loading of the test and the latter influence does not, apparently influencing components of variance in an IQ test that are unrelated to *g*. This highly original analysis adds to the evidence suggesting that the *g* vector is a biologically influenced component of the variance in diverse measures of intellect and this analysis provides evidence that the nature of the influence on IQ of biological and adopted parents is both qualitatively and quantitatively distinct.

Jensen's analyses of the *g* vector also include studies relating the vector to vectors defining the predictive validities of sub-test scores on the Wechsler tests for measures of academic performance. He obtained correlations between *g* vector scores and the vectors of correlations between Wechsler sub-test scores and high school student's rank in class and college student's grade point average. The correlation with the *g* vector for the high school sample was .53 and the comparable correlation for the vector derived from the college student sample was .83. These analyses indicate that the predictive validity of a test of intelligence for a measure of academic success is related to the *g* loadings of the test.

Jensen's analyses of the correlates of *g* vectors provide the quantitative underpinning for what has long been apparent—*g* is a biologically influenced heritable component of the commonality among diverse measures of intellect that is related to the ability of individuals to acquire knowledge in formal academic contexts. Perhaps we have always known this, but following Jensen's highly original use of analyses of the correlates of *g* vectors we know this with a kind of quantitative precision not heretofore available.

Jensen's work on the correlates of the *g* vector reveals some of his best attributes—an ingenious ability to develop quantitative analyses that address fundamental issues in highly original ways that advance our knowledge of critical issues in the field.

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