



PERGAMON

Personality and Individual Differences 33 (2002) 1279–1284

PERSONALITY AND
INDIVIDUAL DIFFERENCES

www.elsevier.com/locate/paid

Jensen Effects and African/Coloured/Indian/White differences on Raven's Standard Progressive Matrices in South Africa

J. Philippe Rushton*

Department of Psychology, University of Western Ontario, London, ON, Canada N6A 5C2

Received 22 June 2001; received in revised form 23 November 2001; accepted 31 December 2001

Abstract

A test is made to determine whether various ethnic group differences on tests of cognitive performance in South Africa are like the Black/White differences in the United States in being positively associated with a tests' g loadings, where g is the general factor of intelligence. A non-parametric re-analysis is made of data from 1056 White, 1063 Indian, 778 mixed-race "Coloured," and 1093 Black 14 year olds on the Raven's Standard Progressive Matrices Test in South Africa, given without time limits by Owen (1992) [*Personality and Individual Differences*, 13, 149]. The new analyses showed that the more highly correlated an item was with g , the more it predicted the White/Indian/Coloured/African differences on the test (Spearman's ρ s from 0.35 to 0.85; all P s < 0.01). The effects remained regardless of which group g was extracted from. Understanding group differences around the world requires new research on the nature and nurture of g . © 2002 Published by Elsevier Science Ltd.

Keywords: IQ scores; g -Factor; Race differences

Black/White differences on cognitive performance tests in the United States are more pronounced on high g -loaded tests than they are on low g -loaded tests, g being the general factor of intelligence. Jensen (1980, p. 535) formally designated this view as "Spearman's hypothesis," because Spearman (1927, p. 379) was the first to suggest it. Subsequently, Osborne (1980) dubbed it the "Spearman–Jensen hypothesis" because it was Jensen who brought Spearman's hypothesis to widespread attention, and it was Jensen who did all the empirical work confirming it. More recently, to honor one of the great psychologists of our time, Rushton (1998) proposed that the term "Jensen Effect" be used whenever a significant correlation occurs between g -factor loadings and any variable, X ; otherwise there is no name for this finding, only a long explanation of how

* Corresponding author. Tel.: +1-519-661-3685; fax: +1-519-850-2302.

E-mail address: rushton@uwo.ca (J.P. Rushton).

the effect was achieved. Jensen Effects are not omnipresent and their absence can be as informative as their presence. For example, Rushton (1999) found that the Flynn Effect is not a Jensen Effect because the secular rise in IQ does not appear to be on g .

The Black/White difference on the g -factor is the best known of all the Jensen Effects. The reason Jensen pursued Spearman's (1927) hypothesis was because it so exquisitely solved a problem that had long perplexed him. Jensen had noted that the race differences were markedly smaller on tests of rote learning and short-term memory than they were on tests of abstract reasoning and transforming information. Moreover, culture-fair tests tended to give Blacks slightly lower scores than did more conventional tests, as typically did non-verbal tests compared with verbal tests. Furthermore, contrary to purely cultural explanations, race differences could be observed as early as 3 years of age, and controlling for socioeconomic level only reduced the race differences by four IQ points (Jensen, 1980, 1998).

After Jensen (1980) re-read Spearman, he realized that the Black/White differences were explained by the general hypothesis proposed by Spearman (1927, p. 379), namely that it "was most marked in just those [tests] which are known to be saturated with g ." Jensen tested Spearman's hypothesis by first extracting the g factor from a variety of cognitive tests (a vector of scores, i.e. possessing both direction and quantity), and then relating these scores to the standardized mean Black/White differences on those same tests (a second vector of scores). It is worth emphasizing that Spearman's hypothesis concerns the *relative* magnitude of the group difference across various tests that differ in their g loadings and not the *absolute* magnitude of group differences. It is therefore conceptually independent of any secular trend in absolute test scores, viz. the Flynn (1999) Effect.

In *The g factor* (1998, chap. 11), Jensen summarized the results from 17 independent data sets of nearly 45,000 Blacks and 245,000 Whites derived from 171 psychometric tests in which g loadings consistently predicted the magnitude of the Black/White difference ($r=0.63$; Spearman $\rho=0.71$, $P < 0.05$). Spearman's hypothesis was borne out even among 3 year olds administered eight sub-tests of the Stanford–Binet, where the rank correlation between g loadings and the Black/White differences was 0.71 ($P < 0.05$). Even when the g loading is calculated from performance on elementary reaction-time tasks which correlate with IQ (such as moving the hand to press a button to turn off a light, which all children can do in less than 1 s), the correlations between the g loadings of these tasks and the Black/White differences range from 0.70 to 0.81.

Subsequent studies of Black/White differences in g have come not only from the United States (Jensen, in press; Nyborg & Jensen, 2000), but also from the Netherlands (te Nijenhuis & van der Flier, 1997), and from South Africa (Lynn & Owen, 1994; Rushton, 2001; Rushton & Skuy, 2000). For example in South Africa, Rushton and Skuy (2000) gave untimed Raven's Standard Progressive Matrices to 309 17 to 23 year old first-year psychology students at the University of the Witwatersrand in Johannesburg. The 173 African students solved an average of 44 of the 60 problems whereas the 136 White students solved an average of 54 of the 60 problems ($P < 0.001$). There was no evidence of test bias because over 70% of the items were answered correctly by African students and the inter-item correlation matrices showed that the items "behaved" in the same way for both Africans and Whites. Nonetheless, by the standards of the 1993 United States normative sample, the African students scored at the 14th percentile and the White students scored at the 61st percentile, yielding IQ equivalents of 84 and 104, respectively.