Race, brain size, and IQ: The case for consilience

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Abstract: Data from magnetic resonance imaging (MRI), autopsy, endocranial measurements, and other techniques show that: (1) brain size correlates 0.40 with cognitive ability; (2) average brain size varies by race; and (3) average cognitive ability varies by race. These results are as replicable as one will find in the social and behavioral sciences. They pose serious problems for Rose’s claim that reductionistic science is inadequate, inefficient, and/or unproductive.

Rose (1999) clearly doesn’t like much of today’s behavioral and brain sciences, which he characterizes as filled with “reductionism,” “reification,” “arbitrary agglomeration,” “ultra-Darwinism,” and “neurogenetic determinism.” However, his proposed alternatives, autoepistemology and homeodynamic lifelines – inasmuch as they actually involve anything different – are unlikely to generate testable predictions the sine qua non of science. That is why I associate myself with those commentators (like Alcock 1999) who argued that, based on its long track record of success, to assume some sensible degree of reductionistic determinism is the way of science. That is also the view of E. O. Wilson (1998, pp. 30–31), in whose “sociobiological footsteps” I am proud to follow, and who brings up the relationship between brain size and IQ, and he made mention of a review by Jensen and Sinha (1994) only in passing. No one referred to the remarkable Magnetic Resonance Imaging (MRI) studies showing a correlation of 0.40 existing between brain size and IQ among humans. There are now well over a dozen MRI studies (e.g., Gur et al. 1999; Tan et al. 1999; see Rushton 1995 and Jensen 1998 for reviews). The MRI brain-size/IQ correlation provides a challenge to Rose’s anti-reductionism. Brains have evolved via natural selection for behavioral complexity (i.e., intelligence), they show substantial heritable variance and, worst of all from Rose’s perspective, they show racial variation at birth, 4 months, 1 year, 7 years, and adulthood (see Fig. 1; Rushton 1997).

Rushton’s (1997) study, based on the enormous (N = 35,000)
Collaborative Perinatal Project, also found that at age 7, brain volume estimated from external head size measures correlated 0.20 with IQ scores in the East Asian subsample, just as it had earlier been shown to do in the white and black subsamples (Broman et al. 1987). Although the more accurate MRI measure of brain size yields correlations much higher than the 0.20 in other samples, the head circumference correlation of 0.20 is still significant. Moreover, the Asian subsample in the study averaged a higher IQ (110) at age 7 than did the white (102) or the black subsamples (90).

The pattern of increasing mean brain size from Africans to Europeans to East Asians is not based on a single isolated study or two. It has been corroborated many times in modern studies using four different techniques: wet brain weight at autopsy; volume of empty skulls using filler, volume estimated from external head size measures correlated 0.20 (Broman et al. 1987). Although the more accurate MRI measure of brain size has, on average, 600 million fewer cortical neurons (based on a partial count of representative areas of the brain) and brain size in humans. His sample included both men and women. The regression equation relating the two measures is: number of cortical neurons (in billions) = 5.583 + 0.006 (cm³ brain volume). Thus, a person with a brain size of 1,400 cm³ has, on average, 600 million fewer cortical neurons than an individual with a brain size of 1,500 cm³. The difference between the low end of the normal distribution for adult brain size (1,000 cm³) and the high end (1,700 cm³) works out to be 0.479 (N = 81, P < 0.001) between number of cortical neurons (based on a partial count of representational areas of the brain) and brain size in humans. His

References


Steven Rose has declined to respond to the above Continuing Commentary.