

## Asian Achievement, Brain Size, and Evolution: Comments on A. H. Yee

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*Asian achievement is now recognized to be global in manifestation. Yet most explanations of group differences remain narrowly focused on one country (the U.S.A.), on one character (test scores), and from one viewpoint (environmentalism). I offer an evolutionary perspective. Genetic distance estimates indicate an African origin for humans about 200,000 years ago, a dispersal event out of Africa about 110,000 years ago, and a Mongoloid-Caucasoid split about 41,000 years ago. This racial succession is matched by cranial capacities, IQ test scores, speeds of decision time, and numerous other life-history variables including rate of physical maturation, family functioning, testosterone level, law-abidingness, and frequency of dizygotic twinning. Evolutionary selection pressures are more cognitively demanding in the cold arctic where mongoloids evolved than in the hot savanna where Africans evolved. Genetic theories are needed to explain the proportionate group differences.*

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KEY WORDS: brain size; evolution; genetics; intelligence; race differences.

### INTRODUCTION

Yee's (1992) criticism of my work on Asian IQ and his disparagement of the idea of inherited advantage obligates a reply, especially because he completely muddles my causal analysis. Yee writes (p. 108):

Rushton argues that superiority in IQ arises from Asians: (a) having evolved more recently than whites, (b) being more sexually restrained than other races, (c) being

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However, the vexing question of whether test scores are at all revelatory about racial group differences in mental ability remains. At bottom, the problem hinges on whether the tests are culture-bound. Doubts continue to linger in many quarters, although a large body of technical work has disposed of this problem at the level of psychometric expertise (the tests show similar patterns of internal item consistency and predictive validity for all groups, and the same differences are to be found on relatively culture-free tests).

Novel data from speed of decision making now show that the racial group differences in mental ability are pervasive. Cross-cultural investigations of reaction time have been carried out on 9- to 12-year-olds from six countries. In these elementary tasks, children must decide which of several lights is on, or stands out from others, and move the hand to press a button. All children can perform the task in less than one second, but more intelligent children, as measured by traditional IQ tests, perform the task faster than do less intelligent children. Lynn (1991) found that Oriental children from Hong Kong and Japan are faster in decision time than White children from Britain and Ireland, who in turn are faster than Black children from Africa (see also Lynn and Shigehisa, 1991). Using similar tests, the same three-way racial pattern is found in Oakland, California (Jensen, 1993; Jensen and Whang, 1993).

### THE GENETICS OF RACIAL INTELLIGENCE

Multifarious sources of evidence suggest that the racial differences in intelligence are partly genetic. For example, Black-White differences are most pronounced on the more *g*-loaded subtests, that is, the general factor common to diverse cognitive tests (Jensen, 1985). The *g*-loadings are related to a number of biological variables including brain evoked potentials, heritability coefficients determined from twin studies, and the degree to which children's test scores are depressed by inbreeding and are raised by outbreeding (Jensen, 1987). Also, Black-White differences on the 11 subtests of the Wechsler Intelligence Scale for Children (WISC) are directly predicted by the magnitude of the inbreeding depression effect, as established independently in the Japanese population (Rushton, 1989). There really is no other explanation for inbreeding depression than a genetic one.

Transracial adoption studies also reveal genetic influence. There have been at least three studies of Korean and Vietnamese children adopted into White American and White Belgian homes (Clark and Harris, 1975; Winick, Meyer, and Harris, 1975; Frydman and Lynn, 1989). As babies, many of these

children had been hospitalized for malnutrition. Nonetheless, they grew to excel in academic ability with IQs ten or more points higher than their adoptive national norms. By contrast, Weinberg, Scarr, and Waldman (1992) found that at age 17, Black and Mixed-Race children adopted into White middle-class families performed at a lower level than did the White siblings with whom they had been raised. Adopted White children had an average IQ of 106, an average aptitude based on national norms at the 59th percentile, and a class rank at the 54th percentile; Mixed-Race children had an average IQ of 99, an aptitude at the 53rd percentile, and a class rank at the 40th percentile; and Black children had an average IQ of 89, an aptitude at the 42nd percentile, and a class rank at the 36th percentile.

### BRAIN SIZE

A small, but robust relation has been firmly established between mental ability and brain size. The correlation between test scores and brain size estimated from magnetic resonance imaging which, in effect, constructs a three-dimensional picture of the brain *in vivo*, averages at about 0.40 (Andreasen *et al.*, 1993; Raz *et al.*, 1993; Wickett, Vernon, and Lee, 1994; Willerman *et al.*, 1991). This represents a substantial increment over correlations reported since the turn of the century between head perimeter and measures of intelligence which average about 0.20 (Broman *et al.*, 1987; Rushton, 1995; Wickett *et al.*, 1994). The head perimeter-IQ relation has been found within samples of Orientals as well as Whites (Rushton, 1992c). Jensen and Johnson (1994) have found that head size is significantly correlated with IQ *within-families* (i.e., among same-sex full siblings, with age partialled out), thus indicating a functional relation between brain size and IQ.

Racial differences in brain size and IQ show up early in life. Data from the National Collaborative Perinatal Project show that 19,000 Black infants have a smaller head perimeter at birth, and are shorter in stature, lighter in weight, and have an earlier age of gestation than 17,000 White infants (Broman *et al.*, 1987). By age seven, catch up growth favors the Black children in body size but not in head perimeter. Head perimeter at birth correlated with IQ at age seven in both the Black and the White children.

Although racial differences in brain size were widely believed to exist in the nineteenth and early twentieth century, more recently it has been thought that differences disappear when corrections are made for body size and other variables. Modern studies, however, have confirmed the earlier findings. Three main procedures have been used: weighing wet brains after

death, filling empty skulls with lead shot and then measuring the volume of filler, and converting external head sizes into cranial volume. Data from all three sources converge on the conclusion that, after statistical corrections are made for body size, mongoloids average about 17 cm<sup>3</sup> (1 cubic inch) more than caucasoids and about 80 cm<sup>3</sup> (5 cubic inches) more than negroids (Rushton, 1995).

Consider modern evidence on brain size differences. For weight at autopsy, Ho *et al.* (1980) summarized data for 1261 Americans aged 25–80 after excluding obviously damaged brains. They reported a significant sex-combined difference between 811 Whites with a mean of 1323 g (SD = 146) and 450 Blacks with a mean of 1223 g (SD = 144). This difference remained after controlling for age, stature, body weight, and total body surface area. With endocranial volume, Beals *et al.* (1984, p. 307, Table 5) analyzed the world database of up to 20,000 crania and found sex-combined brain cases differed by continental area. Excluding Caucasoid areas of Asia (e.g., India) and Africa (e.g., Egypt), 19 Asian populations averaged 1415 cm<sup>3</sup> (SD = 51), ten European groups averaged 1362 cm<sup>3</sup> (SD = 35), and nine African groups averaged 1268 cm<sup>3</sup> (SD = 85).

As to external head measurements, I have conducted several studies and have found consistent evidence of east Asian advantage after corrections are made for body size. For example, in a stratified random sample of 6325 U.S. Army personnel measured in 1988 for fitting helmets, Asian Americans, White Americans, and Black Americans averaged cranial capacities, respectively, of 1416, 1380, and 1359 cm<sup>3</sup> (Rushton, 1992b). Data from tens of thousands of men and women aged 25 to 45, collated by the International Labour Office in Geneva, showed that samples from the Pacific Rim, from Europe, and from Africa, averaged cranial capacities, respectively, of 1308, 1297, and 1241 cm<sup>3</sup> (Rushton, 1994).

#### OTHER VARIABLES

The range of variables showing the same worldwide racial matrix may come as a surprise. Consider crime, a problem behavior often linked to educational and family functioning. The racial pattern in crime statistics found within the U.S. occurs globally. African and Caribbean countries have double the rate of violent crime as European countries and three times more than do countries in the Pacific Rim. Summing over the three crime categories of rape, serious assault, and homicide for data compiled for the 1980s by INTERPOL, the international police organization, I found rates per 100,000 population, respectively, of 142, 74, and 43 (Rushton, 1990).

As reviewed in *Race*, differences exist in the average level of the male sex hormone, testosterone. Studies show 3–19% more testosterone in Black college students and military veterans than in their White counterparts. Studies among the Japanese show a correspondingly lower amount of testosterone than among White Americans. Sex hormones may not only predispose to an aggressive personality but also account for why it is that around the world the rate of dizygotic twinning per 1000 births (caused by a double ovulation) is less than four among mongoloids, about eight among caucasoids, and 16 or greater among negroids (Bulmer, 1970). Hormones also explain the worldwide surveys showing a greater degree of sexual activity in negroids compared to caucasoids and especially to mongoloids.

## DISCUSSION

Yee (1992, p. 109) claims that I stereotype the races by not discussing differences in any probabilistic sense. However, in my U.S. Army data I clearly point out that there is only a 4% difference in cranial capacity between Asian Americans and African Americans and that it is problematic to generalize from a group average to any particular individual (Rushton, 1992b). As one example of overlap, I show that Black officers average larger cranial capacities than White enlisted personnel. I agree that it is important not to exaggerate the findings and to emphasize the wide variability that exists within each of the three macro-races.

However Yee (1992) denigrates the value of the race concept altogether, calling it a “myth” (see also Yee *et al.*, 1993). This is not so. As incisively stated by Levin (1995), in everyday life, as in evolutionary biology, a “negroid” is someone whose ancestors were born in sub-Saharan Africa, and *mutatis mutandis* for “caucasoid” and “mongoloid.” This definition requires temporal bounds, to be set by the best theory of human dispersal. Thus, if *Homo sapiens* first appeared in Africa, branched off into Europe about 110,000 years ago, and into Asia 70,000 years after that, a “negroid” is someone whose ancestors between 4000 and (to accommodate recent migrations) 20 generations ago were born in sub-Saharan Africa—*mutatis mutandis*, again, for caucasoid and mongoloid.

Self-identification and other-identification — that is, the social definition — accords well with physical evidence. Mongoloids, caucasoids, and negroids can be distinguished on the basis of obvious differences in skeletal morphology, hair and facial features, and molecular genetic information. Forensic anthropologists regularly classify the skeletons of

decomposed victims by race. For example, narrow nasal passages and a short distance between eye sockets mark a caucasoid, distinct cheekbones identify a mongoloid, and nasal openings shaped like an upside down heart typify a negroid (Ubelaker and Scammel, 1992). The race of a perpetrator is increasingly identifiable from blood, semen, and hair samples.

To deny the predictive validity of race is absurd. By accepting and studying our differences we may yet learn to affirm our common heritage.

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