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Racial and ethnic differences in intelligence in the United States on the Differential Ability Scale

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Summary—The standardization of the Differential Ability Scale in the United States provides new normative data for general intelligence and for verbal, reasoning and spatial abilities for Asian, black, Hispanic and white groups. In general, mean IQs are highest among the Asians and decline successively among whites, Hispanics and blacks. The details of the data for the four abilities for the four groups are given and provide a number of interesting results.

INTRODUCTION

The standardization sample of the Differential Ability Scale in the United States provides some useful and hitherto unpublished normative data on the intelligence of Asians, blacks, Hispanics and whites. In particular, the results of the standardization study provide evidence on three issues of current interest. These are, firstly, whether the black–white difference in intelligence has been decreasing from the 1960s onwards. Herrnstein and Murray (1994) review evidence from several studies on intelligence tests and educational achievement tests which show a reduction in the black–white difference. For instance, the difference on the Scholastic Aptitude Test (the SAT) from 1976 to 1993 fell from 1.16 to 0.88 standard deviations on the verbal section of the test, and from 1.27 to 0.92 standard deviations on the math section. However, there is a problem with these data in so far as the SAT is only taken by a minority of high school seniors for college entrance. Possibly the best normative samples are the standardization samples of the Wechsler tests. In the standardization sample of the WISC-R carried out in 1972, the black–white difference was 15.8 IQ points, and in the standardization sample of the WAIS-R, carried out in 1980, the difference was 14.5 IQ points (Jensen & Reynolds, 1982; Reynolds, Chastain, Kaufman & McLean, 1987). This difference might be considered a slight reduction of the black–white difference, or alternatively it might be regarded as a sampling error. The standardization data of the DAS were collected in 1986 and hence provide evidence for the possibility of a continued secular reduction in the black–white difference in mean IQ.

A second issue on which the standardization data of the DAS provides useful information concerns the mean IQ of American Asians. There has been research on this question from the 1920s. Much of this was reviewed by Vernon (1982), who concluded that the research evidence as a whole indicated that American ethnic Orientals have a mean verbal IQ of 97 and mean non-verbal and spatial IQs of 110. If these estimates of verbal, non-verbal and spatial IQs are averaged to give a mean for general intelligence we arrive at a figure of 106. This conclusion has been disputed by Flynn (1991) on the grounds that most of the studies fail to correct the IQs of Orientals for outdated test norms. Flynn's own review of the evidence arrives at the conclusion that the mean IQ of American ethnic Orientals is 97.5. However, this figure is essentially a 'guestimate' because there are no satisfactory normative studies of the intelligence of American ethnic Orientals. It should be noted that American ethnic Orientals are not identical to American ethnic Asians. Orientals are those belonging to the anthropological category of Mongoloids indigenous to Asia north of the Himalayas and east of the Yenisey river. Ethnic Asians are those from the whole of Asia and its offshore islands including the Philippines and Taiwan. The standardization sample of the DAS provides possibly best evidence to date on the mean IQ of American ethnic Asians.

A third issue on which the DAS standardization sample contains useful data concerns the average IQ of Hispanics. The Coleman (1966) Report of extensive data collected in the mid-1960s found that Hispanics had a mean IQ 12.6 points below whites, while the National Longitudinal Study of Youth data yielded a Hispanic mean 13.9 IQ points below whites (Herrnstein & Murray, 1994). If the white IQ is set at 102.2, as in the WISC-R standardization sample data, reported by Jensen and Reynolds (1982), these two studies indicate a mean Hispanic IQ of approx. 89.0 in relation to a total American population mean of 100. The standardization sample of the DAS provides further information on this question.

METHOD

The Differential Ability Scale consists of 22 subtests from which subsets are used to give scores based on means of 100 and standard deviations of 15 for General Cognitive Ability, Verbal Ability (Vocabulary and Similarity tests), Non-verbal Reasoning (Matrices, Sequential and Quantitative Reasoning tests) and Spatial Ability (Pattern Construction and Recall of Designs tests). The test is divided into two levels, one for school age children aged 6.0–17.0 yr and the other for preschool children aged 2.5–5.11 yr. The DAS was standardized in the United States in 1986 on a representative sample of the population stratified by age, sex, race (black, Hispanic, white, Asian), geographical location, urban–rural areas, parental socio-economic status and educational preschool enrolment. The characteristics of the total population to which the standardization sample was matched were obtained from the Current Population Survey of 1986. The sample size consisted of 3298 children, of whom 2260 were 6–17 yr olds and 1038 were 2.5–5.11 yr olds. Full accounts of the standardization of the test, reliabilities, validities and other information are given in the test manual (Elliott, 1990).

Table 1. Means and standard deviations of ethnic American groups aged 6–17 yr on the Differential Ability Scale

	Asians $N = 48$		Blacks $N = 254$		Hispanics $N = 266$		Whites $N = 1692$	
Abilities	Mean	SD	Mean	SD	Mean	SD	Mean	SD
General cognitive	107.17	14.05	89.19	14.06	93.86	13.37	102.65	14.25
Verbal	102.65	17.71	91.76	14.04	92.58	14.90	102.15	14.17
Reasoning	108.81	13.52	91.15	14.94	94.10	14.13	102.29	14.40
Spatial	106.81	12.05	89.42	14.12	97.80	13.30	102.07	14.47

Table 2. Means and standard deviations of ethnic American groups aged 2.6–5.11 yr on the Differential Ability Scale

		Blacks			Hispanics			Whites		
Ability	Age	N	Mean	SD	N	Mean	SD	N	Mean	SD
General	2.6–3.5	57	91.54	13.44	39	95.97	14.43	247	102.99	14.10
General	3.6–5.11	112	86.67	13.26	78	93.58	12.04	505	103.56	13.70
Verbal	3.6–5.11	112	87.07	12.55	78	87.50	14.15	505	104.42	13.34

RESULTS

The means and standard deviations for the 6.0–17.0 yr old age group for General Cognitive, Verbal, Reasoning and Spatial Abilities are given in Table 1, and for 2.5–5.11 yr olds in Table 2. The preschool test gives scores only for General Cognitive Ability for 2.5–3.5 yr olds and for General Cognitive Ability and Verbal Ability for 3.5–5.11 yr olds. Asians are omitted from this subsample because the numbers are too few to be meaningful.

The statistical significance of the differences between the group means was tested by Scheffé tests. These show that the differences are statistically significant at least at the 5% level except for the following pairs. Table 1 on general cognitive: Asians–whites; on verbal: blacks–Hispanics, Asians–whites; on reasoning: blacks–Hispanics; on spatial: Asians–whites. Table 2 on verbal: blacks and Hispanics.

DISCUSSION

There are four major points of interest in the results. Firstly, they provide evidence on whether the black–white difference in intelligence has decreased from the 1960s. Numerous studies on the black–white difference from the time of World War One have found a difference in general intelligence of approx. 1 SD or 15 IQ points (Herrnstein & Murray, 1994). Generally the difference is a little less on verbal ability and is a little greater on spatial ability. In the present data the black–white difference in General Cognitive Ability is 13.46 IQ points for the 6–17 yr old age group, 15.06 IQ points for the 2.5–6 yr old group and 13.97 IQ points for the total sample. This difference is a little less than the 15.8 IQ point difference found in the WISC-R standardization sample of 1972 and the 14.5 difference in the WAIS-R standardization sample of 1980. Possibly this reduction in the black–white difference is a real gain for blacks. Possibly, however, it is due to the DAS being less g loaded, since there is much evidence that the magnitude of the black–white IQ difference is a function of the g loading of the tests (Jensen, 1985). Furthermore the finding in the DAS data that the black–white difference is greater among 2–5 yr olds than among 6–17 yr olds tells against the possibility that the difference is narrowing over time. It seems clear that the present results are inconclusive and that further normative data collected in the future will be necessary to determine whether there is any secular trend for a reduction in the black–white difference.

A second point of interest in the results lies in the black–white differences on Verbal, Reasoning and Spatial abilities. We note that they amount to 10.39, 11.14 and 13.65 IQ points, respectively. These results confirm the conclusion reached by Jensen on a number of occasions that the black–white difference is least on verbal ability and greatest on spatial ability (Jenson & Reynolds, 1982; Jenson 1994).

The third item of interest in the results concerns the mean IQs of the Asian sample. On General Cognitive Ability they obtain a mean 4.42 IQ points higher than whites. Although Asians are not synonymous with Orientals, as noted in the introduction, it can be assumed that they are predominantly Oriental. In the 1980 American census about two-thirds of Asians were Oriental (Chinese, Japanese, Korean and some Vietnamese) and the remaining third non-Oriental Asians (mainly Filipinos and some Vietnamese). The figures are given by Lieberson and Waters (1988). We assume therefore that the Asian group in the DAS standardization sample is predominantly Oriental. Their high IQ obtained in this sample is contrary to the conclusion advanced by Flynn (1991) and confirms that of Vernon (1982) for American ethnic Orientals, and also my own conclusion that Oriental peoples world wide, e.g. in Japan, Taiwan, Hong Kong, Singapore, China and South Korea typically obtain mean IQs 2–5 points higher than those of American and European Caucasians (Lynn, 1977, 1987, 1991; Lynn & Song, 1994).

A further point of interest is that the Asian group is strongest on non-verbal reasoning and spatial ability, where its advantage over American whites is 6.52 and 4.74 IQ points, respectively, and less on verbal ability, where its advantage is a negligible 0.5 IQ points. This distinctive pattern of Oriental abilities has been repeatedly found both in the United States and in their indigenous homelands in the Pacific rim (Vernon, 1982; Lynn, 1987; Flynn, 1991).

Turning finally to the white–Hispanic differences, the white advantage on General Cognitive Ability for 6–17 yr olds amounts to 8.79 IQ points. Thus the Hispanic mean IQ falls intermediate between the black and the white, but closer to the black. This is consistent with previous studies of the Hispanic IQ noted in the introduction. It is noteworthy also that the

Hispanic–white difference is greatest on verbal ability (9.57 IQ points, possibly reflecting language handicaps in English), and much less on spatial ability (4.27 IQ points).

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