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Short Communication

A Study of the Intelligence of Xhosa Children in South Africa

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A sample of 379 primary school pupils in South Africa given the Raven's Colored Progressive Matrices obtained a British "Greenwich IQ" of 65. The result is discussed in relation to other studies using cognitive tests in South Africa.

Key Words: Intelligence; South Africa; Progressive Matrices; Xhosa; CPM.

There has been controversy regarding the intelligence of sub-Saharan Africans. In his compilation of race differences in intelligence, Lynn (2006) gave results for 57 sub-Saharan African samples for which the median "Greenwich IQ" was 67. The term Greenwich IQ was proposed by Rindermann (2012) to designate the average IQ of a population in relation to 100 (and standard deviation of 15) in Britain, analogous to the measurement of longitude which is set as deviations from zero through Greenwich. Lynn's conclusion that the Greenwich IQ of sub-Saharan Africans is 67 was disputed by Wicherts, Dolan, Carlson and van der Maas (2010), who contended that the Greenwich IQ of sub-Saharan Africans measured by Raven's Progressive Matrices is 76, and in a further paper by Wicherts, Dolan and van der Maas (2010), who contended that average IQ of sub-Saharan Africans measured by tests other than the Progressive Matrices is 82. These contentions were disputed by Lynn (2010) and Lynn and Meisenberg (2010), who maintained that the Greenwich IQ of sub-Saharan Africans was correctly estimated at 67. The objective of this paper is to

present further evidence on this issue from the Xhosa in the Eastern Cape province of South Africa.

Method

The study used Raven's Colored Progressive Matrices (CPM), a nonverbal intelligence test that requires the recognition of visual patterns and their analysis according to increasingly abstract rules involving symmetry, alternation, numerosity and directionality of component elements (Raven, Court and Raven, 1995). Together with the more difficult Standard Progressive Matrices (SPM), the CPM is one of the most widely used tests of non-verbal intelligence in cross-cultural research (Raven, 2000).

The test was administered to a sample of 379 primary school pupils in South Africa in an investigation presented as a study designed to provide normative data for Xhosa speaking primary school pupils. The sample is described as "peri-urban," being drawn from representative primary schools in the Grahamstown region in the southeast of the country. The study was presented originally as an unpublished Master's thesis at Rhodes University, Grahamstown (Bass, 2000), and published some years later (Knoetze, Bass and Steele, 2005).

Results

Raw scores on the CPM are presented in Table 1 for those age categories containing 5 or more subjects. Also shown are the IQ equivalents according to British norms derived from the CPM standardizations in 1982 (Raven, Court and Raven, 1995) and in 2007 (Raven, 2008a). The time of the study is assumed to be 1999, one year before publication of the thesis. Therefore we calculated the British-equivalent IQ at the time of testing as the time-weighted average for 1999 from the 1982 and 2007 IQs:

$$IQ1999 = (IQ1982 \times 8 + IQ2007 \times 17) / 25$$

Because the British standardizations of the CPM reach only up to the age of 11.5 years, the IQs of the older age groups were calculated by converting the CPM raw scores in Table 1 to the equivalent scores on the Standard Progressive Matrices (SPM) using the conversion table in Raven, Raven and Court (1998). From these scores, the IQs were calculated according to the norm tables of the British SPM standardizations in 1979 (Raven, Raven and Court, 1998) and 2007 (Raven, 2008b). There are no British norms for age 16 in the British 1979 standardization of the SPM.

The last row in Table 1 shows the raw score and IQ averages calculated from the individual age groups with weighting for sample size. The mean "Greenwich IQ" of the sample is calculated as approximately 65 according to British norms at the time of testing.

Table 1. *Raw score means and scaled scores (IQs) of Xhosa children on the CPM. IQs are based on the British CPM standardizations in 1982 and 2007 for age 7.5 to 11.5 years, and on the 1979 and 2007 SPM standardizations for older ages.*

Age	N	Raw score	1982/79 IQ	2007 IQ	1999 IQ
7.5	6	13.3	77	66	69.5
8	14	14.6	78	65	69
8.5	19	17.4	84	67.5	73
9	27	14.7	75	≤57	63
9.5	16	15.1	73.5	≤56	62
10	27	16.8	75	≤57	63
10.5	31	19.8	78	64	68.5
11	32	20.0	75	60	65
11.5	24	22.1	75	64	67.5
12	18	20.9	70	60	63
12.5	23	22.1	71	61.5	64
13	22	23.8	73	66	68
13.5	21	22.1	70	60	63
14	27	23.7	71	62	64.5
14.5	14	22.7	≤68	≤58	61
15	22	24.0	≤68	61	63
15.5	14	23.9	≤68	60	62
16	5	23.8		60	
Total	362	20.2	73.6	61.3	65.2

Discussion

This study shows that the CPM scores of Xhosa speaking schoolchildren in the Eastern Cape province of South Africa are similar to those obtained by the ethnically and linguistically related Zulu speakers in the neighboring province of KwaZulu-Natal on the same test, as reported in the companion paper about Zulu children in Natal (Bakhiet, Lynn and Meisenberg, this issue). Despite their local nature, these results confirm those of other studies with cognitive tests in South Africa, which showed a median IQ of 71 for black South Africans. The results show that at the times the studies were performed (1999 with the Xhosa, 2002

and 2004 with the Zulu), educational reforms that had been initiated in South Africa after the end of apartheid in the early 1990s (Fiske & Ladd, 2004; Ndimande, 2009) had not been fully effective in raising the cognitive level of black schoolchildren. Future studies will have to show whether this situation has changed in recent years. These studies and others of their kind should be treated as part of an ongoing monitoring of educational progress in South Africa.

The result further supports the estimate of 67 for the average sub-Saharan IQ made by Lynn (2006), and disconfirms the claims made by Wicherts, Dolan, Carlson and van der Maas (2010) and Wicherts, Dolan and van der Maas, (2010) that the Greenwich IQ of sub-Saharan Africans is 76 measured by Raven's Progressive Matrices and 82 measured by tests other than the Progressive Matrices. In their paper on the Progressive Matrices, Wicherts, Dolan, Carlson and van der Maas (2010) obtained their estimate of a Greenwich IQ of 76 for sub-Saharan Africans by discarding a number of studies of adults on the Coloured Progressive Matrices test on the grounds that their scores were near the maximum of 36 and were consequently depressed by ceiling effects. This controversial contention cannot explain the present result, where the mean score of 20.2 is well below the maximum score of 36. It is concluded that the present study supports Lynn's (2006) estimate of 67 as the Greenwich IQ of sub-Saharan Africans.

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