

A Study of the Intelligence of South Sudanese Refugee Children

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Data are reported for the intelligence of a sample of 2,990 South Sudanese refugee children aged 7 to 18 years tested with the Standard Progressive Matrices in 2016. The average British-scaled IQ of this sample is estimated to be at or below 55.

Key words: South Sudan, Standard Progressive Matrices, Intelligence, IQ tests, Refugees.

The southern part of Sudan seceded to become the independent nation of South Sudan in July, 2011. The principal reason for this secession was that the people of the southern part of Sudan are ethnically different from those of the center and the north. A genetic analysis by Cavalli-Sforza, Menozzi and Piazza (1994, Figure 3.9.1, p. 181) showed that the South Sudanese are principally a Nilotic people, one of the four sub-races of Negroids (Baker, 1974, p. 329), while the people of central and northern Sudan are a mixed race population consisting principally of North African Caucasoids (K.C.B., 1960, p. 512-3).

An early study of the intelligence of the Nilotic people in South Sudan had been carried out in 1954 by Fahmy (1964). He administered four tests to a sample of 291 school children aged 7-16 years, whom he described as “one of the primitive Nilotic Negro tribes” (p. 164) inhabiting the west bank of the White Nile and belonging to the Shilluk people. The four tests and the mean American-scaled IQs obtained by the sample were 73.5 on the Goddard Formboard, 76.5 on the Porteus mazes, 94.4 on the Alexander Passalong, and 53.4 on the Goodenough Draw-a-Man (DAM). The average IQ on the four tests is 74.5. The norms for these American tests were collected in the 1920s and 1930s and the Sudanese IQs do not take account of the increases in intelligence of approximately 3 IQ points a decade that have taken place in the United States (Flynn, 1984). Lynn and Vanhanen (2012) make an adjustment for the increases in intelligence to reduce the IQ of the Sudanese sample to 69 but this is not a satisfactory study because of the differences in the IQs obtained from the four tests, the long time interval between the date of the American norms and the collection of the data in Sudan, and the more than sixty years since the study was carried out. We report here a recent study of the intelligence of the South Sudanese.

Method

The sample consisted of 2990 children (1584 males, 1405 females) from South Sudan, age 7-18, at schools in two refugee camps that were established in Sudan for those adversely affected by the wars in South Sudan. They attended schools supervised by the Sudanese Red Crescent Society and funded by UNHCR, WFP and UNICEF. The first camp was in Alsalam and held 2524 children from the Shilluk tribe, and the second was in Algablain and held 466 children from the Nuer tribe. The children and teachers completed research participation consent forms. The children were tested in 2016 with the Standard Progressive Matrices (SPM) test (Raven, Raven & Court, 2000) without time limits by four trained psychologists. The SPM is a non-verbal test of visual comprehension and reasoning. It is widely used as a “culture-reduced” test of cognitive development in cross-cultural research because it does not require knowledge that is taught explicitly in school.

Results

Table 1 gives the numbers, SPM scores and British-scaled IQs of the sample. Because of strong British Flynn effects for children up to about age 12 (though not for teenagers), IQs were calculated separately from the norm tables of the British 1979 and 2007 standardizations. In the case of the 2007 standardization

OSMAN, H.A. *et al.* INTELLIGENCE OF SOUTH SUDANESE REFUGEE CHILDREN of the SPM+ (an updated, more difficult form of the test), the British-scaled IQs were calculated by converting the Sudanese SPM raw scores to SPM+ scores using Table SPM3 in Raven, Raven and Court (2000), and calculating the British IQs from Table A1 in Raven (2008). The mean British IQ of the twelve age groups cannot be determined precisely because most of the scores are outside of the norming range of the British standardizations. The 2007 standardization produces estimated IQs below 55 for all ages older than 8 years. Results are similar when the IQs are calculated from the British 1979 norms, which again produce IQs below the lower limit of the norming range.

Table 1. *Standard Progressive Matrices raw scores and IQs according to British norms from the test standardizations in 1979 and 2007.*

Age	N	Score \pm SD	British-scaled IQ	
			1979	2007
7	187	10.8 \pm 6.3	75	63
8	159	10.3 \pm 4.7	\leq 70	59
9	279	11.4 \pm 4.9	\leq 70	<55
10	271	10.9 \pm 5.5	<70	<55
11	303	12.5 \pm 7.3	<70	<55
12	273	13.8 \pm 7.7	<70	<55
13	336	14.3 \pm 7.8	<70	<55
14	295	17.7 \pm 10.8	<70	<55
15	263	16.8 \pm 11.1	<70	<55
16	202	20.5 \pm 12.8		<55
17	222	22.2 \pm 12.7		<55
18	182	24.1 \pm 13.5		<55

Discussion

The main result of this study is an extreme floor effect that was observed through the entire age range. The SPM test consists of 60 items, each with either 6 (sets A and B) or 8 answer choices (sets C, D and E). Therefore random guessing alone will earn an average raw score of 8.5 items guessed correctly. The results of this South Sudanese sample show that up to the age of 10 years, very few children were able to solve any of the visual puzzles of this test, including the very first items that require simple visual matching rather than abstract reasoning.

Above age 10 we do see the expected rise in scores with increasing age, but the results are outside the norming range of the British 2007 standardization. For example, for 18-year-olds in the 2007 standardization of the SPM+, the corresponding SPM score at the 50th percentile of the distribution is 49. This

defines an IQ of 100. At the 0.4th percentile, which marks an IQ of 60, British 18-year-olds have a raw score of 32. Therefore a precise IQ cannot be calculated from the South Sudanese raw score of 24.1. A more meaningful comparison is that the mean score of 18-year-old South Sudanese is at the 25th percentile of British 7-year-olds in 2007 (IQ 90), or at the 60th percentile of British 7-year-olds in 1979 (IQ 105). At age 15, which is the oldest age included in the British standardization of 1979, the British median (IQ 100) was 47 raw score points and the 5th percentile (IQ 75) was 33 raw score points, compared with the South Sudanese mean of 16.8 points.

The British-scaled IQ of less than 55 is one of the lowest recorded for any sample from sub-Saharan Africa. Lynn (2015, p. 59) gives 143 studies of the IQ of Negroid samples for which the median is 71. The lowest IQ in this compilation is 60 for studies in Gambia and Tanzania. The average IQ of the present South Sudanese sample is comparable to that of some minor peoples from sub-Saharan Africa. It is similar to the IQ of 55 for the Bushmen and the IQ of 57 for the Pygmies given in Lynn (2015, pp. 122, 126).

The low IQs of the present subjects are likely attributable in part to the deprivations, interrupted life and education that they experienced before the move to the refugee camps and while they were in the camps. A number of them were orphans whose parents had been killed in the war. Most had been at schools before they were admitted to the camps, but quality of schooling has never been high in South Sudanese villages, and most of them had suffered some degree of malnutrition. Their food in the camps consisted of three meals a day mainly of lentils, beans, bread and corn but with little meat and possibly a shortage of vitamins and minerals. It is inevitable that rudimentary education, nutritional deficiencies and disruptive early life experiences have contributed to poor cognitive development. Improving these conditions remains a task for the future.

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