A Study of Intelligence in the United Arab Emirates

Omar Khaleefa*
University of Khartoum
Richard Lynn
University of Ulster

Results are reported from a large standardization sample of 6-11 year olds for the Colored Progressive Matrices in the United Arab Emirates. Girls performed slightly better than boys, and younger children performed better than older children relative to British norms. There was no sex difference in variability. In relation to a British IQ of 100, the sample obtained an average IQ of 83.

Key Words: Sex differences; Intelligence; Progressive Matrices; United Arab Emirates; Variability.

We have recently published some data on intelligence in Syria derived from the standardization of the Standard Progressive Matrices for the ages 7 through 18 years (Khaleefa & Lynn, 2008). The results of this study showed that there were no sex differences on the test in means or variability; that the mean IQ of the total sample was lower than mean IQs in Britain and the United States; and that in relation to British children, the younger children aged 7-9 years performed rather better than the older children. In this paper we present some data on intelligence in the United Arab Emirates and examine how far the results confirm or differ from those in Syria.

The data for the United Arab Emirates are obtained from a standardization of the Colored Progressive Matrices. This is a non-verbal test in which the problem is to find the principle governing the sequence of a series of designs and patterns. The test is described and norms are given for Britain and a number of countries by Raven et al. (1995). The Colored Progressive Matrices is an easier version of the Standard Progressive Matrices which was constructed in Britain in the 1930s by John Raven (1939) and was designed for children aged 5 through 11 years, while the Standard Progressive Matrices was designed for children aged 6.6 years and older, and for adults. Both the

* Address correspondence to Omar Khaleefa, Ph.D., PO Box 12718 Khartoum, Sudan; e-mail: okhaleefa@hotmail.com

Colored Progressive Matrices and the Standard Progressive Matrices have been used extensively in cross-cultural research. The results of several hundred studies that have used the tests in many countries have been summarized in Lynn (2006).

Both the Colored and the Standard Progressive Matrices are widely accepted as one of the best tests of general intelligence and Spearman's general factor (*g*) (Jensen, 1998). The first and easier items in the test are measures of visualization ability, while the later items are measures of abstract reasoning ability (Lynn et al. (2004).

Numerous studies have been published on the tests during the last seventy years. Three of the issues that have been discussed and researched are: (1) Are there any sex differences on the test? (2) Is there a sex difference in variability? (3) Are there national differences in the mean IQs obtained on the test?

Method and Results

The Colored Progressive Matrices was standardized in the United Arab Emirates in 1997 in a project authorized by the Ministry of Education and Youth and published by Eid (1999). The publication is in Arabic and hence is not readily accessible to western scholars. A total of 4,496 children aged from 6.0 through 11.6 years were drawn as a representative sample and tested. The results are summarized in Table 1. This gives the mean scores obtained by boys and girls of each age, the standard deviations, and the percentile equivalents on the British norms for the Standard Progressive Matrices collected in 1979 given in Raven (1981). These are used because they are more accurate than those for the Colored Progressive Matrices. To calculate these percentile equivalents the scores obtained on the Colored Progressive Matrices had to be converted to equivalent scores on the Standard Progressive Matrices given by Raven et al. (1995, p. 64). There are no percentile equivalents for the Standard Progressive Matrices for scores obtained by 6.0 year olds, so for these the percentile equivalents are for the 1982 British standardization sample of the Colored Progressive Matrices.

Table 1.
Sex Differences on the Colored Progressive Matrices in the United Arab Emirates

Age	Sex	N	Mean	Sd	British Percentile
6	M	183	14.6	3.4	37
	F	232	15.3	3.4	46
6.6	M	240	14.6	4.0	27
	F	241	15.5	3.1	34
7	M	185	16.0	4.4	28
	F	215	16.5	4.6	35
7.6	M	255	16.1	4.4	24
	F	256	17.0	4.2	28
8.0	M	180	18.4	5.3	24
	F	210	19.4	5.3	29
8.6	M	267	18.8	4.7	11
	F	247	19.7	5.3	15
9.0	M	189	20.7	5.1	18
	F	238	21.3	5.7	19
9.6	M	249	21.1	5.1	13
	F	238	21.4	6.3	14
10.0	M	190	22.5	5.7	10
	F	220	23.7	5.2	13
10.6	M	232	22.6	5.3	4
	F	229	24.4	5.6	8
11.0	M	197	24.1	5.8	4
	F	251	25.3	4.7	4
11.6	M	234	24.5	5.5	6
	F	219	25.7	5.6	6

Discussion

The results show four interesting features. First, the younger children aged 6-8 years performed better than the older children in relation to the percentile norms for British children. This replicates the results we have reported for Syria. The 6.0 year olds in the UAE obtained a British percentile of 41.5, equivalent to an IQ of 97, while the older children aged 10-11

obtained a British percentile of approximately 6, equivalent to an IQ of approximately 77 (to adjust for Flynn effects in Britain, these IQs need to be reduced by approximately 3.7 IQ points). The most likely explanation for the better performance of the 6 year olds is that the first items in the test are measures of visualization ability, while the later items are measures of abstract reasoning ability. Thus, the 6 year olds in the UAE obtained almost the same average IQ (97) as British children on visualization ability, but the older children aged 10-11 obtained a much lower IQ (77) on reasoning ability than British children. Another possible factor may be that young Arab children do better than older ones because the West provides a more cognitively stimulating environment, and this has a cumulative advantageous effect as children grow older.

Second, there is no consistent sex difference in variability. This can be seen from the standard deviations, which were larger for boys in four of the age groups, larger for girls in six of the age groups, and the same for boys and girls in two of the age groups. Since the early years of the twentieth century it has frequently been asserted that males have greater variability than females, i.e. there are more males with high and low intelligence while females cluster around the mean. This view has been expressed, for example, by Ellis (1904), Thorndike (1910), Eysenck (1981, p. 42), Hedges & Nowell (1995), and Deary et al. (2007). However, not all studies have found greater male variability, including a meta-analysis of the performance of college students on the Progressive Matrices by Irwing and Lynn (2005). Nor do the present data show any sex difference in variability.

Third, the girls do consistently better than the boys in all twelve age groups. The magnitude of the difference is 2 IQ points, calculated by averaging the British percentile equivalents and converting these to IQs. This result is inconsistent with numerous other studies collated in a meta-analysis by Lynn & Irwing (2004) that show no differences in average scores of boys and girls over this age range, although males obtain higher average scores than females among adults. There was also no sex difference in our study in Syria (Khaleefa & Lynn, 2008). The slightly higher scores obtained by girls in the present UAE sample probably have to be regarded as a sampling error. It is interesting to note that in this rather traditional Arab society

girls do at least as well as boys on this test. It is sometimes argued that girls are handicapped in traditional societies and this impairs their intellectual development, and that as females become more emancipated and gain greater equality, their cognitive abilities improve. Clearly this theory receives no support from the results.

Fourth, the average of the British 1979 percentile equivalents of the scores given in the right hand column of Table 1 is 17.1 for boys, equivalent to an IQ of 85.7, while the average of the girls is 20.9, equivalent to an IQ of 87.7. These two figures can be averaged to 86.7. With adjustment for a Flynn effect gain of 3.7 IQ points in Britain for the 18 years 1979 to 1997, this IQ needs to be reduced to 83. This is closely similar to the average IQs in a number of Middle Eastern countries (calculated in relation to a mean IQ of 100 and SD of 15 in Britain), e.g. Egypt (IQ = 81), Iran (84), Iraq (87), Israel (95), Jordan (84), Kuwait (86), Lebanon (82), Qatar (78), Syria (83), Turkey (90), and Yemen (85) reported in Lynn (2006) and Lynn & Vanhanen (2006).

It is interesting to note that the UAE has a per capita income comparable to that in Western Europe ($24,030 Gross National Income at Purchasing Power Parity as compared with $26,580 in Britain: 2002 figures), but the average IQ remains similar to that of other much poorer countries in the Middle East (e.g. Syria has a per capita income of $3,470 and an average IQ of 83).

It has become well established that IQs in Britain and other western countries have been increasing since 1917 at about 3 IQ points a decade (Tuddenham, 1948; Flynn, 1984, 2007; Lynn & Hampson, 1986). Thus, in relation to a present IQ of 100, the IQ in Britain and other western countries was about 80 in the1930s, and hence a bit lower that that in the UAE at the end of the twentieth century. The causes of these IQ increases are not understood. It has been proposed that they may be due to improved nutrition (Lynn, 1990) and education (Flynn, 2007). Testing is not widely employed in Arab countries, and it is possible that the observed group differences are attributable, at least in part, to the relative novelty of the testing process, as suggested by Stanczak, Stanczak & Awadalla (2001). It can be anticipated that with further economic development intelligence in the United Arab Emirates will increase, as it has in economically developed nations.

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