Intelligence in Libya:
Norms for the Verbal WISC-R

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Results are reported for a standardization of the verbal scale of the American WISC-R on a sample of 870 children aged 6 through 16 years in Libya. Scored against American norms, the sample obtained a mean IQ of 81.7. There was no difference between girls and boys in either means or variability.

In this paper we report data for a standardization in Libya of the verbal scale of the American WISC-R (Wechsler Intelligence Scale for Children – Revised; Wechsler, 1974). The data are of interest for five reasons. First, not much is known about the intelligence of the populations of the countries of North Africa. In a compilation of studies of the average intelligence in the populations of 113 nations, in relation to an IQ of 100 for Britain, Lynn & Vanhanen (2006) were only able to give IQs for Egypt (81) and Morocco (85) among the North African nations. Furthermore, the IQ for Morocco was derived from immigrants in the Netherlands who are not necessarily representative of the population. In addition, we have reported an IQ for Libya of 86.5 based on a standardization sample of 6-11 year olds for the Coloured Progressive Matrices, and an IQ for Tunisia of 84 based on a standardization sample of the Standard Progressive Matrices on young adults aged 20 (Lynn, Abdalla & Al-Shahomee, 2008). The data to be reported for a standardization of the verbal scale of the American WISC-R in Libya will therefore add to the limited existing research literature.

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Second, the existing data for the intelligence of indigenous North African populations indicating IQs in the range of 81-87 are all based on the non-verbal Progressive Matrices. It will be useful to see whether similar results are obtained for verbal intelligence.

Third, the data to be reported give IQs based on American norms for each of the ages of 6 through 16 years. These will show whether the IQs of Libyan children remain stable over this age range. Data for the Coloured Progressive Matrices for Libya showed that the IQs of Libyan children decline over the age range of 6 through 11 years (Lynn, Abdalla & Al- Shahomee, 2008). The same age trend has been found in the United Arab Emirates and Yemen (Khaleefa & Lynn, 2008a, 2008b). It will be interesting to see whether a similar decline takes place in verbal intelligence.

Fourth, the data to be reported give IQs for boys and girls. It has frequently been asserted that females are better than males on the verbal abilities. For instance, "boys, from various cultures, are superior to girls on spatial problems; girls are superior to boys on verbal tasks" (Kagan, 1971, p. 182); "females are consistently superior to males in a wide range of verbal tasks" (Galsworthy, Dionne, Dale, and Plomin, 2000, p.206); "the well attested fact that women are stronger on verbal items" (Bartholomew, 2004, p. 106); "it is well known that females have about a one-third of a standard deviation (5 IQ points) advantage over males" (Anderson, 2004, p. 828). It will be interesting to see whether this is the case in Libya.

Fifth, it has often been stated that males have greater variability of IQ than females. This contention has been asserted since the early years of the twentieth century, when it was proposed by Havelock Ellis (1904), Thorndike (1910) and Terman (1916), and later reaffirmed by Eysenck (1981) and Hedges & Nowell (1995), and recently by Deary, Irwing, Der and Bates (2007). We will examine this, and again it will be interesting to see whether this is the case in Libya.

Method

A standardization of the verbal scale of the American WISC-R (Wechsler Intelligence Scale for Children; Wechsler, 1974) was carried out in Libya in 2007. The performance (non-verbal) scale of the WISC-R was not administered. The verbal scale of the American WISC-R (Wechsler, 1974) was translated into Arabic. The method of back translation was used to check the accuracy of the translation. Most of the American items could be retained, but a few had to be changed. For instance, the American item in the information subtest "Name the two countries that border the United States" was changed to "Name the two countries that border Libya". These items were so few that the changes could not make any appreciable difference to the results. The sample consisted of 421 boys and 449 girls, with approximately 80 children in each of the 11 age groups 6 through 16. The sampling procedure comprised a multi-stage random sampling method (cluster sampling). The school students were randomly selected from first year at elementary schools up to the last year at secondary schools from two cities and from nine villages according to their geographic regions; coastal, mountain and desert villages (three villages in each geographic region). Education is compulsory in Libya from the ages of 6 to 16 years and virtually all children remain in school until the age of 16. Boys and girls are educated together. This ensures that the boys and girls are matched for educational experience and family background.

Results

The scores obtained by the Libyan children for each of the 11 age groups on each of the six subtests of the verbal WISC-R are shown in Table 1. The right hand column gives the American IQs of the Libyan children. These IQs have been calculated by (1) converting the scores for each subtest for each of the 11 age groups to the scaled score equivalents from Table 19 of the American manual and (2) summing the scaled scores and converting these to American IQs using Table 20 of the American manual. The average of the IQs is 81.7.

Table 1.
American WISC-R Verbal IQs of Libyan children by age.

Age	N	Inf	Sim	Arith	Vocab	Comp	DS	IQ
6	82	4.1	4,3	5.1	10.1	5.9	7.0	85
7	87	6.1	5.1	6.6	11.4	8.5	7.8	80
8	80	8.5	5.6	7.5	16.7	10.8	8.6	81
9	85	9.7	8.3	8.4	18.2	11.9	9.4	83
10	78	10.6	9.5	9.1	18.7	12.4	9.6	78
11	76	13.9	11.0	9.5	20.6	12.3	10.3	82
12	75	14.1	11.9	9.9	24.4	14.1	10.3	80
13	71	15.9	13.7	10.3	18.6	16.2	10.3	80
14	94	18.1	16.7	12.1	33.7	18.3	11.0	86
15	72	17.2	16.4	12.0	33.5	19.4	11.2	84
16	70	17.8	16.4	11.8	34.1	18.8	11.4	80

Inf=Information; Sim=Similarities; Arith= Arithmetic; Vocab=Vocabulary; Comp=Comprehension; DS=Digit span.

To examine whether the Libyan sample performed consistently on the six sub-tests, American IQs have been calculated for each of these by (1) converting the scores for each subtest for each of the 11 age groups to the scaled score equivalents from Table 19 of the American manual and (2) converting the average of the scaled score equivalents to IQs using Table 20 of the American manual. The results are given in Table 2.

Table 2.
IQs of Libyan children for subtests (all age groups combined)

Subtests	IQ	Subtests	IQ
Information	86	Vocabulary	75
Similarities	87	Comprehension	78
Arithmetic	82	Digit Span	87

To examine whether there are any sex differences in the IQs of Libyan children, the mean scores of the total sample of boys and girls for each of the six subtests are shown in Table 3. The bottom rows give the F values for the differences between boys and girls tested by ANOVA, the statistical significance of the F values, and the variance ratios obtained by dividing the variance of the boys by that of the girls.

Table 3.
Mean scores of Libyan children on 6 WISC-R subtests.

Sex		Inf	Sim	Arith	Vocab	Comp	DS	Total
Boys	Mean	12.24	10.06	9.46	22.42	13.37	9.77	77.33
	S.D.	5.71	7.14	3.04	10.83	7.13	2.90	30.71
Girls	Mean	12.19	11.26	9.00	22.54	13.39	9.58	77.96
	S.D.	5.60	7.67	2.78	11.42	7.29	2.87	32.45
	F	.023	5.696	5.418	.027	.001	.973	.086
	Sig	.881	.017	.020	.871	.980	.324	.770
	VR	1.04	0.87	1.10	0.90	0.96	1.02	0.90

Discussion

The results show five interesting features. First, as regards an estimate of the verbal IQ in Libya, the average of the 6 subtest IQs given in Table 1 is 81.7 and can be adopted as the best estimate of the Libyan verbal IQ in relation to an American IQ of 100. In relation to the British IQ of 100 which has been used as the yardstick or "Greenwich IQ" in terms of which previous national IQs have been calculated (Lynn, & Vanhanen, 2006), this needs to be reduced by 2 IQ points to 79.7 (because the mean American IQ is 2 IQ points lower than the British). No correction is made for a Flynn effect because the verbal IQ of American children measured by the WISC-R increased by 1.5 IQ points a decade from 1972 to 1985, and then declined by 0.8 IQ points a decade from 1989 to 1995

(Flynn, 2007). It is assumed that this decline has continued up to 2007, since IQ declines have also been reported in recent years in Britain and Denmark (Shayer, 2007; Teasdale & Owen, 2008). It is therefore assumed that there was virtually no difference in the American verbal IQ in 1972 and 2007. The Libyan verbal IQ of 79.7 is a little lower than the IQ of 86.5 for Libya based on a standardization sample of 6-11 year olds for the Coloured Progressive Matrices reported by Lynn, Abdalla & Al-Shahomee (2008). Nevertheless, the IQ in Libya measured by the verbal test is reasonably consistent with the previous results obtained with the non-verbal Coloured Progressive Matrices.

Second, the verbal IQs given in Table 1 for the age groups 6 through 16 show no age trend. On the contrary, the IQs are quite consistent across age groups. This is in contrast to results obtained with the Coloured Progressive Matrices that showed that the IQs of Libyan children decline over the age range of 6 through 11 years (Lynn, Abdalla & Al-Shahomee, 2008). The same age trend has been found with the Coloured Progressive Matrices in the United Arab Emirates and Yemen (Khaleefa & Lynn, 2008a, 2008b). The results from Libya, the United Arab Emirates and Yemen show that 6 and 7 year olds perform well on visualization ability measured by the initial items of the Coloured Progressive Matrices, on which they perform close to British norms, but the older children aged 10-11 perform less well on non-verbal abstract reasoning ability than British children. A possible explanation for this is that schools in these countries may tend to emphasize rote learning and memorization and do not teach analytic and problem solving skills to the same extent as do schools in economically developed nations. The effect of this would be that as children in these countries progress through the school system, they would fall increasingly behind western children in problem solving ability tested in the harder items of the Coloured Progressive Matrices. The IQs obtained by the Libyan children on the 6 subtests measuring information, similarities, (mental) arithmetic,

vocabulary, comprehension, and digit span range between 75 (vocabulary) and 87 (similarities and digit span) and can be regarded as reasonably consistent. The IQ of 86.5 for Libyan children based on a standardization sample of 6-11 year olds for the Coloured Progressive Matrices falls within this range. The initial and easier items of the Coloured Progressive Matrices measure visualization and the later and harder items measure abstract non-verbal reasoning ability (Lynn, Allik & Irwing, 2004). Thus, measures of all these abilities in Libyan children produce broadly similar results. If the IQs obtained from the verbal WISC-R (79.7) and the non-verbal Coloured Progressive Matrices (86.5) are averaged, we arrive at a Libyan IQ of 83.1.

Third, Table 2 gives the IQs of Libyan children for each of the six subtests to examine whether the Libyan sample performs consistently on the sub-tests. It will be seen that Libyan children perform best on Similarities and Digit Span (IQs=87) and least well on vocabulary (IQ=75).

Fourth, the IQs for boys and girls given in Table 3 show no significant overall sex difference in verbal IQ. Girls performed significantly better than boys on similarities, while boys performed significantly better than girls on arithmetic. This result is contrary to the frequent assertion that females are better than males on the verbal abilities, noted in the introduction. However, the meta-analysis by Hyde and Linn (1988) showed virtually no sex difference in verbal abilities. In post-1973 American studies it was a negligible .10d (1.5 IQ points) in favor of females. The present results are consistent with this conclusion.

Fifth, as noted in the introduction, it has been repeatedly asserted that males have greater variability of IQ than females, but there are a number of contrary studies, e.g. in college students reviewed by Irwing & Lynn (2005). The present results add to these in showing no consistent sex differences in variability. Boys showed slightly greater variability on information, arithmetic and digit span, while girls showed slightly greater variability on similarities, vocabulary and comprehension. It appears that a beautiful theory has been destroyed by several ugly facts.

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