

## WAIS vs WAIS-R in matched U.K. samples

J. R. CRAWFORD,<sup>1</sup> F. M. MORRISON,<sup>2</sup> A. M. JACK,<sup>2</sup>  
R. H. B. COCHRANE,<sup>2</sup> K. M. ALLEN<sup>2</sup> and J. A. O. BESSON<sup>2</sup>

Departments of <sup>1</sup>Psychology and <sup>2</sup>Mental Health, University of Aberdeen, Aberdeen AB9 2UB, Scotland

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**Summary**—A matched samples design was employed to compare the British versions of the WAIS (Wechsler, 1955; Saville, 1971) and WAIS-R (Wechsler, 1981; Lea, 1986) in terms of test difficulty. The WAIS yielded significantly higher IQs than the WAIS-R. The mean difference for Full Scale IQ was 8.2 IQ points, i.e. over half a standard deviation. Encouragingly for U.K. users of the Wechsler Scales, additional analysis suggested that the performance of the WAIS-R sample was consistent with an estimated U.K. population mean of  $\sim 100$ .

### INTRODUCTION

With the publication of its British Supplement (Lea, 1986), it is to be expected that the Wechsler Adult Intelligence Scale—Revised (WAIS-R; Wechsler, 1981) will become the major instrument for the assessment of intellectual abilities and deficits in the U.K. In view of this, and in the absence of a U.K. standardisation sample, it is necessary to gather information on the test's psychometric properties in the U.K.

An important question for psychologists who have begun to use the British WAIS-R as a replacement for its predecessor the WAIS (Wechsler, 1955, Saville, 1971) is whether the two scales yield comparable IQ scores. The need to examine this issue arises from the work of Flynn (1984), who has demonstrated that, in the United States, successive IQ test standardisation samples have consistently established norms of a higher standard than their predecessors. In line with this trend, studies comparing the WAIS and WAIS-R in U.S.A. samples have reported that the WAIS-R yields IQ scores that are significantly lower than the WAIS (e.g. Wechsler, 1981).

To date there has been only one attempt to compare the British version of the WAIS-R in U.K. samples. Crawford, Allan, Besson, Cochrane and Stewart (1990), using a matched samples design, reported that the British WAIS-R yielded significantly lower scores than the WAIS. The mean difference between WAIS and WAIS-R Full Scale IQ was 7.5 points, i.e. a difference of half a standard deviation. The aim of the present study is to examine the robustness of this result.

### METHOD

A sample of 74 Ss, free of neurological psychiatric or sensory disability were administered a full-length WAIS according to standardised procedures. A sample of 93 Ss meeting the same criteria were administered a full-length WAIS-R. Ss in both samples were also administered the National Adult Reading Test (NART; Nelson, 1982). Ss pairs were formed by individually matching a WAIS Ss for age ( $\pm 3$  yr), sex and years of education ( $\pm 2$  yr) with a WAIS-R Ss. Using these matching criteria, it proved possible to obtain 54 matched pairs (23 male, 31 female). Matching was carried out blind, i.e. in the absence of the Wechsler data. Mean age in the WAIS and WAIS-R samples was 48.6 (17.9) and 49.0 (18.1) respectively. Mean years of education was 12.2 (2.9) and 12.5 (3.1) respectively.

Following Crawford *et al.* (1990), the NART was employed as a means of establishing whether demographic matching had equated the samples for intellectual ability. It was chosen for this purpose because it loads very highly (0.85) on *g* (Crawford, Stewart, Cochrane, Parker & Besson, 1989) and is rapidly administered.

### RESULTS AND DISCUSSION

Mean scores on the Wechsler scales and mean NART errors for both samples are presented in Table 1. The correlation (Pearson Product-Moment) between NART errors and IQ was  $-0.76$  ( $P < 0.001$ ) in the WAIS sample and  $-0.79$  ( $P < 0.001$ ) in the WAIS-R sample, thus demonstrating that the NART was a good predictor of IQ in both samples. The sample means for NART errors were identical (see Table 1), indicating that the samples were of similar intellectual ability. Therefore, any differences in the samples' Wechsler scores can be attributed with reasonable confidence to a difference in difficulty between the WAIS and WAIS-R.

Paired samples *t*-tests revealed that the WAIS sample obtained significantly higher scores than the WAIS-R sample for Verbal IQ ( $t = 6.14$ ,  $P < 0.001$ ), Performance IQ ( $t = 2.26$ ,  $P < 0.05$ ) and Full Scale IQ ( $t = 4.69$ ,  $P < 0.001$ ). The mean IQ points difference between the two samples was 10.4 for Verbal IQ, 4.8 for Performance IQ and 8.2 for Full Scale IQ.

The present results suggest that the British versions of the WAIS and WAIS-R do not yield comparable IQ scores in the population for which they are intended. They therefore confirm Crawford *et al.*'s (1990) findings.

In both studies, the WAIS yielded significantly higher mean IQs than the WAIS-R, thereby demonstrating that harder norms have been set for the latter test. The mean difference in Full Scale IQ scores was consistent between studies, amounting to around half a standard deviation unit in both cases.

The WAIS and WAIS-R samples examined by Crawford *et al.* (1990) were representative of the adult U.K. population in terms of their age, sex and social class distribution. These authors argued that the sample means therefore provided tentative estimates of the U.K. population means for both tests. Mean WAIS IQ was 108.6, suggesting that the WAIS

Table 1. Mean Wechsler IQs and NART errors in matched samples administered the WAIS or WAIS-R

|               | NART errors | Full scale   | Verbal       | Performance  |
|---------------|-------------|--------------|--------------|--------------|
| WAIS sample   | 17.2 (9.4)  | 114.3 (11.0) | 115.1 (12.6) | 111.6 (10.7) |
| WAIS-R sample | 17.2 (9.3)  | 106.1 (13.0) | 104.8 (13.0) | 106.8 (14.4) |

Standard deviations in parentheses.

produces inflated IQs in the contemporary U.K. population. Encouragingly for U.K. users of the Wechsler Scales, mean WAIS-R IQ was 101.1. This suggests that the U.S.A. restandardisation has, fortuitously, reset the contemporary U.K. population mean of the Wechsler to around the desired mean of 100.

It can be seen from Table 1 that mean WAIS-R IQ in the present sample (106.1) is considerably > 100. However, the present sample's social class distribution deviated from that of the adult U.K. population. Social classes 1 and 2 were overrepresented and social classes 4 and 5 were underrepresented (social class 1 = 9.3, 2 = 31.5, 3 = 50.0, 4 = 7.4, 5 = 1.9%). Furthermore, comparison of mean NART errors in the present sample with that obtained by Crawford *et al.*'s (1990) sample ( $\bar{x} = 21.2$ ,  $SD = 9.3$ ), indicates that the present sample was of above average intellectual ability.

To investigate whether the present sample's mean WAIS-R IQ was consistent with an estimated U.K. population mean of 100, Crawford *et al.*'s. (1990) data were used to generate a regression equation to predict WAIS-R IQ from NART errors. NART error scores obtained by *Ss* in the *present* study were then entered into this equation (Predicted IQ =  $123.15 - 1.05 \times \text{NART errors}$ ). Mean predicted Full Scale IQ was 105.1. This figure is very close to the samples obtained mean Full Scale IQ (106.1). Therefore, the mean IQ of the present WAIS-R sample is consistent with a U.K. population mean of around 100.

Clinicians who have moved from using the WAIS to the WAIS-R should take close account of the above-noted score differences between the tests when comparing a client's Wechsler performance with other psychometric tests and with relevant background information. It is also clearly important to be aware of these score differences if the WAIS-R is used to retest a client originally administered the WAIS. Flynn (1984) provides a detailed discussion of the dangers involved in interpreting the results of serial testing when the tests vary in the obsolescence of their norms. If retesting is required, whether for clinical or research purposes, it would be preferable to readminister the WAIS.

Finally, in contrast to the WAIS, the WAIS-R, on present evidence, would appear to neither seriously underestimate nor overestimate IQ in the contemporary U.K. population. Therefore, with the exception of the specific retest situation noted above, the WAIS-R should be used in preference to the WAIS in U.K. research and clinical practice.

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