Article *NIMHANS Journal*

Comparison of two Short Forms of the Bhatia's test of Intelligence

Volume: 12 Issue: 01 January 1994 Page: 75-77

Ida P Barnabas .

Reprints request
&,
- *Department of Clinical Psychology, National Institute of Mental Health & Neuro Sciences, Bangalore 560 029, India*
Shivaji Rao, - *Department of Biostatistics, National Institute of Mental Health & Neuro Sciences, Bangalore 560 029, India*

Abstract

This study investigated the relative efficacy of two short form methods of the Bhatia's test of Intelligence as an estimate of the Full Scale IQ on a sample of 251 psychiatric patients. Correlations between the full scale IQ and the IQ obtained by using both methods were estimated. In addition, the accuracy of both methods in classification of patients was also assessed. Murthy's short scale scoring procedure was found to be a good approximation of the full length IQ on Bhatia's test.

Key words -
Bhatia Performance Scale of Intelligence,
Abbreviated scales,
Evaluation

The Bhatia's performance Test of Intelligence is a well standardized and reliable tool for the assessment of intelligence in the Indian context. The Battery is applicable to the illiterate as well as the literate groups with separate norms provided for each group. While the test was originally developed for, the 11-16 years age group, the use of this test on adults beyond 16 years of age is based on the assumption that intelligence does not increase beyond 16 years of age which was set as the upper limit of the test. The full battery requires 45 to 60 minutes for its administration [1]. In order to increase the cost effectiveness of the test in terms of time and effort, Murthy [2] and Pershad et al [3] have proposed the use of abbreviated forms of the Bhatia Scale. Under normal circumstances a shortened scale is never as reliable as the original [4]. However in certain clinical situations the use of a short scale may be necessary particularly for gross screening purposes. Verma et al [5] have utilised a scoring procedure which is different from the method proposed by Bhatia.

The present study was therefore undertaken to compare the relative efficacy of these two short form approaches in their ability to predict the Full Scale Intelligence quotient (FSIQ) in psychiatric patients.

Materials and Methods

Subjects were 251 psychiatric patients (192 males, 59 females) with mean age and education level of

27.84 (S.D=9.80) and 10.92 (S.D=4.26) years respectively. Out of 251 psychiatric patients (34) 13.5% were Neurotics, (6) 2.39% had personality disturbance, (142) 56.57% had schizophrenia and (10) 3.98% were alcohol dependents, (13) 5.17% had organicity, (19) 7.5% had affective illness and (27) 10.75% were mentally retarded. All subjects had been referred to the psychodiagnostic section of the Clinical Psychology Department for Psychological evaluation, which included a complete evaluation of intelligence using Bhatia's Full Scale. This data was retrospectively rescored according to the methods described by Murthy [2] and Verma et al [5]. In the Murthy's Short Scale (MSS), scoring method, the scores on the Kohs' Block design test and Pass Along test were summed and multiplied by 2.5. I.Q.'s were obtained by consulting Bhatia's norms [1]. In Verma's Short Scale (VSS) scores were given for each block of 30 seconds and not 60 seconds as in Bhatia's original method. Using this procedure the same 251 protocols were scored on these two subtests according to their revised method. I.Q.'s were obtained by consulting the norms provided by the authors. It was noticed that many of them were unable to proceed beyond first two designs of the Block design and the Pass Along tests. The subjects with different educational backgrounds have different psychological sophistication affecting the responses on tests, thus obtaining low scores [6], [7], [8], [9]. On account of this, the discriminating capacity of the short battery has been low. These problems compelled these researchers to modify the scoring procedures. The Kohs' Block design and Pass Along tests, instead of giving score for the block of one minute the scoring was resorted for the block of 30 seconds. In the revised procedure the range of possible score was double. The conversion of raw scores into the standard scores with a mean of 100 and S.D of 15 indicated a finer discrimination. The obtained I.Q's were classified according to the categories described by Wechsler [10]. I.Q. above 90 were considered as normal and those falling below 90 were classified as subnormal.

Results

Table I gives the mean and S.D's for the three scales. Out of the three scales, the FSIQ has the lowest mean and S.D. while VSS had highest mean and S.D. scores and the MSS fall in between the two scales. A study of intercorrelations revealed that Pearson's correlation coefficient between FSIQ and MSS was 0.79 (highest), between FSIQ and VSS it was 0.57 (lowest) and between MSS and VSS the correlation was 0.72. All the three correlations were highly significant ($p<0.001$, $df=249$). In order to examine which of the two short scales predict the FSIQ best, a stepwise multiple regression analysis was carried out which indicated that MSS was the best predictor ($p<0.001$). The regression coefficient for VSS was not significant. The equation was of the form $FSIQ=24.68 + 0.6042 \times MSS$. The efficacy of these two methods in classifying patients was then estimated. The cut off point (90 as normal and (89 as subnormal based on the classification scheme outlined by Wechsler was adopted [10].The MSS when considered along with FSIQ classified 224 subjects (89%) correctly. 27 subjects (10.8%) were misclassified between the two. On the other hand, VSS with FSIQ together classified only 192 subjects (76%) correctly, while 59 subjects (24%) were wrongly classified. Hence, even in classification of subjects MSS proved to be more accurate in classifying individuals correctly when compared with VSS.

Table I - Mean, S.D's and tests of significance for the full Bhatia scale of Intelligence and the abbreviated scales

Table I - Mean, S.D's and tests of significance for the full Bhatia scale of Intelligence and the abbreviated scales

Table II - Correlation between the three scales

Table II - Correlation between the three scales

Table III - Step-wise multiple regression analysis for the two short forms along with full scale

Table III - Step-wise multiple regression analysis for the two short forms along with full scale

Discussion

Overall, MSS performed favourably, when compared with VSS on all of the described comparisons. Based on these results one might conclude that MSS scoring procedure is a good approximation of the FSIQ and more accurate in classifying individuals correctly as compared to the VSS. It is to be kept in mind that for both forms of scoring procedures, there is no procedure of conversion of raw scores, leading to problems of accurate prorating to obtain the I.Q. Hence, the use of short scales to estimate IQ is to be kept to a minimum. If, however their use becomes unavoidable for various reasons then the MSS method may be preferred to the VSS method [11]. From the clinical point of view, when a patient earns a short form IQ (90 there is a high probability that he or she has intact intellectual functioning. On the other hand when a patient achieves a short form IQ (89 the psychologist should consider this as an indication for a comprehensive assessment of intelligence. A further note of caution is to be noted in the use of abbreviated scales in clinical groups. The psychiatric patients especially psychotics, are known to perform poorly on some subtests of intelligence and better on others. It may be justifiably argued that the short scale scores may not adequately predict the scores on the full scale. Thus, especially when a subject manifests inter -test scatter on the short scale itself, administration of the remaining subtests becomes essential.

Acknowledgements

The authors are grateful to Dr. A Raguram and Dr. Shobini L Rao for their comments and suggestions on this article.

1.Bhatia C M, *Performance Tests of Intelligence Under Indian conditions, London: Oxford University Press*1955

2.Murthy H N, A short scale of the Bhatia's performance tests
Indian Psychological Review Page: 2 (2): 133-134, 1966

3.Pershad D, Arunima Mahajan & Verma S K, Bhatia's short scale of intelligence - A suggested modification for adults
Personality Study & Group Behaviour Page: 8 (1): 43-48, 1988

4.Cronbach L J, *Essential of Psychological Testing (4th edn) New York, Haper & Row*1984

5.Verma S K, Pershad D, Malhotra A & Arunima M, *The Revised Bhatia's Short Battery of performance Tests of Intelligence for Adults - A Hand Book. National psychological Corporation, Agra*1988
6.Wig N N, Pershad D & Verma S K, The use of psychometric tools in Indian psychiatric research, A reappraisal
Indian Journal of Clinical Psychology Page: 1: 8-14, 1974
7.Wig N N, Verma S K & Pershad D, Development of psychological tests in India. An overview of the current situation
Indian Journal of Clinical Psychology Page: 10: 429-437, 1983
8.Verma S K, Development of psychological tests - 10 years experience
Journal of Rajasthan Psychiatric Society Page: 1: 43-56, 1978
9.Pershad D, *Construction and Standardization of Clinical Test of Memory in Hindi. Agra National Psychological Corporation*1977
10.Weschsler D, *The Measurement and Appraisal of Adult Intelligence, Baltimore, Williams and Wilkins*1958
11.Gonsalvez C, *Observations on the use of the Bhatia's Short Scale (Unpublished notes, NIMHANS)*1986