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1.1 INTRODUCTION

The unique feature of the department of education, Gujarat University Ahmedabad is its great and worth-noting contribution in the field of Psychological testing. Many intelligence tests—group as well as individual tests of aptitudes, Cattell's Personality Questionnaires, etc. have either been constructed and standardised or adapted in Gujarati version. The British Ability Scales (BAS) is a new approach to the individual assessment of children's cognitive abilities, of age groups 2:6 to 17:5. The BAS is the outcome of a considerable amount of test development over many years, say, from 1965 to 1983. It consists of twenty-four scales measuring a wide range of cognitive abilities. The uniqueness of the BAS is that each scale has been developed and standardised in such a way that it may be administered singly or in any combination with other scales as per the need of test user. The specific feature of the BAS is that it is based on a Rasch Model which is unidimensional and hence, ability scores on the scales are sample-free, enable change in performance to be measured over time, enable an estimate of the precision of measurement to be obtained for each ability level, enable other test-users and constructors to use the items as a basis for further item development, etc. So far as the little knowledge of the investigator goes, this adaptation and standardisation of BAS is first of its kind in Gujarat.
The British Ability Scales are, indeed, flexible, comprehensive, practical and accurate as compared to traditional intelligence tests. As the BAS consists of 24 scales, each one having different number of items 6 to 90 in range, the study was distributed between two Ph.D. students - Dharmistha Panchal working upon first twelve scales and the present investigator who adapted the last twelve scales falling in two major processes (i) Short-term memory and (ii) Retrieval and application of knowledge.

1.2 SELECTION OF THE PROBLEM:

When the investigator came to know about BAS and its above mentioned peculiarities, she was tempted to undertake the adaptation and standardisation of BAS. She had discussion with her supervisor and it was finally decided that the first half of BAS would be undertaken by Dharmistha Panchal while the remaining half would be undertaken by the present investigator.

The problem of the research study was, therefore, entitled as below: Adaptation and Standardisation of the Second Half (other twelve) Scales of British Ability scales for the Gujarati population of urban Area

1.3 OBJECTIVES:

The following objectives were kept in mind while this study was undertaken:

(a) To adapt the test items to Gujarati environment and therefore to modify, improve or coin new test-items for those having some cultural bias
(b) To construct totally new scales in Gujarati version which are totally language scales (e.g. Word Definitions, Word Reading)

(c) To apply principles of Rasch Model to all the items of twelve scales

(d) To eliminate those items which do not fit in the Rasch Model as per goodness of fit

(e) To compute ability scores on each item of the scale

(f) To estimate reliability and validity of the scale

1.4 IMPORTANCE OF THE STUDY:

This study will bring out adapted Gujarati Version of the original BAS. It will be mainly useful to educational and clinical psychologists in carrying out individual cognitive evaluations of children in age-range 2:6 to 17:5.

Because of the breadth of test content, scoring methods and analyses available, the adapted BAS will be useful in a variety of ways:

1. The scales' primary purpose is to diagnose and analyse children's learning difficulties, thus providing helpful, practical suggestions for teachers, parents and other concerned with the education and care of the child

2. To assess changes in abilities over a period of time

3. To identify relative strength and weaknesses in ability

4. The scales can also be used for the more traditional functions of identifying, selecting and classifying children with various learning difficulties.
Thus, this adaptation of BAS will add one more colourful feather to the cap of psychological tests available in Gujarati version.

1.5 DEFINITION OF THE TERMS:

(A) Adaptation:
To change, modify or develop totally new test items so as to suit a new or special use or situation. In this specific case, the BAS has been adapted to suit for Gujarati children of Gujarat state in India.

(B) Standardisation:
To fix up the mode as well as set of directions of administering each scale; to fix up timelimit for administering each test-item of a scale, if necessary; to establish norms for different groups; to estimate reliability and validity of the scales. Standardisation is, thus, a long process in which different aspects of psychological tests are taken into consideration and are fixed up.

(C) Second half subscales of British Ability scales:
The BAS developed and standardised by Colin D. Elliott with David J. Murray and Lea J. Pearson on the representative sample of children in Great Britain has been used for Gujarati adaptation.

It consists of twenty-four different scales out of which the last twelve scales were adapted by the present investigator.
These scales were as follows:

(a) Immediate Visual Recall
(b) Delayed Visual Recall
(C) Recall of Designs
(d) Recall of Digits
(e) Visual Recognition
(f) Basic Arithmetic
(g) Early Number Skills
(h) Naming Vocabulary
(i) Verbal Comprehension
(j) Verbal Fluency
(k) Word Definitions
(l) Word Reading

(D) Gujarati Population of urban Area:

Here, only Ahmedabad city area has been taken up as an urban area and the total sample of 120 children was selected from Ahmedabad city.

1.6 DELIMITATIONS OF THE STUDY:

Looking to the breadth and width of the BAS consisting of twenty-four scales as well as the mode of individual administration, the study had to be delimited as every step of the adaptation as well as standardisation of the BAS had to be carried out by the present investigator herself.

The first delimitation was the division of scales into two halves and two investigators worked on two different halves; the present investigator, as mentioned earlier, worked on the second half (the last twelve scales) of BAS.
The sample selected was from Ahmedabad city only, considering it as a barometer of the total urban area of Gujarat state. Thus it was a purposive sampling.

As the each test-item of all the twelve scales was to be checked against the characteristics of the Rasch Model and also, the sample of 120 subjects only and it being purposive, no norms have been established. This work, itself, would be so exhaustive that it can be taken up as a study for the other ph.D. thesis. Of course, reliability and validity of the scales have been estimated.

1.7 BIRD'S EYE-VIEW OF THE STUDY:

To be conversant with the test material and different scales of the BAS, the kit box material was studied meticulously along with the manual 3 which contains the detailed information for the administration as well as scoring system of the BAS. Again, Manual-1-Introductory Handbook-was also read carefully. Instructions for administering last twelve scales were translated into Gujarati. As a pilot study, each scale was tried out individually on 10 to 20 subjects of different age groups, depending upon the age-range to which the scale was applicable. This pilot study indicated the necessity of some modifications which were incorporated. Whenever the need for modification in the test-item was quite essential, more than one modified items were newly coined and these modified items were again tried out on a moderate number of subjects. Language tests - 'Word Definition' and 'Word Reading' were totally discarded and both of them were constructed anew in Gujarati version and were tried out on subjects of different age-groups.
Modifications were also made in "Immediate Visual Recall" and "Delayed Visual Recall." Ten pictures out of twenty were more or less modified. In "Naming Vocabulary", six pictures were modified. In "Verbal Comprehension" a picture of 'Teddy-Bear' was replaced by that of an 'Elephant'.

Instead of administering scales to all different age groups, six age groups were selected logically from a total 16 age groups.

The agegroups selected were as follows:

Ten children each from the lower age groups (2:6 to 2:11, 3:0 to 3:5, 3:6 to 3:11) and 30 subjects each from upper age groups (5:6 to 6:5, 10:6 to 11:5 and 15:6 to 17:5) Thus the total sample consisted of 120 subjects, selected by stratified random sampling from Ahmedabad city only.

The BAS was developed and standardised on the Rasch Model developed by George Rasch in 1960 which holds that the probability of a person passing an item depends solely on the ability of that person and the difficulty of the item. The three notions - dimensionality of the latent space, local independence, an item characteristic curve - are the bases of assumptions of this model. Rasch Model Computer program was developed in BASIC for use on easily available IBM PC/XI computer. The program had following features:

(1) Entry of raw data through keyboard and storage in the disk file
(2) Elimination of zero and full score students and also items having zero and full item scores. This was done iteratively till all such items and subjects were removed from the data. Details of removed subjects and items were printed.

(3) Computation of logit Item Difficulties and Item Difficulty (BAS), Mean difficulty, its standard deviation and also standard error of estimation.

(4) Computation of Ability (logit) and Ability (BAS) for all possible subject scores except zero and full. Its Mean, standard Deviation and Standard error.

(5) Computation and generation of Item Characteristic Curve based on probability of success, Item Difficulty and BAS Ability.

(6) The goodness of fit analysis with Chi-square computation.

(7) Removal of items with Chi-square Value less than 0.05 and recomputation from the beginning with the new set of test items.

The analysis results of a test data of 35 students and 18 items obtained using BICAL program of department of Education, Chicago University, Chicago were available from literature. These were compared with those of the present program using the same data. The agreement was excellent.

Test retest reliability at the interval of 3 weeks of each scale was estimated and was compared to that of original ones. Here again, the coefficients of reliability were almost parallel to those of original BAS.
For validation purpose, the Stanford-Binet Intelligence scale was used and the results were reported.

It can be inferred from the bird's eye-view of the study that all precautions that were necessary in adapting a foreign test were taken into consideration and these adapted scales were fully congruous with the original scales developed on the Rasch Model, as all the test items of each scale satisfied the conditions of the Rasch Model.

In the next chapter, the details of the BAS as well as Rasch Model have been described in brief.