CHAPTER 3

PRELIMINARY TRYOUT FOR ITEM-ANALYSIS
Haring prepared the subtests as detailed in the preceding chapter. The next obvious step is the administration of the same among a representative group of pupils for the purpose of analysis and evaluation of items. Thus far, the items have been selected purely on a subjective basis and this kind of subjective estimation of items serves no purpose in the scientific construction of an intelligence test. It is necessary that objective informations be obtained through an experimental procedure and only reliable methods be used for the selection of appropriate items for the final form of the test.

In the scientific analysis of items of a test various criteria may be set up for their evaluation of which difficulty and discrimination or validity constitute the most acceptable bases on which decision can be taken. They yield informations most typical of an item-analysis procedure (Guilford, 1954, p.417) and will be discussed in detail in the following chapter. Such statistical evaluation yielding two types of indices are called the difficulty and discrimination indices, and an item's quality is adjudged first by these indices and then by a qualitative assessment of other characteristics which are not disclosed by the indices.
Since the first form of a test is bound to include many items of questionable value, a large number of such items are eliminated after the first stage of the work is over. It follows, therefore, that more items should be included in the preliminary form than in the final form. Of course, there is no hard and fast rule as to how many more items should be included in the preliminary form and it will rather depend upon how accurately items are prepared for the first form. A careless work will naturally include more of invalid items. Guilford (1954, p. 418) believes that about 50 percent more items in the preliminary form should work well, although according to Conrad (1951, p. 253), this margin may be higher for difficult items or mental functions to be tested by them.

It is almost customary now-a-days to prepare short verbal tests in such a manner that the test can be given in one school period without disturbing the routine of a class. Testing also includes preparing the class and materials, and therefore, a total time of 40 or 45 minutes is further subdivided into testing time and administration or preparation time. This means that out of a total of 40 minutes some 20 to 30 minutes should be kept apart for actual testing. What should then be the number of items for a 20 minutes' test, or for a 30 minutes' test? The answer is not easy. Speed and power factors enter here, of which unfortunately, we do not have a proper means of knowing and applying in this specific problem. A look into the tests recorded in the First Indian Mental Measurement Handbook (1966) is disappointing.
because the time allowed per item is so different that no standard can be worked out for guidance. At this stage of the present work, therefore, a testing time between 20 to 30 minutes is anticipated and because the test is going to have items of varying difficulty, a total of 70 to 100 items are desired to be included in the final form. A total of 220 items then in the preliminary form should work well to show enough items with appropriate values for inclusion in the final form.

Although the preliminary form is limited to the selection of items for the final form, certain aspects regarding the sample of pupils upon whom the test is to be tried need careful consideration.

3.1. Selection of Sample for the Preliminary Tryout

The preliminary tryout of subtests in the battery GUA/67 is sought to be confined among pupils for whom the test is to be ultimately standardized. For this, a representative sample of such pupils is required. The specifications for such sample is considered very essential since, 'The indices of difficulty and discriminating power of the items, the attractiveness of the distracters, and the magnitudes of reliability and validity coefficients for the tryout forms are all dependent on the characteristics of the sample of examinees tested' (Conrad, 1951,p.253). Of course, the very meaning of a sample suggests representation as it is defined as any portion of a population, or universe, as representative of that population or universe (Kerlinger, 1964,p.52).
It now appears that a purely random sample (each member of the population with equal chance of being selected) should serve best our purpose although this goal is not easily attainable in view of certain difficulties of test-administration and the universe under consideration. Moreover, a purely random sample irrespective of grades and sex, will fail to represent the pupils for whom the test is to be applied, and therefore, the classes for whom the test is prepared (VII, VIII, IX and X of high schools) and the sexes for which we have separate schools are taken notice of as special points in the selection of the sample. The following characteristics are made out for the sample upon whom the battery is to be tried.

(a) Size of Sample:— In order to make it convenient to compute Davis Indices (1946) which are based upon Flanagan's, Guilford's recommendation (1954, p.429) to examine a sample of 370 is accepted and a sample is selected as shown in Table 3.1 below:

Table 3.1 Showing the number of pupils in different classes upon whom GUA/67 battery is administered and the number of pupils (in parentheses) constituting the sample for item-analysis.

<table>
<thead>
<tr>
<th>Classes</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBGS (*)</td>
<td>47</td>
<td>46</td>
<td>48</td>
<td>48</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>(45)</td>
<td>(45)</td>
<td>(45)</td>
<td>(45)</td>
<td>(180)</td>
</tr>
<tr>
<td>CCHS (*)</td>
<td>48</td>
<td>49</td>
<td>49</td>
<td>46</td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>(49)</td>
<td>(49)</td>
<td>(49)</td>
<td>(46)</td>
<td>(190)</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>95</td>
<td>97</td>
<td>94</td>
<td>381</td>
</tr>
<tr>
<td></td>
<td>(93)</td>
<td>(94)</td>
<td>(94)</td>
<td>(89)</td>
<td>(370)</td>
</tr>
</tbody>
</table>

(*) PBGS = Pan Basar Girls' High School, Guwahati.
CCHS = Cotton Collegiate Higher Secondary School, Guwahati.
(b) Schools in the Sample: Two centrally located urban schools of which one is a fairly large high school for girls and another is a still larger government higher secondary school (only recently converted) for boys are selected. Both are Assamese medium schools and represent pupils from a wide scatter of heterogeneous population of the city of Guwahati. The schools are affiliated to the Board of Secondary Education, Assam.

(c) School Classes in the Sample: Classes VII, VIII, IX and X for whom the test is developed, are represented in the sample. The exact number of pupils upon whom the test has been administered are shown in Table 3.1. As the actual class-wise attendance in different sections exceeds far above the proposed number, every second or third pupil, depending upon the actual attendance of pupils on the day of examination, is selected to constitute a sub-sample.

(d) Boys and Girls in the Sample: Boys and girls are given equal representation in the sample as the final form is proposed to be standardised for all high school going boys and girls in these four classes with Assamese as the medium of instruction. The girls' environment in Assam is slightly different from that of the boys, particularly from the point of view of the position they occupy in families and the nature of their occupation at home. It may be mentioned here that in most Assamese homes the women engage themselves in cooking and other household work and besides, they utilise
a sizeable part of their daily routine in wearing, knitting, embroidery work etc.; and in these pursuits men seldom take part. It is therefore, thought important to include girls separately in the sample for a trial with the items which are selected without any bias for any special group.

(e) **Age Group in the Sample** :- The sample is not approached from the point of view of the chronological age of pupils because informations relating to such age of pupils are often faulty and therefore not dependable (this point is further discussed in Chapter 6). The class-wise representation is given more stress and pupils irrespective of different ages are being included in the sample. The range of age, however, is determined from the reported age of pupils in the sample as shown in the distribution tables of the same chapter.

(f) **Urban Schools in the Sample** :- Only urban schools are taken in the sample because the test is thought to be of considerable use in the immediate future among pupils of urban areas where testing facilities are more readily available. Nonetheless, it is difficult to distinguish such pupils as purely urban or purely rural as many rural pupils come to read in urban schools particularly in the top classes.

(g) **One City in the Sample** :- Only one city i.e., Gauhati is taken in the sample as this is the largest city of Assam with a population of nearly a hundred thousand (Sarkar, 1965,II,p.6). This is, in fact, a cosmopolitan city
and many people from different places of Assam come to live here with their families in connection with their occupation or business.

3.2. Administration of GUÁ/67

Before administering the subtests, the Principals of the two institutions were contacted with a view to secure their full co-operation in this project. Various problems of administration like sitting arrangement, room accommodation, lighting, noise, routine-work etc. were discussed and testing dates were also finalised. For a smooth and uniform tryout of the subtests, necessary care was taken with regard to the following aspects of administration.

(a) Training of Examiners :- Although the bulk of the administration work has been managed by the author himself, several post-graduate students of Education of the University were trained up to help him mainly as proctors and occasionally as test-administrators. The training consisted in picking up some willing and able workers and then acquainting them with the details of the projected administration. First, they were provided with written instructions as detailed in Illus.3.1 and each had to appear in a mock-administration of the test in the Psychological Laboratory of the Department of Education. They rehearsed every step of administration including meeting some unusual needs like testees' asking things concerning particular problems, or attempting to discuss
problems among friends, or asking for titbits etc. The mock-trial also enabled the author to pick up those students who showed greater ability in controlling a situation like that of administering a psychological test. The examiners included both men and women having a good speech and presence of mind.

(b) Directions to Examinees:— According to written instructions provided to examiners (Instruction 4A in Illustr.3.1), as soon as the booklets were distributed in a class after the testees had taken their seats, they were asked to write their names etc. at appropriate blanks. It was noted that many students in different classes could not write their age and birth-date as easily as they wrote their names. The testees were assured that the information concerning their age would not be used for any other purpose excepting in connection with the research project and they should not feel concerned about disclosing such a vital information. The directions provided on the cover page of each subtest were slowly read out and the testees were asked to follow them at the same speed. The first example was read out and explained if necessary for a solution and the testees were led to find out the answer for the second example. In some cases, a black board was used (analogies and number series subtests) to illustrate an item. They were invited to ask questions while the examples were demonstrated and were told that no further explanation would be made once the actual testing had begun.
Illustr. 3.1. Instructions to Examiners, GU/67

1A. Ascertain whether accommodation for all testees in the room are sufficient or not and then let the testees take their seats comfortably.

2A. Put on a cordial expression and say that, 'You are required to appear in a new type of test usually liked by most pupils of your age'.

3A. Distribute test booklets and see that no one has turned a page.

4A. Instruct them to write their names etc. in Assamese or English. Emphasise that they are required to give their correct age and the date of birth. If the date of birth is not known, the correct age in completed years and months should be written.

5A. Explain by writing on a black-board some new letter combinations etc.) used in the tests but are not found in print in their text and other books. Say, 'If you cannot read a letter, you may seek my help'.

6A. After they have written the informations, say, 'Now, I will read out slowly the lines that appear below. You silently follow my reading'. Read out slowly the instructions and see that the second question is correctly answered by all testees.

7A. After the written instructions are read out, say, 'Wait, do not turn over the pages. One thing you must remember that you will try to answer every question in the test. If you are in doubt about an answer, then underline the word that you may consider to be the most likely answer. But this does not mean that you will underline haphazardly to answer the questions'. Repeat this instruction if necessary. Again
say, 'Return the booklet after you have answered the test and sit quietly at your respective seats'.

8A. Start the stop-watch or note the time as you let them begin their work.

9A. See that they answer systematically from the first question onward to the last question. If some one is found distracted, go near him and say, 'Most of the questions are quite easy and you can work out many problems if you are a bit more attentive' or similar things to encourage him to work. Do not allow testees to discuss and exchange meaningful glances.

10A. Do not help testees to solve problems. If some one asks about a question, let him work out the answer in his own way.

11A. If a booklet is returned, see that most questions are answered by the testee. If necessary, ask him to revise.

12A. Note time when the first and the last booklets are returned. Although a tentative time limit is fixed, allow testees sufficient time to work out most of the given problems.
They were told to attempt all items, and if necessary, by doing intelligent guess work. They were, however, warned not to make wild guesses and answer items carelessly. The examiners were instructed to help testees if they were unable to read an item due to some printing defect. The testees were reminded of some peculiar construction of compound letters as mentioned in Instruction No. 5A in Illus. 3.1 and they were told that they could be helped if they were unable to read a peculiar construction. When the administration of a test was on, nobody excepting the administrator was allowed to stand in front of the testees.

(c) Communication among the Testees :- As the testees from different classes had to appear in small batches (usually class-wise) in six different subtests, communication among testees could not be entirely controlled, particularly when they had to move out for the next class to come in and also when they had to go for their tiffin period. However, as such communications were anticipated more among the senior pupils, the testing procedure was designed to examine senior pupils first and junior pupils last.

(d) Distribution and Collection of Tryout Material :- A testing room was made ready with desks and benches arranged in such a manner that examiners or proctors could move freely between them. When examinees were made to sit comfortably, they were told of the purpose of the test in few words and given assurances that the tests would be very easy and everyone would be able to work out the problems to his great
satisfaction. After distribution of booklets, testees were kept off from turning the pages and they were asked to follow instructions as strictly as possible.

(e) Security Measures:— The booklets and other materials were carried on a day of testing in a properly locked up box and this was placed centrally at a convenient place from where examiners could use them without giving a chance to any outsider to peep at the questions. It was noticed that many school teachers were curious to know about the questions and the mode of administration of the tests as well. Such teachers were not allowed to examine the items of the test proper although they were allowed to watch the procedure from a suitable place at the back of a room.

(f) Pupil Motivation and Participation:— In order to motivate pupils they were told that it would be a novel experience to appear in such a test which was so different from the usual tests they were familiar with in their school examinations. Since most pupils were reluctant to appear in any kind of examination and they developed a short of fear, it was thought necessary to remove such doubts and anxieties: they were told of the interesting nature of the items and how easy they should be to all pupils appearing in the tests. They were also given first one easy subtest (Opposites) where only one operation was needed (education of relation) to find out the answer. Subsequently, the other tests were given and the two tests with number manipulation (arithmetical reasoning and
Fig. 3.2. Showing time intervals taken by different classes of testees in answering subtests of GUA/67
number series) were kept apart and placed between tests of verbal nature. The subtests were administered to a class in the following order:

First session before tiffin-break:
1. Opposites
2. Arithmetical Reasoning
3. Analogies

Second session after tiffin-break:
1. Verbal Reasoning
2. Classification
3. Number series

The testees were also informed that their performance in the tests would not depend upon their learning different subjects in the school. Pupils were found to be very enthusiastic in answering the practice problems and their opinion at the end of the testing was noted to be favourable. They reported that they liked answering the items although some items were a little more difficult toward the end of a test. They wanted their results to be conveyed when they were ready for announcement. But particulars of marks etc. were not made known.

(g) Timing the Subtests in Testing Situations:-
In administering the subtests, ample time was given in each case so that everybody could get sufficient time to answer most items. A record was kept of the allotted time and different tests took different time as may be seen in Fig.3.2. The three verbal tests, opposites, analogies, classification took lesser time than the rest. Individual variation is also noted with respect to different classes although no trend is notice-
able in the Figure.

3.3. **Scoring the Subtests**

Scoring of answered booklets is done with the help of a rights-key cut out from thin card-boards to fit pages of test-booklets. Before applying a scoring stencil, items of a particular page are checked out for possible mistakes like placing a line far outside a cutout, or marking an answer in any other way than by underlining, or any double or multiple underlining of an item. The number series subtest is scored by comparing answers in a booklet with that of the scoring key.

Items of an answered booklet are marked out for different categories as shown below:

- ✓ = rightly answered item
- x = wrongly answered item
- 0 = omitted item
- UN = unattempted item
- M = multiple underlining of an item.

Then, for the first step in item-analysis work the total rights score for each booklet is calculated and written on the cover page of the booklet. The scoring method is further discussed in the following chapter.
SUMMARY

In the first section of this chapter, details about the selection of a sample for the preliminary tryout are stated and discussed. In the second section, some important conditions relating to test administration are discussed and the procedure for a standard administration is laid down. In the last section, the scoring procedure for the subtests is stated.

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