CHAPTER IV
DESIGN AND METHODOLOGY
was basically a correlational study conducted on students and employees.

Sample

The population comprised of undergraduate Plus I students of University College, Rohtak, M.B.B.S. students, technical and Junior teaching staff of Medical College, Rohtak. Out of this population of 2300 a sample of 1000 cases was drawn on random basis with the help of a table of random numbers. It was found that the sample covered the age range of 15 to 45 years and income ranging from Rs. 1000 to Rs. 4000 per month. Students of both the sexes were included in the sample of the present study.

Tools Employed

The data for the present study was obtained by the administration of different scales, tests and an inventory.

The following tools were used:

1. Noise Sensitivity Scale.
2. Sinha’s W-A Self Analysis Form (Anxiety Scale)
3. Jalota’s General Mental Ability Test
4. Personality Inventory (Introversion-Extraversion Scale)
Noise sensitivity scale

Noise sensitivity scale is a self-reporting measure. There are 20 statements in the Noise Sensitivity Scale. Each statement has five response alternatives.

In order to have a tailor-made noise sensitivity measuring instrument for Indian Ss, the present scale was constructed in simple everyday English. It was standardized and norms were prepared by following the standard procedure.

First of all 50 items were constructed after interviewing sections of people. After constructing the items they were sent to ten judges, experts in the area of Psychology and Sociology and Business management with the instruction to examine each item in terms of its relevance to noise sensitivity, ambiguity and difficulty level. Certain items were then modified/rejected in the light of expert comments before pretesting them on a group of 100 Ss of the same background as the sample.

In the light of pretesting experience certain items lacking clarity or posing difficulty in understanding were rejected. In this way the E was left with thirty-one items out
of fifty constructed earlier. Eleven more items were screened out on random basis so that the final scale consisted only 20 items. Before adopting it, its reliability and validity were checked. The reliability and validity coefficients were worked out on another sample of randomly selected 200 students. For working out the reliability of the scale, test-retest method was employed with an interval of four weeks after the first administration. This was done so that the interval between the test-retest may not be either too short or too long. For working out the validity coefficient, the same group was administered Weinstein's Noise Sensitivity scale and the value of Pearson's $r$ was computed between the scores obtained by the group on the newly constructed scale and Weinstein's Noise Sensitivity scale. The coefficient of reliability and validity worked out to be .87 and .76 respectively. Since both the values were statistically significant, the constructed scale was taken as a satisfactory tool for objectively measuring the noise sensitivity level.

**Norms:**

Norms of the test were prepared by administering the scale on 1000 randomly selected male and female population from University and Medical College, Rohtak. The following statistics were obtained:
<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>69.47</td>
</tr>
<tr>
<td>Medium</td>
<td>69.30</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>13.5</td>
</tr>
<tr>
<td>Sk</td>
<td>0.03</td>
</tr>
<tr>
<td>Ku</td>
<td>0.26</td>
</tr>
<tr>
<td>Q1</td>
<td>56.7</td>
</tr>
<tr>
<td>Q3</td>
<td>71.4</td>
</tr>
</tbody>
</table>

**Scoring:**

The final version of the scale had 20 items on a five-point scale. It is a self-reporting scale. It can be administered on both sexes. There is no time limit for its completion but subjects take usually 20 minutes. It can be administered individually or on a group of individuals. The responses are scored as per the procedure laid down for a five-point scale. The scoring of the items (with star) no 4, 7, 9, 12, 14, 18, 19 and 20 is to be done in reverse order that is 5, 4, 3, 2, 1. The scoring of the rest of the items are to be done as 1, 2, 3, 4, 5. The range of scores on this test would be from 20 to 100. Thus the lowest score on the scale could be 5 and highest could be 100. Higher the score more the susceptibility of the person to the noisy environment.
The individuals scoring above 71.4 would be highly sensitive to noise while the individuals falling below 57 would be ranked as low sensitive to noise. The middle range of scores would indicate moderate degree of noise sensitivity.

Sinha W-A Self - Analysis form (Anxiety Scale):

This scale measures the anxiety level of the person. This self analysis form is a simple type of scale. This test consists of 100 statements in all. Each statement has two alternatives 'Yes' and 'No'. Ss were instructed to put ( ) mark on the alternate terms which is best suitable for him/her.

The primary form of test was called the Self - Analysis form, it had a total of 40 items of the 'Yes' 'No' Type. It was assumed that anxiety would be revealed by the reported behaviour not in any one situation but by his average behaviour in a great number of these situations. A person who is more anxious would tend to be anxious in a greater number of different situations.

The final form was administered to 239 under-graduates male students during a class hour under the natural title for
W - A Self Analysis form. The administration time for the entire test was approximately 20 minutes. The age range of the subjects was from 19 to 24 yrs.

Reliability:

The reliability was worked out by split-half and test-retest methods.

<table>
<thead>
<tr>
<th>Method</th>
<th>N</th>
<th>R</th>
<th>Index of S.E.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split-Half</td>
<td>239</td>
<td>.86</td>
<td>.92</td>
</tr>
<tr>
<td>Test-retest</td>
<td>88</td>
<td>.73</td>
<td>.85</td>
</tr>
</tbody>
</table>

Validity

The score on Taylor's M.A.s as modified by the author was used as the first validation criterion on 70 Ss who had taken the test. Taylor's M.A.s was of the same order as obtained that the two tests were measuring almost the same thing. Hindal in a recent study on 200 male students of Punjab University has found scores on the scales to correlate highly with these on other measures. Against Taylor's scale, the correlation was .72, against Cattell's IPAT Anxiety Scale questionnaire, it was .70.
Norms:-

Norms for the test are available on a sample of 78 University students consisting of 310 boys and 475 girls. They belonged to two under-graduates and post-graduates classes in the different faculties. Norms for both men and women have been prepared separately. In both the groups, the distribution had a slight positive skewness and the girls tended to have a slightly higher anxiety score than the boys.

Scoring:

This scale was scored accurately. For any response indicated as 'Yes' the S was awarded the score of one and for a 'No' response, S was given "Zero". The sum of all the 'Yes' responses would be the total anxiety score of the individual. After obtaining the scores Ss are categorized as individuals with high and low anxiety.

A group test of general Mental ability or Jalota intelligence test:

In present study the mental ability scores of Ss were found out by administrating this test on them. There are 100 items in this test. Each statement carries alternatives. Ss are to choose alternative best suitable to them. A test of general ability has 100 items and are divided into a
vocabulary group of ten similar plus ten 'opposite' items and a group of twenty 'classification' items; a set of twenty items of number series, a group of ten items for selection of best answers plus ten items of 'reasoning' and twenty items of analogies: The present test consists of 100 questions from different test dimensions of knowledge which were distributed in the following categories:

(1) Logical selection questions.
(2) Analogy questions.
(3) Best answer questions.
(4) Information questions.
(5) Disorganized sentences (Jumbled Sentences).
(6) Number series questions.
(7) Absurdity questions.
(8) Inference questions.

The time limit to complete this test is 25 minutes. A copy of test booklet has been given in the Appendix.

Reliability

The reliability of the test was worked out by the author using two methods.
Validity

Predictive, internal and factorial validities of this group test of General Mental Ability were calculated to justify its use for the measurement of general intelligence of the Ss of the sample.

Predictive validity

The test was validated against the annual school marks of the examinees. The annual examination came 5 months after the test of intelligence marks which were made available, were utilized for their purpose. The results showed that the test had high predictive validity.

Internal validity

A random sample of 150 pupils having a mean test scores of 30.50 and a standard deviation of 8.00 was used for internal validation. The obtained correlation indicated the good homogeneity among the sub-tests and of the sub-tests with the total test scores.
The final form of inventory as already pointed out consists of only 56 items. These items were carefully selected on the basis of 50% discrimination value for introverted and extraverted persons.

**Reliability:**

The reliability of the test was measured by two methods. It has high reliability co-efficient by both split-half (first half compared with second half) and test-retest methods.

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<td>.64</td>
<td>.80</td>
<td>1.49</td>
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<tr>
<td>Test-Retest</td>
<td>150</td>
<td>.72</td>
<td>.80</td>
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**Validity:** Method - External Criterion.

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Norms:

Norms for the tests are available on a sample of college male and female students. They belonged to under-graduate classes of different faculties. Norms for males and females have been prepared separately. An individual with high scores, that is above 75th percentile may be considered an extravert or an introvert while a person with a very low score that is below 25th percentile may be considered as a borderline case (insignificant) on that trait.

Scoring

Extraversion and introversion category of Ss are categorized according to the norms given in its manual.

Administration of the Test, Inventory and scales

The testing was done in two sessions. In the first session the Anxiety scale and General Mental Ability test were administered in groups consisting of 50 Ss. After a rest interval of thirty minutes the second session commenced which included the administration of I-E inventory and the newly constructed noise sensitivity scale. The investigator explained the aims and objectives of the study. Necessary instructions were given to them before administering the relevant tests, inventory and scales. The necessary steps were
taken to control the drawbacks of the questionnaire/method.

Although instructions were written on all the scales, tests and inventory but they were also explained personally by the E along with the procedure of marking responses. The Ss were assured that the tests, scales and inventory were being given to them only for research purposes and their responses would be kept strictly confidential. They should thus feel free and frank, in marking their responses with utmost of sincerity. They were also informed about the time limit of every test, inventory and scales before the starting signal was given.

The E was fully aware of the difficulty in administering all the four tests to a particular group of Ss on the same day, due to the possibility of the results being polluted by boredom and fatigue but there was no option. There would have been a substantial loss of sample, had the E asked the Ss to come to the laboratory for further testing on a subsequent day at the same time. The size of the groups was deliberately kept small in order to ensure proper supervision.

With this background, we may now pass on to the next chapter dealing with the results and discussion.