Chapter-III
Research Design
CHAPTER – III

RESEARCH DESIGN

The third step of the scientific research is to prepare a research design. A research design is a mapping strategy, which is based on sampling technique. It includes objectives, hypotheses, sampling, Research strategy, method used, tools & techniques for collecting evidences and analyzing the data. A research design is the work before getting the project underway. A research design includes the following components:

1. Objectives of the study
2. Hypotheses of the study
3. Research method & research strategy
4. Sampling design
5. Choice of the research tools
6. Data collection
7. Choice of statistical techniques

Research design is a blueprint of procedure that enables the researcher to test hypothesis by reaching valid conclusion about relationships between independent and dependent variable. In the views of Nokerling’er, Research design has two basic purposes:

- To provide answers to research questions.
- To control variances.

Research design is devised to enable the researcher to justify the research findings in terms of reliability, validity, objectivity and accuracy. Any research plan is deliberately and specifically conceived and executed to have empirical evidence to work our research problems.
Objectives of the study: -

The present study was designed to realize the following objectives:-

O₁. To study the relationship between emotional intelligence and stress among senior secondary students.

O₂. To study the relationship between emotional intelligence and adjustment among senior secondary students.

O₃. To study the relationship between emotional intelligence and academic achievement among senior secondary students.

O₄. To study the difference between the mean stress scores of students having high and low emotional intelligence.

O₅. To study the difference between the mean adjustment scores of students having high and low emotional intelligence.

O₆. To study the difference between the mean academic achievement scores of students having high and low emotional intelligence.

O₇. To study the difference between the mean stress scores of male and female students having high emotional intelligence and low emotional intelligence.

O₈. To study the difference between the mean adjustment scores of male and female students having high emotional intelligence and low emotional intelligence.

O₉. To study the difference between the mean academic achievement scores of male and female students having high emotional intelligence and low emotional intelligence.

O₁₀. To study the difference between the mean stress scores of urban and rural students having high emotional intelligence and low emotional intelligence.
O11. To study the difference between the mean adjustment scores of urban and rural students having high emotional intelligence and low emotional intelligence.

O12. To study the difference between the mean academic achievement scores of urban & rural students having high emotional intelligence and low emotional intelligence.

**Hypotheses of the study:**

The present study has realized the following hypotheses to be formulated:-

**H**1. There is no significant relationship between Emotional Intelligence and Stress among Senior Secondary Students.

**H**2. There is no significant relationship between Emotional Intelligence and Adjustment among Senior Secondary Students.

**H**3. There is no significant relationship between Emotional Intelligence and Academic Achievement among Senior Secondary Students.

**H**4. There is no significant difference between the mean Stress scores of students having high and low Emotional Intelligence.

**H**5. There is no significant difference between the mean Adjustment scores of students having high and low Emotional Intelligence.

**H**6. There is no significant difference between the mean Academic Achievement scores of students having high and low Emotional Intelligence.

**H**7. There is no significant difference between the mean Stress scores of rural and urban students having high Emotional Intelligence.
H₈. There is no significant difference between the mean Stress scores of rural and urban students having low Emotional Intelligence.

H₉. There is no significant difference between the mean Stress scores of male and female students having high Emotional Intelligence.

H₁₀. There is no significant difference between the mean Stress scores of male and female students having low Emotional Intelligence.

H₁₁. There is no significant difference between the mean Adjustment scores of rural and urban students having high Emotional Intelligence.

H₁₂. There is no significant difference between the mean Adjustment scores of rural and urban students having low Emotional Intelligence.

H₁₃. There is no significant difference between the mean Adjustment scores of male and female students having high Emotional Intelligence.

H₁₄. There is no significant difference between the mean Adjustment scores of male and female students having low Emotional Intelligence.

H₁₅. There is no significant difference between the mean Academic Achievement scores of rural and urban students having high Emotional Intelligence.

H₁₆. There is no significant difference between the mean Academic Achievement scores of rural and urban students having low Emotional Intelligence.

H₁₇. There is no significant difference between the mean Academic Achievement scores of male and female students having high Emotional Intelligence.
H_{18}. There is no significant difference between the mean Academic Achievement scores of male and female students having low Emotional Intelligence.

**Research method used**

For investigation and collection of the data descriptive survey method was used to find out the relationship between emotional intelligence and stress, emotional intelligence and adjustment, emotional intelligence and achievement, and to find out any significant difference between the mean scores of stress, adjustment and academic achievement of rural/urban and male/female students in relation to high/low emotional intelligence. For the collection of the data the researcher surveyed the different schools located in the Delhi region for urban as well as rural school students and administered the emotional intelligence scale, stress scale and adjustment scale on the students studying in the eleventh standard.

**Sampling Strategies**

Sample is fundamental to the conduct of research and interpretation of its results. Barring the unusual instance in which a complete sense is taken, research is almost invariably conducted by means of a sample on the basis of which generalization applicable to the population from which the sample obtained is reached.

For collection of 200 senior secondary students from the urban and the rural schools, random sampling was used. Sample for the urban area and rural areas were collected from Delhi region schools. There are eight districts in Delhi. But the sample of the study was drawn from two districts viz., North-West and North-East.

After selection of these two districts, 20 Co-Ed. Government Senior Secondary Schools were selected by using random sampling method. Total numbers of 200 students were selected.
randomly from these schools. The distribution of samples land the name of the schools from which data were collected are given in figure below and table respectively.

**Fig. 2**

**Total = 200 Students**

**Distribution of samples**

<table>
<thead>
<tr>
<th>North-East District</th>
<th>North-West District</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Senior Secondary Schools</td>
<td>10 Senior Secondary Schools</td>
</tr>
<tr>
<td>5 Rural</td>
<td>5 Rural</td>
</tr>
<tr>
<td>5 Urban</td>
<td>5 Urban</td>
</tr>
<tr>
<td>10 students from each school</td>
<td>10 students from each school</td>
</tr>
<tr>
<td>5 Boys and 5 Girls</td>
<td>5 Boys and 5 Girls</td>
</tr>
<tr>
<td>10 Schools x 10 Students=100</td>
<td>10 Schools x 10 Students=100</td>
</tr>
</tbody>
</table>

In view of the importance of sampling the investigator selected the following schools:

**Table-II**

**Name and Numbers of Urban Senior Secondary Schools from where data were collected**

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Name of the School</th>
<th>Class selected</th>
<th>No. of students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boys</td>
</tr>
<tr>
<td>1.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Bhajanpura, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>2.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Loni Road, East Gokulpuri, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>3.</td>
<td>Govt. Sarvodaya Bal Vidyalaya, Vijay Nagar, Delhi</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>4.</td>
<td>Govt. Sarvodaya Bal Vidyalaya, Shakti Nagar, Delhi</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>Sr.no.</td>
<td>Name of the School</td>
<td>Class selected</td>
<td>No. of students</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boys</td>
</tr>
<tr>
<td>1.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Bhogarh, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>2.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Mukhmail Pur, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>3.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Harewali, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>4.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Holambi Kalan, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>5.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Siras Pur, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
<tr>
<td>6.</td>
<td>Govt. Co-Ed. Sr. Sec. School, Barwala, Delhi.</td>
<td>XI</td>
<td>05</td>
</tr>
</tbody>
</table>

Table-III

Name and Numbers of Rural Senior Secondary Schools from where data were collected
7. Govt. Co-Ed. Sr. Sec. School, Singhu Village, Delhi. | XI | 05 | 05
8. Govt. Co-Ed. Sr. Sec. School, Ghoga, Delhi. | XI | 05 | 05
9. Govt. Co-Ed. Sr. Sec. School, Rani Khera, Delhi. | XI | 05 | 05
10. Govt. Sarvodaya Bal Vidyalaya, Nizam Pur, Delhi | XI | 05 | 05

Total No. of Students | XI | 50 | 50

**Research Tools used and their Descriptions**

The following standardized tools were selected for the study:

- Emotional Intelligence Scale (EIS)
- Bist Battery of Stress Scale (BBSS)
- Bell Adjustment Inventory

(1) **Emotional Intelligence Scale (EIS)-(2007)**

This test was originally developed by Anukool Hyde Sanjyot pethe and Upinder Dhar. This test consists of 34 items and measures emotional intelligence through ten factors:

- Self-Awareness
- Empathy
- Self-motivation
- Emotional stability
- Managing relations
- Integrity
● Self-Development
● Value orientation
● Commitment
● Altruistic Behavior

Reliability: - The reliability of the scale was determined by calculating reliability coefficient of a sample of 200 subjects. The split half reliability coefficient was found to be 0.88.

Validity: - Besides face validity, as all items were related to the variable under focus, the scale has high content validity. It is evident from the assessment of Judges/experts that items of the scale are directly related to the concept of emotional intelligence. In order to find out the validity from the coefficient of reliability (Garrette, 1981), the reliability index was calculated, which indicated high validity on account of being 0.93.

Factors of Emotional Intelligence: -

A. Self-awareness is being of oneself and is measured by items 6,12,18,29. These items are “I can continue to do what I believe in even under severe criticism,” I have my priorities clear,” I believe in myself, and “I have built rapport and made and maintained personal friendships with work associates. “This factor is the strongest and explains 26.8% variance and has a total factor load of 2.77. The correlation of this factor with total score is 0.66.

B. Empathy is feeling and understanding the other person and is measured by items 9,10,15,20 and 25. These are “I pay attention to the worries and concerns of others,” I can listen to someone without the urge to say something, “I try to see the other person’s point of view, “I can stay focused under pressure, and “I am able to handle multiple demands.
“This factor explains 7.3% variance with a total factor load of 3.11. The correlation of the factor with total score is 0.70.

C. **Self-motivation** is being motivated internally and is measured by 2, 4, 7, 8, 31 and 34. These items are “People tell me that I am an inspiration for them,” I am able to make intelligent decisions using a healthy balance of emotions and reason, “I am able to assess the situation and then behave,” I can concentrate on the task at hand in spite of disturbances, “I think feelings should be managed, and “I believe that happiness is an attitude. “This factor accounts for 6.3% variance and a total factor load of is 3.28. Its correlation with total score is 0.77.

D. **Emotional stability** is measured by items 14, 19, 26 and 28. These are “I do not mix unnecessary emotions with issues at hand, “I am able to stay composed in both good and bad situations, “I am comfortable and open to novel ideas and information, and “I am persistent in pursuing goals despite obstacles and setbacks. “This factor explains 6.0% variance with a total factor load of 2.51. The correlation of this factor with total score is 0.75.

E. **Managing relations** is measured by 1,5,11 and 17. The statements that measure this factor are “I can encourage others to work even when things are not favorable, “I do not depend on others’ encouragement to do my work well, “I am perceived as friendly and outgoing, and “I can see the brighter side of any situation”. This factor explains 5.3% variance with a total factor load of 2.38. The correlation of this factor with total score is 0.67.

F. **Integrity** is measured by items 16, 27 and 32. “I can stand up for my beliefs, “I pursue goals beyond what is required of me, and “I am aware of my weaknesses” are the
statements that measure this factor. This factor explains 4.6% variance with a total factor load of 1.88.

G. Self-develop**ment** is measured by item 30 and 33 which are “I am able to identify and separate my emotions and “I feel that I must develop myself even when my job does not demand it” and explains 4.1% variance with a total load of 1.37.

H. Value orientation is measured by items 21, 22. The statements are “I am able to maintain the standards of honesty and integrity, and “I am able to confront unethical actions in others” and explain 4.1% variance with a total factor load of 1.29.

I. Commitment is measured by the items 23 and 24. “I am able to meet commitments and keep promises and “I am organized and careful in my work” measure this factor. This factor accounts for 3.6% variance with a total factor load of 1.39.

J. Altruistic behavior is measured by the items 3 and 13. The items are “I am able to encourage people to take initiative, and” I can handle conflicts around me. “It explains 3.0% variance with a total factor load of 1.3.

(II) Bist Battery of Stress Scale (BBSS)-(2006)

This battery was originally developed by Abha Rani Bist, Kumaun University, Almora.

This battery has the following scales in it:

(a) Scale of existential stress (SES)

(b) Scale of achievement stress (SAchS)

(c) Scale of academic stress (SAS)

(d) Scale of self-actualization stress (SSAS)

(e) Scale of physical stress (SPS)

(f) Scale of self-concept stress (SSCS)
(g) Scale of social stress (SSS)
(h) Scale of role stress (SRS)
(i) Scale of institutional stress (SIS)
(j) Scale of family stress (SFS)
(k) Financial stress scale (FSS)
(l) Scale of vocational stress (SVS)
(m) Scale of superstition stress (SSUS)

This battery measures the four components of the stress:

i. Frustration

ii. Conflict

iii. Pressure

iv. Anxiety

**Reliability**

Reliability of the scales of the battery was calculated by three ways for knowing (i) dependability i.e., short-term test-retest correlations, (ii) stability, i.e., retest after a longer interval, and (iii) internal consistency, i.e., split-half correlations and correlation between total scores and scores on each of the component.

**Validity**

All the scales appear to be having content validity and item validity. The method of selecting items supports this supposition. In addition, construct validity (discriminability) was estimated for all scales in a two-fold fashion. The first type tested if the construct measured differentiated students on some related construct. For this memory was taken. The second type tested if the
construct measured by the scales was not related to construct predicted by theory. For this internal evaluation was taken. In both the construct validity was affirmed.

(III) Bell Adjustment Inventory

Bell adjustment inventory (student form) is one of the most widely used personality inventories. The inventory was developed by H. M. Bell in the year 1934. In the process of adaptation, the inventory was once again subjected to all the technical procedures for test standardization which renders it especially suitable for use in the Hindi speaking areas. Since the standardization samples comprised undergraduate students of different rural and urban colleges, this inventory can be used in the final classes of the high schools and also in colleges, individual as well as group situations.

Mohsin-shamshad adaptation of Bell adjustment inventory (1969) consists of 135 items, retained as a result of item analysis, out of 140 items. The inventory measures adjustment in four different areas—home, health, social and emotional—separately, as well as yields a composite score for overall adjustment. Home adjustment is expressed in terms of satisfaction or dissatisfaction with home life; health adjustment in terms of illness; social adjustment in terms of shyness, submissiveness, introversion; and emotional adjustment in terms of depression; nervousness etc. high scores on the inventory indicate low adjustment and low score high adjustment in different specific areas, and also in respect of adjustment taken as a whole. Numbers of items related to each area of adjustment are as Home (35 items), Health (31 items), Social (34 items) and Emotional (35 items). Three responses categories have been provided for answer to each item.

Reliabilities: Both test-retest and odd-even reliabilities of different areas as also of the total test are summarized as:
<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Test-Retest</th>
<th>Odd-even (full-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>.700</td>
<td>.806</td>
</tr>
<tr>
<td>Health</td>
<td>.804</td>
<td>.824</td>
</tr>
<tr>
<td>Social</td>
<td>.868</td>
<td>.738</td>
</tr>
<tr>
<td>Emotional</td>
<td>.919</td>
<td>.855</td>
</tr>
</tbody>
</table>

**Validity:** The items of each sub-scale were selected on the basis of the strength of their association with the total test scores in the sub-test. For this purpose, the method of extreme groups’ comparison was used consisting of the 27% upper and 27% lower scoring groups following Kelley’s (1939) recommendation.

(IV) **Achievement test**

For measuring the achievement of the students, their previous class marks were taken as their achievement.

**Administration of the Tests and Data Collection**

To ensure better response, co-operation, genuine interest and personal contact, the investigator went personally to each school. Principals of these schools were contacted and their help were sought for the administration of the tools and collection of data and dates were fixed for the collection of data. The investigator tried his best to build a report with all respondents. All the three set of tests were given to each student and the instructions were given to the students so that they can finish up their tests at right time and without facing any problem.

**Emotional Intelligence Scale:** For the administration of this test on the students, the investigator gave the instructions as according to the manual. The instructions were as:
(i) There is no time limit for the completion of this test but it will hardly take 10-15 minutes to finish-up.

(ii) Before administrating the scale, it is advisable to emphasize orally that responses should be checked as for the same. The responses will be kept confidential.

(iii) It was also emphasized that there is no right or wrong answers to the statements. The statements are designed to understand the differences in individual reactions to various situations. The scale is meant to know the difference between individuals and not meant to rank them as good or bad.

(iv) It was duly emphasized that all statements have to be responded to and no statements should be left unanswered.

(v) Though the scale is self-administering, it has been found useful to read out the instructions printed on the response sheet to the student teachers.

The test was administered to the 200 students in the above-mentioned schools. The above instructions were given to them before administration of the test.

Each item or statement should be scored 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree.

**Bist Battery of Stress Scales:** For the administration of this test on the students, the investigator gave the instructions as according to the manual. The instructions were as:

(i) There is no time limit for the completion of this test.

(ii) Before administrating the scale, it is advisable to emphasize orally that responses should be checked as for the same. The responses will be kept confidential.

(iii) It was also emphasized that there is no right or wrong answers to the statements. The statements are designed to understand the differences in individual reactions to various
situations. The scale is meant to know the difference between individuals and not meant to rank them as good or bad.

(iv) It was duly emphasized that all statements have to be responded to and no statements should be left unanswered.

(v) Though the scale is self-administering, it has been found useful to read out the instructions printed on the response sheet to the student teachers.

The test was administered to the 200 students in the above-mentioned schools. The above instructions were given to them before administration of the test. The scoring is as follows for the positive statements:

<table>
<thead>
<tr>
<th>Always too much</th>
<th>Often Much</th>
<th>Sometimes Average</th>
<th>Rarely Less</th>
<th>Never Not at all</th>
<th>Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For negative statements, it is just vice-versa. The total will be separate for frequency and quantity. The grand total will be the sum of frequency score and quantity score. **High scores indicate high degree of stress.** Each scale will yield:

(a) Frequency of stress score

(b) Quantity of stress score

(c) Total stress score

**Bell Adjustment Inventory:** Instructions for answering the questions were given on the front cover of the test booklet, and the procedures for test administration are described. Although no time limit is imposed, the inventory takes 35 to 40 minutes. After giving the instructions a test
booklet of Bell’s adjustment inventory should be supplied to the testee and he should be asked to fill in his name, date and class, and make all other necessary entries. He should then read the instructions silently. He should be instructed not to read the questions unless asked for. Before the test proper begins, it is to be ensured that the instructions have been understood by the testee/testees. The test can be administered to an individual or a group at a time. The inventory is scored simply by counting the number of responses marked in each area of adjustment. The scores are to be given in the manual for each response. Each response has to be given a score of one. **High scores indicate poor adjustment.** The sum of scores in different areas gives measure of total adjustment.

**Statistical Techniques Used**

The following statistical techniques were used for the analysis and interpretation of the data:

(i) Mean

(ii) Median

(iii) t-test

(iv) Product Moment Correlation

**Delimitations**

- The present study was confined to Co-Ed. Senior Secondary students only.
- The sample was restricted to 200 students from class XI.
- The age group of the sample was restricted to 17-20 years.
- The present study was confined to ten urban and ten rural area schools only.
- Sample for urban schools and rural schools were confined to Delhi region.
- For measuring achievement of a particular student, their previous class result was taken.
- Stress was confined to academic stress and family stress.