CHAPTER IV

METHODOLOGY

- OBJECTIVES OF THE STUDY
- HYPOTHESES OF THE STUDY
- METHOD ADOPTED FOR THE STUDY
- SAMPLE FOR THE STUDY
- TOOLS AND TECHNIQUES
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METHODOLOGY

After gaining adequate theoretical perspective about the self-concept and locus of control of delinquents and non-delinquents, suitable hypotheses were proposed and appropriate design was developed to collect the required data to prove the hypotheses. Therefore, this chapter deals with the tools and techniques used to collect data, validity and reliability of the tools, administration of the tools, pilot study, main study and the statistical techniques used.

4.1 OBJECTIVES OF THE STUDY

The following are the objectives of the study:

1. To identify normal students and juvenile delinquents.
2. To find the self-concept of juvenile delinquents and normal students.
3. To compare the self-concept of the delinquents and normal students.
4. To find the locus of control of the juvenile delinquents and normal students.
5. To compare the locus of control of the juvenile delinquents and normal students.
6. To find the bearing of sex on the self-concept of the juvenile delinquents and normal students.

7. To find the bearing of sex on the locus of control of the juvenile delinquents and normal students.

8. To find the bearing of religion on the self-concept of the juvenile delinquents and normal students.

9. To find the bearing of religion on the locus of control of the juvenile delinquents and normal students.

10. To find the influence of locality on the self-concept of the juvenile delinquents and normal students.

11. To find out the influence of locality on the locus of control of the juvenile delinquents and normal students.

12. To find the relationship between self-concept and locus of control of normal students and juvenile delinquents as a whole.

13. To find the relationship between self-concept and locus of control among normal students.

14. To find the relationship between self-concept and locus of control among the juvenile delinquents.

15. To find the difference between the relationship between self-concept and locus of control of normal students and the
relationship between self-concept and locus of control of juvenile
delinquents.

4.2 HYPOTHESES OF THE STUDY

Based on related studies, the following hypotheses were
formulated.

1. There will be significant difference between normal boys and
normal girls with respect to their self-concept.

2. There will be significant difference among normal students based
on religion with respect to their self-concept. That means, there
will be significant difference between the self-concept of Hindu-
and Christian students, Hindu and Muslim students and Christian
and Muslim students.

3. There will be significant difference between normal rural and
urban students with respect to their self-concept.

4. There will be significant difference among normal students based
on type of school with respect to their self-concept. The students
of Unaided, Aided and Govt. Schools differ significantly in the
level of self-concept.
5. There will be significant difference between delinquent boys and delinquent girls with respect to their self-concept.

6. There will be significant difference among the Hindu, Muslim and Christian delinquents, with respect to their self-concept.

7. There will be significant difference between the self-concept of the delinquents from rural and urban areas.

8. There will be significant difference among juvenile delinquents based on duration of stay at juvenile home with respect to their self-concept.

9. There will be significant difference among juvenile delinquents based on living status of parents with respect to their self-concept. The delinquents whose parents are alive will have better self-concept than the delinquents whose father or mother are not alive.

10. There will be significant difference between the normal students and the delinquents, with respect to their self-concept.

11. There will be significant difference between the normal boys and delinquent boys and between normal girls and delinquent girls, with respect to their self-concept.
12. There will be significant difference between the self-concept of normal students and juvenile delinquents based on religion.

13. There will be significant differences between the normal students and delinquents from rural area and between the normal students and delinquents from urban area with respect to their self-concept.

14. There will be significant difference between normal boys and girls with respect to their locus of control.

15. There will be significant difference among normal students based on religion with respect to their locus of control.

16. There will be significant difference between the locus of control of the students from rural area and urban area.

17. There will be significant difference among normal students based on type of school (Unaided, Aided and Government) with respect to their locus of control.

18. There will be significant difference between delinquent boys and delinquent girls with respect to their locus of control.

19. There will be significant difference among Hindu, Christian and Muslim juvenile delinquents with respect to their locus of control.
20. There will be significant difference between the delinquents from rural and urban area with respect to their locus of control.

21. There will be significant difference among the delinquents based on duration of stay at juvenile home, with respect to their locus of control.

22. There will be significant difference among delinquents based on the living status of the parents, with respect to their locus of control.

23. There will be significant difference between the normal students and delinquents, with respect to their locus of control.

24. There will be significant differences between the normal boys and delinquent boys and between normal girls and delinquent girls with respect to their locus of control.

25. There will be significant difference between the normal students and juvenile delinquents based on religion with respect to their locus of control.

26. There will be significant differences between the normal students and delinquents from rural area and between the normal
students and delinquents from urban area, with respect to their locus of control.

27. There will be significant relationship between the self-concept and the locus of control of normal students.

28. There will be significant relationship between the self-concept and the locus of control of juvenile delinquents.

29. There will be significant difference between the relationship among self-concept and locus of control of normal students and the relationship among self-concept and locus of control of juvenile delinquents.

4.3 METHOD ADOPTED FOR THE STUDY

Normative Survey Method is adopted for the study.

The investigator found that the Normative Survey Method is extremely useful in realizing the objectives of the present study, because the need for adopting right procedure for carrying out a study is important. The validity and reliability of the findings depend upon the nature of the problem selected, the kind of data taken for study as well as the methodology adopted for arriving at the solutions. Since the present study attempts to compare the self-concept and locus of
control of normal students with the juvenile delinquents, Normative Survey Method was found suitable.

The term survey suggests the gathering of evidence relating to current conditions. According to Good, Bar and Scates (1952), the term 'Normative Survey' is generally used for the type of research that attempts to find out the normal or typical conditions or practice at the present time.

The normative survey approach is followed in studying the local as well as the state, the national and international aspects of education, evaluation and generalization, all directed towards a proper understanding and solution of the significant problems.

The type of information gathered by the normative survey method is capable of rendering important service, because;

1. it determines the present trends and solves current practical problems,
2. it secures historical perspective through a series of cross-sectional pictures of similar conditions at different time,
3. it suggests the course of future development,
4. it helps to fashion many of the tools with which one is doing research,

5. it gathers data from a large number of cases,

6. it is not concerned with the features of individuals but generalized statistics of the whole population,

7. it involves clearly defined problems and definite objectives, careful analysis and interpretations of the data and a logical and skilful reporting of the findings,

8. it contributes to the advancement of knowledge because it affords penetrating insight into the nature of the study which one is dealing with,

9. it provides the background ideas and data from which many more refined laboratory or controlled studies of casual relations are made.

10. Survey may be quantitative or qualitative, descriptions may be either verbal or expressed in mathematical symbols.

Survey studies can be mainly divided into two, descriptive and analytical studies. Descriptive studies are oriented towards the description of the present status of a phenomenon, while in analytical
studies the phenomenon is analyzed on the basis of basic components.

4.4. SAMPLE FOR THE STUDY

The two important aspects in sample selection were kept in mind while selecting sample; 1) the sample has to be representative and 2) it must be of adequate number. "A good sample of a population is the one which within restrictions imposed by its size, will produce the characteristics of the population with the greatest possible accuracy" - (Sukhia, 1963).

A sample is a finite number of observations or cases selected from all cases in a particular universe often assumed to be representative of the total group. 'A representative sample', according to Mouly (1970), would be a miniature or replica of the population, at least with respect to the characteristics under investigation.

SAMPLE SETTING

Since the present study is intended to compare the self-concept and locus of control of normal students and delinquent students, samples from delinquent reformatory schools and ordinary schools were taken. A total sample of 400 students were selected. Sample included 8th, 9th and 10th standard students from delinquent
reformatory schools and ordinary schools. While finalizing the composition of sample care was taken to select students of same age group from delinquent and non-delinquent students. Of the 400 sample, 290 were normal students and 110 were juvenile delinquents. The sample of 290 normal students included 174 boys and 116 girls. Among the 110 juvenile delinquents, 50 were boys and 60 were girls.

While selecting the sample of normal students, care was taken to select students from all types of schools in Kerala (Aided, Unaided and Government schools) and also from rural and urban areas.
Table 4.1 Showing the distribution of students in the sample from the various schools for the study

<table>
<thead>
<tr>
<th>Type of Students</th>
<th>Type of School</th>
<th>Name of School</th>
<th>No. of Boys</th>
<th>No. of Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Normal</td>
<td>Unaided</td>
<td>Sarvodaya Nalanchira</td>
<td>16</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lourde Mount, Vattappara</td>
<td>24</td>
<td>22</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Aided</td>
<td>C.L. H.S.S. Peroorkada</td>
<td>19</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. John’s H.S.S. Nalanchira</td>
<td>25</td>
<td>12</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. Mary’s H.S.S. Kottarakkara</td>
<td>22</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Govt.</td>
<td>G.M.G.H.S.S. Pattom</td>
<td>-</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G.H.S. Kattachakonam</td>
<td>37</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.H.S.S. Pettah</td>
<td>31</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Juvenile delinquents Juvenile delinquents</td>
<td>Govt.</td>
<td>Juvenile Home Trivandrum</td>
<td>36</td>
<td>-</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Juvenile Boys Home, Kozhikode</td>
<td>14</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Juvenile Girls Home, Kozhikode</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>224</td>
<td>176</td>
<td>400</td>
</tr>
</tbody>
</table>

Thus, the sample proved to be representative, reliable and varied. This facilitated the obtainment of reliable data to form right conclusions of the study.
4.5 TOOLS AND TECHNIQUES FOR THE STUDY

In order to test the hypotheses framed for the study, the following tools or techniques have been used.

1. The Self-concept Inventory

2. The Crandall's Intellectual Achievement Responsibility Scale (Locus of Control Test)

Both English and Malayalam versions of the questionnaire were used since some delinquents could not follow English version and some English medium students could not follow Malayalam version.

4.5.1 Self-concept Inventory (Appendix - I. A & B)

The investigator developed the Inventory after reviewing the related literature and selecting the items from "The Way I Feel About Myself" by Ellen V. Piers and Dale B. Harris (1965), “Self-concept Inventory” by S. Murali (1962) and the “Self-concept Inventory” developed by Jeline Davis (1962), keeping in view the social and cultural aspects of Kerala.

Sufficient number of items were included in the tool. Self-concept is the result of one’s experience, reflections, convictions, feedback from
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others and attitudes. So, all these elements were included in the Inventory under separate sub-headings.

With necessary instructions, the draft Inventory was prepared. It was given to experts to get their suggestions for improvement. As per their suggestions, items were selected and necessary modifications were made for the final form of the Inventory. A pilot study was conducted to establish the validity and reliability of the test.

There are 94 statements in the Self-concept Inventory. The Inventory used in this study comprised of a combination of both positive and negative statements.

4.5.1.1 Administration of the Self-concept Inventory

When the students were seated comfortably, they were asked to fill in their names, class, name of the school, sex and religion on the data sheet given. Before they started recording their responses for the Inventory, the following instructions were given. “There is no right or wrong answer for any statement, and the best answer is what you feel is true of yourself. Answer all the items without omitting any. Your responses will be kept confidentially and will be used strictly for the purpose of research only”.
4.5.1.2 Scoring

A positive item with an 'Yes' response and a negative item with a "No" response will get one score, where as, a positive item with "No" and negative item with "Yes" response will get zero mark. The maximum mark possible for the entire test is 94. High score indicates high self-concept. The detail scoring key for this Self-Concept Inventory is given below and also in Appendix-I.C.

**Table 4.2 showing the nature of the items of Self-concept Inventory**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Nature of items</th>
<th>Item Numbers</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Positive items</td>
<td>1,3,4,5,6,7,8,9,13,16,19,20,21,22,25,27,28,29,31,32,33,34,36,37,39,40,41,44,45,46,47,48,50,51,52,53,58,59,65,67,68,69,70,71,75,86,91,92,93,94</td>
<td>One score for the response 'Yes'</td>
</tr>
<tr>
<td>2.</td>
<td>Negative items</td>
<td>2,10,11,12,14,15,17,18,23,24,26,30,35,38,42,43,49,54,55,56,57,60,61,62,63,64,66,72,73,74,76,77,78,79,80,81,82,83,84,85,87,88,89,90</td>
<td>One score for the response 'No'</td>
</tr>
</tbody>
</table>
4.5.2 The Crandall's Intellectual Achievement Responsibility Scale (Locus of control Test) (Appendix - II. A & B)

To measure the locus of control of the respondent's responsibility, the Crandall's Intellectual Achievement Responsibility Scale was selected and suitably modified. In this Questionnaire there are 34 items. For each item two alternatives are given as responses 'A' and 'B'. Respondent has to select one alternative from the two given for each item.

4.5.2.1 Administration

When the students were seated properly, necessary instructions were given regarding the way of marking the responses. They were asked to read each item carefully and mark the response as it applies to them from the two alternatives given for each item.

4.5.2.2 Scoring

The answer sheets of the students were checked against the key and for each correct response one score is given. The maximum possible score in this test is 34, since there are 34 items. The high score indicates his level of the internal locus of control. The detailed
scoring key for this Locus of Control Test is given below and also in Appendix - II C.

**Table 4.3 Showing the nature of the items of Locus of Control Test**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Nature of items</th>
<th>Item Numbers</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Alternative “A”</td>
<td>2,5,6,8,11,12,14,17,18,20,23,24,26,29,30,32</td>
<td>One score for the response ‘A’</td>
</tr>
<tr>
<td>2.</td>
<td>Alternative “B”</td>
<td>1,3,4,7,9,10,13,15,16,19,21,22,25,27,28,31,33,34</td>
<td>One score for response ‘B’</td>
</tr>
</tbody>
</table>

**4.5.3 Pilot Study**

A pilot study was conducted on 50 students to establish the validity and reliability of different tests used, to streamline the instructions to be given to the students for each test and to determine the optimum time duration for each test.

The approximate time schedule for each of the tests as established by pilot study are;

1. The Self-concept Inventory - 30mts

2. Locus of Control Test - 15 mts.
4.5.4 RELIABILITY AND VALIDITY

The most important characteristics of the test tool to be considered before the final selection are reliability and validity.

4.5.4.1 Reliability

"The reliability of a test may be defined as the degree of consistency with which the test measures what it does measure. A test score is called reliable when we have reasons for believing it to be stable and trustworthy" (Sukhia and Melhotra - 1963).

The reliability of the tools used for the present study were established as follows;

1. Self-concept Inventory

In order to establish the reliability of the Self-concept Inventory, the split-half method was used. The correlation between the two parts based on odd-even items was calculated by using Karl Pearson's formula and the co-efficient of reliability obtained was 0.966. This showed that test was a highly reliable one.
2. Locus of Control Test

The reliability of the Locus of Control Test was also established by the split-half method. The correlation between the two parts based on odd-even items was calculated and the co-efficient of reliability obtained was 0.658.

This showed that Locus of Control Test also was a highly reliable one.

4.5.4.2 Validity

Validity refers to the appropriateness of a tool. A valid tool measures what it ought, claims or intends to measure. The following types of validity are used in different studies.

1. Content Validity
2. Face Validity
3. Construct Validity
4. Predictive Validity
5. Concurrent Validity
6. Factorial Validity

The validity of the tools used for the present study were established as follows.
1. Self-concept Inventory

Content validity and Face validity of the test have been established by referring it to the experts in the fields; namely, the Professors in Psychology, the Professors of the Colleges of Education, etc.

2. Locus of Control Test

Validity of the Locus of Control Test was established as by the determination of the face validity by referring it to the experts in the field.

4.5.5 COLLECTION OF DATA

The validated Inventories (the Self-concept Inventory and the Locus of Control Test) were made use of in the main study to collect the necessary data to compare the self-concept and locus of control level of delinquents and normals. The study was carried out in three reformatory schools, one in Thiruvananthapuram and the other two in Kozhikode and eight schools where normal students are studying. Fourty five minutes were taken to administer these two tests for a group of students in the sample.
4.6 STATISTICAL TECHNIQUES

Statistical Techniques like Percentage, Standard deviation, Mean, Test of Significance (’t’ test), Scheffe Pair-wise Comparison etc. were used for the present study.

The details of the statistical techniques used in the present study for the analysis and interpretations of the collected data are given below.

1. Percentage

\[
\text{Percentage} = \frac{R}{S} \times 100
\]

Where,

\[R = \text{Number of response}\]
\[S = \text{Total number of samples}\]

2. Computation of Arithmetic Mean

This technique is used to compare two groups. The formula for calculating arithmetic mean is given below:

\[
\text{A.M.} = \frac{\sum fx}{N}
\]

Where \(\sum\) = Sum of
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\[ F = \text{frequency} \]
\[ X = \text{score} \]
\[ N = \text{Total frequency} \]

3. Measures of Dispersion

It is the measure of the scatter or spread of the separate scores around their averages. So the measures of dispersion add meaning to the measures of averages.

4. Standard Deviation (\( \sigma \))

It is the square root of the sum of the square of the deviations of each observation from the mean and divide by the size of the sample. This is used to find out the dispersion of the scores and the formula is:

\[ \sigma = \frac{1}{N} \sqrt{\sum (X_i - \overline{X})^2} \]

5. Tests of Hypothesis

Hypothesis testing determines the validity of the assumption with a view to choose between two conflicting hypothesis about the value of the population parameter. Hypothesis testing helps to decide on the basis of sample data; whether a hypothesis about the population is likely to be true or false. Statisticians have developed several tests of
hypotheses (also known as the tests of significance) for the purpose of testing of hypotheses which can be classified as:

1. Parametric tests or standard tests of hypotheses.

2. Non-parametric tests or distribution free test of hypotheses.

Parametric tests usually assume certain properties of the parent population from which we draw sample.

Assumptions about the population parameters like mean, variance, etc. must hold good before parametric tests can be used.

Some of the important parametric tests are:

1. t-test

2. F-test

All these tests are based on the assumptions of normality, ie, the source of data is considered to be normally distributed.

t-test

t-test is based on t-distribution and is considered an appropriate test for judging the significance of a sample mean or for judging the significance of difference between the mean of two samples (in case of small samples) when population variance is not known. In case two
samples are related, we used paired t-test for judging the significance of the mean of difference between the two related samples.

The t-test used for the small sample size and the variance of the population is unknown, then the test statistic ‘t’ is

\[
t = \frac{\bar{X} - pm}{\sigma_S / \sqrt{n}} \quad \text{with d.f.} = n - 1
\]

Where

\[
\sigma_S = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n - 1}}
\]

Where pm is the population mean

\[
\bar{X} = \text{Arithmetic mean of the sample}
\]

\[
d.f = \text{degrees of freedom}
\]

The test statistics t for difference between means

\[
t = \frac{X_1 - X_2}{\frac{\sigma_{S_1}^2}{n_1} + \frac{\sigma_{S_2}^2}{n_2}}
\]

Where

\[
\sigma_{S_1} = \sqrt{\frac{\sum (X_{i1} - X_1)^2}{n_1 - 1}}
\]

\[
\sigma_{S_2} = \sqrt{\frac{\sum (X_{i2} - X_2)^2}{n_2 - 1}}
\]
Hypothesis Testing for Comparing a Variance

When we want to test the equality of variances of two normal populations, we make use of F-test based on F-distribution. The test statistic used here is:

\[ F = \frac{\sigma^2_{1}}{\sigma^2_{2}} \]

Where

\[ \sigma^2_{1} = \frac{\Sigma(X_{i_1} - \bar{X}_1)^2}{n_1 - 1} \]

and

\[ \sigma^2_{2} = \frac{\Sigma(X_{i_2} - \bar{X}_2)^2}{n_2 - 1} \]

While calculating F, \( \sigma^2_{1} \) is treated > \( \sigma^2_{2} \) which means that the numerator is always the greater variance.

Tables for F-distribution have been prepared by statisticians for different values of F at different levels of significance for different degrees of freedom for the greater and the smaller variances. By comparing the observed value of F with the corresponding table value, we can infer whether the difference between the variance of samples could have arisen due to sampling fluctuations. If the calculated value
of F is greater than the table value of F at a certain level of significance for \((n_{1.1})\) and \((n_{2.1})\) degrees of freedom, we regard the F-ratio as significant. Degrees of freedom for greater variance is represented as \(V_1\) and for smaller variance as \(V_2\).

**The Significance of the Difference between two R'S**

Let \(r_1\) and \(r_2\) be the correlative co-efficient for samples \(n_1\) and \(n_2\). The CR for the difference in r’s is calculated by the following formula.

\[
Cr = \frac{Abs(Z_1 - Z_2)}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}
\]

Where \(Z_1 = \) Fisher's z function of \(r_1\)

\[
= \ln \left( \frac{1 + r_1}{1 - r_1} \right)^{0.5}
\]

and \(Z_2 = \) Fisher's Z function of \(r_2\)

\[
= \ln \left( \frac{1 + r_2}{1 - r_2} \right)^{0.5}
\]
CONCLUSION

Adopting the methods and the procedures discussed earlier in this chapter, tests were administered and marked. The obtained data were then analysed using appropriate statistical techniques described above to compare the self-concept and locus of control of juvenile delinquents and non-delinquents. The next chapter presents the analysis and interpretation of the data collected in the light of the hypotheses formulated.