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CHAPTER - 5

PROCEDURE OF THE STUDY

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Having developed the inventories for measuring achievement, affiliation, and power motives, it remains to describe other measures used and the procedure followed for the present study, which is being dealt with in this chapter.

As the principal task of this research was to identify relationships among and between motivational variables and the criterion variable, i.e., academic achievement in order to predict the achievement of high school students, the present study was carried out under the broad framework of descriptive method of research. The procedure of data collection and related aspects necessary for testing the null hypotheses stated in Chapter 3 have been suitably articulated under the following headings:

- 5.1 Selection and Description of other Tools Used
- 5.2 The Sample
- 5.3 Procedure of Data Collection
- 5.4 Scoring and Tabulation
- 5.5 Techniques of Data Analysis
- 5.6 Delimitations of the Study

## 5.1 SELECTION AND DESCRIPTION OF OTHER TOOLS USED

In order to quantify the variables under study, different tools were selected on the basis of some scientific and practical considerations. This section gives the relevant details of the tools used other than the inventories of the three motives developed and standardized by the researcher as these have already been described in Chapter 4. Additional tools were needed for:

- 5.1.1 Criterion of Academic Achievement
- 5.1.2 Measurement of Intelligence, and
- 5.1.3 Quantification of Background Factors.

### 5.1.1 Criterion of Academic Achievement

Measurement of achievement in school in terms of some quantitative score was necessary for the present study. Nevertheless, choosing a dependable and reliable criterion proved a difficult problem. There could be three possible criteria of academic achievement, viz., teacher's rating, standardized achievement tests' score or examination marks. The first could not be accepted as a dependable criteria - not only on account of the subjectivity of ratings but also because of unfavourable student-teacher ratio which precludes the possibility of frequent intimate and direct contact between a teacher and his students. Similarly, use of the standardized achievement test scores had to be discarded because of the restrictive nature of their content and practical difficulty involved in administering a

large number of tests. Further, it has been pointed out that Grade Point Average, which covers a larger span of time involvement is more sensitive to motivational influences than the standardized tests (Schultz and Pomerantz, 1974).

In Indian context, high school board examination marks are based on real life situation and are one of the most important criteria for the students' future facilities, admissions, services etc. They are socially, educationally and occupationally accepted as the sole criterion of school achievement and considered as the yardstick of measurement for any sort of conclusion about the students. The school administrator too, is most interested in predicting these marks. Therefore, it was decided to consider the high school annual board examination marks as the criterion of academic achievement.

Though these essay type examinations are less reliable than the objective tests, in many cases evidence has been found in support of satisfactory reliability of examination marks (Mohsin, 1960), marks in social studies and language (Mehta, 1961-62), and more so when different marks are added together (Basumallik, 1959). As such, in the present study high school board examination marks of the students in different subjects were summated to get a total academic achievement score. No attempt was made to separate them subjectwise or groupwise as science, arts, commerce group etc. because the researcher wanted to study achievement as a whole under the assumption that motives affect the behaviour of individuals irrespective of the field in which they work.

Such a measure of academic achievement has extensively and efficiently been used by several other researchers also (Muthaya, 1964; Mehta, 1969; Sinha, 1970; Dutt and Sabharwal, 1973; Srivaastava, 1975; Bhattacharya, 1978).

### 5.1.2 Measurement of Intelligence

As subjects of the present study were normal and educated, it was decided to use verbal test of intelligence. From different tests available Jalota's (1976) Hindi version of the Group Test of General Mental Ability was selected for measuring the intelligence of the students. This test was particularly selected as it had been recently revised, item analysed, and standardized on over 1,000 students of classes VIII, IX, and X from rural and urban areas of different states including Uttar Pradesh. It had further proved to be useful for the age range of 12-18 years in different studies.

This test is a sort of speed test designed to measure the verbal, numerical, and reasoning abilities. It contains one hundred items from which forty items measure verbal ability, twenty measure numerical ability, and the rest measure reasoning ability. It consists of a separate questionnaire and answersheet (Appendix-XIII). The subjects are required to fill the answersheets only, which are then scored according to the key provided (Appendix-XIV).

Reliability of the test has been established by calculating correlations among odd and even halves of the test. The correlation coefficients corrected to full length of the test with the

Spearman-Brown Formula ranged from 0.88 to 0.98 for students of grade VIII to X.

The validity of the revised test has been reported on the basis of factor analysis of the inter-element scores, which gave a pattern of the three centroid factors. Oblique rotation to simple structure exhibited an identification of the Verbal, Numerical, and Reasoning factors. Contribution of Verbal, Numerical and Reasoning subtests has been found to be 33%, 24% and 43%, respectively, for 379 students of class IX. Validation with external criteria of school examination marks yielded correlations ranging from 0.537 to 0.604 which were also satisfactory and acceptable.

Classwise and agewise percentile ranks as norms have been provided. In addition to this, the test author (Jalota, 1976) has also provided stanine scale conversion table alongwith methods of calculating I.Q.

### 5.1.3 Quantification of Background Factors

Information given by the students in the personal data column of the motive inventories, regarding their order of birth; number of siblings in the family; and their parents' education, income and occupational level were quantified by the researcher (Appendix-XV). It was assumed that this information would adequately provide with an index of the background factors for the respective students in the present study.

## 5.2 THE SAMPLE

A population of class X students studying in recognised schools of Varanasi city was taken into consideration for the present study. It was assumed that this city being cosmopolitan in nature, has students from all sections of society and truly represents the high school population.

From this, sample for the present study was drawn in two stages. In the first stage a frame of all recognised high schools of Varanasi city was prepared. From which a sample of 20 schools was randomly drawn. It may be stated that such a large sample of schools was drawn with a view to make it representative, as the population was heterogeneous. On the one hand there were schools having high socioeconomic or achieving status like Saint John's and Rajghat Besant School on the other there were government schools and those belonging to Nagar Mahapalika etc.

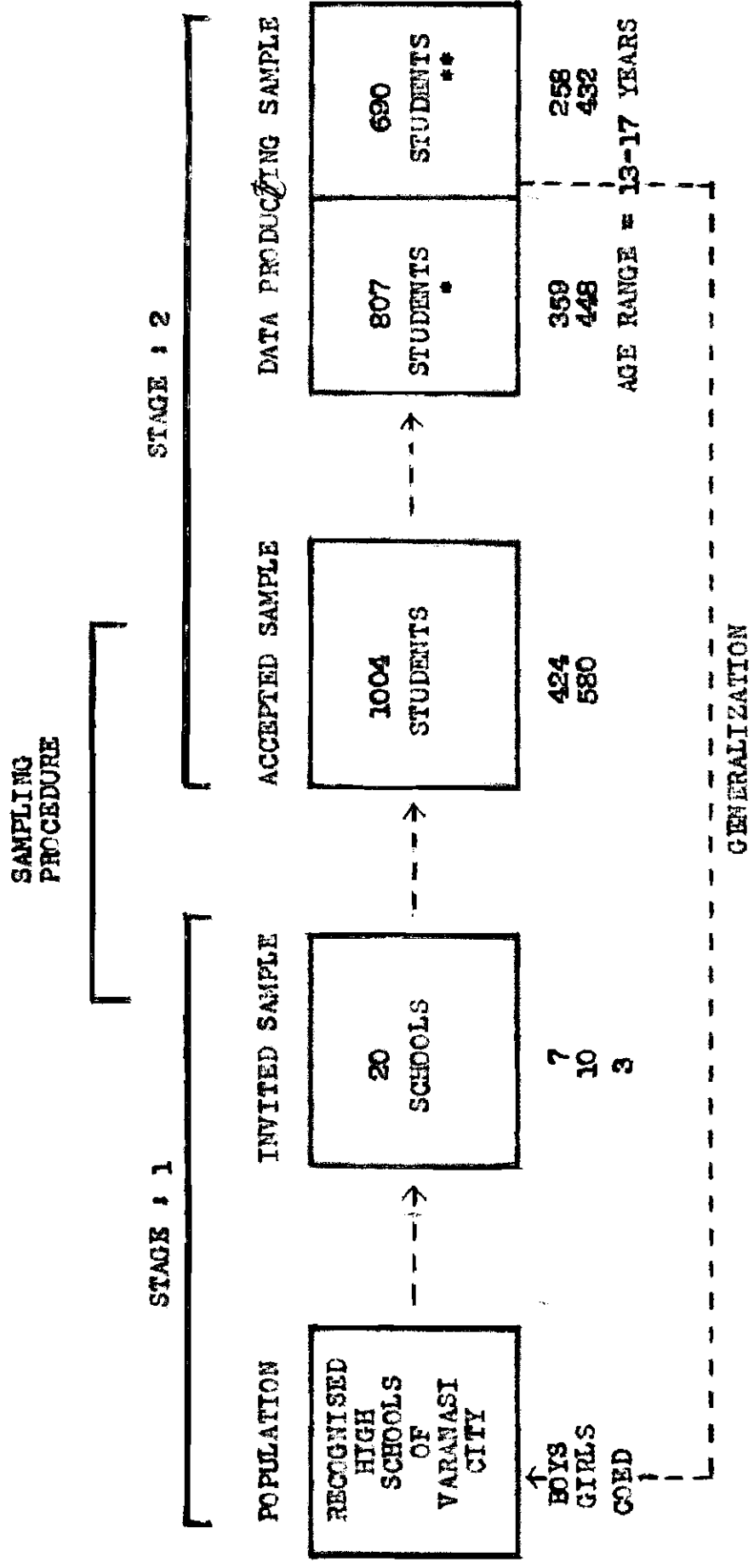
In the second stage, following the cluster sampling of class X technique, all the students of any one section/ from each of these schools were drawn out for this study. This technique has been commonly used in educational researches and found to be practical, economical, yielding generalizable results. It equals with random sampling in efficiency as both are probability sampling techniques and has further shown to overcome few drawbacks inherent in random sampling when applied to a school situation.

Thus a total sample of 1004 high school students studying in class X and having an age range of 13-17 years was drawn from

20 randomly selected schools (Appendix-XVI). It was assumed that such a sample of students would fairly represent the population on the basis of the sample size which normally include subjects representing the full range of socioeconomic environment.

However, due to some unavoidable reasons it was not possible to subject the entire sample to all the tests. Some of the students could not be present in both the sessions of test administration. In addition, complete examination records of some could not be procured. There were some cases whose responses were not relevant to the purpose or method of analysis. These cases were, therefore, excluded from the sample. Such students who took all the psychological measures, supplied all the background information and whose required examination marks could be attained were found to be 690, i.e., 258 boys and 432 girls. On excluding the intelligence test scores the number increased to 807, i.e., 359 boys and 448 girls. These data producing samples were, therefore, taken into consideration and used for different analysis to make generalization in the present study. The whole sampling procedure has been diagrammatically represented in Figure 5.1.

Fig. 5.1. Diagrammatic representation of the sampling procedure for the present study



### 5.3 PROCEDURE OF DATA COLLECTION

The final data for the present study was collected in three sessions by the researcher personally, so as to keep the testing situation constant and ensure collection of valid and reliable data under the existing circumstances. In the first session, after contacting the respective schools, the final forms of achievement motive, affiliation motive, and power motive inventories were administered in random order to the students in batches of 20-30 each. At the very outset, proper rapport was established with the students. They were requested to participate sincerely in the study, which was expected to reveal many important points concerning their behaviour and achievement. Each student was then given a set of three randomly arranged motive inventories and asked to fill the relevant information about themselves in the personal data columns. They were told that the information given by them will be kept strictly confidential and would be used for the present research only. The students were then requested to fill the inventory strictly according to the instructions printed on the first page of test booklets, which was read out loudly by the researcher and explained. These instructions were further reinforced by orally reiterating that the student will in the long run be doing himself most good by being frank and honest in describing his behaviour. The inventories on being filled were collected from all the students.

In order to avoid fatigue in the students and due to limited time given in the schools, Jalota's Group Test of General Mental Ability was administered the next day on the same sample, by strictly following its manual.

Total time consumed by each group in test administration including instructions, distribution, clarification of examples, and collection of inventories was approximately 110 minutes, as shown below:

I Session:

Personal data column	:	10 minutes
Achievement motive inventory	:	20 minutes
Affiliation motive inventory	:	20 minutes
Power motive inventory	:	20 minutes

II Session:

Intelligence test	:	40 minutes
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Later on, when the students sat for their high school annual board examination after one or two months, the academic achievement index was prepared by noting down the aggregate marks of the students in the sample. This was obtained from the cross lists of board results in the respective schools.

Complete data collection work for the present study took about six months.

#### 5.4 SCORING AND TABULATION

All the tests were scored by the researcher and checked for mistakes, if any. Inventories containing the responses of

the students on achievement, affiliation, and power motives were scored with the help of the scoring keys (Appendix IV, VIII, XII) developed by the researcher and reported in Chapter 3. Various information provided in the personal data columns regarding parents' education, income, occupation and students' order of birth and number of siblings in the family were quantified and weights in number were given according to the category allotted (Appendix - XV). Jalota's group test of general mental ability was scored with the help of the key provided by the test author (Appendix-XIV). As the sample of the present study included students appearing for both central board and U.P. board, the total marks of students in the two groups were converted into their respective standard scores with a mean of 50 and SD of 10 and then they were compiled together for analysis.

The data thus obtained was tabulated on different sheets in alphabetical order of the names of the students. Two master charts were prepared for boys' and girls' sample. From these master charts requisite charts were then prepared for different statistical analysis.

### 5.5 TECHNIQUES OF DATA ANALYSIS

In addition to the general descriptive statistics, following statistical techniques have been adopted in this study for analyzing the obtained data and arriving at generalizable conclusions.

1. The t-test was applied to determine the significance of difference between mean achievement motive, affiliation motive and power motive in boys' and girls' sample (Guilford, 1973).
2. Pearson's product-moment coefficient of correlation was computed to find out the relationship among the variables under the study (Guilford, 1973).
3. Step-wise multiple regression analysis was carried out to find the joint and relative contribution of the three motives, intelligence and background factors of the students to their academic achievement. An attempt was also made to derive a specification equation for the prediction of academic achievement through these variables.
4. Three-way analysis of variance technique in a 3 x 3 x 3 factorial design for unbalanced data was applied to measure the interaction effect of achievement motive, affiliation motive, and power motive on the academic achievement.
5. The statistical significance of all the results were considered at 0.05 and 0.01 levels of confidence.

#### 5.6 DELIMITATIONS OF THE STUDY

On the basis of the procedure followed the study was found to be delimited on following grounds:

1. It was restricted to the study of only three human motives, viz., achievement motive, affiliation motive, and power motive.
2. Composite motive scores were yielded by self-report inventories.
3. Only annual board examination marks were considered for the index of academic achievement in the present study.
4. The study was confined to Varanasi city of Uttar Pradesh, India.
5. The sample was delimited to class X students comprising of 359 boys and 448 girls.
6. Academic achievement was studied with reference to the three motives, intelligence, and background factors, viz., parents' education, their income, their occupational level, birth order of the subjects and number of siblings in the family, only.
7. The relationship, differences and predictions noted would be in terms of averages for the group of students under study. As such generalizations would be appropriate only when they are used for population which are not significantly dissimilar to the present sample.