CHAPTER IV

Method

The present study is mainly exploratory. Here an attempt is made to find out the relationship of scholastic achievement with intelligence, emotional maturity, and socio-economic status. Intercorrelations between intelligence and emotional maturity, intelligence and socio-economic status, and emotional maturity and socio-economic status have also been investigated. The residual relationship between any two of these variables has also been worked out when the common influence of one or two of the other variables was eliminated by applying the multivariate analysis of partial correlations. The relationships of sub-variables of socio-economic status with scholastic achievement and with other variables have also been worked out. Here the scholastic achievement has been taken as the average of public examination and internal evaluation. Regression equations were also evolved, using variables in different combinations to predict the future scholastic achievement of the students, and the factor analysis of the variables and sub-variables was made.

Sampling

For the present study, a stratified random sample of students of the age-group 14+ and 15+ was drawn from the ninth and tenth classes from the different categories of schools in the present Punjab State, while constituting the sample, the variables of sex, locality and management were taken into consideration in order to make the sample representative of all types of schools,
i.e., boys & girls, urban & rural and government & private. The number of each category of schools and their population were estimated from the gazettee publishing the results of the Matriculation & Higher Secondary Part (I) examinations of the Punjab School Education Board, and from the data maintained by the statistical branch of the Directorate of Public Instruction, Punjab.

Sixty schools were selected by using the method of random draws. The category-wise lists of all the 1,192 schools were given to a girl student of the sixth class and she was asked to tick-mark any sixty schools according to the number wanted from each category. Further, the selection of the students from each selected school was made from the attendance registers of the ninth & tenth classes, and the students selected were every fifth, seventh, tenth, etc., depending upon the size of the sample desired to be taken from a particular school. This was ascertained beforehand by pooling the total number of students in the ninth and tenth classes respectively of each category of the schools selected, and by dividing it by the number of the student-samples wanted under that category of schools. So the number of the students to be selected from a school was predetermined. In this way, 506 students were selected from 60 schools which were subjected to experimentation. The samples of the schools and the students selected are presented in Table 18, while selecting the required number of students from a school, special care was taken to see that all the students selected from the ninth and tenth classes were of the age-
Table 16. Details of the stratification of the sample selected
group 14+ and 15+ respectively, where there was a divergence, that student was dropped from the list and the preceding or succeeding student who fulfilled the norm of the age restriction was taken.

It was also ensured that the sample was inclusive of the Hindi-medium schools, though the medium of the tests was Punjabi. It may, however, be made clear that all teachers have the knowledge of Punjabi of the Matriculation standard and all students read the Punjabi language as a compulsory subject up to the tenth class. It is compulsory to pass in Punjabi in the Matriculation Examination. So they have ample knowledge of this language.

The Administering of Tests

Tests were administered during December 1972 to March 1973 by the investigator himself personally in order to make the teachers and the students fill the test forms seriously and to render the results of the research dependable. The investigator had to go round all the sixty schools two times. In the first round, the permission of the Head of each institution was taken, the students were selected, and the teachers in charge of the classes were requested to prepare the scholastic achievement of the concerned students on the printed proformas given to them. In the second round, the tests were administered and the proformas filled by the teachers were collected.

The testing sessions were conducted in the classrooms which were adequately ventilated and lighted and were away from the noise made by other students. Each student was provided with a separate seat. An atmosphere suggestive of a class test prevailed. One teacher for every three to five students was invariably present to fill in the emotional-maturity scale. Teachers in charge of the
respective classes (ninth & tenth) were also present to assist in the administration of the tests and to make the ratings of the students for the emotional-maturity position and the socio-economic status. All the teachers present were, however, given prior instructions not to disturb any student or make any remark about a student as the testing proceeded.

The sequence of testing was followed in all schools with strict uniformity. In the first place, the Intelligence Test was administered to all the students of the ninth and tenth classes of a school in the morning. This was followed by the administration of Socio-Economic Status Scale after a rest of about half an hour. While the students were being given these tests, the teachers were requested to sit separately and to give individually their estimation of the position of a student on the Emotional-Maturity Scale. A teacher was to fill the scale in respect of that student only about whom he had intimate knowledge. He would tick that statement which was applicable to him. A teacher could know the reaction of a student to any statement about the applicability of which he had any doubt, but he could approach the student only after the other test of the student was over. Simultaneously with the administering of the tests, the teachers in charge of the classes (ninth and tenth respectively) or a teacher having an intimate knowledge of all the subjects (students) made the ratings of the students on the seven-point scales for the emotional-maturity position and for the
socio-economic status independently without interference or prompting from any of their colleagues.

The teachers were explained the procedure of filling in the Emotional-Maturity Scale, the EM rating scale and the SES rating scale jointly in a meeting in a friendly atmosphere. The instructions to students were read out aloud and explained to clear up doubts, if any, before the administration of each test. Especially in answering the intelligence test, the students were given ample opportunity to grasp the questions and to know which types of questions were to follow in the main body of the tests. The time limit (twenty minutes) and other instructions in the manual for intelligence test were strictly followed. There was no time limit for the SES scale, but generally none took more than 40 minutes. The teachers took about two hours to fill in the Emotional-Maturity Scales of three to five students.

While the testing was in progress, the investigator was on the alert to prevent the students from copying the answers from their neighbours or to prevent them from getting information from one another. This was done by giving such signs as indicated to them that their actions had been watched but they were not obstructed. Such a situation arose very rarely and none of the students had the temerity to copy, specially in the presence of their teachers. The co-operation from the students and the teachers was very satisfactory. The testing and the filling in of the forms were done in a serious manner.
The Scoring of Tests

Intelligence Test.– The scoring was done on the basis of the key and the instructions given in the Manual of Instructions (for intelligence test). Each item correctly answered was given a weightage of one mark and the marks for the items correctly answered were totalled to make the actual score of a subject on the intelligence test.

The Emotional-Maturity Scale.— The scoring in this scale was also done with the help of the key supplied, in which the weightage ranged from 1 to 9 marks. The scores of all the statements applicable to a subject were totalled and divided by the number of applicable (or ticked) statements, on the basis of the Thurstone technique as per the Manual of Instructions (for emotional maturity scale). The scores were worked out up to one decimal place and were then multiplied by 10 to make them whole numbers.

The CM Rating Scale.— The scoring of the seven-point rating scale was done on the basis of seven marks for the top rating and one mark for the worst position. Other points were adjusted accordingly. Each subject had one of the scores from 1 to 7.

The Socio-Economic Status Scale.— The key and the manual of marking for this scale have been prepared by the investigator as indicated in the previous chapter and the scoring was done on the basis of this key. Marks have been given to each ticked graded part of a variable. Then the marks of all the eleven sub-variables were totalled, subject to the condition that the maximum marks for each
sub-variable were not allowed to exceed its highest limit. Other conditions laid down in the manual were also properly followed.

**SES Rating Scale** - The scoring of the seven-point rating scale was done on the basis of seven marks for the highest socio-economic status and one mark for the lowest status. The other points were adjusted, keeping in view these limits. So each subject got a score from 1 to 7.

**Scholastic Achievement** - Marks obtained in the public examination, and the average of the marks obtained in the house tests, annual examinations and internal assessment; were converted into percentages; and their average was further taken.

**Tabulation of Data**

The data, thus collected, were tabulated, having four variables, viz. Intelligence (I), Emotional Maturity (EM), Socio-Economic Status (SES) and Scholastic Achievement (SA) and eleven sub-variables of the socio-economic status (SES₁ to SES₁₁). There are two alternative variables of scholastic achievement (SA₁ & SA₂) and two ratings of EM and SES positions (EM₁ & SES₁₂).

All the data relating to 586 subjects were also tabulated, splitting up the sample into two and fours according to the strata of the sample.