CHAPTER FOUR

METHODS
4.1 Sample Selection:

A) Selection of Schools:

For the present study, the list of approved Secondary Schools of Calcutta were divided into five zones — East, West, North, South and Central. Two schools from each zone (one boys' and one girls' schools) were taken randomly.

Calcutta is a vast Metropolitan City with a large variety of people, with significant differences in cultural and social perceptions. The Central and North being relatively older than the South while the West being more developed than the East. To cover these differences, the schools chosen for sample were carefully selected from the four zones to keep a parity of these factors.

Care was taken to match them against the following criteria:

(a) The school should be at least 20 years old in a locality. A school sets its own standard, but a school naturally takes time to do. A school can produce a student of its own standard only after 10 years. A 20 years span was really needed to develop comparable standard. Hence, the schools selected were at least more than 20 years in a locality.

(b) The present roll strength in the Secondary Section of the school should be at least 500.

The performance in the field of academic and extracurricular activities gives a school the popularity in a locality. This again sets a standard reflected in the students strength of a school. Hence, the roll strength of 500 in the Secondary Section was considered while selecting schools for the sample to be studied.

So all including 5 boys' and 5 girls' schools were finally selected.
B) Selection of Students:

From the above selected schools students of Classes VII, VIII and IX, 350 boys and 350 girls were selected. The students were then matched with respect to the following criteria:

a) Age group 13 years to 16 years.
b) Physically and mentally normal.
c) Both parents are living.
d) At least one parent is the earning member of the family.

After matching 300 boys and 300 girls are finally selected.

Out of 300 boys and 300 girls 100 boys and 100 girls were set aside for standardization of tools and the rest 200 boys and 200 girls were kept for main study.

4.2 Research Hypotheses:

The following hypotheses were developed to fulfill the aim of the present study:

\( H_1 \): Scholastic capability and social competence measure of adolescent school students bear a positive relationship.

\( H_2 \): Degree of positive relationship between scholastic capability and social competence measure of boys and girls varies.

\( H_3 \): Scholastic capability of Secondary School students vary directly with their parents' education.
$H_4$: Scholastic capability of Secondary School students vary directly with their parents' income.

$H_5$: Social competence of Secondary School students vary directly with their parents' education.

$H_6$: Social competence of Secondary School students vary directly with their parents' income.

4.3 **Instruments Used**:

To collect empirical data from the sample the following instruments were used in the present study:

1) A Structured Background Information Schedule was developed to collect relevant general information about each student (Appendix I).

2) A Schedule was structured to record the percentage of examination marks obtained by the respective students in last annual examination, being collected from respective school records — earmarking their Scholastic Capability, assuming it synonymous of Scholastic Competence.

3) Raven's Progressive Matrices Test (RPM).

4) Social Competence Scale (developed by the experimenter after two standard scales, *viz.*, Pro-social Scale developed by Emmon (1989) and Peer Acceptance Rating Scale developed by Asher and Dodge (1986) (Appendix II).

4.4 **Description of Tools**:

A) **Background Information Schedule**:

It was composed of fifteen custom-built items to explore background of the students and their parents to match them against certain criteria like age,
examination results, health, parents' monthly income, parents' education and other relevant facts.

B) Description of Raven's Progressive Matrices Test (RPM):

RPM was designed primarily as a measure of Spearman's g factor or general intelligence (Raven, 1983; Raven, Raven and Court, 1995). In keeping with Spearman's theoretical analysis of g, this test requires chiefly the education of relations among abstract items. The items consist of a set of Matrices, or arrangements of design elements into rows and columns, from each of which a part has been removed. The task is to choose the missing insert from given alternatives. The easier items require accuracy in discrimination, the more difficult item involves analogies, permutations and alternation of patterns and other logical relations. The test is administered with no time limit and can be given individually or in groups. Very simple oral instructions are required.

The RPM is available in three forms, differing in level of difficulty. The Standard Progressive Matrices (SPM, 1996 Edition) is the form suitable for average individuals between the ages 6 and 80 years. An easier form, the Coloured Progressive Matrices (CPM, 1990 Edition) is available for younger children and special groups who cannot be adequately tested with the SPM for various reasons. Norms for the CPM are available for children from 5½ to 11½ and for samples of non-retarded persons aged 60 to 89 years and of mentally retarded adults. A third form, the Advanced Progressive Matrices (APM, 1994 Edition) was developed for above-average adolescents and adults.

The manual for all levels of the RPM is available in sections. Section 1 gives a general overview and was updated in 1995. The last section of the manual summarizes additional research on reliability, validity and supplementary norms obtained in various countries and on special occupations (Court and Raven, 1995).

In general, retest reliability in groups of older children and adults that were moderately homogenous in age-ranges, approximately from 70 to 90. At the lowest ranges reliability falls below these values. Internal consistency coefficients are mostly in the 80s and 90s. Correlations with both verbal and performance tests of
intelligence range between 40 and 75, tending to be higher with performance than with verbal tests. Predictive validity coefficients against academic criteria run somewhat lower than those of the usual verbal intelligence tests. Several factorial analyses suggest that Progressive Matrices Test is heavily loaded with a factor common to most intelligence measures (identified with Spearman's g by many psychologists) but that spatial aptitude, inductive reasoning, perceptual accuracy and other group factors also influence performance.

C) Description of the Development of Social Competence Scale:

Social Competence Scale was developed by the experimenter after two standard scales, viz., Pro-Social Scale developed by Emmon (1989) and Peer Acceptance Rating Scale developed by Asher and Dodge (1986).

The Six-Item Pro-Social Scale was developed by Emmon (1989) to measure two domains of psychosocial behaviour, i.e., interpersonal problem solving and social responsibility. The reliability of the scale was computed by the author and it was reported nearly equal to 0.84. Each item was provided with a Six Point Scale to give the response to the items, where '1' indicates 'rarely', '6' indicates 'almost always' and '2 to 5' 'in between' 'rarely'.

The Peer Acceptance Rating Scale was developed by Asher and Dodge (1986) to measure peer relationships. Here students were asked to circle three names of peers for each question and for each name they were to respond on a 5-point scale (1 = not at all to 5 = very much).

Considering the three domains that is 'Interpersonal Problem Solving', 'Social Responsibility' and 'Peer Acceptance', a Social Competence Scale was developed by the Experimenter. For each item four answers were given and the students were asked to respond by ticking any one of the four answers which he preferred most. For example —

Statement: Your class friend has lost your library book.

a) You will shoulder the punishment ( ).
b) You will take the punishment but you will let know everyone that your friend is the culprit ( ).

c) You will ask him to take the punishment ( ).

d) Both of you will shoulder the responsibility of getting the book replaced ( ).

The questionnaire was given to two judges for their opinion regarding content validity of the items. Initially 36 items were framed for draft questionnaire, 12 for each domain. Ultimately 30 items were retained (10 items for each domain).

Scoring :

For scoring each item a procedure was followed where out of 4 alternative answers, the score 3 was allotted to the answer which indicated high competence and score '0' was allotted to the answer which indicated low competence, and scores '2' and '1' for in between responses.

Standardization of Social Competence Scale :

The 30-item scale was then administered on 100 boys and 100 girls (mentioned under 4.1).

For item analysis the students were divided into two groups (boys and girls separately) on the basis of their last annual examination. The students who obtained above 'mean + 1 Sd' were included under 'high achieving group' and those who obtained less than 'mean + 1 Sd' were included under 'low achieving group'. For the verification of discriminative power of the items, significance of difference between two groups with respect to item mean was verified by 't' test. The results are incorporated in Tables 5.2A to 5.2F. According to the significant 't'-values all the 30 items were retained.

In order to find out the reliability of the scale split-half method was followed. The reliability of the scale was found to be 0.78 for boys and 0.81 for girls.
The content validity of the test was verified by the judges, reported earlier.

4.5 Data Collection and Scoring:

Data were collected in a group from each selected school during regular class sessions. Students were asked to fill up the Background Information Schedule in the very beginning of the session. Each student was given a questionnaire containing 30 items for measuring social competence. They were told to follow the instructions carefully and were also informed that their answers would be kept confidential. Raven's Progressive Matrices was administered individually on the next day. The marks of last annual examination were collected from respective office records.

Scoring:

1) The marks collected for annual examination were converted into percentages to get Scholastic Capability Score.

2) The score obtained for the 30 items in the Social Competence Scale was also converted into percentages.

3) The data obtained for Raven's Progressive Matrices were scored with the help of the manual.

4.6 Data Processing:

1) Percentage of marks in annual examination (earmarking their Scholastic Capability or Competence, respectively) are recorded in Tables 5.3A and 5.3B in the form of frequency distribution (separately for boys and girls) and the corresponding frequency polygons are represented in Figure 5.1 (for both boys and girls). The measure of central tendencies and Sd were computed and recorded in the said tables.

2) The frequency distribution of Social Maturity Scores are recorded in Tables 5.4A and 5.4B. The frequency polygons of the corresponding
frequency distribution are presented in Figure 5.2 (for both boys and girls). The measure of central tendencies and Sd were computed and recorded in the said tables.

3) The correlation between social maturity scores and percentage of scholastic capability scores of the respondents was computed for boys and girls and total sample separately and recorded in Table 5.5.

4) The correlation between scholastic capability and social competence for high and low achieving students (procedure for finding out high and low achieving groups described in Chapter 5) were computed (separately for boys and girls) and recorded in Tables 5.6A to 5.6D.

5) The correlation between scholastic capability scores and Raven's Progressive Matrices Scores were computed for both high and low groups (separately for boys and girls) and recorded in Tables 5.7A to 5.7D.

6) The result of $\chi^2$-test between parents' income and their children's scholastic capability and social competence are recorded in Tables 5.8A and 5.8B for boys and 5.8C and 5.8D for girls. Similarly the result of $\chi^2$-test between parents' education and their children's scholastic capability and social competence are recorded in Tables 5.9A and 5.9B for boys and 5.9C and 5.9D for girls.

4.7 Further probing of the data would be done, if necessary, and the procedure for probing the data would be recorded in Chapter 5.