METHOD OF INVESTIGATION

Selection of Tools

In order to test the hypotheses formulated in the preceding chapter, the following tools were chosen:

1. The You Test of Curiosity (Maw and Maw 1961) standardized by the Investigator for the present study.


Description of the Tools

A description of the above mentioned tools is given below:

1. The You Test of Curiosity, Form C (Original)

In order to measure the curiosity of elementary school children with paper and pencil instruments, Maw and Maw (1961) formulated a battery of tests known as The You Test of Curiosity. It consists of 4 subtests.
They are the following:

A. Which Do You Think Are Foolish Sayings?
B. What Do You Know?
C. What Would You Do?
D. Which Would You Discuss?

A brief description of the above tests is given below:

A. Which Do You Think Are Foolish Sayings?

This is an objective test of 22 items. It consists of items, some of which are common absurdities and the rest are straightforward statements. The test is administered in a group situation. The teacher reads the items out loudly to the students as they follow and answer. No time limit is prescribed, but is estimated to take about 10 minutes. The subjects have to distinguish those items that are absurd or foolish from those that are correct. Each item answered in the keyed direction is given one point. The score is the total of correct responses.
B. What Do You Know?

The test consists of 18 items. The subjects have to select the fact that is correct from a choice of 4 in each item. The test is administered in a group situation. The teacher reads the items out loudly to the students as they follow and answer. No time limit is prescribed but it is estimated to take about 10 minutes. Each item answered in the keyed direction is given one point. The score is the total of correct responses.

C. What Would You Do?

The test consists of 26 items. The subjects are to mark that which they would do or would prefer to do from a choice of 4. The test is administered in a group situation. The teacher reads the items out loudly to the students as they follow and answer. No time limit is stated but is estimated at about 15 minutes. Each item answered in the keyed direction is given one point. The score is the total of correct responses.
D. Which Would You Discuss?

This is an objective test of 40 sets of 3 geometric designs. The subjects are told that there is a story about each design in each set. They are to indicate which story of each set they would prefer to hear. Each design is weighted as 0, 1 or 2. Each item is given credit according to the design marked. The score is one-half of the total of these points. The test is administered in a group situation. No time limit is prescribed, but it is estimated to take about 15 minutes.

The scores of the 4 subtests are added together for a total curiosity score.

As the above test of curiosity was developed in the American milieu, it was adapted for the purpose of the present study by standardizing it on a random sample of children of the age groups of 7, 8, 9 and 10-years. The process of standardization will be explained in a later section of this chapter under the heading "Preliminary Investigation."
2. Goodenough's Draw-a-Man test of Intelligence (adapted by Phatak 1966)

For the purpose of the measurement of intelligence in young children, there are at present a number of intelligence tests, like the Bhatac's Test of Intelligence, the Wechsler's Intelligence Scale for Children (WISC), the Coloured Progressive Matrices Test by Raven, Goodenough's Draw-a-Man test, etc. But for the present study only Goodenough's (1926) Draw-a-Man test as adapted by Phatak (1966) has been employed.

Young children are greatly interested in drawing and more so drawing the human figure, is a highly interesting activity to them. Young boys and girls are generally found to be drawing and scribbling on the floor, walls and on any pieces of paper available to them. A few studies in the literature have indicated a relationship between curiosity and drawing the human figure (e.g. Munichin 1971b). Hence, in the present study, Goodenough's Draw-a-Man test as adapted by Phatak (1966) has been used to measure intelligence in young children.
Goodenough's Draw-a-Man Technique

Since the beginning of the present century, children's drawings have furnished material for many different types of psychological investigations. It was soon recognised that drawing as it is done by the young child is a very different psychological performance from drawing as the adult usually conceives it. This difference is expressed in the statement that the child draws what he knows, rather than what he sees. This characteristic of children's drawings has suggested to many persons the possibility of utilizing such material for study of the mental development during the early years.

There have been many attempts to study the development of conceptual thinking in young children, through their spontaneous drawings. Significant among such attempts is that of Goodenough (1926) who has developed a comprehensive scale to be used in the measurement of the intellectual factors involved in the spontaneous drawings of young children. This scale is based on the drawings of the human figure. In its final form, the scale consists of 51 points or units of measurement. The points were derived by means of:
1. The observation of differences which appear to be characteristic of the performances of children at successive ages of school grades.

2. The formulation of objective definitions or descriptions of these differences and

3. Their statistical validation based on a comparison between the performances of children of different ages and also between the performances of children who were accelerated in school and those who were retarded.

The Goodenough scale forms a serviceable test of intellectual development, which is useful both for making comparisons between groups and as a supplement to the usual type of intelligence test in the study of individual cases.

Burt (1921) presents a scale for the measurement of drawing ability which according to him involves a glimpse into the intellectual factors of children.

It is recognized by many psychologists that a fairly close relationship exists between progress in drawing the human figure and general intellectual progress and a fairly high correlation between scores in drawing human figures and scores on recognized tests of intelligence or teachers' judgement of intellectual capacity (Chamberlain 1900; Sully 1912; Goodenough 1926, 1950; Buhler 1929; Eng 1931; McElwee 1932; Berdie 1945;
Correlations between drawing scores and Stanford-Binet mental age average .76 for ages 4 to 12 years taken separately (Goodenough 1926). It is evident therefore that progress in drawing human figures, during the early years closely parallels intellectual growth and development.

**Draw-a-Man test in India**

In India most of the studies done on children's drawings refer to Goodenough's Draw-a-Man Scale (Dutta 1935; Menzel 1935; Minaxi 1946; Joseph 1953; Phatak 1956; Dutta 1965; and Parvathi 1973).

Phatak (1956) attempted to modify the Goodenough scale so as to suit it to the Indian situation. The new scale was critically studied for validity, reliability and objectivity.

**Validity**

The Phatak's scale was tested for validity against Kamat's (1936) tests for measuring intelligence of Indian children. The coefficients of correlations between the scores on Phatak Draw-a-Man Scale and
Kamat's Tests was calculated on groups of boys of 6, 7 and 8-years. They were 0.51, 0.51 and 0.53 (Phatak 1966).

In the study of drawings by American children in the U.S.A., validity of the scale was studied against three standardized tests of intelligence. They were (i) Otis Alpha Short Form, (ii) Pintner General Ability Tests - the Pintner-Cunningham Primary Tests for younger children and Pintner Intermediate Test for the older group and (iii) Davis-Eells Test of General Intelligence or Problem Solving Ability. Correlations between the Draw-a-Man scores and scores or I.Q.'s on the three tests were calculated for each age group from 6 to 10 years. The correlations obtained were 0.47, 0.47 and 0.61 (Phatak 1965).

Shah (1959) tested the validity of the scale by using teachers' opinion expressed on a 5-point scale as external criterion, on a sample of 100 children. He obtained an 'r' of 0.62.

Dutta (1965) in a comparative study of the Phatak's scale with that of the Goodenough scale calculated the correlation between the two scales.
She scored the drawings by Indian children on both scales and calculated age-wise coefficients of correlation for the age groups 6, 7, 8 and 9-years. The correlations ranged from 0.87 to 0.94. The average 'r' was 0.94.

In a comparison of Phatak scale and Goodenough-Harriss Revision and Extension of Draw-a-Man scale, the coefficient of correlation between the scores on the two scales for the drawings by American children was found to be 0.87 (Phatak 1959). Dutta (1965) made similar calculations by applying the two scales to the drawings by Indian children. Her correlation coefficients with age groups 6 to 9 years ranged from 0.80 to 0.93. The average was 0.87.

Reliability

Reliability of the Phatak's scale was studied by two methods namely Test-Retest reliability and Inter-scorer Agreement.

The Test-Retest reliability was carried out on samples of 15 to 100 subjects by Phatak (1966). The
correlation coefficients ranged from 0.57 to 0.95 (Phatak 1966).

**Objectivity**

Objectivity of the Phatak's scale was tested by the Inter-scorer Agreement. Reliability in terms of objectivity is studied by calculating the coefficients of correlation between the scorings of the same performance by two different persons. In the Phatak's scale the scorers ranged from the author of the scale to a young graduate in statistics. The Inter-scorer Agreement was carried out on the same sample as was taken for reliability as given above. The coefficients of correlations ranged from 0.62 to 0.96. The age groups in both cases were from 6 to 9-years (Phatak 1966).

Phatak's Draw-a-Man test has given importance to the number of details in each body part, proportion, symmetry and motor coordination. The scale consists of 21 points and weightage is given to each point according to the stages of development observed in children's drawings, in representing the particular points. Phatak's Draw-a-Man test can be briefly
characterized as follows:

1. It utilizes nothing but the children's single drawing of a man.

2. It is accordingly nonverbal.

3. It requires no more than 10 minutes of testing an entire class.

4. It is useful chiefly with children from mental age 4 to mental age 10.

5. It is of use in order to have a quick measure of intelligence of children from 5 to 10 years of age.

In conclusion, the Phatak Draw-a-Man Scale is valid and reliable to an acceptable level for further work leading to practical use.

Therefore, the Phatak's Draw-a-Man test was employed in the present study for a measure of intelligence in children of 7 to 10-years of age. The reliability of the instrument was found out by the Inter-Scorer method. A random sample of 30 subjects each from the high and low socio-economic status groups were selected for the purpose.

3. The Wallach and Kogan's Instruments of Creativity

The creativity instruments were originally used with elementary school children by Wallach and Kogan (1965). The applicability of the Wallach and Kogan instruments to all age levels with replicability
of results have also been demonstrated in a number of studies (Ward 1966; Biller et al 1967; Appleton 1969; Cropley and Maslany 1969; Kogan and Morgan 1969; Wallach and Wing 1969; Paramesh 1971, 1972; Singer and Rummo 1971; and Kareem 1976). The factorial validity of these instruments has also been reported by Wallach and Kogan (1965).

Wallach and Kogan (1965) have endeavoured to delieneate creativity as a cognitive dimension which is cohesive in itself and is distinct from the conventional concept of intelligence. Wallach and Kogan have shown that the instruments designed by them possesses adequate validity as a measure of divergent thinking.

The battery of creativity instruments consists of 3 verbal and 2 visual techniques. The verbal techniques comprise items eliciting possible instances of a class concept (instances), items eliciting possible similarities between two verbally specified objects (similarities) and items eliciting possible uses of a specified object (alternate uses). These serve as stimuli for the subject to generate the possible meaning or interpretation.
As the Wallach and Kogan instruments were developed in the American cultural milieu, it was adapted for Indian conditions by Paramesh (1971). A short scale of the original Wallach and Kogan Battery consisting of 3 items in each task was successfully employed by Wallach and Wing (1969) who found them to be equally effective as the original battery. The modified version of the Wallach and Kogan battery adapted to Indian setting by Paramesh (1971) was used in the present investigation. The same was translated into the Tamil language for use with subjects belonging to the low socio-economic-status group.

The battery of creativity instruments consists of 3 verbal and 2 visual tasks. The verbal tasks are the Instances, The Alternate Uses and The Similarities. The visual tasks are the Pattern Meanings and the Line Meanings. The verbal instruments comprising of 3 tasks were included in one booklet and the 2 visual tasks were presented together in another booklet.

To find out the reliability of each of the five tasks split-half (odd-even) technique was used.
A random sample of 30 subjects each from the high and low socio-economic-status groups were used for the purpose.

4. **The Junior Eysenck Personality Inventory**

The Junior Eysenck Personality Inventory (JEPI) was used in the present study for the purpose of measuring extraversion and neuroticism. The test was constructed by S.B.G. Eysenck (1965a). According to the author, the JEPI measures the two major personality dimensions of extraversion and neuroticism in children from 7 to 16 years of age. These two dimensions are clearly apparent even at the young age of 7 years in children.

The test consists of 60 items out of which 24 items yield a measure of extraversion, 24 items yield a measure of neuroticism and 12 items provide a Lie score. The same was translated into the Tamil language for use with subjects belonging to the lower socio-economic status group.

To find out the reliability of the instruments split-half (odd-even) method was used (Guilford 1954). A random sample of 30 subjects each from the high and
low socio-economic status groups were used for the purpose.

Results regarding reliabilities of the tests used in the present study for both the high and low socio-economic status subjects are presented in Table 1 as given below:

The following table gives the results regarding Reliability.

**TABLE 1**

Reliability Coefficients of Tests Used.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Test Method</th>
<th>High Socio-Economic Status</th>
<th>Low Socio-Economic Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inter-scorer</td>
<td>0.79**</td>
<td>0.87**</td>
</tr>
<tr>
<td>2</td>
<td>Creativity Instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Instances Split-half</td>
<td>0.79**</td>
<td>0.70**</td>
</tr>
<tr>
<td>2</td>
<td>Alternate Uses Split-half</td>
<td>0.56**</td>
<td>0.69**</td>
</tr>
<tr>
<td>3</td>
<td>Similarities Split-half</td>
<td>0.91**</td>
<td>0.83**</td>
</tr>
<tr>
<td>4</td>
<td>Pattern Meanings Split-half</td>
<td>0.92**</td>
<td>0.88**</td>
</tr>
<tr>
<td>5</td>
<td>Line Meanings Split-half</td>
<td>0.85**</td>
<td>0.84**</td>
</tr>
<tr>
<td>3</td>
<td>Junior Eysenck Personality Inventory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Extraversion Split-half</td>
<td>0.68**</td>
<td>0.63**</td>
</tr>
<tr>
<td>2</td>
<td>Neuroticism Split-half</td>
<td>0.62**</td>
<td>0.71**</td>
</tr>
</tbody>
</table>

*P < .01

As may be observed, Table 1 discloses high reliability of
the tests used in the present investigation.

As mentioned in an earlier section of the present chapter, Preliminary Investigation was to be carried out in order to standardize Maw and Maw's (1961) the You Test of Curiosity. The details regarding the preliminary investigation are given in the following:

**Preliminary Investigation**

**Standardization of the You Test**

As the You Test of Curiosity by Maw and Maw (1961), (already described earlier) comprising both verbal and nonverbal subtests was developed in the American context, it was felt necessary to study its suitability to Indian conditions. Hence, it was standardized on a random sample of boys and girls.

**Sample**

For the above purpose, a random sample of 400 subjects, 100 from each of the 7, 8, 9 and 10-year age groups were administered the You Test. There were 50 boys and 50 girls in each age group. They were selected from two schools one each for
boys and girls, catering to the middle socio-economic levels in the city of Madras.

**Adaptation of the You Test**

The four subtests comprising the You Test were initially referred to three teachers concerned with each of the three classes, viz. standards III, IV and V, of one of the schools where data was proposed to be collected for the main study. Children of both sexes were available in this school. The opinions of the teachers were sought on the suitability of the four subtests and on the suitability of specific items in each of the four subtests, to the pupils of the III, IV and V standards. All the teachers uniformly felt that the 'What Would You Do' test may not be suitable for the age groups concerned and that it was beyond the comprehension of children of the said standards. The teachers also felt that certain items in the two verbal tests were not applicable for the age groups involved, from the point of view of their maturity and comprehension. They were also of the opinion that certain items in the verbal tests had to be modified.
The Investigator then availed herself of an opportunity to meet some children, boys and girls, from standards III to V for a practice session of the test. The children evinced a great deal of interest in all the tests, but much less on the 'What Would You Do' test, in which they had some problems. Therefore, based on the opinions advanced by the teachers of the respective classes and observation of the Investigator on the experiences of the children with these tests, it was decided to drop the 'What Would You Do' test and retain only the other three tests for the purpose of the present study.

The 'Which To Discuss' test is nonverbal in nature and hence culture fair. It was thought that cultural bias would be at a minimum. However, instead of 40 sets of three geometric designs, as in the study by Ogden (1963), 40 items of pairs of geometric figures and symbols were included in the 'Which To Discuss' test, as sent by Maw (1978, Appendix) to the Investigator. For the purpose of the present study the title of the above test was changed to 'Which To Select' test as the same was felt to be more appropriate in the present context.
Regarding the other two tests, based on the opinions given by the teachers of the respective classes, as stated earlier, a number of items had to be changed, either by substituting proper nouns with Indian names in the items, or by slightly modifying the format of the items. Besides, in some cases, the items had to be changed and new ones had to be formulated. However, care was taken to formulate the items on the same lines, as in the original test, modified suitably for local cultural conditions for the age groups intended.

The three tests of curiosity, thus finalized are the following:

1. Curiosity Test I (Foolish Sayings) comprising 52 items.
2. Curiosity Test II (What Do You Know) comprising 50 items.
3. Curiosity Test III (Which To Select) comprising 40 items.

Administration of the Curiosity Tests

The preliminary forms of Curiosity Test I, Curiosity Test II and Curiosity Test III, with 52, 50 and 40 items respectively, were then administered to a random sample of 400 subjects in the form of
Prior to the administration of the test, the pupils belonging to the four age groups under study, i.e. 7, 8, 9 and 10-years were identified from different classes, with the help of the teachers. These subjects were then divided into small groups of 25 subjects each, of a particular age and sex. This way, there were two groups at each age level of boys and girls separately. Suitable dates were then fixed for the convenience of the school administration.

The curiosity instruments were administered to the pupils in small groups of 25 in each session. After the introduction of the Investigator to the pupils, the Investigator spent some time to establish rapport with them. The test booklets were then distributed to the subjects. The booklets contained the following instructions:

"These are a series of short tests. The correct answer is what you think or believe. You must work on one test at a time. You must not go ahead to the next test, before completing the previous one. You will be told when to begin each test. Work as accurately as you can. Try hard to give what you think is the correct answer for each item."
The subjects were told to go through the above instructions silently as the Investigator read them aloud. Doubts if any were cleared by the Investigator before starting the tests. The subjects were then asked to turn the first page of the test booklet to Curiosity Test I.

**Curiosity Test I (Foolish Sayings)**

The subjects were told to go through the instructions for Curiosity Test I, silently as the Investigator read aloud to them. The specific instructions for Curiosity Test I were as follows:

"Some of the following statements have parts in them that make them foolish. Other statements are correct. Put an X before the foolish ones, and ✓ before those that are correct."

Doubts, if any, were clarified by the Investigator and the mode of answering the test was explained to them. They were told to stand in their place when they completed answering the test. The test proper was then started. After all the subjects had completed the test, they were told to turn the page of the test booklet to Curiosity Test II.
Curiosity Test II (What Do You Know)

The subjects were told to go through the instructions for Curiosity Test II silently as the Investigator read aloud to them. The specific instructions for Curiosity Test II were as follows:

"All students learn many facts. Some of the facts are learned in school and some are learned from other places. How many of the following facts do you know? Mark a □ in front of the correct ending for each of the following items."

Doubts, if any, were clarified by the Investigator and the mode of answering the test was explained to them. They were then asked to stand in their place, when they completed answering the test. The test was then started. After all the subjects had finished answering the test, they were asked to turn the page of the test booklet to Curiosity Test III.

Curiosity Test III (Which To Select)

The subjects were asked to go through the instructions for Curiosity Test III, silently as the Investigator read them aloud. The specific
instructions for Curiosity Test III were as follows:

"You are told that there is a story about each figure in the pairs below. If you could hear only one story, for each figure, which one of the figures, would you select? Draw a circle around the figure in each pair, about which you would like to hear the story."

Doubts, if any, were clarified by the Investigator, and the mode of answering the test was explained to them. They were then asked to stand in their respective places when they had completed the test. The test was then started. After all the subjects had finished answering, the tests booklets were collected from them by the Investigator.

**Scoring**

The three tests were scored in accordance with the key of correct answers evolved by the Investigator (Appendix 2). Each item answered correctly was given a score of one, with respect to Curiosity Test I, Curiosity Test II and Curiosity Test III. In this way, the maximum possible score for Curiosity Test I was 52, and the minimum score was zero. The maximum possible score for
Curiosity Test II was 50 and the minimum score was zero. Similarly, the maximum possible score for Curiosity Test III was 40 and the minimum score was zero.

The scores obtained by the subjects on the three subtests of curiosity were then summed for a total curiosity score.

For purposes of the present study, the number of items answered correctly by the subjects in Curiosity Test I was designated as Curiosity I; the number of items answered correctly by the subjects in Curiosity Test II was designated as Curiosity II and the number of items answered correctly by the subjects in Curiosity Test III was designated as Curiosity III. A sum of these three measures was referred to as the Total Curiosity Score (TCS); henceforward the above 4 measures of curiosity will be referred to as Curiosity I, Curiosity II, Curiosity III and TCS.

Reliability of the Curiosity Tests

Reliability is an important characteristic of any cognitive test. The reliability of the Curiosity
The Reliability Of The Curiosity Tests (Preliminary Form)

The reliability of the three tests of curiosity were determined by the split-half (odd-even) technique. Product-moment coefficient of correlation between the odd and the even items of the test were computed separately for each age group, and for each sex within an age group. The coefficients were then corrected by the Spearman-Brown Prophecy Formula (Guilford 1954). The reliability coefficients for the preliminary forms of the three tests of curiosity are presented in Table 2.

TABLE 2
Reliability Coefficients for the Preliminary Forms of Curiosity Tests I, II and III.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sample N</th>
<th>Age</th>
<th>Sex</th>
<th>Curiosity Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>50</td>
<td>7</td>
<td>B</td>
<td>.57** .72** .86**</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>7</td>
<td>G</td>
<td>.73** .82** .85**</td>
</tr>
<tr>
<td>2.</td>
<td>50</td>
<td>8</td>
<td>B</td>
<td>.58** .62** .89**</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>8</td>
<td>G</td>
<td>.69** .82** .96**</td>
</tr>
<tr>
<td>3.</td>
<td>50</td>
<td>9</td>
<td>B</td>
<td>.87** .74** .88**</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>9</td>
<td>G</td>
<td>.76** .88** .90**</td>
</tr>
<tr>
<td>4.</td>
<td>50</td>
<td>10</td>
<td>B</td>
<td>.58** .83** .84**</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>10</td>
<td>G</td>
<td>.79** .74** .82**</td>
</tr>
</tbody>
</table>

**P < .01

As may be observed from Table 2 the coefficients
of reliability are significant beyond the 0.01 level. This testifies to the internal consistency of the Curiosity Tests used in the study.

Maw and Maw (1961) also obtained a reliability coefficient of 0.91 for their Foolish Sayings Test, a reliability coefficient of 0.77 for the What Do You Know Test and a reliability coefficient of 0.91 for the Which To Discuss Test when administered to V grade children.

Besides, the inter-correlations among the three subtests of curiosity, viz. Curiosity Test I, Curiosity Test II and Curiosity Test III, were computed. They are presented in Table 3 below:

**TABLE 3**

Inter-correlations among the three subtests of Curiosity. (N=400).

<table>
<thead>
<tr>
<th>Curiosity Tests</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity Test I</td>
<td>1</td>
<td>.18**</td>
<td>.17**</td>
</tr>
<tr>
<td>Curiosity Test II</td>
<td></td>
<td>1</td>
<td>.27**</td>
</tr>
<tr>
<td>Curiosity Test III</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Note: For 398 degrees of freedom "r's" of 0.09 and 0.13 are significant at the 0.05 and 0.01 levels respectively.

The intercorrelations are fairly high and they
testify to the cohesive nature of the curiosity measures employed here.

**Item Analysis of the Curiosity Tests**

In order to improve the tests, the three tests of Curiosity, viz. Curiosity Test I, Curiosity Test II and Curiosity Test III, for each of the 4 age groups namely 7, 8, 9 and 10-years were subjected to a process of item analysis. The details regarding item analysis are given as follows:

According to Davis (Ebell 1966) "the construction of solid and reliable tests requires consideration of quantitative information regarding the difficulty and discrimination power of each test exercise or items, that are proposed for use, such information is provided by item analysis data."

The analysis of the subject's response to test items is a powerful tool for test improvement. Item analysis brings to light which items may be too easy or too difficult and which may fail for other reasons to discriminate clearly between the good and poor examinees. Finally, a test composed of items, revised and selected on the basis of item analysis data, is a much more reliable test than one composed
of untested items (Ebel 1966). It was therefore thought necessary to subject the data obtained in the preliminary administration of the curiosity tests to item analysis.

The Item Analysis of the three Curiosity Tests was carried out for each age group separately combining the data across the sexes.

**Item Analysis of Curiosity Test I for Age Group 7-Years**

First of all, the scores of the 100 subjects of the age group 7-years on Curiosity Test I were arranged in decreasing order, from high to low.

Secondly, an upper group, consisting of 27% of the total sample (27 subjects) and a lower group, consisting of an equal percentage of the total sample (27 subjects) were identified. The answer sheets of these 54 subjects were then separated from those of the rest. The selection of criterion groups on the basis of 27% of the upper and lower groups provided the best compromise between two desirable but inconsistent aims, i.e.,

a) to make the extreme groups as large as possible and b) to make the extreme groups as different as possible.
Kelley (1939) demonstrated that by taking the upper and the lower groups of 27% of the total sample, one can say with the greatest confidence that those in the upper group are superior in the ability measured by the test to those in the lower group.

Thirdly, the number of times each alternative response was chosen, out of the two for each item, was counted for the pupils in the upper group. The same was then determined for the pupils of the lower group.

Fourthly, these response counts were recorded against the alternatives they refer to on a copy of the test.

Fifthly, response counts to the keyed correct alternative for the upper and the lower groups were added. This sum was divided by the maximum possible sum, i.e. the sum of the number of pupils in the upper and the lower groups, here it is 54. The quotient was multiplied by 100 to express it as a percentage. This percentage is the index of item difficulty.

Finally, the response count for the lower group
was subtracted from that of the upper group. This difference was then divided by the maximum possible difference, i.e. the number of subjects in the upper (or lower) group, here it is 27. This quotient, expressed as a decimal fraction, is the index of discrimination (D). This index of discrimination, which was first described by Johnson (1951) has since attracted considerable attention and approval. It is simpler to determine and to explain than such other indices of discrimination as the biserial and tetrachoric coefficients of correlation as well as Flanagan's coefficients and Davis' coefficients (Flanagan 1939; Davis 1946). It has the very useful property which most of the correlation indices lack of being biased in favour of items of middle difficulty (Ebel 1966).

A copy of the preliminary form of Curiosity Test I with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and of discrimination (D) entered separately is presented in Appendix (A).

Items with an index of difficulty below 16% and above 85% have been considered too easy and too
difficult respectively, and hence to be eliminated. Items with difficulty indices between 16% and 85% have been construed to be of mediocre difficulty and therefore to be retained. Similarly, items with index of discrimination of 0.30 and above are construed to be highly discriminating and hence were retained (Ebel 1966).

According to the above criteria, there were totally 21 items which fell short of these specifications. Such items were those with serial numbers 1, 2, 3, 4, 11, 12, 15, 16, 18, 20, 22, 26, 27, 28, 29, 33, 34, 37, 45, 47 and 48. It was decided to eliminate these 21 items from the final form of Curiosity Test I. The final form of Curiosity Test I for the 7-year age group therefore consisted of 31 items.

Item Analysis of Curiosity Test I for Age Group 8-Years

Item Analysis was done for Curiosity Test I on the scores of the sample of 8-years age group subjects. The procedure was essentially the same as that adopted for the sample of 7-year age group subjects. A copy of the preliminary form of Curiosity Test I with response counts for the upper
and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (B).

There were totally 27 items of Curiosity Test I for 8-years age group which failed to come up to the specifications adopted. Such items were those with the serial numbers 1, 2, 3, 4, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 31, 39, 43, 45, 46, 47, 48 and 49. These 27 items had to be rejected and hence the final form of Curiosity Test I for the 8-year age group consisted of 25 items.

Item Analysis of Curiosity Test I for Age Group 9-Years

Item Analysis was done for Curiosity Test I on the scores of the sample of 9-year age group subjects. The procedure was essentially the same as that adopted for the sample of the 7 and 8-year age group subjects. A copy of the preliminary form of Curiosity Test I with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (C).
There were totally 30 items of Curiosity Test I which failed to come up to the specifications given above. Such items were those with the serial numbers 1, 2, 3, 4, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 27, 28, 29, 31, 34, 42, 43, 45, 46, 47, 48, 49 and 52. These 30 items had to be rejected and hence the final form of Curiosity Test I for age group 9-years consisted of 22 items.

Item Analysis of Curiosity Test I for Age Group 10-Years

Item Analysis was done for Curiosity Test I on the scores of the sample of 10-years age group subjects. The procedure was essentially the same as that adopted for the sample of the 7, 8 and 9-years age group subjects. A copy of the preliminary form of Curiosity Test I with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (D).

There were totally 32 items of Curiosity Test I which failed to come up to the specifications given above. Such items were those with the serial
numbers 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 18, 19, 20, 23, 24, 25, 28, 29, 31, 34, 35, 38, 42, 43, 46, 47, 48, 49 and 52. These 32 items had to be rejected and hence the final form of Curiosity Test I for age group 10-years consisted of 20 items.

Item Analysis of Curiosity Test II for Age Group 7-Years

Item Analysis for Curiosity Test II was done on the scores of the same subjects as were taken for Curiosity Test I. The procedure was essentially the same as that adopted for Curiosity Test I. A copy of the preliminary form of Curiosity Test II with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (E).

There were totally 20 items of Curiosity Test II which fell short of the specifications given above. Such items were those with the serial numbers 1, 11, 14, 15, 18, 22, 23, 24, 25, 26, 28, 30, 31, 35, 36, 40, 44, 46, 48 and 50. These 20 items had to be rejected and hence the final form of Curiosity Test II for age group 7-years consisted of 30 items.
Item Analysis of Curiosity Test II for Age Group 8-Years

Item Analysis for Curiosity Test II for age group 8-years was done on the scores of the same subjects as were taken for Curiosity Test I. The procedure was essentially the same as that adopted for Curiosity Test I. A copy of the preliminary form of Curiosity Test II with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (F).

There were totally 20 items of Curiosity Test II which fell short of the specifications given above. Such items were those with the serial numbers 1, 3, 11, 12, 14, 18, 19, 22, 25, 26, 28, 30, 31, 35, 36, 39, 40, 44, 46 and 50. These 20 items had to be rejected, and hence the final form of Curiosity Test II for the 8-year age group consisted of 30 items.

Item Analysis of Curiosity Test II for Age Group 9-Years

Item Analysis for Curiosity Test II for age group 9-years was done on the scores of the same
subjects as were taken for Curiosity Test I. The procedure was essentially the same as that adopted for Curiosity Test I. A copy of the preliminary form of Curiosity Test II with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (G).

There were totally 21 items of Curiosity Test II which failed to come up to the specifications given above. Such items were those with serial numbers 1, 2, 3, 7, 10, 11, 12, 14, 18, 22, 25, 26, 28, 30, 31, 35, 36, 40, 44, 46 and 47. These 21 items had to be rejected and hence the final form of Curiosity Test II for the 9-year age group consisted of 29 items.

**Item Analysis of Curiosity Test II for Age Group 10-Years**

Item Analysis for Curiosity Test II for age group 10-years was done on the scores of the same subjects as were taken for Curiosity Test I. The procedure was essentially the same as that adopted for Curiosity Test I. A copy of the preliminary form of Curiosity Test II with response counts for the
upper and lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (H).

There were totally 22 items of Curiosity Test II which failed to come up to the specifications given above. Such items were those with the serial numbers 1, 2, 3, 7, 10, 11, 18, 19, 22, 25, 26, 28, 30, 31, 35, 36, 38, 39, 40, 44, 46 and 47. These 22 items had to be rejected and hence the final form of Curiosity Test II for 10-year age group consisted of 28 items.

Item Analysis of Curiosity Test III for Age Group 7-Years

Item Analysis for Curiosity Test III for age group 7-years was done on the scores of the same subjects as were taken for Curiosity Test I and Curiosity Test II. The procedure was essentially the same as that adopted for the earlier two tests of curiosity. A copy of the preliminary form of Curiosity Test III with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (I).
There were totally 11 items of Curiosity Test III which fell short of the specifications given above. Such items were those with the serial numbers 1, 4, 8, 9, 24, 26, 27, 32, 34, 39 and 40. These 11 items had to be rejected and hence the final form of Curiosity Test III for 7-year age group consisted of 29 items.

Item Analysis of Curiosity Test III for Age Group 8-Years

Item Analysis for Curiosity Test III for age group 8-years was done on the scores of the same subjects as were taken for Curiosity Test I and Curiosity Test II. The procedure was essentially the same as that adopted for the earlier two tests of Curiosity. A copy of the preliminary form of Curiosity Test III with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (J).

There were totally 5 items of Curiosity Test III which fell short of the specifications given above. Such items were those with the serial numbers 1, 4, 9, 24 and 34. These 5 items had to be rejected and
hence the final form of Curiosity Test III for 8-year age group consisted of 35 items.

**Item Analysis of Curiosity Test III for Age Group 9-Years**

Item Analysis for Curiosity Test III for age group 9-years was done on the scores of the same subjects as were taken for Curiosity Test I and Curiosity Test II. The procedure was essentially the same as that adopted for the earlier two tests of Curiosity. A copy of the preliminary form of Curiosity Test III with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (K).

There were totally four items of Curiosity Test III which fell short of the specifications given above. Such items were those with the serial numbers 1, 4, 9 and 34. These four items had to be rejected and hence the final form of Curiosity Test III for 9-year age group consisted of 36 items.
Item Analysis of Curiosity Test III for Age Group 10-Years

Item Analysis for Curiosity Test III for age group 10-years was done on the scores of the same subjects as were taken for Curiosity Test I and Curiosity Test II. The procedure was essentially the same as that adopted for the earlier two tests of Curiosity. A copy of the preliminary form of Curiosity Test III with response counts for the upper and the lower groups recorded separately against each alternative and the indices of difficulty and discrimination entered separately for each item is presented in Appendix (I).

There were totally 2 items of Curiosity Test III which fell short of the specifications given above. Such items were those with the serial numbers 4 and 34. These two items had to be rejected and hence the final form of Curiosity Test III for 10-year age group consisted of 38 items.

The final forms of the three tests of curiosity for the four age groups under study evolved after careful item analysis, were employed in the main study.
Curiosity was, therefore, operationally defined as the scores obtained by the subjects in the three tests of curiosity.

More specifically, Curiosity I was operationally defined here, as the score obtained by a subject on Curiosity Test I (Foolish Sayings).

Curiosity II was operationally defined here as the score obtained by a subject on Curiosity Test II (What Do You Know).

Curiosity III was operationally defined here, as the score obtained by a subject in Curiosity Test III (Which To Select).

Total Curiosity Score (TCS) was operationally defined here as the sum of the scores obtained by a subject on all the three tests of curiosity taken together.

Validity of The Curiosity Measures

Maw and Maw (1961) secured high and low curiosity groups, through teacher, peer and self ratings of fifth grade children. These two groups were then used to measure the curiosity of elementary school children.
Maw and Maw reasoned that a child with high curiosity would amass a greater store of general information than would a child of less curiosity, but of the same intelligence. Hence, they developed a test of general information, from items selected at random from several encyclopedias. The test was administered to the high and low curiosity groups. The results were significantly different, i.e., in favour of the high curiosity groups. The other test, viz. The Foolish Sayings Test and the Which To Select Test were also administered using the same approach. In each case, the results were significantly different in favour of the high groups. Maw and Maw were thus satisfied with the validity of the tests, that they devised.

In the present study, a number of modifications had been introduced in the content of the tests, so as to make them suitable to the sample of the study. Hence, a validity test of these instruments was deemed necessary. For this purpose, it was decided to obtain the curiosity ratings of a random sample of 50 children from their teachers. In order to do this, it was decided to have a sample of children of mixed age group, i.e. from 7 to 10-years, which are the age
For the above purpose, Standard IV was found to be suitable, as it contained children of all the four age groups of the study. Therefore, two teachers of Standard IV of one of the schools included in the main study were asked to give their ratings, of the 50 children on their curiosity behaviour. Ratings were obtained from two teachers to enhance their reliability and dependability. The teachers were told what the Investigator meant by curiosity behaviour. They were explained Maw and Maw's conceptual definition of curiosity (adopted for the present study), namely, when a child:

1. reacts positively to new, strange, incongruous or mysterious elements in his environment by moving towards them, by exploring them, or by manipulating them;

2. exhibits a need or a desire to know more about himself and/or his environment;

3. scans his surroundings seeking new experiences;

4. persists in examining and exploring stimuli in order to know more about them.

They were provided with the following 5-point scale to make their ratings of the children on curiosity.

1. Poor
2. Fairly good
3. Good
4. Very good
5. Excellent
The ratings given by the teachers of each child were then summed to arrive at a single score. The curiosity tests were administered to these 50 children and their curiosity scores determined. The sum of the teachers' ratings on curiosity was then correlated with the curiosity scores of these children. Product-moment correlation method was adopted for this purpose and the validity coefficients are presented in Table 4.

**TABLE 4**

Validity coefficients of the Curiosity Tests.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tests</th>
<th>Validity coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Curiosity Test I</td>
<td>.71**</td>
</tr>
<tr>
<td>2.</td>
<td>Curiosity Test II</td>
<td>.60**</td>
</tr>
<tr>
<td>3.</td>
<td>Curiosity Test III</td>
<td>.54**</td>
</tr>
</tbody>
</table>

**P<.01**

It may be seen from the above table that all the three coefficients are significant beyond the .01 level. Hence, it can be considered that the three adapted tests of curiosity are highly valid.
THE MAIN STUDY

In the present investigation, an attempt has been made to study the relationship of curiosity to intelligence, creativity, extraversion and neuroticism and also to find out the influence of sex and socio-economic status on curiosity. For this purpose, various tests were chosen and reliabilities were determined. Since all of the tests, selected were found to be highly reliable and valid, the main study was conducted using these tests.

Sample

The sample chosen for the main study belongs to the age group 7 to 10-years respectively. A total of 500 children selected at random from 4 schools in the city of Madras were used for the main study. The children belonged to Standards III, IV and V. Of this, 400 subjects were drawn from 3 schools catering to the high socio-economic status. The subjects were chosen by random sampling from the attendance registers. There were 50 boys and 50 girls in each age group of the high socio-economic status samples.

From the above four schools, three schools
catering to the affluent section of the community consisted of only such pupils whose parents' income was Rs. 2,000/- and above per month, and almost all the subjects had indicated the occupation of the parents to be either professional or business. It is clear that the subjects from the high socio-economic status families were better placed in terms of physical, social and economic amenities and stimulation potential and their parents' educational level also belonged to a higher cadre.

However, 100 children from a school catering to the low socio-economic status group of age 10 only, 50 of each sex were also studied. This school serving the children from the low socio-economic section of the community, catered to pupils whose parents' income was Rs. 200/- and below per month. The parents in these cases were predominantly daily wage earners and belonged mostly to the category of labourers and domestic servants.

This sample of 100 subjects from the low socio-economic group was deliberately selected for the study because in the first place, it is necessary that children of this section of the population need be
studied and compared to the children of the high socio-economic groups, and secondly knowledge could be gained as to how far economic status acts as an influencing factor in the attitudes of the children from the extreme socio-economic groups towards curiosity and other variables used in the study.

Sequence of Administration

1. The Curiosity Tests

The original 'You Test' of curiosity as standardized for the present investigation was employed for obtaining measures of curiosity. The final form of the three subtests of curiosity meant for each age group, were made into separate booklets. These test booklets were administered to a sample of 25 subjects at a time.

Administration

The mode of administration of the curiosity tests viz., Curiosity Test I, Curiosity Test II and Curiosity Test III was essentially the same as that reported earlier under standardization. As the children from the low socio-economic status are
taught in Tamil only as the medium of instruction, it was necessary to translate the tests used in this study into Tamil (Appendix 3).

**Scoring**

The scoring procedure was the same as was described in the preliminary investigation. Scoring was carried out according to the key prepared for the purpose.

In order to find out the reliability of the Curiosity Tests, the data of a random sample of 30 subjects from each age group was utilized. Reliability for the Tamil test also was calculated. This was done by drawing a random sample of 30 subjects, of the 10-year age group. The reliability coefficients were determined by the split-half (odd-even) method, for both the high and the low socio-economic status subjects. They were corrected using the Spearman-Brown Prophecy formula to obtain the reliability coefficients which are presented in Table 5 in the following page.
TABLE 5

Reliability Coefficients of the Curiosity Tests.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sample Age</th>
<th>Socio-Economic Status (SES)</th>
<th>Curiosity Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>1.</td>
<td>30 7</td>
<td>High SES</td>
<td>.85**</td>
</tr>
<tr>
<td>2.</td>
<td>30 8</td>
<td>High SES</td>
<td>.83**</td>
</tr>
<tr>
<td>3.</td>
<td>30 9</td>
<td>High SES</td>
<td>.78**</td>
</tr>
<tr>
<td>4.</td>
<td>30 10</td>
<td>High SES</td>
<td>.83**</td>
</tr>
<tr>
<td>5.</td>
<td>30 10</td>
<td>Low SES</td>
<td>.64**</td>
</tr>
</tbody>
</table>

**p < .01

The above table shows that all the reliability coefficients are found to be highly significant. This testifies to the high reliability of the curiosity tests in the present investigation.

2. Draw-a-Man test of Intelligence

The Draw-a-Man test of Intelligence (Phatak 1966) was administered in the following way.

Administration

The above test was administered to groups of 25 subjects at a time. Each subject was given a drawing sheet (7"x8") in which they were asked to
give their bio-data, regarding their name, age, sex and name of the school (Appendix 4). They were provided with pencils and erasers. Care was taken to see that all pictures of human figures were removed from the classroom where the subjects were seated. The Investigator gave the following instructions to the children:

"There is a blank space on your drawing sheet. I want you to draw a picture of a full man in the space. I want to see how nicely you can draw it. So, try to draw as best as you can. Take as much time as you like, but if you want to turn the sheet and use the back side you have to tell me. When you finish the drawing of the human figure, put your pencil down, and raise your hand to indicate that you have finished."

Care was taken to see that every child understood the instructions properly.

As the objective of the present investigation also required that the Draw-a-Man test be administered to a sample of subjects from the low socio-economic status, it was deemed necessary to translate the above instructions into the Tamil language (Appendix 4). The test was then administered to the low socio-economic status subjects of the 10-year age group.
Scoring

Scoring was done according to Phatak's scale (Phatak 1966). The scale consists of 21 major point scores and the highest weighted score is 61.

3. The Wallach and Kogan's Instruments of Creativity

Though Wallach and Kogan (1965) originally designed their creativity tests for individual administration, group administration of these instruments has been successfully employed by Cropley (1968), Paramesh (1971) and Kareem (1976). Following the lead of these investigators, these instruments were administered to the subjects in small groups of 25 each in the present study. The tasks were administered in a non-evaluative and stress-free context, with no time limits and with the teacher not present. The use of the term 'test' was avoided. The tasks were introduced to the subjects as 'Imagination Games'.

Administration of the Verbal Instruments

The answer sheets for the verbal tasks were first distributed, one each to the pupils. The answer sheets had sufficient space for answering all
the three tasks. It was divided into 3 sections, meant for the 3 tasks; Instances, Alternate Uses and Similarities. Each of these sections was further subdivided into 3 and each item was presented on the top of each such division. The instructions for answering each game were given at the beginning of the game.

**Instances**

This was the first of the three verbal tasks. It contained items which required the subject to generate possible instances of a class concept which was given in verbal terms. The following instructions were read to the pupils as they read them silently.

"This booklet contains a number of tasks similar to games. In each you will find a thing named for you. Please write in the respective space provided as many things as you can think of that are like what is given at the top of that space. For example, write all the things that grow; now you can think of a number of things that grow, say tree, baby, animal and so on. These all the kinds of different answers that are possible. Try to write as many as you can. You may take as much time as you need. Remember to name as many things as you can think of that are like what is given at the top of each page."

They were asked if they had any doubts with respect to what they were to do. After clarifying
the doubts, the signal for doing the task was given.

The following three items comprised the Instances Task.

1. Write all the square things you can think of.
2. Write all the things you can think of that will make noise.
3. Write all the things you can think of that move on wheels.

Alternate Uses

After the subjects had finished the first task, they were asked to proceed to the Alternate Uses, which was the second of the verbal techniques. This contained items which required generation of possible uses for a verbally specified object. The following instructions were read to the pupils as they read them silently from their booklets.

"This booklet contains a number of game-like tasks, on each page. You will find the object named for you on top of the space provided in each page. Please write all the different ways in which that object can be used. Any object can be used in a lot of different ways. For example, write all the ways in which you can use a rope - say drawing water, climbing, tying and so on. There are all kinds of different answers that are possible. Try to write as many as you can. You may take as much time as you need. Remember to write a lot of different ways of using the object given at the top in the respective space provided."
Any doubts by the subject were clarified and they were asked to proceed with the task. The following three items comprised the Alternate Uses Task.

1. Write all the different ways you could use a knife.

2. Write all the different ways you could use a car tyre - either the tube or the outer part.

3. Write all the different ways you could use a key - the kind that is used in doors.

Similarities

This was the last of the verbal tasks. It contained items which required the generation of possible similarities between 2 verbally specified objects. The following instructions were read to the pupils as they read them silently from their booklets.

"You may find a number of game-like tasks in this booklet. Two objects are given at the top of the space provided in each page. Please write all the ways that these two objects are alike. For example: write all the ways that two objects, namely, glass and sand are alike. Now you may think of a lot of different ways that these two are alike, say they are non-living, they can be used in house-building, they can be sold and so on. There are all kinds of different answers that are possible. Try to write as many as you can. You may take as much time as you need. Remember to write in the respective space provided as many ways as you can think of, by which the two objects given at the top of each space are alike."
Any doubts the subjects had were cleared, and they were requested to proceed with the task.

The following 3 items comprised the Similarities Task.

1. Write all the ways in which a potato and a carrot are alike.
2. Write all the ways in which a grocery store (provision) store and a hotel are alike.
3. Write all the ways in which a radio and a telephone are alike.

A copy of the verbal creativity instruments is presented in Appendix (5).

Administration of the Visual Instruments

These instruments were administered on a different day. The answer sheets for these instruments were distributed one each to the subjects. These were like those for the verbal tasks, except that there were two sections in them meant for the two visual tasks, Pattern Meanings and Line Meanings. The serial numbers of the Patterns and the Lines were presented at the top of each division in the answer sheets.
Instructions for this game were given at the beginning of the game.

Pattern Meanings

This was the first of the visual instruments which contained visual stimulus materials. The subjects were required to generate possible meanings or interpretations for each of the three visual designs. The following instructions were read to the pupils as they read them silently.

"Now you are going to see some designs, one on each page. For each one, you have to write in the space below it, all the things you can think of as to how each complete design looks like. You may feel free to use your imagination. Here is an example on the first page. Tell me what this could be.....Yes, your answers are fine. Some of the things we could think of are palm leaves, rays of light, brush and so on. There are lots of other things too. Take your own time to write as many as you can think of. Let us begin now."

After clearing the doubts of the pupils, they were started on this task. The items comprising the Pattern Meanings Task are presented in Appendix (5).
**Line Meanings**

This was the other visual instrument. It consisted of one or another kind of line. The subject had to generate meanings or interpretations relevant to the form of the 3 lines. The following instructions were read to the pupils as they read them silently.

"Now you are going to see some lines, one on each page. For each one, you are to write in the space below, all the things the line as a whole makes you think of. See this first line. Write all that it makes you think of. Take your own time to write as many as you can. Let us begin now."

The doubts of the pupils were then cleared, and they were started on the task.

The items comprising the Line Meanings are presented in Appendix (5).

The above tests of creativity were translated into the Tamil language and were administered to the subjects belonging to the low socio-economic status group (Appendix 5).

**Scoring of the Creativity Instruments**

Whereas Wallach and Kogan (1965) advocated scoring for number and uniqueness of responses, Pankove and Kogan (1968) and Kareem (1976) on the other hand, adopted only the fluency or the number score in their study. Their contention was that the
fluency score by itself, is a good index of creativity as these two variables, viz. number and uniqueness scores were highly correlated in the original Wallach and Kogan study (1965). As the determination of uniqueness is highly time-consuming, these investigators decided in favour of only the fluency score. In line with their work, in the present study also, the number or fluency score alone, was taken for a measure of creativity.

Fluency score refers to the total number of responses given by the subject to each item in each instrument. Scoring was done by summing up the number of different responses given by the subject to each item in each instrument.

The total fluency in a given instrument constitutes the sum total of responses given by the subject to all the items in the instrument. The sum of the 5 measures of creativity comprised the creativity index for each subject.

4. The Junior Eysenck Personality Inventory

The Junior Eysenck Personality Inventory (S.B.G. Eysenck 1965a) was administered, to the sample of subjects as
given below.

**Administration**

The above test was administered as a group test. The subjects were comfortably seated in their respective places, and each subject was given a copy of the Inventory and the following instructions:

"Here are some questions regarding the way you behave, feel and act. After each question is a space for answering 'Yes' or 'No'. Try to decide whether 'Yes' or 'No' represents your way of acting or feeling. Then underline the 'Yes' or 'No' as the case may be, for each of the question, to indicate your answer. Work quickly and do not spend too much time over any question. There are no right or wrong answers. Remember to answer every question."

There was no time limit but normally the subject took 30 minutes to complete the test (Appendix 6).

**Scoring**

Scoring was done with the key provided by the author of the Inventory, for each of the variables (S.B.G. Eysenck 1965a).

**Statistics used**

The data thus collected was processed using the following statistics. They were the mean, standard
deviation, product moment coefficients of correlation and multiple correlation. These statistical techniques were used for determining the relationship of curiosity to intelligence, creativity, extraversion and neuroticism. This was done separately for each age group and within each age group for the sexes separately.

Multiple correlation was chosen as the statistical tool for the purpose of studying the strength of relationship between the dependent variable of curiosity and a linear combination of the independent variables of intelligence, creativity, extraversion and neuroticism. The justification for the use of multiple correlation is that actual relationships between the variables may not be revealed by simple product moment correlation only. One variable is found to be associated with or dependent upon more than one other variable at the same time. In the present context, multiple correlation represents the correlation between curiosity and a linear combination of intelligence, creativity, extraversion and neuroticism. The formula for multiple correlation and the testing of significance for the observed multiple correlation coefficient is given in Appendix 8.
'Critical Ratio' was used to find out whether boys and girls differ significantly on curiosity. For this purpose, the age groups 7, 8, 9 and 10-years were taken separately.

For finding out the differences between the mean scores of the high and low socio-economic status group in curiosity, 'Critical Ratio' was made use of. This analysis was done for the 10-year age group only as data on this aspect from other age groups were not collected. However the sexes were treated separately.

The results are presented and discussed in the following chapter.