CHAPTER IV

METHOD OF STUDY
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This section presents a brief outline of the social setting from which the unilingual and the bilingual subjects were drawn, the sample and its major socio-demographic characteristics, a description of the tests and finally the data collection procedure.

Setting

A significant proportion of Indian population are tribals who are locally known as Adibasis. Orissa, a South-Eastern state in the Indian republic, has the highest percentage of tribal population in India, next only to Nagaland. The state of Orissa runs along the East-Coast of the Bay of Bengal between 17.48° to 22.34° North latitude and 81.24° to 87.29° East longitude. The tribals comprise 25 % of the entire population of the State. The majority tribal groups in Orissa are the Konds, Juangas, Sauras, Santalas and the Bhuyans who live particularly in the districts of Phulbani, Koraput and Keonjhar.

Most of the tribals or Adibasis live in the interior districts of the state. They have long been exploited by the nontribal rich and moneyed class for ages and have been driven to the remotest hilly and forest areas. Judged against the modern standard, they are economically and educationally backward. Tribal life is marked by some crude superstitions, notions and ignorance. During the
last four decades, the government of India is trying to improve the socio-economic conditions of the tribal people through the implementation of intensive Tribal Development Programs.

The Kond tribe is one of the most primitive tribes of the country who live in the Phulbani district of Orissa. The Phulbani district also known as Kondmal (the Kond belt) is located about 250 kilometers away in the South-West direction of Bhubaneswar, the State capital of Orissa. The district comprises wide open uplands fringed by forests having an elevation of over 3000 feet. Due to high relief, the district receives heavy rainfall of over 200 centimeters with an annual temperature ranging from 20°C to 23°C. The land area of the district is 11.1 thousand square kilometers having a population of about 7 lakhs of which about 3 lakhs are Kond tribals.

In the midst of poverty, diseases and backwardness, the Kond tribals of Orissa lead very simple and happy life enriched by natural pleasure. They have plenty of romance; their life is full of songs and dance of rare beauty and simplicity. They have their own standard of morals and discipline. They obey the order of the heads in their respective clans. Their social organizations are still intact. Their primitive traditions of marriage, festivals and rituals are still unimpaired to a considerable extent and their artistic tradition is unbroken. They have
uncommon spirit of unity among them to protect themselves from the attack of animals and ravages of nature. They earn their livelihood mostly on selling forest products. Many of them have now taken up a ruinous form of cultivation known as 'Podu' or shifting cultivation.

Some of the tribal groups in Orissa and elsewhere in India do have their own exclusive languages and others speak the regional languages. It is not uncommon for tribals to speak two or even three languages. The Konds in Orissa have their own language called Kui. The members of this tribe living in the Southern region of the district of Phulbani speak Kui along with Oriya which is the language of the state and medium of instruction in schools. Konds living approximately 60 to 70 kilometers away in the North-Eastern Phulbani speak only Oriya as they have forgotten Kui language over number of generations possibly because of the influence of the Oriya speaking nontribals. Thus some of the Konds are bilinguals in Oriya and Kui, whereas some others are unilinguals in Oriya. However, socio-culturally, racially, economically and in terms of educational opportunities available, both the groups are very much similar. Their social customs, religious practices, food habits and living conditions do not differ at all. Thus, such a situation provides unique natural laboratory for studying the consequences of bilingualism.
Kui belongs to the Indo-Dravidian language family. It has its own grammatical, semantic and phonetic system with the Oriya script being used for the written Kui. There are some dialectical variations of Kui spoken in different parts and the language spoken around G. Udayagiri town in Phulbani district is usually taken as the standard Kui by the regional linguists.

Oriya, which is the mother tongue of about 20 million people in the state, belongs to the Indo-Aryan group of languages and has a rich literary heritage. It originated approximately 2000 years back and developed as a written language during 7th and 8th centuries. In the process of evolution, the Oriya literature has become rich with many literary epics, novels, story collections, folktales and folksongs, dramas, poetry collections etc. Two sets of encyclopaedia are available for reference in the Oriya literature. There are about six dailies, several weeklies and monthlies published in the Oriya literature.

For the present study it may be noted that the social settings from which the uninlingual and the bilingual subjects were drawn were homogeneous. Information about the sociodemographic characteristics of both the groups was obtained and is presented in this section.

Sample

The performance characteristics of the bilingual and uninlingual Konds were contrasted following a 2 (Linguistic
status: bilinguals and unilinguals) x 3 (Grades: 2, 4 and 6) Analysis of Variance design. The sample consisted of 360 subjects with 60 children from each of the following populations:

(i) Grade Two Unilingual
(ii) Grade Four Unilingual
(iii) Grade Six Unilingual
(iv) Grade Two Bilingual
(v) Grade Four Bilingual
(vi) Grade Six Bilingual.

The mean ages for the six subgroups were 7.8, 10.2, 12.1, 7.7, 10.5, and 12.0 respectively.

The subjects were Kui-Oriya bilinguals and Oriya speaking unilingual Kond students randomly sampled from the tribal Ashram Schools in the Phulbani district of Orissa, a South-Eastern state of India. All the subjects belonged to the low SES families of farm labourers with annual per capita income of less than 1000 Indian rupees. The literacy rate of villages where the schools are located is less than 15%.

The villages are underdeveloped, there is no running, water, electricity, telephone, television or bus services. The roads are unpaved and there are no modern facilities for agriculture. The sample consisted of both boys and girls.

The bilingual subjects speak Kui in their homes and
mostly Oriya outside. The unilingual subjects speak only Oriya and have very little knowledge of Kui. However, for both unilingual and bilingual subjects, the medium of instruction in schools is Oriya. The Ashram Schools are purely residential schools sponsored by the Tribal Development Department of Orissa. Schools in bilingual areas are mostly attended by bilingual students whereas Schools in unilingual areas are populated by unilingual students. Hence, bilingual students interact among themselves in Kui language whereas unilinguals interact among themselves in Oriya language.

Most of the subjects belonged to low caste homes which are characterized by poverty, occupation of menial nature, illiteracy and a complete lack of parental interest in the child's education. The motivation of the parents in sending their children to school is to get some basic requirements like food, clothing etc. for their children free of cost from the school. Students are also motivated to attend schools for the same reason. Despite this the school attendance is not very encouraging.

Descriptive Sample Characteristics

Information on major socio-demographic characteristics of the unilingual and bilingual sample was obtained through a structured questionnaire (Appendix I). Their responses were verified with local teachers who knew their family.

The means and standard deviations of nine major socio-
demographic variables for all the six groups of subjects are reported in Table 1. Four of these variables namely Father's education, Father's Occupation, Per capita income of the family and Income per child were rated on five point scales (1, 2, 3, 4 & 5) in the following manner.

- **Father's education:** (1) Illiterate, (2) Preliminary literacy, (3) Primary education, (4) Secondary education, and (5) Above Secondary education.

- **Father's occupation:** (1) Daily labourer, (2) Self-employed farmer, (3) Skilled labourer (e.g., mason), (4) Low paid government servants, and (5) Higher paid government servants.

- **Per capita income of the family:** (1) Below 250 rupees, (2) 251 to 500 rupees, (3) 501 to 750 rupees, (4) 751 to 1000 rupees, and (5) Above 1000 rupees.

- **Income per child:** (1) The annual income of the family was divided by the number of siblings to obtain an index of income per child per annum and was rated in the same five point scale as used for per capita income.

The means and standard deviations of other five socio-demographic variables namely, family size, landed property,
Table 1
Means and Standard Deviations of the Nine Socio-Demographic Variables for the Unilingual and Bilingual Children in Grades Two, Four, and Six
(N = 60 in each group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Grade II</th>
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<th>Grade IV</th>
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<th>Grade VI</th>
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<td>Bili</td>
<td>Uni</td>
<td>Bili</td>
<td>Uni</td>
<td>Bili</td>
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<tr>
<td>Father's Education</td>
<td>Mean</td>
<td>1.63</td>
<td>1.44</td>
<td>1.64</td>
<td>1.31</td>
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</tr>
<tr>
<td></td>
<td>SD</td>
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<td>0.87</td>
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<td>Mean</td>
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<td>Mean</td>
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<td>2.37</td>
<td>2.82</td>
<td>2.54</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.75</td>
<td>0.39</td>
<td>0.83</td>
<td>0.56</td>
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<td>Mean</td>
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</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.13</td>
<td>1.35</td>
<td>1.21</td>
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<tr>
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<td>3.67</td>
<td>2.68</td>
<td>2.84</td>
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<tr>
<td></td>
<td>SD</td>
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<td>0.32</td>
<td>0.91</td>
<td>0.67</td>
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<td>No. of literate family</td>
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<td>0.73</td>
<td>1.06</td>
<td>0.94</td>
<td>1.21</td>
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<tr>
<td>Members</td>
<td>SD</td>
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<td>0.82</td>
<td>0.58</td>
<td>0.54</td>
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<tr>
<td>No. of literate Siblings</td>
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<td>0.57</td>
<td>0.84</td>
<td>0.75</td>
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<tr>
<td></td>
<td>SD</td>
<td>0.64</td>
<td>0.81</td>
<td>0.63</td>
<td>0.75</td>
<td>0.58</td>
</tr>
</tbody>
</table>
number of siblings, number of literate family members and number of literate siblings were calculated from the observed scores.

Disregarding grade status, combined means and standard deviations were computed separately for unilingual and bilingual subjects and 't' ratios were calculated for all the nine sociodemographic variables. The combined means, standard deviations and 't' ratios are reported in Table 2.

The three important sociodemographic variables are father's education, occupation and per capita income of the family. These variables bear direct consequences on the child's motivation and environment for cognitive and linguistic development and educational achievement. The means of unilingual and bilingual children (Table 1) across all the three grades were indicative of very low level of parental education and family income, and menial nature of parental occupation. With respect to these three variables, no differences were observed between unilingual and bilingual subjects as the combined means yielded insignificant 't' ratios (Table 2).

No significant differences were also observed (Table 2) between unilingual and bilingual children with respect to sociodemographic variables namely land holding, income per child, family size and number of siblings. It appears from the mean and standard deviation (Table 1) that both
Table 2
Means, Standard Deviations and 't' values of the Nine Socio-Demographic Variables for the Unilingual and Bilingual Samples (N=180 in each group)

<table>
<thead>
<tr>
<th>Variables</th>
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<th>SD</th>
<th>'t'</th>
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<tbody>
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<td>Father's Education</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Uni</td>
<td>1.60</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>1.64</td>
<td>1.01</td>
<td>0.4</td>
</tr>
<tr>
<td>Father's Occupation</td>
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<td></td>
<td></td>
</tr>
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<td>Uni</td>
<td>2.77</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>2.90</td>
<td>0.95</td>
<td>1.43</td>
</tr>
<tr>
<td>Family Income (Per capita)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni</td>
<td>2.66</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>2.51</td>
<td>0.51</td>
<td>0.70</td>
</tr>
<tr>
<td>Income Per Child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni</td>
<td>3.14</td>
<td>1.20</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>3.13</td>
<td>1.26</td>
<td>0.08</td>
</tr>
<tr>
<td>Landed Property (in Acs.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni</td>
<td>0.63</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>0.60</td>
<td>0.54</td>
<td>0.45</td>
</tr>
<tr>
<td>Family size</td>
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</tr>
<tr>
<td>Uni</td>
<td>6.42</td>
<td>2.21</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>6.20</td>
<td>2.14</td>
<td>1.02</td>
</tr>
<tr>
<td>No. of Siblings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni</td>
<td>2.96</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>3.10</td>
<td>0.78</td>
<td>1.75</td>
</tr>
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<td>No. of Literate Family Members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni</td>
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<td>0.68</td>
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</tr>
<tr>
<td>Bil</td>
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<td>0.64</td>
<td>3.1**</td>
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<td>No. of Literate Siblings</td>
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<td>Uni</td>
<td>0.61</td>
<td>0.64</td>
<td></td>
</tr>
<tr>
<td>Bil</td>
<td>0.82</td>
<td>0.80</td>
<td>2.4**</td>
</tr>
</tbody>
</table>

** p < .01
unilingual and bilingual subjects possessed very poor land holdings. Agriculture being their major occupation, poor land holdings result in low per capita income and low income per child. Ignorance about the benefits of a planned family results in more number of siblings and larger family size. These sociodemographic variables are in interaction with each other and hence create a very similar sociocultural environment for both unilingual and bilingual subjects.

Only two variables on which the unilingual and bilingual subjects differed significantly were number of literate family members and number of literate siblings. Since number of literate family members also included number of literate siblings, for practical purposes the significance of the differences on both these variables might be considered as a single dimension of difference. Although bilingual children had more literate members in their family, the influence of this sociodemographic variable was largely partialled out by using subjects only from residential schools. Moreover, in a society, where most of the time and energy is spent in meeting the basic necessities of life, parents can afford very little time to provide intellectual support to the children. In view of this, difference in the mean number of literate family members and siblings between unilingual and bilingual subjects was of least practical significance for
the children's intellectual pursuit.

Tests

All subjects were administered three groups of tests: Tests of cognitive development, Tests of metalinguistic awareness and Measures of academic achievement. The cognitive battery included tests of intelligence (Raven's Coloured Progressive Matrices), Conservation (Conservation of Length, Number, Substance, Weight, Continuous and Discontinuous quantity and Two dimensional space), memory (Category Clustering in Free Recall, Serial Short-Term Recall of Locations), reasoning (Syllogistic Reasoning) and Coding processes, namely simultaneous (Figure-Copying and Memory for Designs) and successive processing (Serial Recall and Digit Span).

The metalinguistic battery consisted of the following eight measures: Rhyme Recognition, Knowledge of Appropriateness of Utterance, Correction of Other's speech, Meaning and Referent Relationship, Symbol Substitution, Arbitrariness of Language, Word Creation and Ambiguity Detection.

School marks on English, Oriya, Arithmetic, General Science and Drawing were taken as measures of educational achievement. In addition to these, subjects' performance in Arithmetic and General Science was also measured with the help of two standardized tests.

The rationale for using these tests has been presented
earlier. The tests, their administration and scoring procedures are described below.

**Cognitive Battery**

**Intelligence**

Raven's Coloured Progressive Matrices (RCPM) is a widely used non-verbal test of intelligence. The test consisted of 36 items with 12 items in each of the three sets of A, Ab, and B. Each item is a colour design, a part of which is missing. Below each, six small coloured designs are given, one of which fits exactly into the missing part of the larger design to make it a complete form. The subject's task is to choose the right alternative to fill up the missing space, and write down its serial number in the answer sheet. There was no time limit for the test and each subject took as much time as he required for solving all the problems contained in the test booklet. Instructions as per the test manual were given to the subjects in Oriya. The responses were scored for the total number of items answered correctly.

**Conservation**

Conservation tests were adopted from Goldschmidt and Bentler (1968) and the processes of administration and scoring were done following their manual.
Conservation of length. Two straight eight-inch-long wooden bars were used. The child was presented with these two bars. Those were lying parallel and their ends were in alignment. The child was asked: "Are the bars the same length? Is this bar (top bar) as long as this one (bottom bar)?" After the child gave the response 'yes', the bottom bar was moved so that their ends were no longer in alignment. The child was asked the same question as above. If the child agreed to equality, the experimenter asked for justification of the response: "How do you know?" If the subjects could not verbally explain their judgement, they were asked a few additional questions, "Is this (bottom bar) longer or that (top bar) longer? Are they of equal length or not? Is any of the bar longer than the other?" The response was scored '0' if the equality was not understood while the bars were parallel without their ends being in alignment. He got a score of one if he agreed to equality when the bars were parallel without their ends being in alignment. It took approximately 3 minutes to administer the test.

Conservation of Number. Six round black chips were placed in a straight line with a gap of 2 inches in between the chips. Parallel to and below the row of black chips, 6 white chips were also placed in a straight line in corresponding positions. The subject was then asked; "Are there as many black chips as white chips?" If any of the
subjects said that one line had more than the other, it was demonstrated to him that both the lines had same number of chips. Following this, the gap between the black chips were reduced into one inch and the gaps between white ones were increased to 3 inches while the subject was watching the entire process. The subject was then asked, "Are there as many black chips as white chips, or is there more of one kind?" He was also asked to give justification for his answer. He got a score of one if he understood the equality when the spacing of chips in the two rows was nonuniform. It took approximately 3 minutes to administer the test.

Conservation of Substance. The subject was given two balls of dough and was asked, "Do both the balls contain same amount of flour to eat or does one have more than the other?" If any of the subjects did not find both the balls equal, he was asked to make them equal by taking some pieces from the larger ball and adding it to the other. After the subject agreed to equality, the experimenter said, "Now I am making this ball into a cake (while the subject was looking on). Is there the same amount to eat in the cake as in the ball?" He was also asked to justify his answer. He got a score of 1 if he understood that both the ball and the cake had the same amount to eat. It took approximately 3 to 4 minutes to administer the test.
Conservation of Weight. The subject was given two balls of clay having approximately equal weight and asked to weigh them with his hands to find out if both the balls weighed the same or one was heavier than the other. If any of the subjects reported unequality, he was asked to make their weights equal by taking small pieces from the heavier ball and adding it to the lighter one. Following an agreement on equality on the part of the subject, the experimenter made a pancake out of one of the balls, leaving the other unchanged, while the subject was watching. The subject was then asked, "Is the ball as heavy as the Pancake or is one heavier?" The subject was not allowed to pick up the ball or pancake. He was asked to give justification for his answer. He earned a score of 1, if he understood equality in weight of the ball and the pancake. It took approximately 3 to 4 minutes to administer the test.

Conservation of Continuous Quantity. Two equal size glasses filled with same amount of water were placed before the subject. Then he was asked, "Is there as much water in this glass, as in that one or does one have more?" If any of the subjects reported unequality, he was asked to pour water from one into the other to ensure equal amount of water in both the glasses. Then the experimenter poured water from one of the glasses into a flatter disc-like glass container while the subject was watching the process.
Then he was asked, "Does this glass have as much water as that in the disc or does one have more?" He was asked to give justification for his answer. He was given a score of 1 if he understood that both the disc and the glass had the same amount of water. It took approximately 3 to 4 minutes to administer the test.

Conservation of Discontinuous quantity. Two equal size glasses filled with an equal amount of rice were placed before the subject. Then he was asked, "Is there as much rice in this glass as in that one or does one have more?" In case of disagreement, the subject was asked to make the amount equal in both the glasses by pouring some rice from one into the other. The rice from one of the glasses was then poured into five small glasses in front of the subject. Then he was asked, "Is there as much rice in this glass as in all of these five glasses taken together or does one side have more?" He was also asked to give justification for his answer. He got a score of 1 if the understood that the amount of rice remained unchanged in the second instance. It took 3 to 4 minutes to administer the test.

Conservation of Two-Dimensional Space. The two rectangles each built with 8 blocks of wood were placed before the subject. The subject was asked, "Is there as much wood here in this rectangle as in that one or does one have more?" If any of the subjects said that they
were not the same, it was pointed out to him that one rectangle was just as big as the other and hence, they were both the same. Then the experimenter spread the wooden blocks of one of the rectangles in a straight line while the subject was watching the process. Following this, the subject was asked, "Is there as much wood here in this rectangle as there in the straight line or does one have more?" He was also asked to give justification for his answer. His responses were recorded. A score of 1 was given if he understood equality in the second instance. It took approximately 3 to 4 minutes to administer the test.

All these 7 conservation tests were administered in approximately 25-30 minutes. Right answer with its justification was scored 1 while a wrong answer was scored 0. Hence, the maximum score for all the tests of conservation taken together was 7.

Memory

**Category Clustering in Free Recall.** This test was similar to the ones used to study organizational features of free recall (Bousfield, 1953; Cole, Gay, Glick & Sharp, 1971). The test material consisted of 16 familiar line drawings, four from each of the categories of animals, fruits, vehicles, and limbs. Each drawing appeared on a white card (3 x 4 inches). The subject was shown all the
drawings one after another in a random sequence with each drawing being presented for a two seconds viewing period. As each drawing was presented, the subject was asked to tell the names of the drawings aloud. Following the completion of the first trial, the subject was asked to recall from memory what he saw. After the subject indicated that he could not recall any more, the next trial begun. Each subject was presented the drawings three times but in a different order each time.

The subjects' responses were scored for the amount of clustering exhibiting in recall output using Bousfield's (1953) Ratio of Repetition index (RR). It took approximately 10 minutes to administer the test.

**Serial Short-Term Recall of Locations.** This test was similar to the one used by Wagner on Mexican subjects (Wagner, 1974) and Moroccan subjects (Wagner, 1978) to study the influence of age, schooling and environment on structural features and control processes in memory. The test material consisted of sets of seven white cards (3 x 4 inches), with a line drawing of a familiar animal appearing on one side of each card. A given set contained seven cards and a 'probe' card containing a line drawing of one of the animals. The task for the subject was to remember the locations of seven animal drawings as each card was presented for 2 seconds viewing period, and then
placed face down in front of the subject from left to right in a linear arrangement. After two seconds the subject was shown the probe card with the instruction to point to the card in the row that contained the same animal. Each subject was given 7 test trials such that each serial position was probed once. Since in a trial, the cards were laid down from left to right, the serial position of the probe was related to the time interval between presentation of a given card and the probe recall. It took approximately 7 to 10 minutes to administer the test individually. The task was pictorial in nature, requiring little verbal responses.

**Syllogistic Reasoning**

This test consisted of 14 items, which were very similar to those used by previous investigators (Bickerseth, 1979; Fobih, 1979; Luria, 1971; Sharp, Cole & Lave, 1979). There were two syllogisms from each of the following seven categories: (1) familiar, (2) unfamiliar, (3) contrary to experience, (4) artificial, (5) conjunctive, (6) disjunctive, and (7) implicative. All subjects were tested individually in an informal interview type situation. They were also asked to give justifications for their answers. A correct answer to each question was given a score of 1. The total score for each subject was obtained by adding his score over all the items in the test. It took approximately 12-15 minutes to administer the test.
Coding Processes

Figure Copying. This test has been identified as a marker test for simultaneous processing (Das, Kirby & Jarman, 1975). It was originally used as a test of developmental readiness at the Gesell Institute (Ilg & Ames, 1964). In this test, the subject was required to reproduce 10 geometric patterns of increasing difficulty, which were then scored 0, 1, or 2 according to the accuracy of reproduction. The maximum possible correct score was 20. Scoring criteria emphasized the maintenance of geometric relations and proportions rather than exact reproduction. It took approximately 7 to 10 minutes to administer the test.

Memory for Designs. This test originally derived from Graham and Kendall (1960) has been identified as a stable marker test for simultaneous processing. The test material consisted of 15 simple straight line designs. Each was shown to the child for a 15 second viewing period. Subjects were required to reproduce each design from memory. Their responses were then scored for errors as 0, 1, 2 or 3 depending on the correctness of reproduction. Fully right reproductions were scored 0 while completely wrong responses were scored 3. The subjects' scores were added over 15 designs for a maximum possible score of 43. It took approximately 5 to 8 minutes to administer the test to each subject.
Serial Recall. This is a marker test of successive processing. The version used in this study consisted of 12 lists of words which began with a four-word series and progressed to a six-word series. There were four lists for each of the four-, five-, and six-word series. The subjects were required to recall each series in correct serial order. The number of words recalled in correct serial position constituted the serial recall score of the subject. The maximum possible score on this test was 60, and the administration time for the test was approximately 4 to 6 minutes.

Digit Span. This successive marker test is abstracted directly from the Wechsler Intelligence Scale for Children (WISC). A series of digits of increasing length were read out to the subjects who were required to recall the digits in correct serial order. The subject's score was the number of digits in the series of maximum length recalled correctly. It took approximately 2 minutes to administer the test.

Metalinguistic Battery

Following Clark's (1978) model, metalinguistic battery consisted of eight different measures as described below. Six of these were adapted in Oriya by Mohanty
Rhyme Recognition

The Oriya Version (Mohanty & Mohanty, 1980) of this test consisted of 8 items with 3 words per item. Two of the three words in each test formed a rhyme because of their last letter similarities. The locations of the two rhyme words were randomly varied across all the 9 items. The experimenter read out all the three words in each item with the instruction to the subject to identify the two that rhymed the same. For each item, the correct answer was given a score of 1 with the maximum score being 8 for the entire test. The administration time was approximately 2 minutes.

Knowledge of Appropriateness of Utterances

This test (Mohanty & Mohanty, 1980) consisted of 4 items, each item presenting a social interactional situation for which the subject was required to respond. For example, in one of the items involving a play situation, the subject was told, "your friends are playing in the field. You very much wish to play with them. How would you express your desire?" The subject was awarded a score of 2 for each item, if his utterances (answer) was appropriate to the occasion, thus yielding a maximum possible score of 8 for the entire test. It took approximately 3 minutes to administer the test to each
Correction of Other's Speech

The test (Patnaik & Mohanty, 1984) consisted of 8 items, each of which was a full Oriya sentence having a structural error. As each item was read out to the subject, he was instructed to correctly rearrange the words in the sentence. For each item the correct answer got a score of 1 and the wrong answer a score of 0. The maximum possible score for the test was 8 and its administration time was approximately 3 minutes.

Meaning and Referent Relationship

Originally developed by Osherson and Markman (1975) it is used to assess child's belief in the stability of word meanings even when the empirical referents are no longer present. In this test a series of questions were asked to the subject about a make-belief animal (e.g., a fairy bird) and an elephant. In the first instance, the subjects are shown a toy fairy bird and are given its meaning as one with four wings of different colours. Then they were asked four different questions: "How would they explain the meaning of fairy bird to another young child? What would the term mean if the last fairy bird died and there were no more fairy birds? After the last fairy bird dies, how would they explain the meaning of fairy bird to another young child? Whether the meaning of
the term changes because there are no more fairy birds?"
The last three questions were asked with the toy fairy bird being taken away from the sight of the subject. Correct answer to each question got a score of 1 and the wrong answer a score of 0. A similar pattern of questioning was followed for the term elephant except that no toy elephant was used in this instance. The maximum possible score for this test was 8 and its administration time was approximately 5 minutes.

Symbol Substitution

This test was originally developed by Osherson and Markman (1975) as a measure of metalinguistic ability and was adapted into Oriya by Patnaik and Mohanty (1984). The test is designed to assess subject's understanding that words are used as symbols and its meanings are not intrinsic to the word as such. The names of the objects and events can be changed without changing their characteristics or properties. The test consisted of four items and two questions were asked in each. For example, the subject was shown a toy aeroplane, which was renamed by the experimenter as 'frog' for the purpose of playing a game. The subject was then asked, "What is this? (showing the aeroplane)? How can the frog fly?" Each question earned a score of 1 for being correctly answered, thus yielding a maximum possible score of 8 for the
Arbitrariness of Language

The test is designed to determine whether the subject understands that there is an arbitrary relationship between a word and its referent. There were two items in the test, each one consisting of four questions. In the first item involving an interchange of names for the Sun and the Moon, the subject was asked the following questions:

"Suppose that you were making up names for things, could you call 'The Sun', 'The Moon' and 'The moon' 'The sun'? Why could you change or not change the names? What would you call the things in the sky at night when you go to bed? What would the sky look like when you go to bed?"

The second item consisted of the pictures of a dog and a cat with the following questions: "If everybody in the world agreed to change names and call dogs as cats and cats as dogs, what would you call this (dog picture)? What sound would this animal make? What would you call this (cat picture)? What sound would this animal make?"

Correct response to each question earned a score of 1 with a maximum possible score of 8 for the test. The administration time of the test was approximately 5 minutes.

Word Creation

This test earlier used by Mohanty and Mohanty (1980) consisted of 8 items, each of which was a full sentence.
in Oriya having a different verb form. For the root verb in each of the sentences, the subject was provided with a new word with the instruction to use the appropriate form of the new word while reconstructing the sentence. For an example, if 'to play' is said as 'to reel', how would we say, "They were playing in the field?" Correct response in each item was awarded a score of 1, thus yielding a maximum possible score of 8 for the test. It took approximately 5 minutes to administer the test.

Ambiguity Detection

Ambiguous sentences provide an excellent context for studying the subjects linguistic processes. The task used in this present study was based on Keil (1980). The test consisted of 12 items each one in the form of a sentence. Six of the sentences were unambiguous and the other six were ambiguous. For each item, there was a corresponding picture-card consisting of four pictures. For unambiguous items, only one of the four pictures in the card could appropriately describe the message contained in the sentence. But for the ambiguous items two of the four pictures in each of the corresponding cards could be referred to, depending upon the intonation of the sentence. For example, one of the ambiguous sentences in Oriya could be interpreted in two different ways in the following manner while read out with different intonations: 'Two baskets are filled with cucumbers' and
"A basket is filled with two cucumbers". The corresponding picture card for this item contained a picture of two baskets each filled with cucumbers, a picture of a basket filled with two cucumbers and two other pictures of baskets and cucumbers not appropriately representing the sentence. The nature of remaining five picture-cards meant for the ambiguous items was similar in that in each, two of the four pictures carried the meaning of the ambiguous sentence.

A printed sheet of 12 sentences was placed in front of the subject while the experimenter read out from a separate sheet each of the sentences twice using two different intonations. The two different intonations were of no consequences for the unambiguous items, while for the ambiguous ones, they carried two different meanings of each sentence. The ambiguous and unambiguous items appeared on the same sheet in a random order. The subject was instructed that after hearing each sentence he should select from among the four pictures of the corresponding card, only those that represented the meaning of the sentence. Subject's responses for the unambiguous items were not scored. For each of the ambiguous items, the subject earned a score of two, if he got the two meanings of the sentence and accordingly selected two pictures, and a score of 1 if he selected only one of the pictures as relating to the meaning of the sentence. The
maximum possible score for the test was thus 12 and its administration time was approximately 8 minutes.

**Educational Achievement Measures**

Marks obtained by each student on major subject areas such as English, Oriya, Arithmetic, Science and Drawing were obtained from school examination records. The average of the marks obtained in each subject area in the two previous examinations was used as an index of subjects' educational achievement. In addition, the subjects were also administered two standardized measures of achievement, one for Arithmetic and the other for Science. The latter two tests were developed at the Center for Advanced Study in Psychology, Orissa by Puhan and Dash (1978) and Mohanty and Sahoo (1978) respectively.

**Procedure**

The test was administered by the author with the help of one research assistant who had Master's Degree in Psychology from Utkal University in Orissa, India. Both the author and the research assistant are natives of Orissa and speak Oriya language. Being born and brought up in the rural traditions of the state, the investigators shared a part of the subjects' culture. Thus, there were no wide linguistic or cultural barriers between the investigator and the subjects.
The author and the research assistant lived in the township of Phulbani district for the 10-month period of data collection. During this period, they travelled into remote areas in bicycles where the Tribal Ashram Schools were located. The permission of the District Inspector of Schools was first obtained to carry out this work in 12 tribal schools. The subjects were tested in a separate room or in a quiet hallway provided by the Headmasters of the respective schools. Most of the teachers in the school were cooperative with the investigators during the research work.

All children were tested individually in Oriya, which is the medium of instruction in the primary schools of the state. All the tests were administered in the order they have been described in this section. After establishing some level of rapport with the child, the testing session began. The subjects were administered all the tests in three to four sessions.