Comparative Study of Mental Ability of Rural Children Attending and Nonattending Noon Meal Programme

BY

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Childhood!

(Anandalakshmy 1986)

Children are our future and our most precious resources. The quality of tomorrow's world - perhaps

even its survival will be determined by the well being, safety and development of children today (International Year of the Child - Souvenir, 1979). Early childhood constitutes the foundation of adult productivity (UNICEF 1983). It is the childhood that holds the potentials and sets the limits of future development of a society (NIPCCD, 1984).

Osuntokon (1984) states that children between 0-6 years constitute 21 percent of the population. The preschool children constitute an important vulnerable segment of population from the nutritional stand point. The problems of infection and malnutrition are more prevalent in this age group. Available evidence indicate that severe mal-nutrition experienced on a critical phase of life affects not only the expression of the genetic potential for physical growth and development but also for intellectual development and personality.

A study conducted by the All India Institute of Medical Science in rural areas found that 77 percent of

children in rural areas are malnourished and of these 23 percent in rural areas suffer from acute malnutrition (Grade III & IV) (Tandon 1981).

Banerji (1983) was of the opinion that mal-nutrition adversely affects the mental performance of a larger proportion of children in developing countries. Studies have shown that serious nutritional deficiencies in early childhood impair normal growth and function of the brain that moderate deficiencies of nutrition affect learning capacity.

Bee (1984) says the child's diet makes a major impact on the course of growth and development. Poorly nourished children grow more slowly and do not grow as large as well nourished. One more important effect of mal-nutrition on the early years seem to have a permanent effect on some parts of the brain and nervous system.

Richardson (1980) carried out a study and found that severe mal-nutrition in early childhood has differing consequences for later intellectual impairment, depending on the background, history and characteristics

of the child's guardian, the economic conditions of the household and the child's social environment.

Sharma (1979) expresses that the lack of the requisite amount of nutrients at the crucial stage on the development of the child results in mal-nutrition, leading to stunted mental growth.

Supplementary feeding not only aim for the improvement in nutritional status measured by the increase in height and weight leaving behind the emphasis on the achievement of satisfactory rates of growth in children (Swaminathan 1970).

Haq (1978) stresses that an adequate diet with sufficient calories protein, carbohydrates, fats, vitamin and minerals to allow children to carry out essential physical and mental activities in good health is a basic human right.

Mahatma Gandhi emphasized "Mane Sane in corpore sano", that is "a healthy mind in a healthy body is a self evident with and perhaps is the first law for humanity" (Bhatia, 1985). So the nutritional adequacy

is an important factor in the life of a child from the time of gestation to the time of his acceptance of full responsibility as a socially functioning adult (Cravioto et al, 1971). So Santrock (1983) is more concerned about childhood which he states that it has to be valued as a special time for growth and change to invest great resources in caring for the educating children.

"Children are the matrix which we fashion into whatever finished product our human imperfection designs. They reflect the world we have made for them. So we need to recreate an environment in which they can have a childhood they will want to remember with joy (Bowen, 1987).

The preschool years are the most formative ones in the child's development, and should be full of stimulation or enrichment (Sanoff, 1981).

When the child is stimulates and enriched with informal education the child increases his concept, curiasity, interests, knowledge and observation power which is taken and stored through life time (Taylor, 1972).

So Informal Education needs to be recognised as a prerequisite for the healthy mental development of children (Muralidaran, 1976).

If the citizens of tomorrow are to be equipped with for freedom, intelligence and physical skills, the foundations must be laid in the nursary schools which must cover all the rural areas. Thus preparation in the nursary school helps the child considerably in his mental readiness and subsequent education. (Zaheer, 1979).

Phoebe Cusden (1975) views that the Nursery School is first and foremost an educational institution which takes the whole child for its province.

Padmini (1983) regards that the school as the most significant and comprehensive formal agency of education is expected to provide the child with all kinds of experiences he needs in order to develop and share capacities, master his developmental tasks adequately and deserve satisfaction of his personality needs, while there is considerable possibility of fostering development of dimensions other than the

cognitive through various other agency of education. The main responsibility for fostering cognitive development on children rests with the school, the most important formal agency of education and that is why cognitive learning is predominant in the school system.

Intelligence refers to one's general capacity to act purposefully, think rationally and deal effectively with the environment and to cope up with the demands of daily life Coon (1983) and Lehey (1983).

Vatsyayan (1982) quotes Garrett that mental ability includes abilities required in the solution of problems which in turn require comprehension and use of symbols, such as words, numbers, diagrams, equations and formulae which represent ideas to relationship.

During the first 4 or 5 years of the life many personal behaviour in language, attitudes, values, even ways of learning begin to take on the form they will retain for the life time (Prakasha, 1983).

Bayley (1970) charted an intellectual growth curve which pin points childhood years as the primary time when there is rapid acceleration towards the peak of mental functions (Helms and Turner 1976).

An analysis of 227 studies done by Smart and Smart (1978) revealed that childhood education did make a significant contribution to the development of intelligence in 3-5 years old children.

So the investigator was interested to find out the mental abilities of preschool children who were attending the noon meal programme in the Chief Minister's Nutritions noon meal Centre in the rural area where informal education is also provided for the allround development of children.

Review of Literature

II. REVIEW OF LITERATURE

The Review of Literature of the study on "Comparitive study of mental ability of children" who are attending and non attending the noon meal programme is discussed under the following main headings.

1. Meaning of intelligence and mental ability
2. Mental abilities of preschool children
3. Factors affecting mental ability

1. Meaning of intelligence and mental ability:

Intelligence refers to ones general capacity to act purposefully, think rationally and deal effectively with the environment (Coon 1983).

According to Horn (1986), Howe (1984) and Olson (1986) intelligence indicates the presence of one or more of a variety of abilities. These include judging, reasoning, comprehending educing relations and correlates, forming concepts, grasping essentials, acting purposefully adapting successfully or having a high level of mental efficiency or thinking capacity.

Cognition processes are perception discovery, recognition, imagining, judging, memorizing, learning, thinking and often speech (Wagenknadt 1972). It is an ability to profit from experience to learn new information and to adjust to new situation (Kagan et al 1976). Intelligence is the ability to solve various types of problems (Vroon, 1980).

Mental ability is a general term for the variety of capacity the child has for integrating information from multiple sources and for planning responses (Newman and Newman 1980). It is the ability to learn and adapt to the environment (Pravakar 1986). According to Garrett, mental ability includes abilities required in the solution of problems, which inturn require comprehension and use of symbols such as words, numbers, diagrams, equations and formulae which represent ideas and relationship (Vatsyayan 1982).

Cognition are those mental processes through which knowledge is acquired and transofmed the process by which sensory perceptions are translated into systematized, understandable information for our intelligent use (Jensen et al 1986). Cognitive development refers to the age related series of change that occur in mental

activity - thought, memory, perception - attention and language (Santrock 1984).

2. Mental abilities of preschool children:

Preschool children between the ages of 2 and 5 learn very fast and develop their cognitive and other powers enormously. Jupe et al (1985) state that as the child grows up she progresses through stages in her ability to learn and think. Here intelligence changes and develops. The development of intelligence involves changes in concepts. With new experiences a child's concepts become more complex.

During the preschool age there is a noticeable expansion of intellectual curiosity, desire to know and conceptialize and attempts to act in accordance with throughout conclusion (Pikunas 1976).

Because of acquisition of language increased memory capacity, especially vocative memory, his heightened ability to differentiate perceptual experiences and his increasing knowledge of the rules of arithmatic and logic. He is capable of increasing intellectual performance. The child is now capable of symbolizations,

simple representations begin to occur at age of 4 or 5 (Bemporad 1980).

Once children have attained a certain level of cognitive capacity, they can rapidly acquire skills and competencies that more stimulated or more active children may have picked up earlier because of mothering or inherent temperamental tendencies for exploration (Kearsley and Zelazo 1978).

Most child development researchers conclude that children develop ceoncepts of sequence time, classification and space through handling objects, manipulating, watching and verbalizing (Adcock 1971).

The kind of programmes and the methods of testing involved in the studies done by Newmen and Newmen 1978. Show investigators have turned to a close look at some of the experiences in the nursary school which might enhance cognitive functioning. The stimulating environment of a preschool compels small children to understand the world around them. The various informal programme place emphasis not only dull instruction but on harmoneous creative growth (Bhatia et al 1985).

3. Factors Affecting Mental Ability:

Some of the factors that influence the mental ability are as follows:

1. Mal-nutrition:

Since the preschool children are extremely vulnerable to infectious diseases and infestaions. They succumb readily if the diet is poor in quality and quantity. The rate of growth and development of the preschool children depend to a large measure on the adequacy of the diet consumed by them (Swaminathan 1974).

Severe cases of malnutrition requiring hospital care constitute less than 5% of the poor rural preschool child population in countries of the third world where malnutrition is widespread. Nutrition is a critical factor for the central nervous system during the period of birth growth i.e from mild gestation to about 2 years of life (NIN, 1988) has found that severe nutritional deprivation during this period can lead to structual and chemical changes in the brain as a consequence of severe malnutrition probably leading to intellectual retardation.

There have been a number of studies done by Kaplan (1972) Sharma (1973), Gupta et al (1975), suggesting that protein calorie malnutrition had adverse effects on the mental development of children.

It is almost an accepted fact that the maximum and the fastest cognitive growth amongst the children takes place upto the age of 3 years. Neurologists maintain that neglect of cognitive growth of this stage has irreversible effects in the long run. So high protein rich foods is therefore recommended for the children during this period of natural growth (Passi, 1986).

2. Environmental influence:

The environment affects the development of mental ability in the first few years. Environmental deprivation retards development particularly mental ability and the cuturally deprived children found it difficult to cope up with demands of schooling in the later stage (Gopalan 1979).

a. Social Class:

Many of the environmental factors that have the

greatest impact on the child's I.Q. and achievements are associated with the social class and ethical group of the family, social class is typically correlated with I.Q. (Mussen, Konger Kagan, Khystian 1974).

Psycholinguists and the cognitive pshychologists have tried to establish the fact that a nuturing environment during infancy also goes a long way in strengthening and developing the mental facilities of children (Vernon, 1979).

b. Race:

Race is genetically inferior to another, but rather that black children have lower I.Q. because of experiences in their families, neighbourhood and school as well as the events associated with economic disadvantages and racial descrimination (Scarr 1981).

Scarr, Salapatek and Weinberg (1975) measured the I.Qs of black children who were adopted and raised by white families in Minneapoles. In all cases, the children were reared in a more affluent environment than the one they were born in. The researchers found that the children's I.Qs were considerably higher than

would have been expected if they had remained in an impoverished environment.

c. Home Environment:

Children with more responsive parents on the average have higher I.Q. scores (Ramey, Farien and Campbell 1977) Hanson (1975) was of the opinion that children whose parents are more involved in their development on average have higher I.Q. Scores. Children whose parents provide appropriate play materials on the average, have higher I.Q. scores (Tulkin & Covitz, 1975). Children whose parents use more descriptive language with them on the average have higher I.Q scores (Clarces-tewart, Vandevtoep & Killen, 1979). Chitra (1983) found that children living with their parents received a higher score in the intelligence test than children living in orphanages. Urban children usually performed at a higher level than rural children (Sattler 1982). Sheela (1978) found that the family members frequency of city contact had no influence on the children's mean cognitive scores.

¢. Birth Order:

First bron children have higher I.Q. than do

later bron children (Zajonic 1975). Nensen (1972) quoting Altus work (1966) remarked that the consistent finding of many studies was that the first bron children were superior in alsmost everyway. Breland (1973) assessed that the first born were superior to the later born in intelligence and achievement. Scarr and Weinberg (1979) also proved that birth rank is clearly related to I.Q. in both the adoptive and biological families that later bron suffering a slight disadvantage in I.Q. Deepali (1987) did a study on Mental Ability of Preschool children in Urban, Rural and Tribal areas found that percentage of first, second, thrid born children having good or very good mental ability were 58, 40 and 17 respectively, showing that mental ability decreases with increasing ordinal position.

E. Preschool experience:

Children who attended special preschool on the average had higher I.Q. (Gray & Klaus 1965). Immediately following, children who attended special preschool showed higher school achievement in the late elementary grades, on the average (High Scope Foundation 1977). Kaladevi (1983) did a study on cognitive ability of

children with and without preschool experience and found both urban and rural children who attended pre-school did exceedingly well in the tests of cognitive ability than the children without preschool experience. Shahnaz (1988) did a study at NIN and found that children who attended the school performed better on tests of intelligence than children who did not attend school or those who had dropped out of school.

5. Testing situation:

In the tests of cognitive development, the children participating in the Meal Programme scored the highest in problem solving and verbalisation (Vijaya-kumari, 1984). The tribal children from marudamalai who had frequent contacts with pilgrims were better than those from Palamalai at all age levels observed. (Sheela, 1978).

Deepali (1987) found the mental ability of children increased in direct proportion to frequency of any contacts of the father, mother and children.

6. Socio Economic Status:

The relationship of measured intelligence to

socio economic level is one of the best documented findings in mental test history (Tyler, 1965). Infants' developmental status interacts with socio economic status low scores on infant developmental scales are more likely to result in poorer intellectual performance at later ages in the context of low socio economic status (Wener, Honzik and Smith 1968) and Willerman, Broman & Fiedler (1970). As socio economic status increases, the vocabularly of children becomes greater and the opportunity for intelligence and enrichment also increases (Donn & Kelly 1981).

B. Sex:

When the score is broken down into several separate skills or abilities some patterns of sex differences do emerge. Girls did show an early and consistent superiority on verban behaviour (Bee, 1981). Among girls of 3-4 years old, Higher the Anganwadi children had significantly higher cognitive scores than lower the Anganwadi children. Regarding boys belonging to both age groups Higher Anganwadi children performed better in their mental ability tests than lower anganwadi

children. In most cases, boys established superiority over girls (Premlatha, 1987). Deepali (1987) found more percentage of girls had good and very good mental ability than boys. Hundal (1969) found girls were superior to boys on the performance tests. The study also revealed that boys developed the differentiation of abilities in themselves earlier than girls (Research on Psychology 1971-76). Broman, Nichols & Kennedy (1975) found in United States girls have slightly higher I.Q in the earlier years than boys. Schulman & Prall (1971) exposed that girls are generally more mature in their mental development than boys.

I. Family size:

Studies on mental ability show that children from smaller families score higher than children from larger families Newmen & Newmen (1980). Sheela (1978), surprisingly found children from large families obtained more scores than those from smaller families. Zajone (1975) found intelligence declines with family size, the fewer children in family, the smarter are likely to be Deepali (1987) found the percentage of children having good or very good mentaal ability were from small

families when to children from larger families.

J. Heredity:

Plaget believed that heredity plays an important role in cognitive development though heredity along cannot account for intellectual development (Wadsworth, 1984) Kagan (1984) viewed that heredity transmission seems to play only a limited role in the development of cognitive functioning.

K. Educational level of parents:

Studies at NIN examined the profiles of mothers of malnourished and well nourished children and found that mothers of malnourished children were lower in intelligence, their knowledge about food and attitude toward child care were poorer and their perception regarding support available was negative as compared to mothers of well nourished, children (Shahraz Vazir 1988). Broman et al (1975) did a study with 26,760 children from before birth to age 4 the best predictor of I.Q. at age 4 was the mother's education and her social status. Neither the child's prenatal and birth history nor the child's performance on an infant

intelligence scale predicted as well as the mother's educational and social class.

Sheela (1978) found the mean cognitive scores increases steadily with the father's educational status and occupation but not so steadily with mother's educational status and occupation. Children with well, educated parents who provide a rich intellectual climate are likely to have a better chance to develop their intellectual skills than children where parents cannot provide them with these benefits (Page and Grandon 1979). From her study Rathnakumari (1976) came to the conclusion that Higher the educational level of the father superior the mental abilities of the child. Deepali (1987) found mental ability of children increased in direct proportion of fathers and mothers educational level. Mental ability of children increased as the parents' occupational level increased.

Developmental studies related to intelligence have shown that growth curves differ from person to person. The studies conducted by Seetha (1975), Magsod (1980) and Gakhat (1984) established the superiority of intelligence as major factor influence on academic achievement (Indian Psychological Review, 1986).

Radin (1972) found both the quality and quantity of father son interaction strongly associated with four year old boys intellectual functioning. Father son interactions during an interview with the father were recorded and later coded for frequency of paternal nurturance and restrictiveness. The overall member of father son interaction was positively correlated to both Standford Binet and Peabody picture vocabulary test . However the strongest relationship observed was better paternal nurturance and the intelligence test measures on the other hand paternal restrictiveness was negatively correlated with the level of intellectual functioning. The quality of the father's behaviour particularly paternal nurturance appeared to be more important than did the total number of father son interactions (Davids 1974).

Experimental Procedure

III. EXPERIMENTAL PROCEDURE

The methodological details of the study on "Comparative study on mental ability of Rural Children Attending and Non attending Noon Meal Programme" are discussed under the following headings:

1. Selection of the area
2. Selection of the sample
3. Selection of the method
4. Collection of data and
5. Analysis of data

1. Selection of the area:

The area selected for the conduct of the study was the rural area Sarkar Samakulam Block Usually called as S.S.Kulam was selected. The following villages from the above mentioned block were selected.

a. Idikarai
b. Vilampalayam
c. Kovilpalayam
d. Kondapalayam

Four Chief Ministers Noon Meal Centre belonging to these villages were selected.

2. Selection of the sample:

The sample of the study comprised of 120 pre-school children of the age group of 3-5 years. Since children are our future and our most precious, resources (Anandalakshmy, 1986) preschool stage has been valued as a special time for mental growth (Santrock, 1983). Children from 3-5 years of age many striking advances in their cognitive development (Anselmo, 1985).

Sandeep (1981) states that children from rural area have very poor I.Q. due to inadequate stimulation provided by the parents, peers and the social environment. So the investigator was interested to select the rural areas, so the preschool children attending and non attending noon meal programme from rural area. Sixty children attending the noon meal programme in the noon meal centres and sixty children who were not attending the noon meal programmes i.e those who were at home without going to noon meal centres were selected. The sample in each group had an equal representation of boys and girls that is 30 boys and 30 girls. The sample were selected at random from the noon meal centre. The investigator visited each and every house in all the villages and selected the children of preschool stage.

3. Selection of the Method:

The methods selected for the study were an interview schedule (Appendix A) to find out the family background information and the mental ability test. The interview method was selected mainly because it enables to have a face to face relationship with the parents. The interview technique was mainly used because the subject will feel free to express himself fully and truthfully. The data gathered through interviews have been found to be reliable (Sidhu, 1985).

The information secured through interview is likely to be more correct. The interview is a more appropriate technique for revealing information about complex emotionally-laden subjects or for probing the sentiments underlying an expressed opinions (Wilkinson and Bhandaikar, 1982).

To find out the mental abilities of the pre-school children a research tool developed by NIPCCD (National Institute of Public Co-operation and Child Development) 1980 was used (Appendix B) This tool was formulated mainly to measure the mental abilities

of preschool children. The test consists of the following categories.

I. Verbal Ability:

i) Identifying objects by name

ii) Picture vocabulary

iii) Identifying objects by use

II. Information:

few questions

III. Comprehension:

i) Verbal comprehension

ii) Following directions

IV. Memory:

i) Memory for digits

ii) Memory for words

iii) Memory for story

iv) Memory for objects removed

V. Spatial Relations:

i) Visual perception

Booklet with six pictures

ii) Mutilated pictures

Booklet with six mutilated pictures

VI. Reasoning:

i) Verbal reasoning ability to completing the sentences.

4. Collection of Data:

Before collecting the data a rapport was established with the mothers and the purpose of the study was explained to them clearly. The general information and information on family background were collected from the parents by interviewing them. Data regarding the size of the family educational level of parents, occupation of parents and income level were collected from them. For assessing the mental ability, each child was tested individually in a separate room. The child was told he would be administered an interesting game and he was told about how he must respond to each question. The child was made to understand each item clearly. The test was adminisered in the same order. There was no time limit. The responses were noted and scores were given. The lowest and highest scores obtained by children were noted and on the basis of this, the children were graded into four groups such as poor (5-17), average (18-30), good (31-43), and very good

(44-57). The mental ability scores obtained by the sample is given in Appendix C.

5. Analysis of the Data:

After the collection of data, it was analysed statistically using 'chi' square test to assess the mental abilities of children in relation of their participation in the noon meal programme, sex, age, birth order, size of the family, education of parents and occupation of the parents (Appendix D).

Results and Discussion

IV. RESULTS AND DISCUSSION

The results of the study on "Comparative study of Mental Ability of Children who are Attending and Non-attending the Noon Meal Programme" are discussed under the following headings:

1. Family background information of the selected sample
2. Mental ability in relation to Attending the preschool
3. Mental ability in relation to the age of the children
4. Mental ability in relation to the sex of the children
5. Mental ability in relation to the birth order of the children
6. Mental ability in relation to the size of the family
7. Mental ability in relation to education of father
8. Mental ability in relation to education of mother
9. Mental ability in relation to occupation of father

10. Mental ability in relation to occupation of mother
11. Mental ability in relation to participation in Noon Meal Programme.

1. Family Background Information of The Selected Sample:

Family Background Information of the Selected sample is given in Table I.

TABLE I

FAMILY BACKGROUND INFORMATION OF THE SELECTED SAMPLE

In Percent

	Attending		Non-Attending	
	Father N:30	Mother N:30	Father N:30	Mother N:30
Educational Level of Parents				
Illiterate	43	52	77	85
Primary	10	22	7	10
Middle School	47	26	16	5
Occupational Level of Patents				
Skilled	5	-	10	-
Unskilled	95	33	90	41
Unemployed	-	67	-	59

Father seem to have better education upto middle school level compared to mothers, irrespective of attending the noon meal programme. Majority of the parents of the rural sample were found to be illiterate with regard to occupational level of parents, majority of fathers and mothers were unskilled and unemployed respectively.

2. Mental Ability in Relation to Attending the Preschool:

The children attending the preschool show more I.Q. and display their intellectuals when compared to non-attending children (Newmen & Newmen, 1980). The mental ability in relation to attending the preschool are shown below:

TABLE II

MENTAL ABILITY IN RELATION TO ATTENDING THE PRESCHOOL

In Percent

	Mental Ability in Relation to Participation	
	Attending (N=60)	Non-Attending (N=60)
Poor	-	38.3
Average	-	60
Good	77	1.7
Very Good	23	-

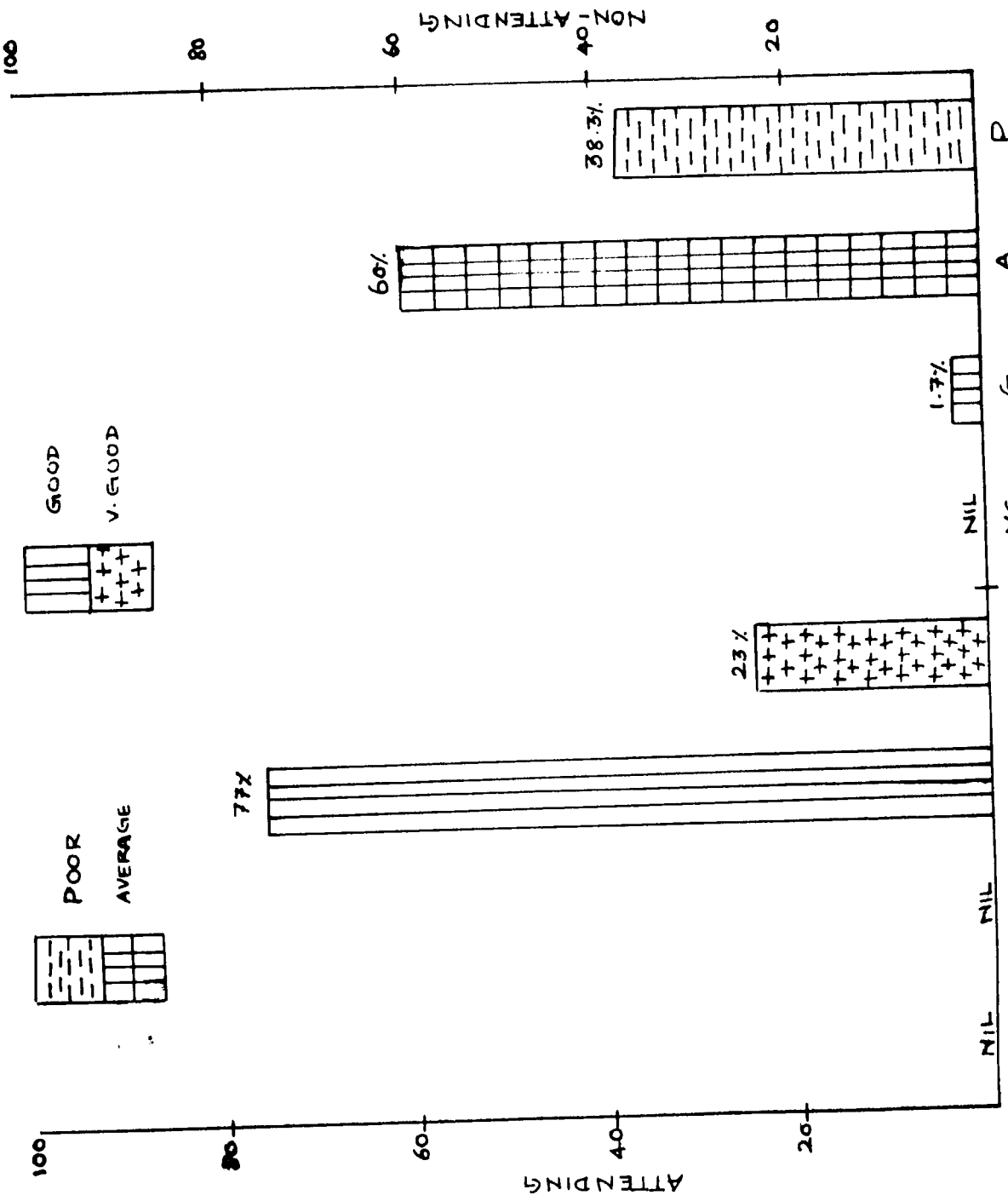

FIGURE I.

MENTAL ABILITY IN RELATION TO THEIR PARTICIPATION

The finding confirms the above statement that the children attending the preschool (Noon Meal Programme 77 percent) were good in their mental ability scores when compared to non-attending children, majority of whom were average in their mental ability.

This finding is similar to Kaladevi (1983) who found that the children having preschool experience did exceedingly well in the tests of mental ability.

3. Mental Ability in Relation to the Age of the Children:

Mental ability changes as age increased (Kagan et al, 1981). The mental ability scores obtained by the children in relation to age are given in Table III.

TABLE III

MENTAL ABILITY IN RELATION TO AGE OF THE CHILDREN

In Percent

Mental Ability	Age of the children (Years)			
	3-4		4-5	
	Attending (N=30)	Non-Attending (N=30)	Attending (N=30)	Non-Attending (N=30)
Poor	-	33	-	50
Average	-	67	-	43
Good	75	-	85	7
Very Good	25	-	15	-

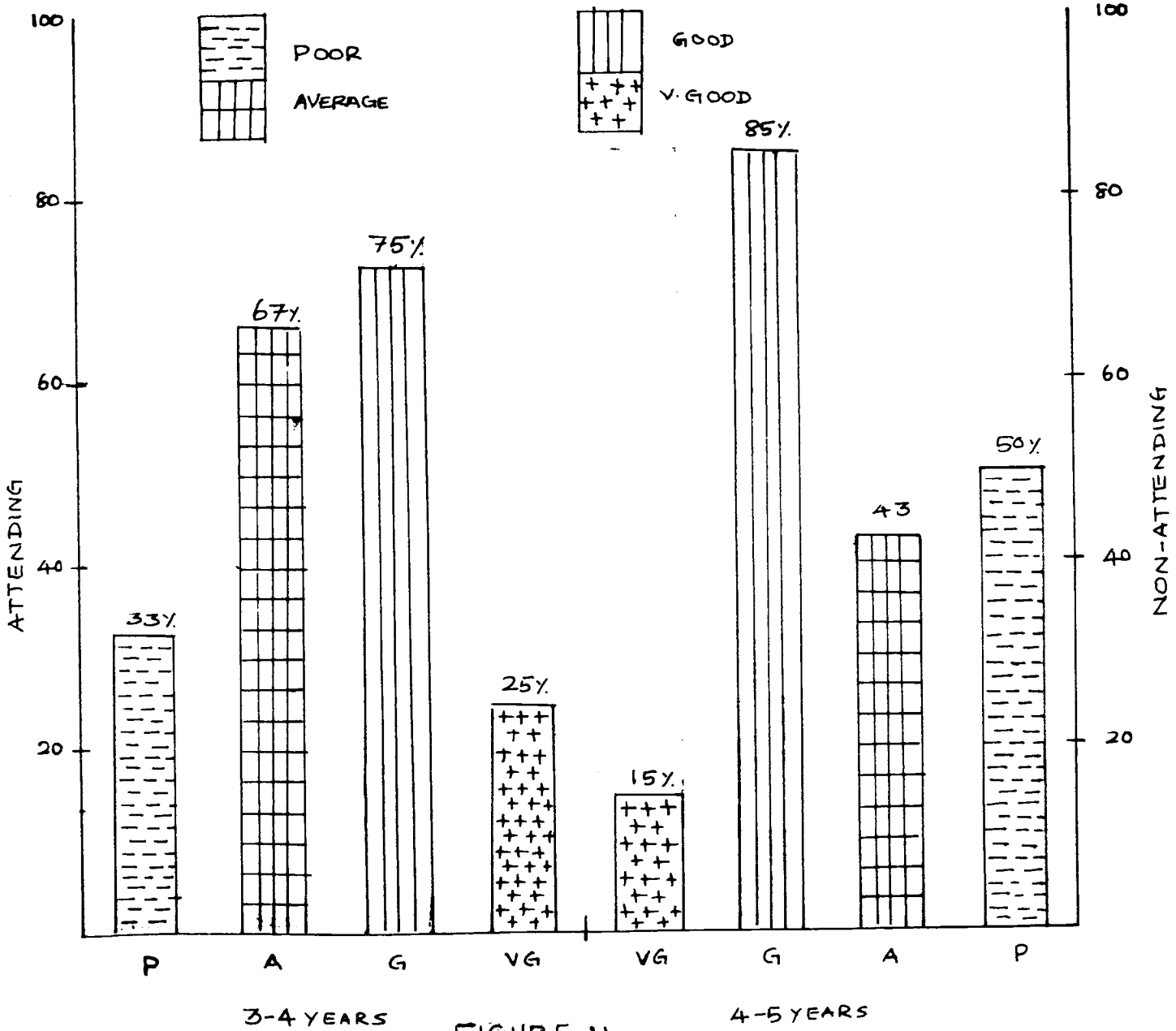

FIGURE 11

MENTAL ABILITY IN RELATION TO AGE

Differences is found between the children of 3-4 and 4-5 years in mental ability. The children who attended the school performed well in the test than non attended. The increase in mental ability in relation to age was seen only in the case of children who attended the school. This finding is similar to Jupe et al (1985) who found that the preschool children between 3-5 learn very fast and develop their cognitive power enormously.

4. Mental Ability in Relation to the Sex of Children:

Bee (1981) and Deepali (1987) found significant difference between the sexes in mental ability performance. The mental ability scores obtained by the children of both sex are given in Table IV.

TABLE IV

MENTAL ABILITY IN RELATION TO SEX OF CHILDREN

In Percent

Mental Ability	Sex of children			
	Boys		Girls	
	Attending (N=30)	Non-Attending (N=30)	Attending (N=30)	Non-Attending (N=30)
Poor	-	50	-	30
Average	-	50	-	63
Good	80	-	73	7
Very Good	20	-	27	-

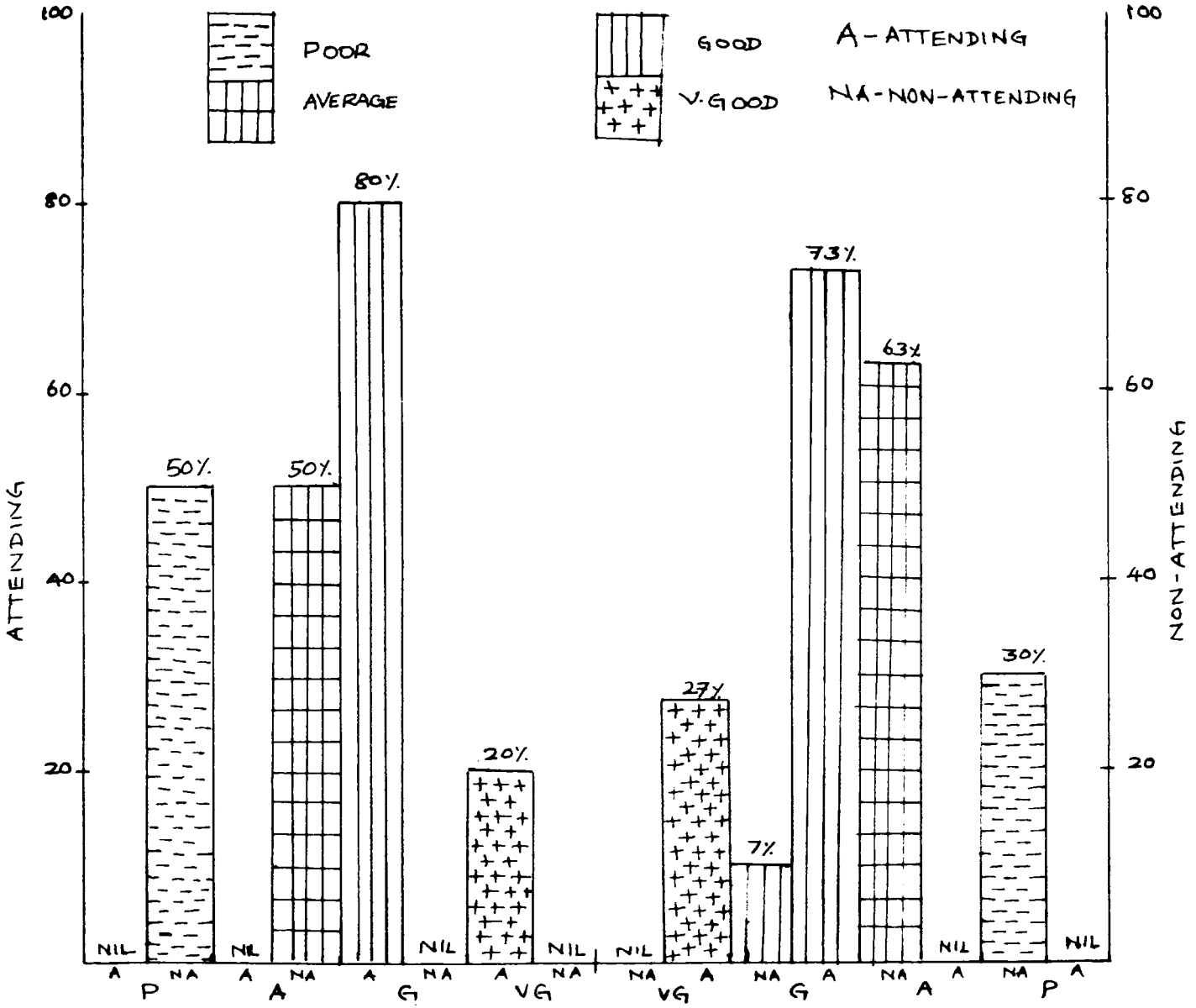

FIGURE III.

MENTAL ABILITY IN RELATION TO SEX

The above table shows that boys who attended the school display more mental maturity than girls. Among non attending children, girls were slightly better than boys in their mental ability.

This is in confirmation with the earlier study that "boys established superiority over girls in mental ability (Premlatha, 1987)".

5. Mental Ability in Relation to Birth Order of Children:

Scarr and Winberg (1979) proved that birth rank is clearly related to I.Q. The mental ability in relation to birth order of children are given below:

TABLE V

MENTAL ABILITY IN RELATION TO BIRTH ORDER OF CHILDREN

In Percent

Mental Ability	Birth Order of children					
	Atten-ding (N=17)	Non-Attending (N=24)	Atten ding (N=33)	Non-Attending (N=30)	Atten ding (N=10)	Non-Attending (N=6)
Poor	-	50	-	40	-	17
Average	-	50	-	57	-	66
Good	88	-	73	3	7	17
Very Good	12	-	27	-	3	-

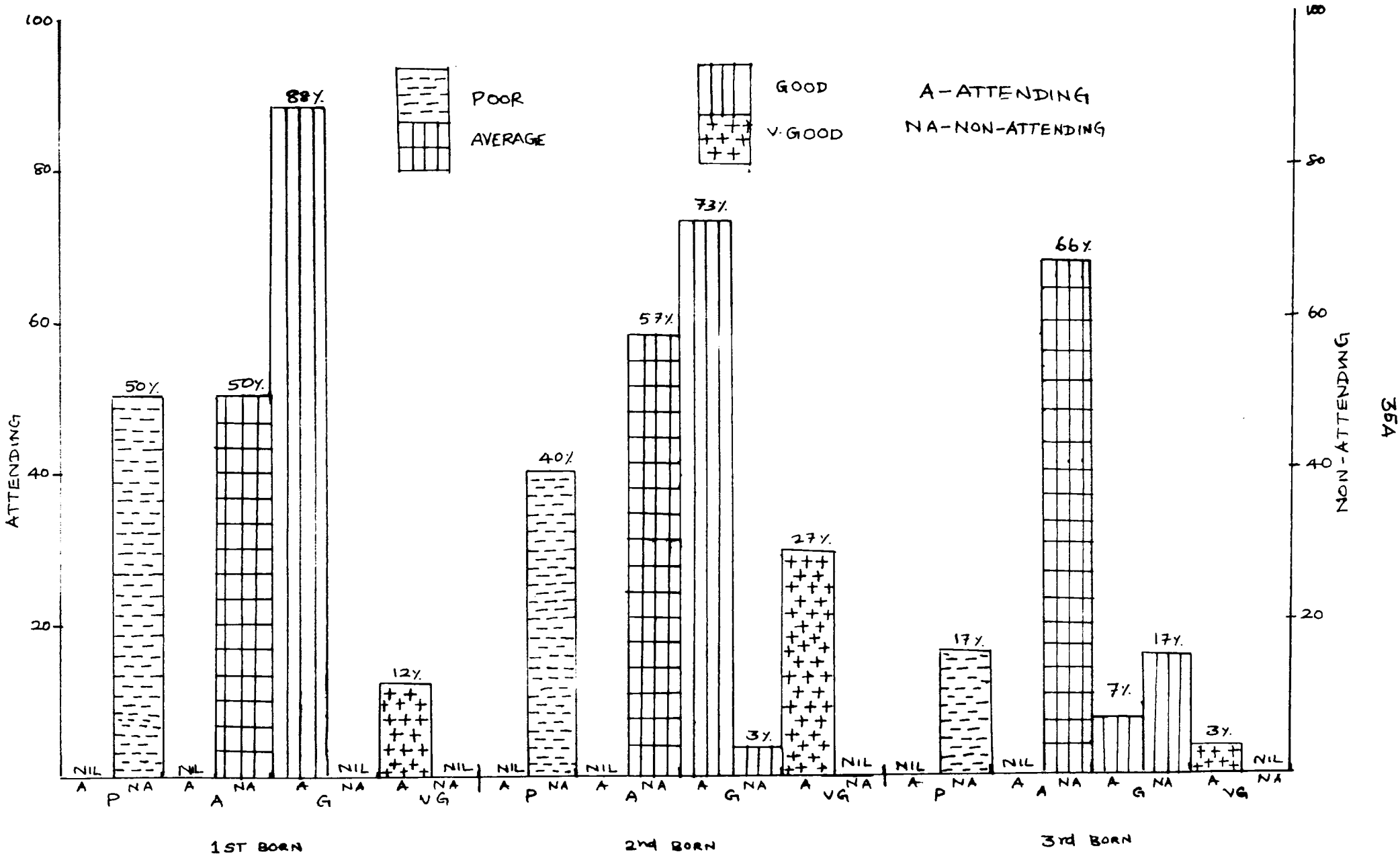

FIGURE IV

MENTAL ABILITY IN RELATION TO BIRTH ORDER

The above Table shows that majority of the first born children obtained good scores followed by second born children (73 percent). Twenty seven per cent of the second born children attending the meal programme obtained very good scores. Thus a difference is seen between the first born, second born and third born children with their participation in the noon meal programme. Among children who did not participate in the noon meal programme, third born children were better in their performance than the first and second born.

6. Mental Ability in Relation to the Size of the Family:

Studies on mental ability show that children from smaller families scored higher than those of the larger families (Newmen and Newmen, 1980). The mental ability scores obtained by the children in relation to the size of the family are given below.

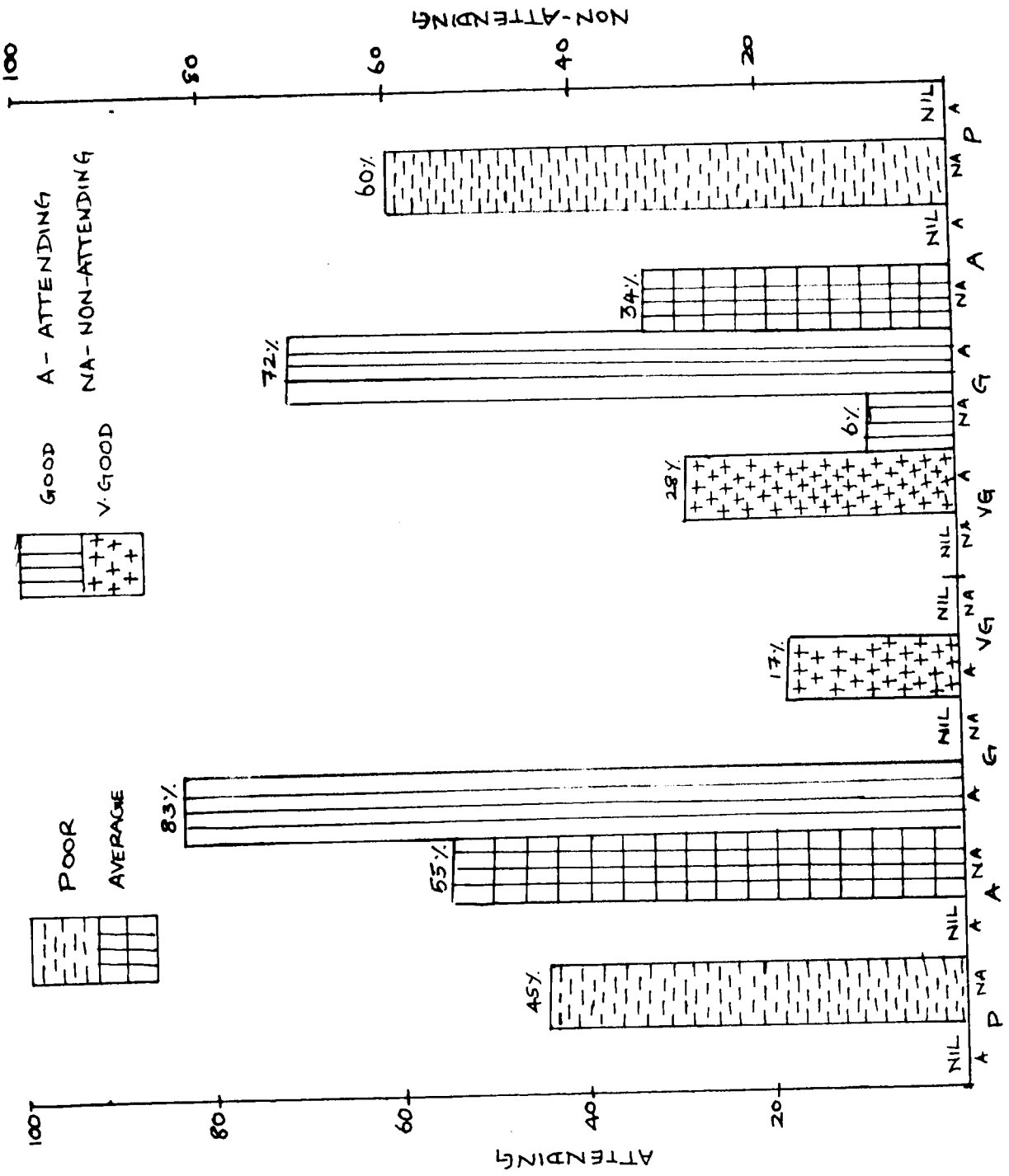

FIGURE VI

MENTAL ABILITY IN RELATION TO FAMILY SIZE

TABLE VI

MENTAL ABILITY IN RELATION TO THE SIXE OF THE FAMILY

In Percent

Mental Ability	Size of the family			
	Small		Large	
	Attending (N=24)	Non-Attending (N=22)	Attending (N=36)	Non-Attending (N=38)
Poor	-	45	-	60
Average	-	55	-	34
Good	83	-	72	6
Very Good	17	-	28	-

The size of the family does influence the mental ability of the children, as majority of the children from small family obtained good scores, but among large families, 28 percent had obtained very good scores. In general children from smaller families were found to be better in their mental ability scores.

7. Mental Ability in Relation to Education of Father:

Sheela (1978) found that the mean cognitive scores increase with the father's educational status. The mental

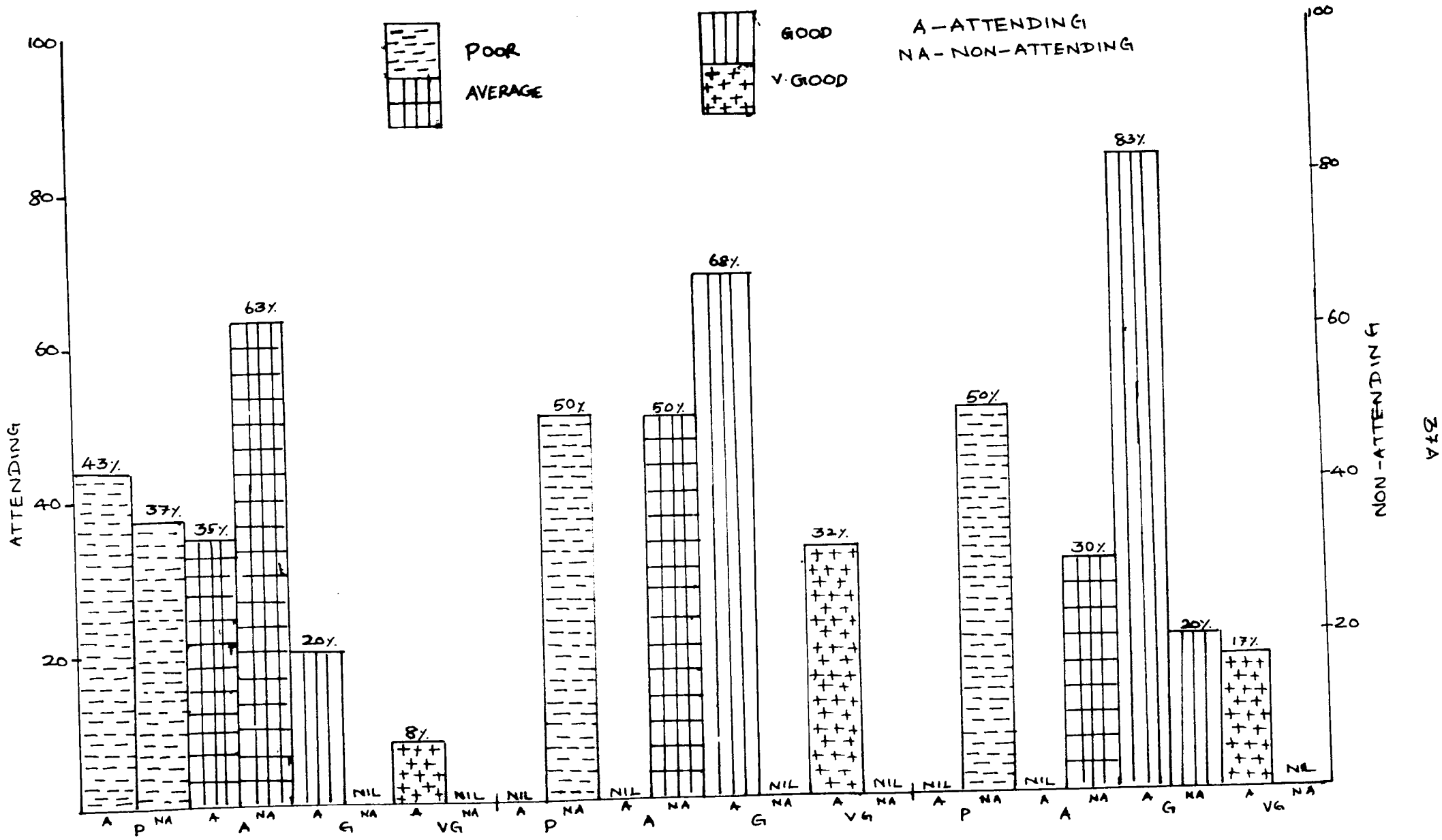

FIGURE VI. FATHER

MENTAL ABILITY IN RELATION TO FATHER'S EDUCATION

274

ability of the children in relation to education of father's are given in Table VII.

TABLE VII

MENTAL ABILITY IN RELATION TO EDUCATION OF FATHER

In Percent

	Education of father					
	Illiterate		Primary		Middle School	
	Attending (N=26)	Non-Attending (N=46)	Attending (N=6)	Non-Attending (N=4)	Attending (N=28)	Non-Attending (N=10
Poor	43	37	-	50	-	50
Average	35	63	-	50	-	30
Good	20	-	68	-	83	20
Very Good	8	-	32	-	17	-

It is clear that education of parents does influence the mental ability of children, as majority of children attending the noon meal programme (83 percent) whose fathers have education upto middle school have obtained good scores compared to those of primary school level. It is also remarkable that 20 percent of children whose fathers have studied upto middle school inspite of

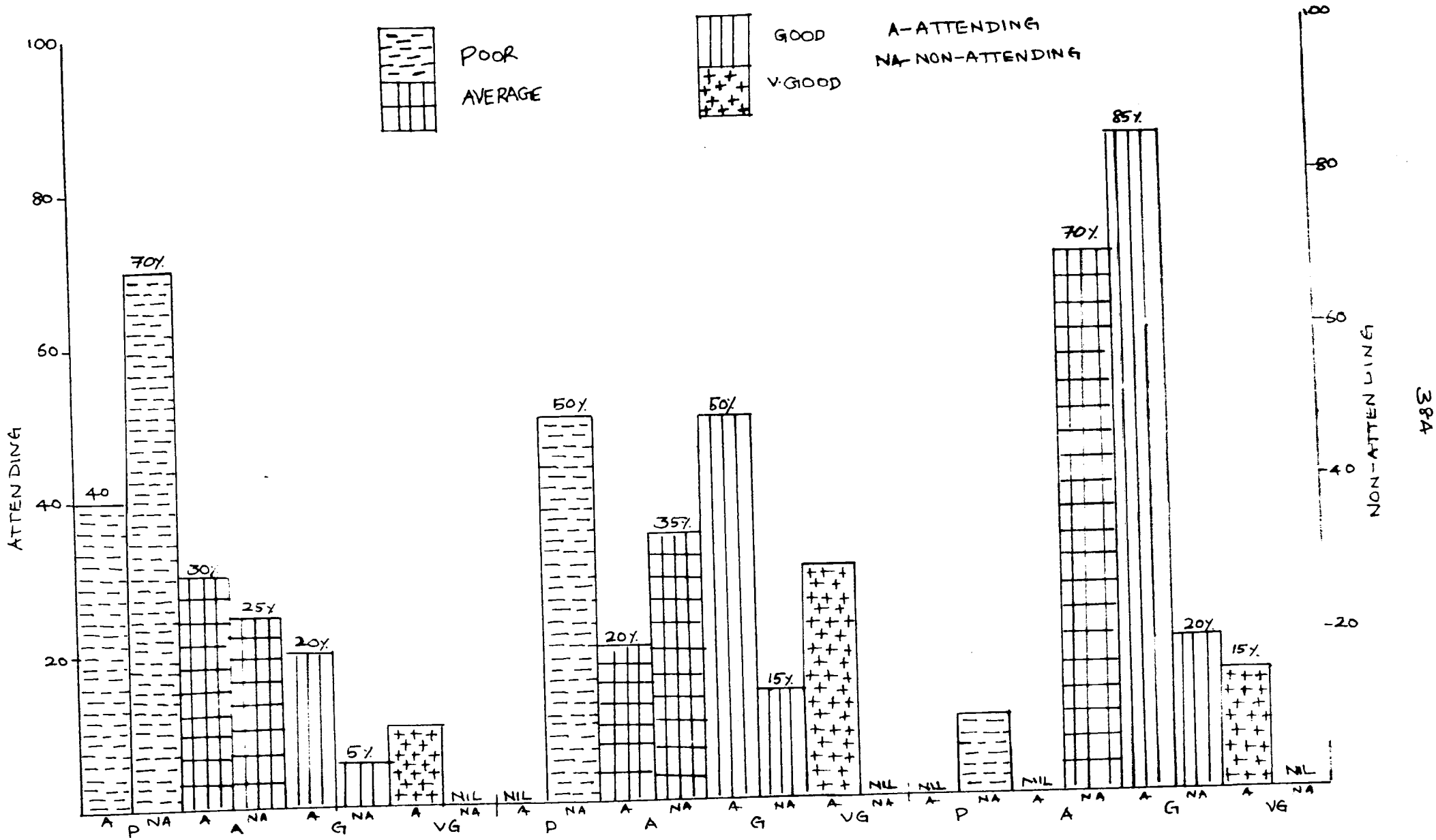

FIGURE-VII

MENTAL ABILITY IN RELATION TO MOTHER'S EDUCATION

not attending the programme, have obtained good scores.

8. Mental Ability in Relation to Education of Mother:

The mental ability scores obtained by the children in relation to education of mother are given in Table VIII.

TABLE VIII

MENTAL ABILITY IN RELATION TO EDUCATION OF MOTHER

In Percent

Mental Ability	Education of Mother					
	Illiterate		Primary		Middle School	
	Attending (N=31)	Non-Attending (N=51)	Attending (N=13)	Non-Attending (N=6)	Attending (N=16)	Non Attending (N=3)
Poor	40	70	-	50	-	10
Average	30	25	20	35	-	70
Good	20	5	50	15	85	20
Very Good	10	-	30	-	15	-

As mother's education increase, the percentage of the children who attend the noon meal programme also showed an increase in their mental abilities. Among non-attending children, the children whose moterh's had education upto middle school performed better than those who were

illiterated and the increase being four times than that of illiterates. Irrespective of attending and non-attending the noon mean programme it is clear that mothers' education does influence mental ability of children.

9. Mental Ability in Relation to Occupation of Father

The mental ability scores obtained by the children in relation to occupation of father are given below:

TABLE IX

MENTAL ABILITY IN RELATION TO OCCUPATION OF FATHER

Mental Ability	Occupation of Father			
	Skilled		Unskilled	
	Attending (N=3)	Non Attending (N=6)	Attending (N=57)	Non Attending (N=54)
Poor	-	57	-	67
Average	-	43	12	26
Good	67	-	55	7
Very Good	33	-	33	-

The table reveals that the children attending non mean programme, whose father's were skilled workers performed better than those of unskilled. It is also evident that noon mean programme also influences the performance of the children in their mental ability.

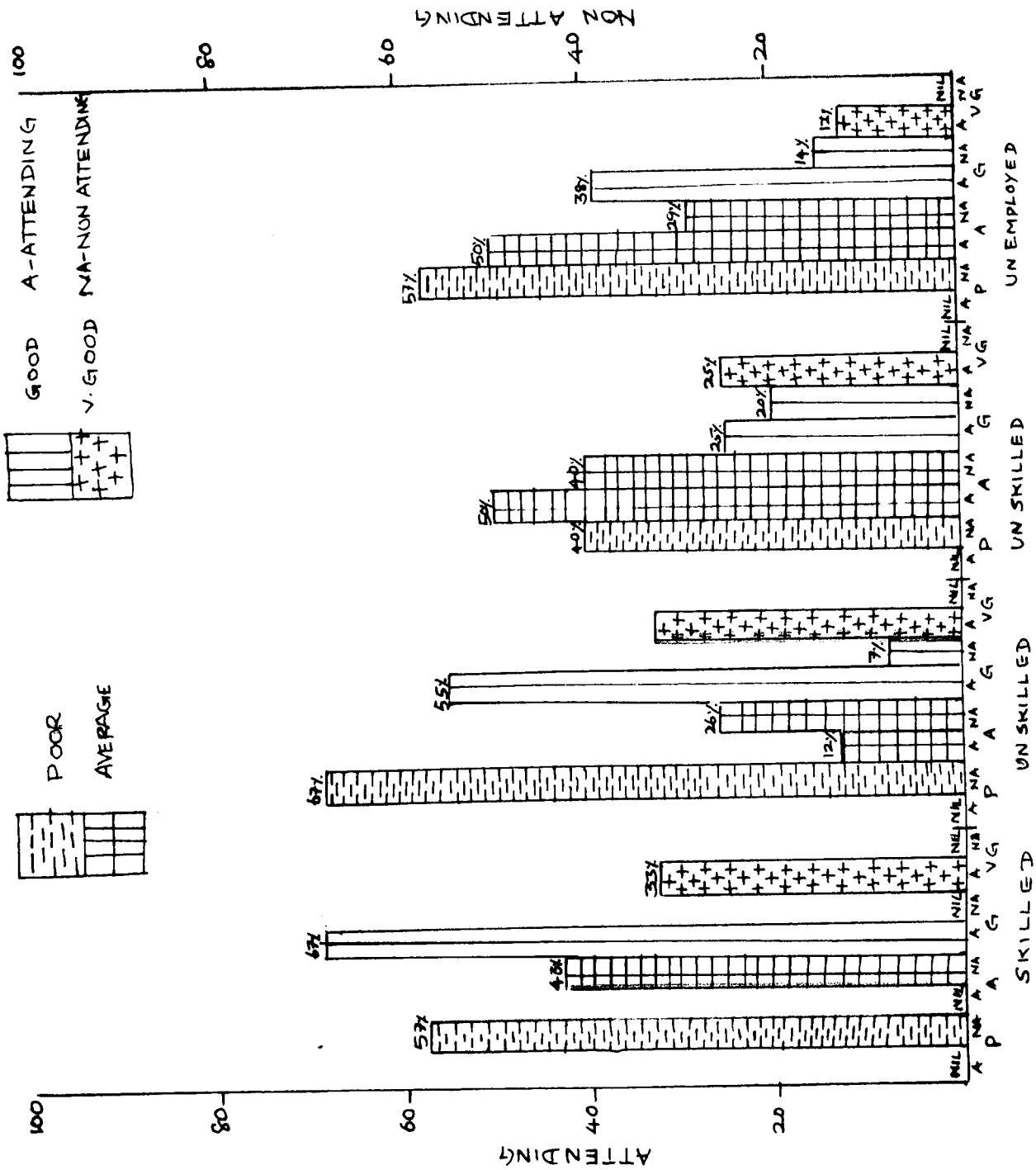

FIGURE. VIII
MENTAL ABILITY IN RELATION TO PARENTS OCCUPATION

10. Mental Ability in Relation to Occupation of Mother

The mental ability of children in relation to occupation of mother age given in Table X.

TABLE X

MENTAL ABILITY IN RELATION TO OCCUPATION OF MOTHER

In Percent

Mental ability	Occupation of Mother			
	Unskilled		Un employed	
	Attending (N=20)	Non-Attending (N=25)	Attending (N=40)	Non-Attending (N=35
Poor	-	40	-	57
Average	50	40	50	29
Good	25	20	38	14
Very Good	25	-	12	-

Children participating in noon meal programme of unskilled mother's obtained very good scores than those or unemployed mothers, whereas slight difference was observed between children of unemployed and unskilled mothers,where about 38 percent of children of umemployed mother obtained good scores.

11. Mental Ability in Relation to participation in Noon Meal Programme

TABLE XI

MENTAL ABILITY IN RELATION TO PARTICIPATION IN NOON MEAL PROGRAMMES

	Attending (N=60)	Non-Attending (N=60)	X^2	Boys (N=60)	Girls (N=60)	X^2
I. Verbal ability						
a. Objects by Name						
3 and above	57	14	59.40	34	37	0.13 N.S.
Below 3	3	40	**	26	23	
b. Picture Vocabulary						
3 and above	54	11	59.21	30	25	0.53 N.S.
Below 3	6	49	**	30	25	
c. Identifying objects by use						
3 and above	54	4	78.49	27	31	0.30 N.S.
Below 3	6	56	**	33	29	
II. Information						
3 and above	60	20	57.03	34	46	4.53 N.S.
Below 3	0	40	**	26	14	
III. Comprehension						
a. Verbal comprehension						
2 and above	58	27	35.10	45	40	0.64 N.S.
Below 2	2	33	**	15	20	

	Attending	Non-attending	X^2	Boys	Girls	X^2
b. Following Direction						
I and above	36	18	9.73	31	23	1.64 N.S.
Below 1	24	42	**	29	37	
IV. Memory						
a. Memory for Digits						
1 and above	50	20	28.33	44	26	9.90 **
Below 1	10	40	**	16	34	
b. Memorty for words						
2 and above	60	29	39.14	44	45	3.02 N.S.
Below 2	0	31	**	16	15	
c. Memory for Stoty						
3 and above	52	11	53.46	31	32	9.28 X
Below 3	8	49	**	29	28	10^{-6} N.S.
d. Objects removed						
1 and above	51	27	19.37	44	34	2.96 N.S.
Below 1	9	33	**	16	26	
V. Spatial Relationship						
a. Visual perception						
3 and above	45	12	34.21	24	33	2.13 N.S.
Below 3	15	48	**	36	27	

	Attending	Non-attending	X^2	Boys	Girls	X^2
b. Mutilated pictures						
3 and above	44	2	57.82	21	25	0.31 N.S.
Below 3	16	58	**	39	35	
VI. Reasoning						
Verbal Reasoning						
5 and above	60	15	68.83	31	44	5.12 N.S.
Below 5	0	45	**	29	16	

In the subtests of verbal ability namely identifying objects by name, picture vocabulary, identifying objects by use, information comprehension like verbal comprehension following direction, memory - memory for words, memory for story, objects removed, spatial relationship - visual perception, mutilated prictures and verbal reasoning highly significant difference at 1 percent was observed between the childrenot attending and non attending the noon meal programme. The children who attended the programme did exceeding well which was because of their education in the school and also of participation in the noon meal programme. It is readly surprising to note that no difference was found between boys and girls in these above mentioned tests, except memory test for digits so it is clear that noon meal programme and education given to children help to improve their mental ability.

Summary and Conclusion

V. SUMMARY AND CONCLUSION

The effect of early stimulation on intellectual development has become important in present days with regard to this much attention is being paid to the noon meal programme to promote their mental development.

Therefore mental ability of 120 preschool children of 3-5 years belonging to rural areas of Coimbatore: 60 of whom attended and 60 children who did not attend the Noon Meal Programme were tested with the Mental ability Tool developed by NIPCCD (1980).

The Key findings of the study are summarised as follows:

1. The Mental Ability of Children attending the Noon Meal Programme was found to be good (77 percent) compared to non-attending children.

2. Difference in Mental ability was found between children of 3-4 and 4-5 years. The increase in the Mental Ability of children in relation to age was seen only in the case of children who attended noon meal programme.

3. Boy who attended the noon meal programme displayed better scores in mental ability test than girls. But among non attending children, girls were slightly better than boys in their test performance.

4. Noon Meal Programme has helped the first born children to obtain 'Good' scores followed by seemed and third born children. Among the non participants thrid born children were found to be better in their performance.

5. Children from smaller families were found to be better in their mental ability than those of large families.

6. Education from smaller families were found to have influenced the mental ability of children as children with educated parents had a better chance to develop their mental ability when compared to illiterate fathers.

7. As mothers education increased the mental ability of children also increased irrespective of their participation in the noon meal programme.

8. The children attending the Noon Meal Programme whose fathers were skilled scored better in the

mental ability test than those of father unskilled.

9. Children participating in Noon Meal Programme of unskilled Mother obtained very good scores than those of unemployed mothers.

Recommendations:

In general it was found that the children who attended the noon meal programme performed better in the mental ability test and their, scores was found to be increasing so the findings of the study suggest the following recommendations.

1. The Noon Meal Programme should continue

2. The Noon Meal centres should stimulate the children and provide play opportunities to children in such a way that it should increase the mental ability of children.

3. Short term refresher training course must be organised for the teachers of Chief Ministers Noon Meal Programme to educate them more on the ways and means of providing creative and stimulating experiences to children which will help them to increase their mental ability.

4. Stable play materials which will promote the intellectual functioning of the children can be supplied to all the centres.

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Appendix

APPENDIX - A

SCHEDULE TO ELICIT BACKGROUND INFORMATION

Name :

Date of birth :

No.of siblings :

Order of birth :

Type of family :

Date of testing:

C.A :

Sex :

Rural:

Urban:

Joint:

Nuclear:

Name	Education	Occupation	Income/Month
Father			
Mother			

APPENDIX - B

Tool - Test on Mental Abilities Developed By NIPCCO (1980)

I. Verbal Abilities:

Sub Test : Identifying objects by name

Materials : Book
Note Book
Post Card
Candle
Socks

Procedure:

The experimenter arranges the objects in the above order and places out one at a time and shows it to the subject asking "what is this" or "what do you call this"? or what is the name of this.

Scoring:

For each correct answer one mark is given The maximum score possible is 5.

Sub Test : 2: Picture vocabularly

Materials : In consists of a booklet with the following pictures.

Mango

Tumbler

Table

Well

Telephone

Procedure:

The experimenter shows are picture at a time asking "what is this? or what do you call this? or what is the name of this?"

Scoring:

For each correct one mark is given. The maximum score possible is 5.

Sub-Test: 3: Identifying objects by use

Items : Fan

Clock

Book

Petrol

Train

Procedure:

The experimenter tells the name of the item one by one and asks" what is the use of" or "why should we have a "

Scoring:

For each correct answer one mark is given. The maximum score possible is 5.

II. Information:

Sub-Test : 4: Information

The experimenter puts the following questions to the subjects.

Questions:

1. Where is monkey tail?
2. Where does a lion live?
3. What is the colour of arrow?
4. How many fingers are their in a hand?
5. What do we get from a coconut tree?

Scoring:

For each correct answer one mark is given. The maximum score possible is 5.

IV. Comprehension:

Sub-Test : 5 : a) Verbal Comprehension

Procedure:

The experimenter puts the following questions to the subjects.

Questions:

1. Point out your right ear/left hand?
2. How can you avoid thorns while going out?
3. What should you buy to go by train?
4. What will happen to a house built out of glass?

b) Following Directions:

The experimenter says "Do what tell you to do" and give the following order:

Keep this book on the table, close the door and give me the book placed over there (pointing to it)

Score:

For each correct answer in A) one mark is given b) If the order is carried out correctly it is scored one. The maximum score possible is 5.

IV. Memory:

Sub-Test: 6 : Memory for digits

Procedure:

The experimenter says "Repeat what I say" and tell the following digits, at the rate of 1 digit per second.

Items Sample: 4-6-2 (not scored)

2-4-9-1; 7-1-5-3

3-7-5-8-4; 8-6-9-2-7

Score:

If the subject repeats the number correctly in the same order, one point is given. Maximum score possible is 2.

Sub-Test : 7 : Memory for words

Procedure:

The experiments says : Listen carefully to what I say you must repeat it in the same words".

1. Mother
2. I Won't fight with anybody
3. We have a beautiful garden at home
4. Rana climbed the coconut tree and plucked coconuts.

Score:

If the subject repeats the words in an items correctly one mark is given maximum score is 4.

Sub-Test : 8 : Memory for story

The experimentor tells the sotory "Fox and the Graper" as follows:

"Once upon a time there was fox in the forest. The fox was very hungry. It was a grape garden. It was full of grapes which could not be easily reached. The fox jumped up to ear the grapes. But it would never reach it. The fox said "There grapes are sour" and ran away".

Then the experimenter puts the following questions to the subjects.

1. What was there in the forest?
2. How did the fox feel?
3. What did the fox see?
4. Did the fox eat the fruit?
5. What did the fox say in the end?

Score:

For each correct answer one mark is given. The maximum score possible is 5.

Sub-Test : 9 : Memory for objects removed

Materials: Coim, thread, comb, key
Match box, block, button, bangle, pencil

Procedure:

The experimenter places the objects under item 1 (coin, thread, comb, key) before the subject and ask "what is this, if the subject is not aware of the object, the experimenter names it. Then the experiments say "Now look at these objects carefully" After a few second, the experimenter covers the objects with a screen and removed the key. Then she removes the screen and ask "what is missing"?

The same procedure is followed for item 2 where the button is removed.

Score:

For each correct answer one mark is given. The maximum score possible is 2.

V. Spatial Relations:

Sub-Test : 10 : Visual perception

Materials: Booklet with 6 pictures

Procedure:

The experimenter shows the first picture to the subject and says" there you see a picture in the centre There are 4 more around it show me the one which is just like the one in the centre.

If the subject had difficulty in following the experimenter demonstrates the first one, which is the sample item.

Score:

For each correct response, one mark is given The maximum score possible is 5. (The sample item is not scored).

Sub-Test : 11 : Mutilated pictures:

A Booklet with 6 mutilated pictures.

Procedure:

The experimenter shows the first picture and asks "what is missing in this" if the subject is unable to answer the experimenter demonstrates the Ist item which is the sample item.

Score:

For each correct response 1 mark is given. The maximum score possible is 5. (The sample item is not scored).

VI. Reasoning:

Sub-Test : 12 : Verbal reasoning:

Procedure:

The experimenter reads the following incomplete sentences to the subject and asks the subject to fill them up correctly.

Items:

1. Chillie is hot, sugar is ----------
2. Dog is on the ground, Fish is ---------
3. Ice is cold, fire is ----------
4. Car runs on the road, ship ----------
5. Rabbit moves fast, tortoise ----------
6. Milk is white, crow is ----------
7. Brother is a boy, sister is ----------
8. Sun rises in the morning, moon rises ---
9. Cotton is light, Iron is ----------

Scores:

For each correct answer 1 mark is given the maximum score possible is 9.

Raw Score:

The total score obtained by the subject in the centre test constitutes his/her raw scores.

Standard Scores:

The raw scores are converted into standard scores by refering to the normsw with the chronological age of the subject.

Sub Test	1	2	3	4	5	6	7	8	9	10	11	12
Items												
Total												

Raw scores Standard Score : 57

Remarks:

APPENDIX - C

MENTAL ABILITY SCORES OBTAINED BY THE SAMPLE

S.NO.	MENTAL ABILITY SCORED OF THE CHILD
1.	43
2.	41
3.	39
4.	40
5.	40
6.	31
7.	35
8.	38
9.	39
10.	41
11.	45
12.	44
13.	39
14.	47
15.	40
16.	37
17.	47
18.	38
19.	42
20.	50

S.No	MENTAL ABILITY SCORES OF THE CHILD
21.	46
22.	42
23.	38
24.	40
25.	46
26.	36
27.	39
28.	41
29.	44
30.	42
31.	25
32.	19
33.	21
34.	23
35.	33
36.	25
37.	26
38.	19
39.	18
40.	20
41.	18
42.	16
43.	19

S.No.	MENTAL ABILITY SCORES OF THE CHILD
44.	14
45.	15
46.	39
47.	17
48.	16
49.	29
50.	30
51.	20
52.	20
53.	20
54.	15
55.	20
56.	18
57.	17
58.	18
59.	15
60.	18
61.	34
62.	32
63.	40
64.	49
65.	39
66.	38
67.	41

S.No.	MENTAL ABILITY SCORES OF THE CHILD
68.	36
69.	44
70.	42
71.	39
72.	36
73.	40
74.	39
75.	42
76.	44
77.	44
78.	40
79.	44
80.	37
81.	32
82.	41
83.	37
84.	37
85.	40
86.	42
87.	36
88.	51
89.	51
90.	42

S.No.	MENTAL ABILITY SCORES OF THE CHILD
91.	21
92.	20
93.	18
94.	21
95.	18
96.	20
97.	18
98.	11
99.	9
100.	17
101.	15
102.	13
103.	19
104.	13
105.	13
106.	21
107.	16
108.	19
109.	22
110.	15
111.	18
112.	17

S.No.	MENTAL ABILITY SCORES OF THE CHILD
113.	15
114.	19
115.	19
116.	13
117.	14
118.	19
119.	13
120.	17

APPENDIX D

STATISTICAL ANALYSIS

Mental Ability of Rural Children Attended And Non-attended the Noon Meal Programme were analysed by using the X^2 test (Chi Square Test).

Null Hypothesis:

H_o : The Scores are not improved by an attendence

Level of significance:

$\alpha = 0.05$

Formula:

$$X^2 = \frac{N\left[\,|\,ad-bc\,| - \frac{N}{2}\right]^2}{(a+b)\,(a+c)\,(b+d)\,(c+d)} \qquad X^2 \text{ with 1df}$$

Data:

Score	Attendence	
	Attending	Non-Attending
3 & above	57 (a)	14 (b)
below 3	3 (c)	46 (d)

In the table one of the cell frequency is less than 5. We apply yates correlation for X^2.

Yates Correlation:

	Attendence		
Scores	Attending	Non-Attending	Total
3 and above	56.5	14	71
below 3	3.5	46	49
Total	60.0	60	120

Calculations:

N = 120

a = 56.5

b = 14

c = 3.5

d = 46

$$\chi^2_o \quad 120 \quad \frac{\left[\,|56.5 \times 46 - 3.5 \times 14| \; - \frac{120}{2}\right]^2}{60 \times 60 \times 71 \times 49}$$

$$= 59.40$$

Infence:

Calculated (observed)value of χ^2 is 59.40

Expected value of χ^2 at 5% for 1df = 3.841

We conclude the Null hypothesis rejected since calculated value is greater than expected value. Therefore the scores are improved by an attendence.