MEAN LENGTH OF UTTERANCE AND SYNTACTIC COMPLEXITY IN THE SPEECH OF THE MENTALLY RETARDED

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1992

To,

My Dearest Mummy - Daddy

My source of inspiration who taught me

'Don't wait till tomorrow

To reach out and grow

To learn something interesting

You didn't know'

AND

To my subjects

CERTIFICATE

This is to certify that the Dissertation entitled **MEAN LENGTH OF UTTERANCE AND SYNTACTIC COMPLEXITY IN THE SPEECH OF THE MENTALLY RETARDED"** *is the bonafide work done in part fulfiiment for Second Year M.Sc, (Speech and Hearing) of the student with* **Reg.No. M9006.**

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CERTIFICATE

This is to certify that the Dissertation entitled **'MEAN LENGTH OF UTTERANCE AND SYNTACTIC COMPLEXITY IN THE SPEECH OF THE MENTALLY RETARDED"** *has heen prepared under my supervision and guidance.*

MYSORE
1992

Dr.SHYAMALA K.C.
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DECLARATION

I hereby declare that this Dissertation entitled: **"MEAN LENGTH OF UTTERANCE AND SYNTACTIC COMPLEXITY IN THE SPEECH OF THE MENTALLY RETARDED"** *is the result of my own study, undertaken under the guidance of* **Dr.SHYAMALA. K.C.,** *Lecturer Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any University for any other Diploma or Degree.*

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INTRODUCTION

Communication is the most essential base for 'getting along with others' and for satisfying both intra and interpersonal needs. The most sophisticated way of communication is seen in human beings who use speech. This has been evolved by modifications of very primitive use of gestures. While communicating, it is the underlying language that is externalized through speech. Thus language is the 'core' of an effective communicative process. The pattern of language development is sequential universally, unless and until interference is caused due to any sensory or motor deficits. Apart from sensory and motor deficits, the cognition also plays a very important role in language acquisition. In cognitively impaired children (as in mental retardation) not only the overall language development is retarded but also the rate at which the language development occurs in disproportionately slower than the rate of their intellectual development.

Several tests (formal tests) have been developed to assess the language level but none of them gives the exact picture of the level at which the child functions practically.

Discrepancy is always seen between the competance and performance of the child. Thus there is need for systematic and structural approach to study the language development from the single word utterance to adult model.

The nature of language impairment is found to encompass a delay in language in mentally retarted (MR) in majority. Some have also reported that there are qualitative differences seen.

It has been often felt that the retarded children cannot use language efficiently.

Brown has contributed maximally to the field of assessment of language acquisition. In 1973 he developed five stages of sentence construction that seem parallel (or mirror) over all language development. From the time it has been introduced, it has been most popular assessment tool in the West, while it has not been studied here at all.

Indian context is a highly futile ground for research of this type because of multi ethnic and multilingual environment. Practically. no study has been reported in Indian context in the language acquisition in the mentally retarted population. Hence the present study was undertaken to see if any predictive trend could be established.

NEER FOR THE STUDY:-

Thorough scrutiny of literature revealed that no study was available regarding this language aspect in the disordered population.

The present study was undertaken to fill the following lacunae in the literature.

1. A lack of studies exploring language skills with respect to mean length of utterance and syntactic complexity in the normals and disordered population in Indian context.

2. A lack of the same in the mentally retarded population.

PURPOSE OF THE STUDY:-

The study was undertaken with the following objectives in view :-

1. To compare the MLU values of the normals with that of the mentally handicapped.

2. To evaluate sentence complexity of the normal children aged 4-11 years.

3. To find the relationship between intelligence quotient and sentence complexity in the mentally retarded population.

REVIEW OF LITERATURE

With the advent and incorporation of descriptive linguistics and behaviourism in the field of speech and language and a quest to quantitatively describe a child's verbal output, speech and language pathalogists have increasingly turned to MLU as a tool for measurement. MLU enjoys an important place in child language assessment primarily because it is believed to be an index of grammatical competence (MC Carthy 1954, Brown 1973). Ever since its usage as early as 1925 by Mice, researchers have looked for factors influencing MLU, the methods of eliciting a representative sample for MLU counts. ways of computing MLU and its relationship with MLR another measure believed to be indicative of grammatical competence. These factors have been studied to evaluate the reliability and validity of MLU as a measure of grammatical competence.

Brown (1973) first found that at comparable MLU's children used the same grammatical structures, upto the MLU of about 4. He observed that CA was not a good predictor of language development: this he did after analysing longitudinally, the speech samples of 3 children - Adam, Eve and Sarah.

He found that they varied widely on the age at which they acquired specific linguistic features and in their general rate of language acquisition. MLU in terms of morphemes was believed to provide a satisfactory index for comparison between children and a sensitive measure of a child's language development over time. Points on the MLU distribution at which the children were compared then developed into intervals and finally into stages that characterized a facet of language learning which was specific to that stage. Brown's stages are designated with Roman numberals and are as follows:-

Stage I - Semantic roles and syntactic relations

(MLU 1.0 - 2.0 morphemes or 1.75 morphemes) here the child is starting to put noun-verb sequences together such as "Car go"

Stage II :- Grammatical morphemes and modulation meaning

(MLU - 2.0 - 2.5 with average of 2.25 morphemes)The child starts to change word endings to potray grammar as in Cars going .

Stage III :- Modalities of simple sentences (MLU = 2.5 - 3.25 with average of 2.75 morphemes) The child begins to use questions and imperatives for instance, "that's a car ?"

Stage IV :- Embedding (MLU - 3.25 - 3.75 with average of 3.5 morphemes) the child begins to use complex sentences for eg. "where is the car going now ?"

Stage V :- Co-ordination (MLU - 3.75 - 4.25 with average of 4 morphemes) The child may use connectors and more functions as in "MOM's in the car".

Brown did not imply that the stages are discrete, but rather that the linquistic development is continuous and that the stages allow comparison and characterizations at different levels of language proficiency.

De Villiers and De Villiers (1973) smoothed the original MLU interval to 0.5 morphemes while retaining Brown's stage of 1973. These smaller stages were useful in characterizing advances, especially in inflection for the 3-4 MLU range. In Brown's stages. the 3-4 range was too wide to capture the rapid development during this age. In support to Brown's works several authors have agreed that MLU is the best measure for language sophistication (Fors and Hakes 1978, Peterson 1990. Shriner and Sherman, 1967)

Given that present trend is to study individual differences in language development rather than similarities, same authors believe that MLU will lose its popularity as a measure of linguistic maturity (De Villiers and De Villiers, 1982). However, we cannot make judgements about normalcy of individual differences until a comparison is made and MLU could be one of the index by which the grammatical competencies of 2 or more children are comparable.

MLU has been found to be sensitive to several intra individual and extra individual difference. These differences have been explored by various researchers. Some of the intra individual variables include age, interest in the topic, familiarity with the topic.

The important extra-individual variables include demographic and cultural variables. situational variables, methods of elicting MLU. conversational role of the examiner, etc. (Cowan, Weber, Haddinott and Klein (1967), Shriner (1969), Sharf (1972).

AGE AND MLU :- MLU has been found to be significantly influenced by age (Braine (1983). Miller and Erwin (1965), Bloom (1968), Bowerman (1973), Miller and Chapman (1981), Brown (1970) purports that 2 children having the same MLU need not have the same CA. They vary greatly in rapidity with which they progress grammatically and for that reason CA is poor index of linguistic level.

Miller and Chapman (1981) conducted a study on 230 children and tried to correlate predicted MLU values and obtained MLU values. He discovered that the variation between predicted MLU values and obtained MLU values was very small (statistically - not significant). However, as age increased this variability increased due to large inter subject variation. The match between observed MLU and predicted MLU was seen upto the age of 5 years.

EXTRA INDIVUDAL VARIABLES :-

a. SITUATIONAL VARIABLES :- Kramer, James and Saxman (1979) found that there was a significant difference in MLU in scores of language samples collected at home and in the clinics with MLU-M at home being higher. This was as reported by Scott and Taylor (1978).

Kuczai (1983) found considerable differences in relation to crib-speech MLU as compared to social context speech with the latter showing more stability. Those findings point to the fact that situational variables do influence MLU values.

ELICITOR VARIABLES:

Martlew, Connoly & MC Clead (1978) studied the speech of a boy of 5-6 years in 3 different conditions - playing alone, playing with one or two friends and playing with his mother. The MLU was found to be lowest when alone (3.5), slightly higher when playing with friend (3.7) and highest when playing with his mother (4.3).

Oswang and Carpenter (1978) compared language samples collected by mother and by clinician for young language impaired children. They reported that mother generated more utterances that 2 elicitors within the restricted time period.

Tomasello. Farrar & Diner (1984) correlated the MLU of children at 2 stages - Stage I (1.7 MLU, meanage - 24 months) and II stage (MLU - 2.8; mean age - 25 of months). While interacting with familiar and unfamiliar adults. Results indicated that the MLU for Stage II

children did not change for both familiar and unfamiliar interactors whereas stage I children produced utterances with higher MLU's with familiar interactions. The reason for this was attributed to the possibility that the Stage I child may have been less aware of the conversational cues and hence relied as general social cues like familiarity of the interactor.

c. **METHODS OF EVOKING LANGUAGE SAMPLE AS A VARIABLE :**

Barrie Blackley et al (1978) reported published studies by Musselwhite and Rogister in which the variability of MLU was examined. Musselwhite compared language samples obtained with 3 variations of a conversation method, whereas Rogister used a story-telling task to obtain the samples. They concluded that MLU-M seemed to be essentially stable with speaking tasks. However, as comparing the results of these two experiments, the results of MLU-M matched subjects showed great disparity, suggesting that the disparity could be due to two different methods of diciting a language samples.

James & Button (1978) conducted a study on 7 children with language disorders with 3 different stimulus

conditions - the children talked about toys brought from home, takem from clinic stock and in the third condition, no toys were provided. Results indicated that stimulus condition had no significant effect as children's MLU scores. The familiar toy and no toy conditions were more efficient in eliciting scorable utterances for MLU measures than clinic toys.

d. **LANGUAGE AS A VARIABLE**:-

Kuaal et al (1988) divided 15 Spanish speaking children into groups according to MLU and found that MLU values derived from 15 Spanish children were higher than MLU derived from comparable English children. This was attributed morphological difference in Spanish and English.

Other variables found to influence MLU includes social economic status, time of the day. emotional state of child. the practise effect dialects, sex and physical conditions of the child.

A review of the literature thus reveals that the reports on MLU as a measure of grammatical competence is ambiguous as best, due to methodological variables and criterion adopted to score the language samples.

MLU was initially studied as a production variation within a given person. It is however. an established fact that linguistic output will depend to a large extent an liguistic input.

It thus follows that if the linguistic input provided to a child varies in terms of MLU, the output would also show a concurrent variation (Lieven 1978). Research focus thus shifted to establish how the MLU of mothers or fathers influenced the MLU values in the child's production. Brown and Bellugi (1964) pointed out that the utterances of parents to young children were short syntactically and simple semantically. The parents frequently repeated these well formed utterances. This view was also supported by Hoff (1990).

Most studies report that MLU of adults measured in adult-child interactions considerably shorter than in adult-adult speech (Drach 1969, Newport. 1975). In fact, a mother's utterances became even shorter when her child first began producing intelligible words (Philips 1973. Lord 1975)

De Villiers and De Villiers (1982) reported that mother's MLU was longer when speaking to 8 months and 28 months old children as compared to 18 month old children. This could be due to the fact that 18 month old children starts to respond with a word or 2 words, hence the mother's focus would be to elicit verbal response. For the other age groups, mother's focus would be to catch and maintain attention.

Murray et al (1990) however opines that the mother's ability to fine tune her early linguistic input occured earlier-more specifically during the 2nd half of the 1st year of development and could be predictive of her childs' later receptive language functioning.

FACTORS CONSIDERED FOR CALCULATION OF MLU/MLR

1. Computation of MLU /MLR

   Computation of MLU is done by analysing the language
   samples from the child either spontaneously by repitition
   or by directing him to answer the question asked regarding
   story. It could also be accomplished from conversation
   sample.

   Author differ in their view regarding the sample size to
   be collected for analysis. It ranges from as low as 15
   sentences to as high as 1000 sentences per child.
   Schneiderman (1955), Griffith and Miner 1969 suggested
   that as few as 15 sentences could serve to provide enough
   data for reliable estimates of MLR and a length complexity
   index.

   Majority of authors agree to the use of 50 spontaneous
   utterances for measuring MLU (Mc.Carthy 1930, Templin
   1957. Darley and Moll. 1960. Minifie, 1963, Shriner 1967,
   Bruce et al 1989. Cole 1989. Ezell and Goldstein 1969,
   Scherer & Olswang 1989)

Bruce 1989 believed reliable MLU score could be got by analysing 5 consecutive intelligible utterance. Darleyu and Moll (1960) collected 50 responses from 150 children and calculated the MLR from 5.10.15,20,25.35 and 50 responses. They concluded that 25 responses were adequate for most descriptive purposes, although the highest reliability was obtained from the 50 responses.

According to Minifie et al (1963) 50 utterances 3 times within less than 3 weeks period should be considered and mean of 5 long utterance. This would also take into account day to day variations within a speaker.

Brown 1973 and Niechuys et al 1984 are of the opinion that atleast 100 utterances should be taken and then mean of 5 long and 10 long utterances respectively should be taken. However. Lackner (1968) suggests the use of 1000 spontaneous utterances per child in both normals and language impaired population and then compare their grammar and determine their complexity.

Some other authors do not specify number of utterances:

a. Wellen (1985) A story should be narrated to the child and later while eliciting language sample 30 questions regarding that story should be answered.

b. Klee (1989) says that 20 months monther-child interaction should be sufficient.

c. Wells Gorden(1979) 24 samples of 90 second duration with 20 minutes interval between 2 samples would give reliable MLU measures.

2. <u>Rules for computing MLU:-</u>

Several authors have modified Brown's (1975) rules for computing MLU values.

Brown (1975) counted 100 utterances by omitting the first page of transcription. All proper names, reduplications, etc. were counted as single morphemes. He omitted fillers and stuttered words from his count. As opposed to this Chapman (1981) considered morpheme count from the first page itself and used only 50 utterances. He also counted repetitions as two morphemes instead of one. Moreover he believed that words such as birthday, pocket book, etc.

(which Brown considered as 1 morpheme) should be counted as 2 morphemes, provided the child used the two morphemes separately in a different lexical environment. Lund and Duchan (1988) followed much the same rules as Brown (1975) and Chapman (1981). However, he cautioned against considering utterances which were eliptical and which gave the impression that they would have been longer if the eliciting question had been absent.

Ever since MLU was positively correlated with CA (Spreisterbach 1958 Brown 1974. Miller and Chapman 1981) attempts are continuing to determine such a direct correlation exists in the language disordered population and to what extent.

Spreisterbach (1958) studied children with cleft palate and found their MLU to be decreased as compared to age matched normals. This finding was also replicated in studies conducted by Faircloth 1975 and Pannbacer (1978).

Singer (1976) did a comparative study of grammatical development in age-matched normals and cerebral palsied children and compared them on quantitative and qualitative basis. It was found that cerebral palsied children not only spoke less during a given unit of time but used few age appropriate forms and agrammatical ones than the non-brain injured.

Klee. Shaeffer, May, Membrino and Maugey (1989) studied the relationship in normals and specifically language impaired pre-school children. Results showed that the predicted MLU of the language impaired group was lower than that of the normal group across the age range studied (24-50 months)

As evident from the review of literature, there appears to be a dearth of literature regarding MLU and syntactic complexity in both normals and the language disordered population. Few stray reports on the language disordered population by Singer (1976) and Klee et al (1989) suggests that the MLU and syntactic complexity could serve as important tools to differentially diagnose a group of language disordered children from a group of normals.

THE LANGUAGE IN THE MENTALLY RETARDED CHILDREN :-

The capacity to develop speech and language is an innate capacity of the human brain. When the brain is impaired in the areas responsible for language development, the capacity for language is also impaired. If the physical appearance is normal, the mentally retarded children is more likely to reveal himself by poor speech and language than by any other single deficiency. Language behaviour in the retarded persons is relevant for two basic reasons :-

1. Language behaviour and mental retardation have been explicitly related since the time of Mead (1913).

2. Language illustrates. psuedosophistication and partial accuracy of our thinking about retardation.

Studies of language and cognitive development in the retarded children suggest that, in the overwhelming majority of cases, levels of language ability are at or below the same child's level of functioning in the other cognitive domains. (Beegly and Ochetti 1987; Miller 1988). However, we also find literature which are contradictary to this view. Thal, Bates and Bellugi (1989) have reported in their study on two

children with Williams Syndrome that the linguistic abilities are better than other, earlier developing, cognitive skills. Thus one cannot for sure establish a relationship between cognition and language development. From the review of literature one can conclude that the mentally retarded children may show inadequacy for language in some or all of following ways :-

1. Apparent inability to understand the spoken word
2. Impoverished vocabulary
3. Constant repitition of a few words or pharses (i.e.) perseveration
4. Parrot-like copying of adult speech (Echolalia)
5. Poor articulation
6. Primitive grammatical construction in the speech.

By and large, however, children with higher mental endowement possess better language ability.

The traditional belief has been that language of the mentally retarded developed in slow motion. The theory of the quantitative delay of the language of the mentally retarded was clearly articulated of Lenneberg (1967).

Some researchers have also noted qualitative differences in the language used by the mentally retarded. Their use of morphemes differ (Menyuk 1971) and as mental age increased, some differences are also observed in the use of inflectional forms (Schiefelbusch 1972). Ryan (1977) found that vocabulary improved more quickly than did the grammar in the retarded. A study of semantics (Semmel, Barrett and Binnett, 1970) indicated that when retarded and normal subjects of the same mental age are compareed on the word-association tasks, the retarded fail to shift from synonyms to antonyms at the same mental ages as the normals. This indicates a deviance in language development.

Apart from this the striking characteristic shown by the majority of the mentally retarded children is their use of concrete language. They show paucity of ideas, lack of abstract thinking and irrelevancy of ideas. Frequently, words and sentences are introduced haphazardly with no relation to the subject matter of the conversation. In addition Karlin and Strazulla (1953) observe that many of mentally retarded children show poor attention span, accompanied by easy fatigability and distractibility. To a great extent these symptoms resemble the symptom complex seen in aphasia.

Karlin (1953) states that in aphasia, a previously normal individual has sustained brain damage and the deterioration in languange function is one of the outstanding signs. In the mentally deficient the outstanding feature is all pervasive lack of development of the intellectual functions of the brain and the language defect is a secondary symptom'.

Majority of the studies above on the retarded population cited in the literature have used Down's syndrome children to refer to the mentally retarded group as a whole. However, in the present study only two out of 10 subjects could be fitted in to the clinical category of Down's syndrome.

20 normal children in the age group of 4-11 years and 10 mentally retarded children with comparable MA were studied. This 10 mentally retarded children were divided into two groups based on the degree of retardation based on AAMD classification 1975. 5 subjects each were taken having mild and moderate retardation. All the 10 subjects had a mean MA of 8.5. years.

SEX:- Out of the 20 normals 7 of them were females and 11 males. Among the mentally retarded group 5 were females and 5 males.

The primary mode of communication of these children was verbal but gestures and pantomine along with verbal communication was noted.

Each of the subjects were attending school. The subjects were chosen from Bangalore and Mysore cities and all of them had Kannada as their mother tongue. They all belonged to middle socio-economic status group.

Only subjects with hearing within 20dBHL were considered. With the exception of one of the subjects from the MR group who had very high arched palate, none of the subjects from either group had any history of visual, auditory, medical or neurological abnormalities. Other criteria for inclusion in the present study was MA falling within range of 4-11 years and IQ falling within 56-70 on psychological assessment using SFB and BK or SFB and CMMS. All the subjects in the study had minimal exposure to therapy (less than 6 months) or no therapy at the time of the study. The subject size was limited due to strict selection criteria, descriptive nature of the study and restricted time.

METHOD OF DATA COLLECTION :-

Initially time was spent to built a working rapport with the child. The actual data collection commenced only when the child was comfortable and he/she could verbalize freely with the investigator.

Spontaneous speech,, elicited/narrated speech using pictures were used to collect the sample of the language from each child. Each child was seen individually by the investigator in a quiet environment with which they were familiar (usually school-set up.

All the childrens verbal responses were audiotaped. Diary of each session of speech interaction was maintained. Each session lasted 20-30 minutes or longer depending on the childs comfort. The data collection was normally done when the child was most active in the mornings and when he/she was not drowsy. Each child was tested to elicit 100 utterances each in spontaneous speech and elicited speech.

Recording of verbal interaction :-

The data was collected at the centre in which the child has been admitted. Verbal interaction were persued between investigator-child; teacher-child and teacher-child-investigator.

Positive reinforcements were used for each session either sweets/pictures (stickers) and even verbal reinforcement were used.

The data for recording :-

1. Spontaneous speech :- It was recorded with attendent and the investigator around. The childs interaction in natural free play with toys and picture book were also recorded. Same toys and pictures were used with all the children.
2. Narrative/elicited speech :- Story telling and describing pictures.

RESULTS AND DISCUSSIONS :-

The study was aimed at exploring the mean length of utterance and syntactic complexity of a group of normal and mentally retarded childred. Spontaneous speech and elicited/narrative speech, using pictures as stimuli, were used to collect language samples. 20 normal children and 10 children with mental retardation in the age group of 4-11 years served as subjects for the study. (In mentally retarded population mental age was taken into consideration) The 100 utterances collected from each of these children were analyzed for the mean length of utterance (in words and morphemes) and syntactic complexity. The results are presented and discussed below:

<div align="center">P.T.O. . . . .</div>

1. <u>RESULTS FOR MLU (WORDS) AND MLU (MORPHEMES)</u>:-

   A.   <u>RESULTS IN NORMALS</u> :-

       Table 1 shows the distribution of MLU (Words) and MLU (Morphemes) as a function of age as well as the mean MLU (Words) and MLU (Morphemes) in the normal subjects.

<div align="center"><u>TABLE 1</u></div>

	MLU (W)	MLU (M)
C1 }	2.65	4.12
C2) 4-5 YRS	2.47	4.30
C3 }	2.58	4.89
C4 } 5-6 YRS	1.48	2.32
C5 }	3.09	5.37
C6 } 6-7 YRS	2.19	3.11
C7 }	1.71	2.38
C8 }	2.07	2.95
C8 } 7-8 YRS	2.71	4.60
C10}	1.80	2.77
C11 }	3.78	6.04
C12 } 8-9 YRS	3.15	5.13
C13 }	3.57	6.27
C14 }	2.32	3.36
C15 } 9-10 YRS	2.01	3.87
C16 }	2.58	3.43
C17)	3.56	6.35
C18 }	3.24	6.01
C19 } 10-11 YRS	2.00	3.32
C20 }	3.17	4.71
Mean	2.60	4.26

B. <u>RESULTS IN THE MENTALLY RETARDED POPULATION:-</u>

Table 4 shows the distribution of single-word and multiple word utterances in the mentallly retarded population.

<div align="center">

<u>Table 4</u>

NUMBER OF WORDS IN AN UTTERANCE
</div>

	1	2	3	4	5	6	7
S1	38	38	17	19	2	–	–
S2	51	26	15	6	2	–	–
S3	57	28	12	8	–	–	–
S4	66	28	5	1	–	–	–
S5	69	18	10	3	–	–	–
S6	46	31	16	6	1	–	–
S7	59	20	12	7	1	1	–
S8	42	37	17	2	1	1	–
S9	59	26	13	2	–	–	–
S10	74	25	–	–	1	–	–
MEAN	56.1	27.5	11.1	3.9	0.8	0.2	–

From table 4 it is evident that in the mentally retarded population. single word utterances occurred most frequently. However, longer utterances (with two or more words were less frequently used in all the retarded subjects.

On comparing the mild (S1-S5) and moderate (S6-S10) groups. occurence of one word and two word utterances was found to be almost equal in both the subgroups.

Considering the IQ. the mildly retarded group showed reduced frequency of occurrence of two or multiple word utterances with the decrease in IQ. On the contrary. single word utterances increased with reduced IQ.

For moderately retarded group (S6-S10), no such conclusions could be drawn. However, if subject S8 is excluded. utterances consisting of 3 or more words occurred infrequently with the decrease in IQ. Such conclusions were not true for single-word and two word utterances.

C. COMPARISON BETWEEN NORMALS AND THE MENTALLY RETARDED POPULATION :-

The normals and the mentally retarded group were compared in terms of single and multiple word utterances. The comparison are presented graphically

GRAPH-3: Distribution of single word and multiple word utterances in normals and the mentally retarded group.
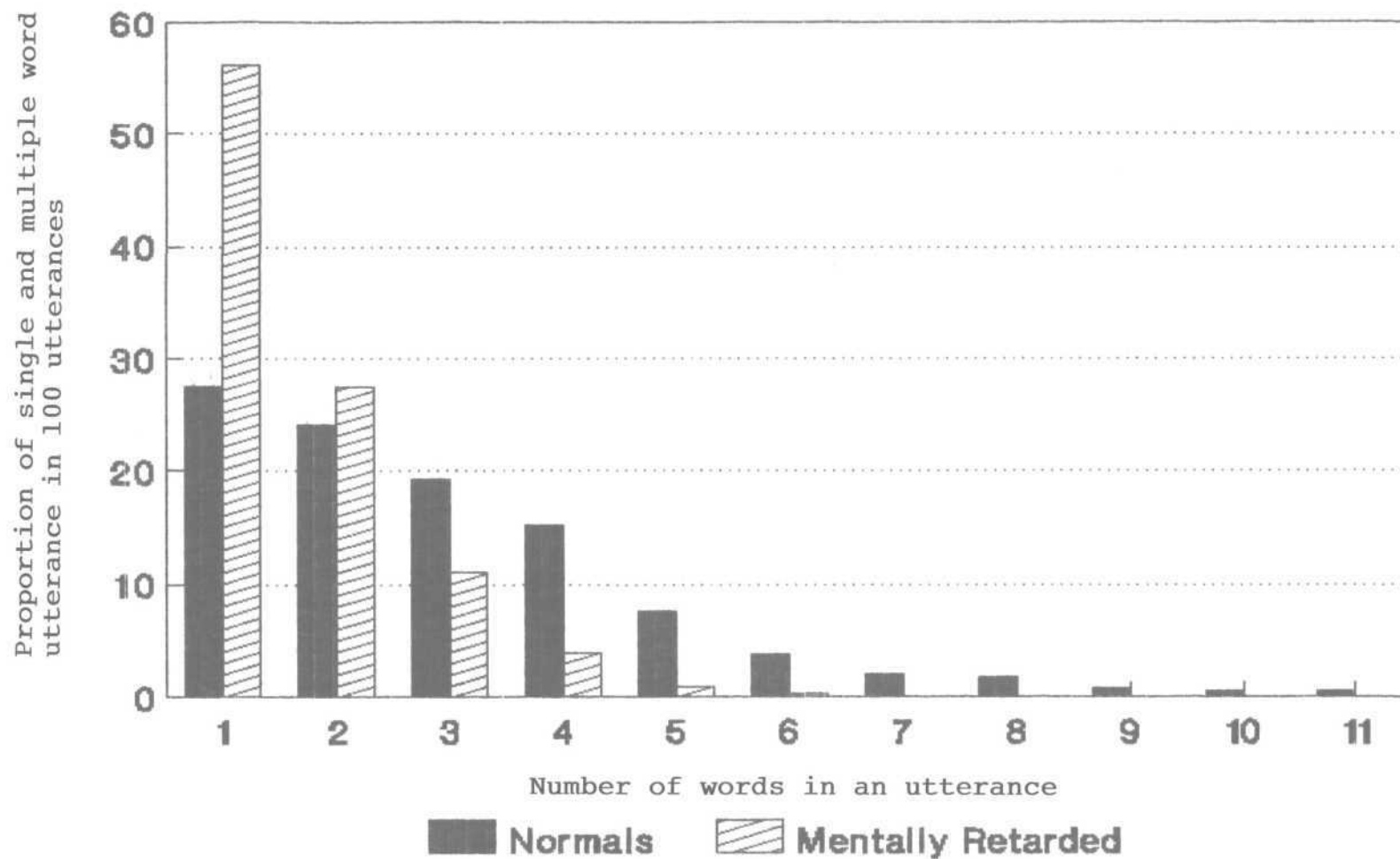
(Graph 3). The 3-4 word utterances were found to increase with age in the normals with the frequency of one and two word utterance reducing with increasing age. Unlike normals, only single word utterances were most frequent in the retarded population. However, if means were considered. The same is true for the normals subjects also. That is the occurrence of single-word is highest.

It is also seen that the normal subjects speech consisted of more longer utterances than the retarded group. The longest utterance in the normals consisted of 11 words which was used only once by one subject. Whereas in the mentally retarded population the longest utterance consisted of 6 words only. That too it was used by two subjects once each.

2.A. THE ORDER AND FREQUECNY OF LEXICAL/GRAMMATICAL
        CATEGORIES IN THE NORMALS :-

Table 5 shows percentage of lexical /grammatical categories in the normals.

TABLE 5 - DISTRIBUTION OF PROPORTION OF GRAMMATICAL
CATEGORIES IN NORMALS

No.	Nouns	Verbs	Pronouns	Adverbs	Ad.1ectives	Quotation	Kinship	Interrogation	Negation	Conjunction	Reduplication	Onam: topo: ea
C1	33.96	35.09	13.21	2.26	4.91	1.13	3.77	0.38	2.64	2.26	0.38	-
C2	36.03	32.38	12.15	3.26	3.24	1.62	4.45	-	2.43	1.27	0.81	2.02
C3	38.82	31.79	11.83	3.10	5.81	1.55	3.49	0.39	3.10	1.55	0.78	
C4	49.32	30.41	1.35	7.43	5.40	3.38	0.68	-	1.35	0.88	-	-
C5	28.48	34.95	18.77	4.85	5.83	1.94	0.32	0.85	0.37	2.59	0.65	-
C6	40.18	16.44	11.42	7.76	11.88	2.74	5.94	-	2.28	1.37	-	-
C7	54.19	15.49	3.87	12.90	16.18	-	3.87	1.29	1.29	1.29	-	-
C8	40.10	22.20	7.25	9.18	5.80	2.49	3.88	1.93	0.97	4.83	1.45	-
C9	38.53	35.42	7.75	3.32	7.75	1.11	4.80	0.37	1.85	0.74	0.31	-
C10	53.33	19.44	4.44	4.44	5.55	1.67	2.26	1.11	3.89	3.89	-	-
C11	26.48	33.86	16.67	7.41	8.88	1.06	2.65	0.53	0.53	4.85	1.06	0.27
C12	28.25	33.33	16.51	0.32	9.52	2.54	0.95	0.95	3.81	0.64	-	0.32
C13	30.53	0.80	17.93	2.52	10.92	0.84	0.84	0.84	1.68	0.84	0.84	0.28
C14	36.84	21.55	12.50	10.78	10.78	-	4.31	-	1.30	2.16	-	-
C15	45.27	26.36	2.99	10.95	7.38	-	6.47	0.50	0.99	2.49	-	-
C16	32.56	22.10	9.69	11.25	9.30	1.16	11.24	0.39	0.78	1.55	-	-
C17	42.27	19.56	5.68	13.25	18.72	0.32	0.63	-	1.26	0.32	-	-
C18	33.03	36.73	7.10	4.63	10.19	1.54	0.82	0.93	3.70	1.54	-	-
C19	38.08	27.32	11.34	7.73	8.78	-	3.10	-	4.12	1.55	-	-
C20	30.62	28.82	18.82	3.37	11.52	1.12	0.28	0.56	0.84	4.21	-	-
	37.53	26.18	10.55	6.54	8.72	1.31	3.23	0.54	1.96	2.02	0.31	0.15

From the table it is seen that percentage of occurrence of nouns is the most in all the subjects with the exception of 3 subjects $C_1, C_5, C_8 \ C_{12} \ C_{18}$) in whom verbs were more than the nouns. Other grammatical categories showed similar trend in all the subjects. On examining the means, it is evident that normals exhibited the following order arranged in decreasing frequency of occurence in the sample.

Nouns. verbs. Pronouns. adjectives, adverbs, kinship terms. conjunction. negatives, quotatives, interrogatives, reduplicatives and onomatopoiea.

B. <u>THE ORDER AND FREQUENCY OF LEXICAL/GRAMMATICAL CATEGORIES IN THE MENTALLY RETARDED POPULATION</u> :-

TABLE 6 shows the percentage of lexical/grammatical categories in the mentally retarded population.

From the table it is seen that percentage of occurrence of nouns is the highest in all the 10 subjects. Next freaquent occurrence was of the verbs. Pronouns were more than adverbs in 6 subjects other than S2. S4. S5. S6. Adjectives were more in subjects S1, S7, S8 and S10 as compared to adverbs.

TABLE 8

SUB	Nouns (N)	Verbs	Pronouns (Pr)	Adverbs (Adv)	Adject-ives (Adj)	Quot-ati-on (Q)	Kin ship (K)	Inter-roga-tion (Int)	Nega-tive (Ne)	Conj-unc-tion (Con)	Redup-lica-tion (Re)	Onam-top-iea (O)
S1	36.32	23.38	7.98	6.97	8.46	0.99	9.95	-	2.99	0.99	-	0.50
S2	33.51	28.11	9.19	14.05	7.56	-	1.08	-	2.70	3.29	0.54	-
S3	33.73	28.31	10.84	7.23	6.24	-	3.61	-	4.82	0.60	0.60	-
S4	40.43	22.70	2.13	8.51	8.51	-	9.93	0.71	8.55	-	1.42	-
S5	44.08	19.08	5.26	11.18	9.21	-	3.29	2.63	3.29	0.66	1.32	-
S8	32.42	28.38	8.24	15.38	9.35	.-	2.75	-	5.49	-	-	-
S7	36.78	22.41	9.20	6.90	8.62	-	4.60	1.72	5.17	2.30	1.72	-
S8	38.93	18.75	9.09	8.52	10.23	0.57	1.70	0.57	7.39	4.55	1.14	0.57
S9	45.28	23.27	9.43	6.29	5.03	-	4.40	-	5.66	0.63	-	-
S10	47.58	15.33	8.87	2.42	12.10	-	9.68	-	3.23	-	-	-
M	38.71	22.77	8.02	8.75	8.53	0.16	5.10	0.56	4.93	1.30	0.67	0.11

On examining the means, the mentally retarded as a group exhibited the following order arranged in decreasing frequency of occurrence in the sample.

Nouns, verbs, adverbs, adjectives, pronouns, negatives, kinship terms. conjunctions, reduplicatives. interrogatives. quotatives and onomatopoiea.

Comparison of mildly (S1-S5) and moderately (S6-S10) retarded group reveals the following:

Both these sub-groups used nouns more frequently than any other grammatical categories which is the trend in tune with the normals.

Mildly retarded group tend to use verbs, adverbs, quotatives. interrogatives. kinship terms and reduplicatives more as compared to the moderately retarded group.

Nouns. pronouns. adjectives, negatives and conjunctives are used more by the moderately retarded population as compared to the mild ones.

C.   COMPARISON BETWEEN NORMALS AND THE MENTALLY RETARDED POPULATION:-

The normals and the mentally retarded groups were compared to see if there were any differences among these two groups in terms of the order and frequency of occurrence of the lexical/grammatical categories.

Comparison of the means from Table 5 and Table 6 reveals the following:-

Both in the normals and the retarded group the percentage of noun was highest followed by the verbs. The normals tend to use quotatives and conjunctions more than the retarded group. Kinship terms, Interrogatives, Negatives and reduplication were used more frequently by the retarded group as compared to the normals.

The overall pattern is that of the reduced usage of all the grammatical categories verbs pronouns and conjunctions by the mentally retarded population.

In summary, following results could be obtained:

1. There is a quantitative and qualitative difference
    between normals and the mentally retarded population
    though the qualitative differences may be subtle.

2. There were also differences noticed within the
    mentally retarded population - mildly retarded group
    performed differently from the moderately retarded
    group on almost all grammatical categories except
    nouns.

3.   ARRANGEMENT OF LEXICAL/GRAMMATICAL CATEGORIES
                IN AN UTTERANCE:

Arrangement   of   lexical/grammatical   categories   were
analysed in minimum of five longest utterances in terms
of MLU (M). The results are presented according to the
pattern seen in these longest utterances in both normals
and the mentally retarded children.

A.   RESULTS IN NORMALS :-

The most common pattern seen in the normals was as
follows :-

Adj + Locative + Adv + Adjective + Verb.
/ a huḍṇga: mṇraḍomele Kutkoṇḍu i huḍṇgina:
noḍutaidane/

The   use   of   single word utterance were rare compared to
multiple   word   utterances.   The   single word utterances
were   usually nouns, inflected verbs, small percentage of
negatives, adverbs and adjectives.

Two word utterances were usually combinations eg. :-

Noun + Verb   eg:- /nir bI ḍ tiḍale /.

Three word utterances were usually

a) Noun + Conj + Noun . eg:- / Iḍḷi mᴧtɛ Kɛsᴧrib^hᾳːt /.
b) Pronoun + kinship + verb . eg:- / nᴧmmᴧ amma:
   ma:ḍᴧta:re/
c) Adverb + Adj + verb . eg:- / iḷḷi ibrʊ hogta:iḍa:ḷe/

Four word utterances constituted of

Adj + Locative + Noun + verb : eg : / vᴧndʊ ʊrᴧḷḷi
   rᾳːdza: ittu /

Five word utterances included following combination

Adjective + Noun + Verb + Quotative + Verb .

/ obᴧḷᴧna tᴧrka:ri tᴧkᴧba: ᴧnta: kᴧḷista:ne/

B. <u>RESULTS IN THE MENTALLY RETARDED</u>:-

The arrangement of grammatical categories seen in the utterances of the MR population varied from that in the normals. (Graph 4) see page 51.

The most common pattern observed was as follows:

a) Pronoun + Kinship + Pronoun + Noun + Verb.

/nʌmʌ amma:nge na:nu tʃʌppa:ti oskoeɭtini/

b) Adjective + Locative + Adjective + Noun + Verb.

/vʌndu urʌlli obʌna: ra:ʤa: i:da:re/

Single word utterances were most frequent which consisted
of either noun, adjective or negative. Verbs were rarely
used in isolation. When used in isolation verbs remained
uninflected. Eg.: The MR population used the uninflected
verb form say /hogu/ instead of /hoguttini/.

Two word utterances were usually

a) Noun + Verb. eg: /uvuge hognta:jɛ/ for /uruge
   hogʌta:ɭe/

b) Adverb + Verb eg: /sumʌnɛ kutkondida:re/

Three word utterances were either

a) Pronoun + Adjective + verb: eg: /nʌnnu obʌnɛ bʌrtini/.

b) Kinship + Noun + Verb eg: /ta:i mʌnɛʌlli i:da:re/

   or /anna: kɛlʌsa:kɛ hogʌ/ for /anna: kɛlʌsa:kɛ
   hogʌta:rɛ/

6 word utterances were used only 2 subjects once each.

Adjective + Noun + Adverb + Verb + Noun + Verb. eg:- /vʌnu koni tingɛ bʌndbittu
topi teɾʌdu/ for /vʌndu koti kɛlgʌdɛ bʌndu topi tʌgoɭʌdu/.

No particular trend was noted when IQ was considered as a
variable.

GRAPH-4: Distribution of lexical categories in normals and mentally retarded population.
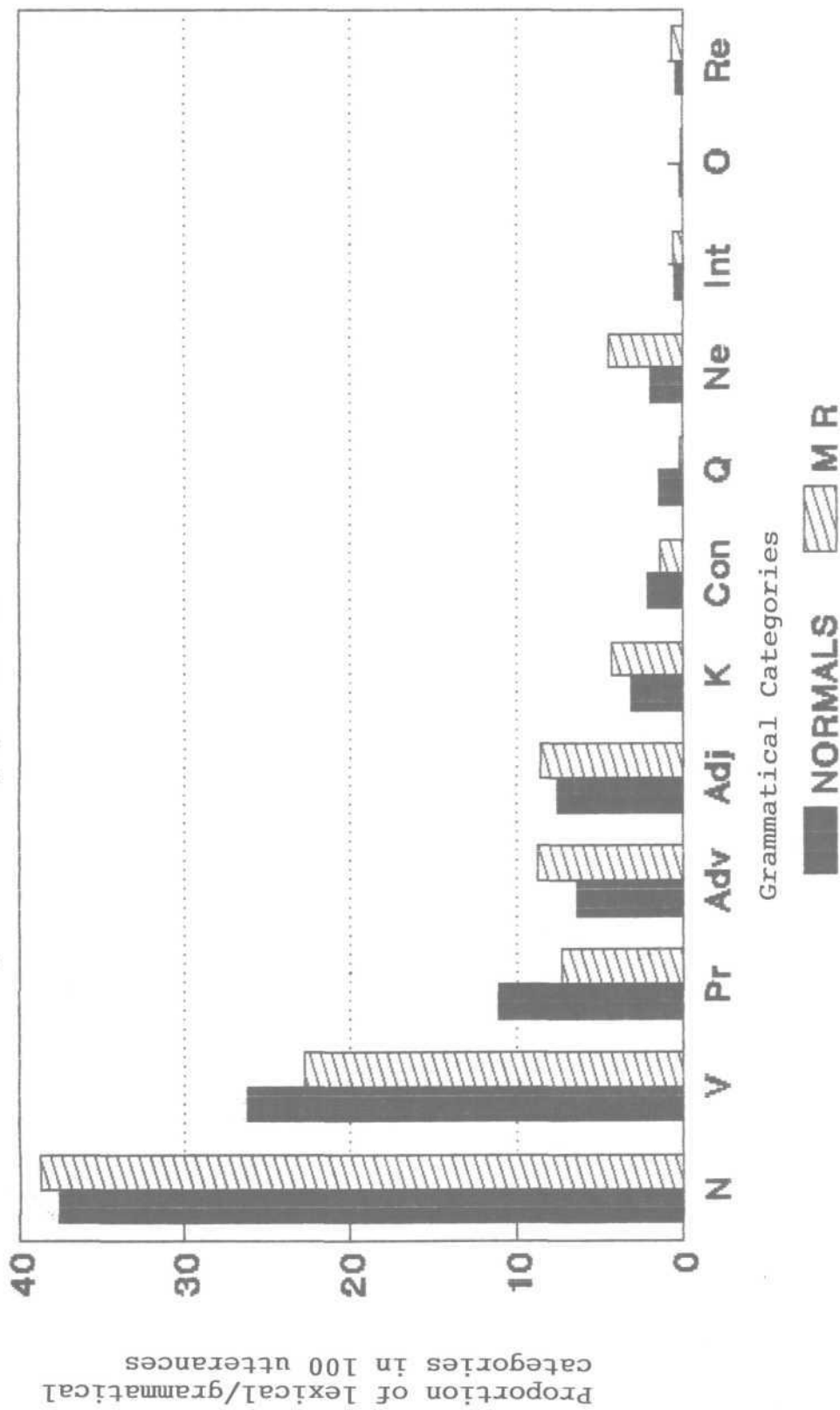
C.   COMPARISON BETWEEN NORMALS AND THE MENTALLY
             RETARDED POPULATION:-

The lexical/grammatical arrangement in the utterances of
the mentally retarded was compared to that of the normals
comparison reveals.

1. There were subtle differences in the arrangement of
   lexical categories in the mentally retarded group as
   compared to that of the normals when utterances
   consisted of three or more words.

2. The compound verbs used by the mentally retarded group
   consisted of fewer morphemes than the normals.
   Eg.: Compound verbs used by the normals were

   a) /ettikondu idutairtare/
   b) / togoḷʌkkɛ hogtairtate/
   c) / itkondu irtane/

   In the mentally retarded group, following compound
   verbs were used:

   / kʌrkond hogntare/.

3. The mentally retarded group tended to use uninflected verb-forms more often than the inflected verb-forms as seen in the normals.

   Eg.: Mentally regarded used verb stem like /hogu/, /odu/. /adu/. etc. whereas similar verbs were used with inflections by the normals. eg.: /hoguttini/, /odoudu/. /adoudu/. etc.

4. The mentally retarded children used conjunctions whereas the normals made use of more complex construction to convey the same idea.

   Eg:- / hʌlu udzuttini ʌmɛlɛ snana maḍʌtini /

   This construction is seen in the speech of mentally retarded population. Whereas the normals used the following:-

   / hʌlu udzbiṭṭu snaːnaː maḍʌtini / .

In summary. we can say that the mentally retarded children use simplified patterns as compared to the normal children. However, some mildly retarded children sometimes do use constructions close to that of the normals.

Thus from the results obtained from the 3 sub-sections demonstrating syntactic complexity, it is evident that the mentally retarded children though are able to convey their ideas. their verbal constructions lack the complexity of the normals. This finding does not agree with the finding of Coggin et al (1983) who concluded that young retarded children at 2-word stage of linguistic development may be as flexible and diverse in their use of language during social interactions as are the non-retarded children. But the difference could be due difference in controlled variables in the two studies. In the present study subjects were not matched on linguistic abilities as in the study of Coggin et al (1983). Secondly they have studied only Downs Syndrome children upto two word stage. Whereas in present study, only two children could be fitted in clinical category of Down's syndrome and moreover the subjects linguistic level in the present study extended upto 4 or 5 word stage.

GENERAL CHARACTERISTICS OF THE MENTALLY RETARDED GROUP:-
In this study the mentally retarded children served as subject. Out of the ten, five were mildly retarded and the other five were moderately retarded.

Following general characteristics were observed:

Examination of oral-peripheral structures revealed that the speech mechanism was normal both structurally and functionally in all the subjects except the one who had a very high arched palate. Two subjects exhibited nasality.

Many of the retarded (especially the moderately retarded) subjects had misarticulations in the form of distortions and omissions. Substitutions were sound /r/ and /l/ were highly distorted in all the positions both at the word level as well as the sentence level. At the sentence level, nasal omissions were heard in this subject. One of the mildly retarded subjects had slurred speech. One of the moderately retarded subjects had very fast rate of speech. Hesitations, repititions. false starters and omissions were frequent in this subject. Diadochokinetic rate and phonation duration were reduced in the whole in the mentally retarded population. This could be because most of the subjects felt shy to repeat or phonate and some did not understand "the need to repeat the syllables rapidly or to phonate as long as they could.

In terms of language behaviour retarded population as a group showed decreased grammatical complexity in their verbal outputs. Spontaneous utterances were longer and complex as compared to the elicited ones which were generally shorter and simplified. Language deficiency seen could be categorized into following groups:-

1. <u>Incomplete</u> <u>utterances</u>:- Many a times the mentally
    retarded population tended to leave the utterances
    incomplete For eg.:

    /maʊ̈ʈi/   for   /maʊ̈ɖʌtini/
    /aːskɛ/   for   /baːskɛʈ/
    /hogid/   for   /hogtini/ .

2. <u>Simplification</u>:- In the mentally retarded population
    either the utterances were left incomplete or if
    completed many a times simplified version was used. This
    was seen both at the word level as well as the sentence
    level. At word level there was simplification of blends
    or simplification of compound verb. eg:- /sʈaiku/ for
    /sʈraiku/ and /tʃikaʊʌjʌlli/ for /tʃikaːvʌjʌsinʌlli/
    At phrase level, entire phrase was substituted by
    a single word. Eg:- /ʈi/ for /ʈi kuɖitaːrɛ/

3. <u>Lack of use of pronouns</u>:- The mentally retarded children
    did not use pronouns unless demanded for Eg. instead of
    the first person singular pronoun /nanu/ the retarded
    children preferred to give their own names.

4. Use of incorrect inflection:- Many a times, inflection are not used at all. Especially verbs are used in non-inflected forms

Eg. of incorrect inflections are:-
|mʌnɛgɛ| for |mʌnɛʌlli|
|kɛɭʌsana| for |kɛɭʌsaːgɛ|
|mʌnɛna| for |mʌnɛInda| .

5. Repitition:-

   Repitition of noun several times in place of plural suffixes. Eg :- Repitition of noun |huḍʌgi|, three to four times instead of plural suffix |jʌru| in |huḍʌgijʌru|.

6. Perservation:- Tendency to perservate was also noticed in the mentally retarded group

   Eg.: /gombe/

7. Inappropriate naming:- One of the subjects showed this error. Eg.: The word/gʌnnu/ meaning /gʌn/ was given in response to the picture of telescope. However, the subject could appropriately describe the use of the "object which was named in absence of any actual stimuli.

8.   <u>Neologisms:-</u>   The use of neologisms were also noticed. Eg.: The use of meaningless word /ʌrtona/ for the word /hogtare/

9.   <u>Self-correction:-</u> The tendency to correct self was also seen in one of the subjects. For eg.:- The word /popure/ was used to described coconut initially. But immediately the correct Kannada equivalent word for coconut i.e. /kobre/ was given without being asked to do so.

SUMMARY AND CONCLUSIONS

This study aimed at determining the mean length of utterance in words and morphemes. grammatical categories and their arrangement in these utterances as used by normals and the mentally retarded population. 20 normals in the age range of 4-11 years and 10 mentally retarded children with IQ range of 41-70 with mean IQ of 54.2 were studied. The degree of retardation was diagnosed as mild or moderate by the psychologists. All the children had normal hearing and no other sensory motor or neurological involvement. They all came from middle socio-economic background. The study was carried out by subjective evaluation and a recording of spontaneous and elicited speech by diary keeping and audio tape recording. The data obtained was transcribed in IPA transcriptions.

The analysis was made in terms of MLU(W) and MLU (M). proportion of grammatical categories and arrangement of these grammatical categories in the utterances. Also. the behaviour of the two groups (mild and moderately retarded) was examined. The general characteristics of mentally retarded group as a whole in terms of speech and language characteristics were noted.

Following conclusions were drawn:

1. As expected, the mean length of utterance in morphemes was higher than that of mean length of utterance in words in both the normals and the retarded population.

2. Mo relationship was found between age and meanlength of utterance in the normals.

3. When the mentally retarded group as a whole was considered, no relationship between IQ and MLU was seen. However, if mild and moderate groups were considered separately. MLU increased with the increase in IQ in the mildly retarded group.

4. Speech and language delay and deficits are present in the mentally retarded group as seen by the present study.

5. Both the mild and the moderately retarded group presented these deficits.

6. Though all the grammatical categories are acquired, it
    is not used to their maximum extent. Sometimes even
    incorrect usage is noticed indicating that all the
    grammatical categories are not fully mastered.

7. There is not much difference in terms of usage of
    grammatical categories in the mildly and moderately
    retarded group.

8. The overall pattern of language in the mentally retarded
    population follow the normal trend with few individual
    quantitative and qualitative differences..

9. Misarticulations. slurred speech. repetitions,
    hesitations, perservation, neologisms and simplification
    of syntactic structures are seen in the mentally
    retarded group and they are found more in moderately
    retarded group. These however need further exploration.

IMPLICATION OF THE STUDY:-

This study is first of its kinds, in Indian context.
MLU and sentence complexity would provide invaluable clinical
tool built along a descriptive framework through which the
language performance of the retarded population can be
quantified and interpreted. If the language is delayed

relative to cognitive development. intensive therapy is indicated. This measure will be useful for documenting baseline performance and monitoring progress within language intervention programme.

LIMITATION:-

1. Sample size is limited both in normals and mentally retarded population and phonetic transcription is time consuming.

2. Only two groups i.e. mildly and moderately retarded are studied in the clinical population.

This study should be replicated on various other clinical populations to identify and describe the relationship between MLU and sentence complexity.

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APPENDIX

RULES FOR COMPUTATION OF MEAN LENGTH OF UTTERANCE [MLU]

(1) The first 100 utterances were transcribed . Utterance during story narration was mandatorily included in the count.

(2) Unintelligible or partially intelligible utterances were omitted from the count.

(3) Stutterings (Mark by repeated effort) at a single word) and all repetitions were counted as one word. Repetition for emphasis should be counted as two words.

(4) Fillers such as mm or oh are not counted, but no, yes etc. were counted as words.

(5) All compound words were counted as two words if the child used the constituent morphemes separately in two different linguistic context - Eg.Birthday.

(6) All inflections (possession, plural, tenses) were counted as separate morphemes.

(7) Imitations and elliptical answers to questions which gave the impression that the utterance would have been more complete if there had been no eliciting questions (Eg. What is that? My box' were counted.

(8) Rote passages such as nursery rhymes, songs or prose passages which have been memorized and which may not be fully processed linguistically by the child were omitted.

(9) All partial utterances which are interrupted by outside events or shift in child's focus were excluded.

(10) MLU was calculated using the following formula:

$$\text{MLU (W/M)} = \frac{\text{Number of words/morphemes}}{100}$$

From the table it is apparent that MLU (Words) was always less than MLU (Morphemes).

The group of normal children, ranging in age from 4.5 years to 10.11 years, with mean age of 7.6 years had a mean MLU (W) of 2.52. The mean MLU (M) for the normal group was found to be 4.17.

It is apparent from Table 1 that MLU did not increase with increase in age. This finding was true for both MLU (W) and MLU (M). The lack of corresponding variations in MLU (W) and MLU (M) with increase in age is also depicted graphically (Graph 1). This finding shows good agreement with Miller and Chapman's (1881) conclusions that the variability in MLU increases after 5 years of age.

GRAPH-1: Agewise distribution of MLU(W) and MLU(M) in normals
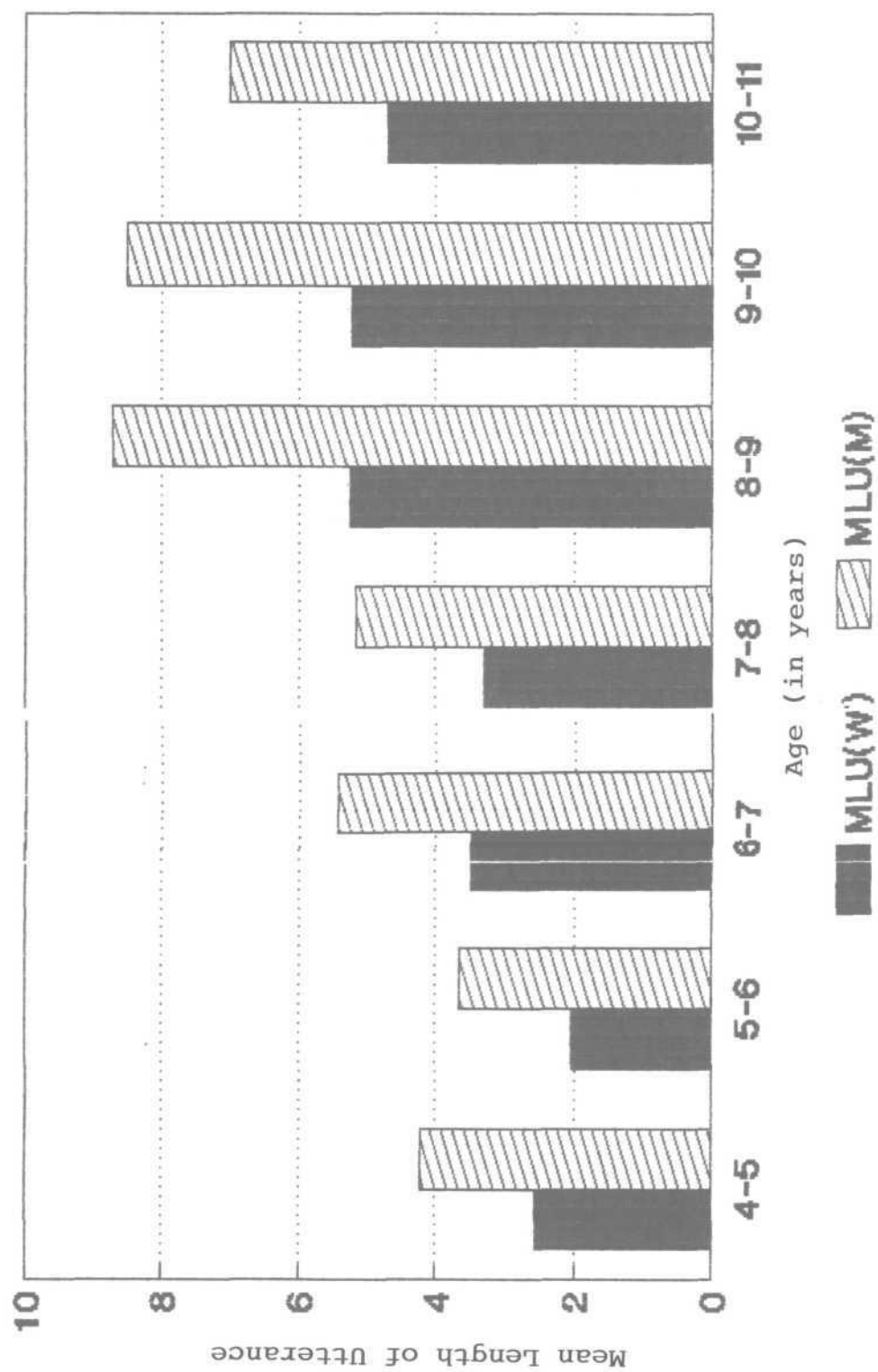
B. <u>RESULTS IN THE MENTALLY RETARDED POPULATION</u> :-

Table 2 shows the distribution of MLU (W) and MLU (M) as a function of IQ as well as the mean MLU (W) and MLU (M) in the mentally retarded children with mean mental age of 8.5 years.

| Ho.	IQ	MLU (Words)	MLU (Morphemes)	
SI	68.5	2.07	3.04	}
S2	63.5	1.82	2.75	} } }
S3	60.0	1.61	2.40	) MEAN = 2.56
S4	57.0	1.43	2.35	))
S5	56.0	1.47	2.28	)
S6	52.0	1.85	2.97	})
S7	50.0	1.74	2.52	})
S8	47.0	1.86	2.47	} MEAN - 2.32)
S9	45.0	1.58	2.08	})
S10	43.0	1.29	1.54	)
MEAH	54.2	1.67	2.44	

From the above table it is apparent that MLU (W) was always less than MLU (M).

The group of the mentally retarded population ranging in IQ from 43-68.5 with mean IQ of 54.2 had a mean MLU (W) of 1.67. The mean MLU (M) for this group was found to be 2.44.

It is apparent from the table 2 that MLU did not decrease with reduced IQ, When mentally retarded were considered on the whole as one group. This was true for both MLU (W) and MLU (M). The lack of corresponding variations in MLU(W) and MLU (M) depicted graphically (Graph - 2).

In .Table 2, S1-S5 are the subjects with mild retardation and S6-S10 are the subjects with moderate retardation.

GRAPH-2: Distribution of MLU(W) and MLU(M) in the mentally retarded population as a function of IQ
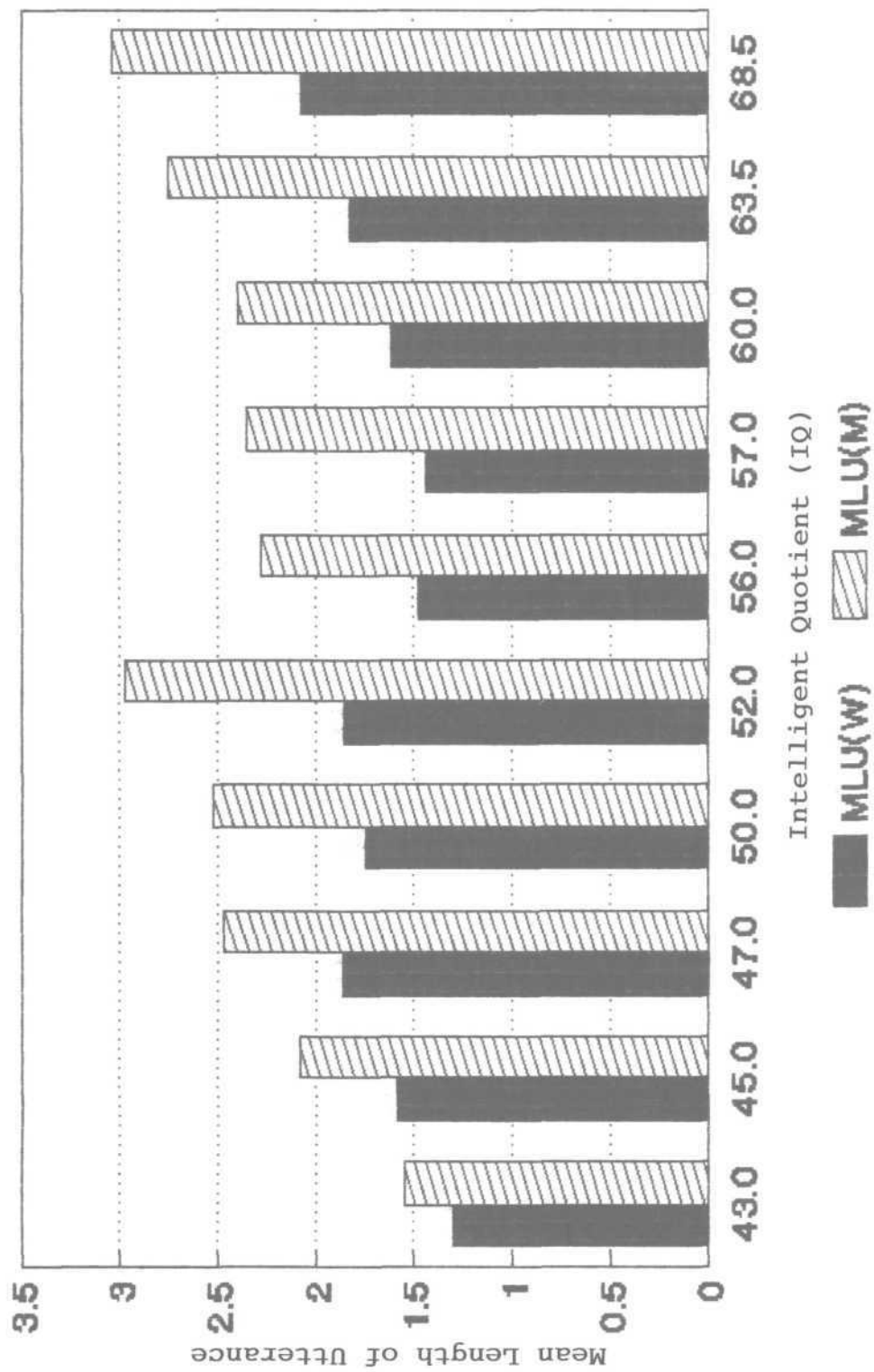
Comparison of the mean MLU (W) and MLU (M) of S1-S5 to the mean MLU (W) and MLU (M) of S6-S10.

Table 2b shows the mean MLU (W) and mean MLU (M) in sube.icts S1-S5 (Mildly retarded) and S6-S10 (Moderately retarded)

TABLE 2-B

	Mild	Moderate
Mean MLU (Words)	1.68	1.66
Mean MLU (Morphemes)	2.56	2.32

From the table it is clear that MLU (M) was higher than MLU (W) in both the mildly and the moderately retarded group. However, there were differences between these two sub-groups.

Mildly retarded group had both MLU (W) and MLU (M) higher as compared to the moderate group. Within these subgroups MLU (M) decreased with reduction in IQ, but not the MLU (W). The lack of reduction in MLU with reduction in IQ in both the mildly and moderately mentally retarded group/due to increase in MLU (W) of S5 as .compared to that of S4 in the mild group and also MLU (W) value of S8 was higher than the preceeding subject S7 in the moderate group.

This variation could not be explained by the variables considered in the present study. Extraneous variables like age at which intervention was done, home training etc. could not be controlled. They could have probably contributed to the enhancement of MLU (W) scores of the subjects S5 and S8 in the mildly and moderately retarded group respectively.

Such a variations was not seen in MLU (M). That is MLU(M) reduced with reduction in IQ when mildly and moderately retarded group were considered separately.

C.   COMPARISON BETWEEN NORMALS AND THE MENTALLY
                RETARTED POPULATION :-

On comparison of the means from table 1 and table 2 for the normals and the mentally retarded population respectively, it is evident that the value of MLU (M) was higher than MLU (W) as expected in each of these groups. Between group comparison shows that the MR population are deficient as compared to the normals. That is the MLU (W) in the MR population was 1.67 and that the normal subjects MLU (W) had a value of 2.52. MLU (M) in normals was as high as 4.17 morphemes where as in the retarded population it was found to be highly reduced to 2.44 morphemes.

This finding is in agreement with previous finding by Klee et al (1989). where predicted MLU of the language impaired group was lower than normals across the age range studied. Note however that MLU has not been specifically studied in the mentally retarded group.

II. <u>SYNTACTIC</u> <u>COMPLEXITY</u>:-

The second purpose of the study was to determine if the normal and the mentally retarded children varied in terms of syntactic complexity. Results obtained were analyzed under 3 sub-categories. They are :

1. The number of single word and multiple word utterances.
2. The order and frequency of lexical/grammatical categories in the sample analyzed.
3. The arrangement of these lexical/grammatical categories within an utterance.

TABLE 3 - DISTRIBUTION OF PROPORTION OF SINGLE WORD
AND MULTIPLE WORD UTTERANCES IN THE NORMALS

SUB	1	2	3	4	5	6	7	8	9	10	11
1	20	28	26	19	6	1	2	—	-	—	-
2	1	8	26	25	18	11	5	6	-	-	-
3	12	28	24	22	6	3	2	2	1	-	-
4	68	19	6	5	2	-	-	-	-	-	-
5	9	23	25	20	12	10	-	-	-	-	-
6	57	23	2	9	2	6	1	-	-	-	-
7	80	18	10	8	3	1	-	-	-	-	-
8	45	21	19	9	2	2	3	1	-	-	-
9	14	24	27	18	4	6	1	-	-	-	-
10	54	27	10	3	2	1	1	2	-	-	-
11	4	16	28	23	9	12	4	3	1	-	-
12	6	26	27	22	14	2	1	2	-	-	-
13	17	28	28	17	7	2	1	-	-	-	-
14	33	30	18	13	5	1	-	-	-	-	-
15	41	32	15	10	2		-	-	-	-	-
18	34	32	21	7	5	1	-	-	-	-	-
17	20	24	17	28	10	2	1	-	-	-	-
18	8	19	22	20	17	8	3	3	-	-	-
19	38	39	15	6	2	-	-	-	-	-	-
20	4	18	20	21	23	4	7	3	3	1	1
MEAN	27.25	24.05	19.30	15.15	7.55	3.65	1.60	1.10	0.25	0.05	0.05

1 A. THE DISTRIBUTION OF SINGLE AND MULTIPLE WORD UTTERANCES IN NORMALS:-

Table 3 shows distribution of single word and multiple word utterances in the normals.

Results obtained in the normals revealed that though normals use a large number of single word and two word utterances. their language sample also contain three, four and five word utterances. Six. Seven and Eight word utterances are also produced though infrequently. Only in Subjects C20 and C17. 5 word and 4 word utterances respectively. were higher as compared to single word other multiple word utterances. However on examining the mean proportions, proportion of single word utterance is found to be the highest.