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Abstract

Mean Length of Utterance (or MLU) is a measure of linguistic productivity in children. A higher MLU is taken to indicate a higher level of language proficiency. It is calculated in morphemes or in words by dividing the number of morphemes or words by the total number of utterances, with an utterance defined as a sequence of words preceded and followed by change of turn in a conversation. The aim of this study was to establish normative data for MLU and acquisition of aspects of syntax in Konkani speaking children in the age range of 3 to 5 years and to find the relation between MLU and the development of syntax. Acquisition of syntax was found to be directly proportional to the MLU. Higher the MLU, higher was the percentage of usage of the grammatical forms. These findings can be used to establish age appropriateness of grammatical development in Konkani speaking children in the age range of 3- 5 years.

Use of MLU

Assessing language development is necessary to understand the successive stages of development. Several qualitative and quantitative procedures are adopted in attempts to describe and assess the language of children. One such procedure which is found to be particularly useful with the clinical population of developmentally disabled children is computing mean length of utterance in words/morphemes. It provides an index of syntactic complexity in the child's speech. The mean length of utterance (MLU) has gained sustained popularity and interest of the professionals for long, for its relative ease of use and precision. It successfully serves as a tool for identifying language delay and deviancy. It is a more accurate measure of acquisition stage than chronological age of child. MLU is increasingly used with language disordered population as it serves as a tool for identifying language delay and deviances.

MLU is a measure suggested by Brown (1973) to indicate the length of utterances produced by children, where an utterance is a sequence of words preceded and followed by change of turn in a conversation. It is calculated in morphemes or in words by dividing the number of morphemes or words by the total number of utterances. Brown proposed that a useful index of language development could be the child's 'Mean Length

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of Utterance' (MLU). He suggested that one should collect a sample of 100 utterances from the child under observation and for each utterance calculate the number of morphemes which it contains. The mean of these utterance lengths, calculated in morphemes, is taken as child's MLU. This measure increases relatively smoothly over time for children (Brown, 1973:57), and it is widely used to compare the interpretation of data from different authors. Using it, Brown also proposed five stages of development. According to him, Stage I lasts to MLU 1.75, and is a stage of two-word speech and stages II-V correspond to MLU value of 2.25, 2.75, 3.50 and 4.00.

Brown's Formulation

Brown (1973) first found that at comparable MLUs children used the same grammatical structures up to the MLU of about 4. He observed that chronological age was not a good predictor of language development. After analyzing longitudinally, the speech samples of 3 children - Adam, Eve and Sarah, Brown designated five stages of language acquisition with reference to MLU, as follows.

Stage I: Semantic roles and syntactic relations (MLU 1.0 - 2.0 morphemes or 1.75 morphemes). Here child puts noun-verb sequences together.

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 portray grammar.

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.

Stage IV: Embedding (MLU = 3.25 - 3.75 with average of 3.5 morphemes). The child begins to use complex sentences.

Stage V: Co-ordination (MLU = 3.75 - 4.25 with average of 4 morphemes). The child may use connectors and more functions.

Brown did not imply that the stages are discrete, but rather that the linguistic development is continuous and that the stages allow comparison and characterizations at different levels of language proficiency. However, there has been considerable debate regarding the inherent reliability or usefulness of MLU as an index of grammatical development and also concerning whether it is morphemes [MLU (m)], syllables [MLU(s)] or words that should be measured.

Usefulness of MLU to Assess the Development of Morphological and Syntactic Skills in Young Children

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Child language researchers and speech-language pathologists used mean length of utterance in words MLU (w) as a measurement of a child's gross language development before Brown (1973) introduced mean length of utterance in morphemes MLU (m). After Brown (1973) and others documented MLU(m) to be a measure correlated to development of morphological and syntactic skills in young children, the practice of counting MLU (m) became more widely used and accepted. Bloom (1968), Bowerman (1970), Miller and Chapman (1981) also reported that MLU was significantly influenced by the age. The relationship between child's age and mean length of utterance measured in morphemes MLU (m) was studied by Miller and Chapman, (1978) in a sample of 123 middle - to upper-middle-class Midwestern children in the US, aged 17 to 59 months, conversing with mothers in free play. A significant correlation was found between age and MLU: $r = 0.88$. Age accounted for 78% of the variance. Ranges within one standard deviation (SD) were estimated for predicted MLUs and derived for predicted ages on the basis of linear regression.

Arlman-Rupp et al (1976) observed that for children between 2.0 and 2.6 there is a high correlation between calculations of MLU based on morphemes, on words and on syllables, at least in Dutch. The advantage of a morpheme-based MLU was expected to be that, it would allow comparison of development between languages of different types.

Use of MLU to Identify the Language Age of Children

Measures of MLU have also been used to arrive at the 'language age' of children with developmental language disorders. According to Pamela Rosenthal Rollins of the University of Texas at Dallas (1995), despite much criticism MLU is often used to "language-age-match" children with language disorders to younger children with typical language. Her study explored the nature of MLU as a variable for language-age-matching children. Her findings demonstrated that MLU did not ensure that the children were matched on linguistic performances. When taken as a group, a group of children with SLI were not comparable to the control group with respect to morphological or lexical skill. Thus, the language skills were not equivalent between the groups. She suggested that we must go beyond global indicators such as MLU to the notion that "a child's language level should be represented as a profile of scores on a variety of component skills".

Chengappa (2002) in her study on 'Mean length of utterance and syntactic complexity in the speech of mentally retarded' compared the MLU and syntactic complexity of typically growing children with that of mentally retarded individuals in the age range of 4 to 11 years in Kannada. 20 normal children in the age range of 4-11 years and 10 mentally retarded children with comparable mental age were studied. Her findings suggested that mentally retarded children used single word utterances most frequently and the mildly retarded group had higher MLU (both MLU (w) and MLU (m) than the moderately retarded group. The occurrence of different grammatical categories in both

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the normal and mentally retarded were as follows in a decreasing frequency of occurrence - nouns, verbs, pronouns, adjectives, adverbs, kinship terms, conjunction, negatives, quotatives, interrogatives, reduplicative and onomatopoeia.

Parker (2005) compared MLU (w) and MLU (m) scores of 40 language transcripts from typically-developing, English-speaking children between the ages of 3:0 and 3:10. Results indicated that MLU (m) and MLU (w) are almost perfectly correlated. This finding suggests that MLU (w) can be used as effectively as MLU (m) as a measurement of a child's gross language development.

Fewer Studies in Indian Languages

There have been very few studies of MLU in Indian languages. When we look at the Indian languages, we see two main language roots: those of Aryan origin and those of Dravidian origin. Aryan languages are used more as we move towards the north, and towards the south we see the Dravidian languages.

Konkani falls between the Aryan and the Dravidian types, and fits better into the Aryan group. Due to the tumultuous historical events, the Konkani community has fragmented and spread throughout the west coast of India and has not been studied much.

The present study aimed at establishing norms for MLU in Konkani speaking children in the age range of 3 to 5 years and to relate them to the acquisition of aspects of syntax in Konkani speaking children.

Borkar & Ghanekar (2004) give importance to the following aspects of syntax in Konkani - nouns (/na:m/), pronoun (/sarvna:m/), adjective (/vis^he:s^han/), PNG markers, (/vachan/,/ling/), verbs (/krija:pad/), adverbs (/krija:vis^he:s^han/), tenses (/ka:l/), affirmatives (/hajka:r/), negations (/n^hajka:r/), case markers (/ka:rak/). These aspects of the grammar of Konkani were explored and correlated with changes in MLU, in the current study.

Methodology

A. Subject Selection: Normal subjects in the age range of 3 to 5 years were selected with 10 subjects in the age range of 3-4 years and 10 in the age range of 4-5 years. In each age group, 5 girls and 5 boys who were native speakers of Konkani (Gomantaki dialect) were selected.

B. Material Selection: Picture description task was given to the subjects by using pictures depicting two to three events. Story narration and spontaneous speech were also elicited by asking simple questions.

C. Method of Data Collection: The data was collected after building rapport with the

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child and only when the child was comfortable with the investigator. For spontaneous speech,

1. Subjects were asked simple questions about general information pertaining to themselves such as, “what did you have for breakfast?”, “how do you come to school everyday?” etc.
2. Picture description task was used by employing pictures depicting 2-3 items, from the stories of primary school level. This was common to all the subjects in both the age ranges.

D. Recording of Speech Sample: The verbal responses obtained were recorded on a high fidelity tape recorder during investigator-child interaction. Positive reinforcement was given whenever necessary.

E. Analysis: The sample obtained was transcribed into IPA. Then mean length of utterance (MLU) was calculated in words and morphemes, using the following formula:

Number of morphemes/words
Total number of utterances.

The Linguistic Profile Test (Karanth 1984) was used as a guideline to select the grammatical structures for analysis. The ratio of grammatical forms like, nouns, plurals, tenses, PNG markers, case markers, transitives, intransitives, causatives, predicates, sentences, conjunctions, quotatives and comparatives for each subject was calculated.

Mean and standard deviation was calculated by using appropriate statistical procedures and independent sample t-test of significance was used to compare the MLU of the two age groups.

RESULTS AND DISCUSSION

MLU in Konkani:

Table 1.1: MLU in normal children (4 to 5 years)

SUBJECT	M/F	AGE	MLU(w)	MLU(m)
1	Male	4.11	2.84	3.8
2	Male	4.5	2.46	3.5
3	Male	4.3	2.9	3.56
4	Male	4.6	2.32	3.5

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5	Male	4.9	2.66	4.8
6	Female	4.5	2.98	4.22
7	Female	4.7	2.32	3.08
8	Female	4.5	3.4	4.26
9	Female	4.7	3.28	4.36
10	Female	4.4	2.92	3.9
MEAN	-	4.52	2.80	3.89
S.D	-	0.22	0.37	0.51

Table 1.1 shows the distribution of Mean Length of Utterance in words as well as in morphemes.

Subjects in the age group of 4 to 5 years showed mean MLU (w) of 2.80 and MLU (m) of 3.89.

Table 1.2 shows MLU in normal males and females (4 to 5 years)

Subject	M/F	Age	MLU (w)	MLU (m)	Subject	M/F	AGE	MLU (w)	MLU (m)
1	Male	4.11	2.84	3.8	1	Female	4.5	2.98	4.22
2	Male	4.5	2.46	3.5	2	Female	4.7	2.32	3.08
3	Male	4.3	2.9	3.56	3	Female	4.5	3.4	4.26
4	Male	4.6	2.32	3.5	4	Female	4.7	3.28	4.36
5	Male	4.9	2.66	4.8	5	Female	4.4	2.92	3.9
Mean	-	4.48	2.63	3.83	Mean	-	4.56	2.98	3.86
SD	-	0.30	0.24	0.55	SD	-	0.13	0.42	0.52

Table 1.2 shows the distribution of MLU in words as well as morphemes in normal males and females in the age range of 4 to 5 years. Males in this age group showed MLU (w) of 2.63 and MLU (m) of 3.83. Females in this age group showed mean MLU (w) of 2.98 and MLU (m) of 3.86.

Table 1.3: MLU in normal children (3 to 4 years)

SUBJECT	M/F	AGE	MLU(w)	MLU(m)
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1	Male	3.8	2.42	2.82
2	Male	3.5	2.34	2.98
3	Male	3.8	2.42	2.96
4	Male	3.8	2.16	2.82
5	Male	3.9	2.38	3.02
6	Female	3.10	2.62	3.16
7	Female	3.6	2.54	3.06
8	Female	3.8	2.32	2.74
9	Female	3.11	3.22	3.4
10	Female	3.9	2.38	2.94
MEAN	-	3.6	2.48	2.99
S.D	-	0.30	0.28	0.19

Table 1.3 shows the distribution of MLU in words as well as in morphemes in the normal children in the age range of 3 to 4 years.

Normal subjects in this age group showed the mean MLU (w) of 2.48 and mean MLU (m) of 2.99.

Table 1.4: MLU in normal males and females (3 to 4 years)

Subject	M/F	Age	MLU (w)	MLU (m)	Subject	M/F	AGE	MLU (w)	MLU (m)
1	Male	3.8	2.42	2.82	1	Female	3.10	2.62	3.16
2	Male	3.5	2.34	2.98	2	Female	3.6	2.54	3.06
3	Male	3.8	2.42	2.96	3	Female	3.8	2.32	2.74
4	Male	3.8	2.16	2.82	4	Female	3.11	3.22	3.4
5	Male	3.9	2.38	3.02	5	Female	3.9	2.38	2.94
Mean		3.76	2.34	2.92	Mean	-	3.50	2.61	3.06
S.D		0.15	0.10	0.38	S.D	-	0.37	0.35	0.24

Table 1.4 shows the distribution of MLU in words as well as morphemes in normal males and females in the age range of 3 to 4 years. Males in this age group showed MLU (w) of 2.34 and MLU (m) of 2.92. Females in this age group showed mean MLU (w) of 2.61 and MLU (m) of 3.06.

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Acquisition of Aspects of Syntax in Konkani speaking children

Table 2.1 shows the percentage of occurrence of different grammatical structures in morphemes in the age range of 4 to 5 years.

Subject/mean	% in Males	% in Female	Total % (m)
Nouns	30.3020	29.3420	29.82
Plurals	3.7120	2.6280	3.17
Tenses	18.3680	16.1560	17.26
PNG Markers	14.0900	12.4800	13.28
Case Markers	10.2660	7.3320	8.79
Transitives	8.9580	9.7040	9.33
Intransitives	8.4840	7.9280	8.20
Causatives	1.2360	1.1480	1.19
Predicates	13.2680	11.8520	12.56
Affirmatives	2.6820	0.9400	1.81
Interrogatives	0.2220	0.4720	0.34
Conjunctions	3.3820	3.8560	3.61
Quotatives	12.6080	15.1000	13.85
Comparative	0.2220	0.5660	0.39

Among the 14 grammatical structures selected for the study, nouns were the most frequently used structures whereas comparatives and interrogatives were the least frequently used structures.

The usage of a variety of grammatical structures was found to be higher in males as compared to females in most of the structures except for interrogatives, conjunctions, quotatives and comparatives where the females demonstrated better usage.

Table 2.2 shows the percentage of grammatical structures in morphemes in the age range of 3 to 4 years.

Subject/mean	% in Males	% in Female	Total % (m)
Nouns	33.42	32.54	32.98
Plurals	6.04	3.45	4.74
Tenses	22.98	16.08	19.53
PNG Markers	20.54	15.2	17.87

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Case Markers	9.57	7.87	8.72
Transitives	10.24	8.23	9.23
Intransitives	10.24	8.23	9.23
Causatives	0.96	0.75	0.85
Predicates	16.7	11.52	14.11
Affirmatives	1.43	1.3	1.36
Interrogatives	0.14	0.27	0.20
Conjunctions	4.85	4.64	4.75
Quotatives	15.74	12.06	13.9
Comparative	0.00	0.00	0.00

Among the 14 grammatical structures selected for the study, nouns were the most frequently used structures, interrogatives and causatives were the least used structures and there were no comparatives used in both males as well as females, in this age range.

Here, too the usage of a variety of grammatical structures was found to be higher in males as compared to females in most of the structures except for interrogatives, where females were found to be better.

Discussion

MLU (w) as well as MLU (m) was found to be higher in the children in the age range of 4 to 5 years than those in the age range of 3 to 4 years. Acquisition of different aspects of syntax was found to be directly proportional to the Mean Length of Utterance. Higher the MLU, higher was the percentage of usage of the grammatical forms. Nouns were found to be most widely used whereas; comparatives and interrogatives were the least used structures. In both the age groups, MLU in words as well as morphemes was found to be higher in females than males. Interestingly despite the higher MLU the range and variety of grammatical structures used by males was better than that by females, except on transitives, interrogatives and conjunctions in the age range of 4 to 5 years and interrogatives in the age group of 3 to 4 years.

Summary

The study aimed at determining the norms for Mean Length of Utterance (MLU) and for determining the frequency of usage of various grammatical structures with increase in MLU in Konkani speaking children. Two age groups were studied (i.e. children in the age range of 3-4 years and 4-5 years) with 10 subjects in each group. All the subjects came from a middle socio-economic background. The study was carried out by subjective

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evaluation. Speech sample was obtained through spontaneous speech, picture description and story telling tasks for both the age groups.

The analysis was made in terms of MLU in words as well as morphemes and percentage of grammatical structures by taking the Linguistic Profile Test as a guideline to select the grammatical structures.

Conclusions

1. The 4-5 year old subjects demonstrated average MLU(w) of 2.80 and MLU(m) of 3.89.
 2. The 3-4 year old subjects demonstrated average MLU (w) of 2.48 and MLU (m) of 2.99.
 3. When males and females were compared within the same age group, MLU in females was found to be higher than the males in terms of both words as well as morphemes.
 4. In both the age groups, nouns were found to be the most frequently used and comparatives and interrogatives were the least used grammatical structures though the percentage of usage of these structures varied across the two groups.
 5. In both the age groups, males scored better for usage of a variety of grammatical structures than females.
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Colophon

This study is a part and continuation of the dissertation by the first author (Dessai Rashmi Deepak), which was conducted as a part of Masters in Audiology and Speech Language Pathology program in Dr. M. V. Shetty College of Speech.

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