

## Linguistic Profile Test – Normative Data for Children in Grades VI to X (11+ Years – 15+ years)

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### Abstract

*In view of the near total absence of literature on language acquisition in older children, in the India context, this study focused on the collection of normative data for older school going children from Grades VI to X on the Linguistics Profile Test (LPT). One hundred and fifty children ranging in age from 11+ years to 15+ years were the subjects in the current study. There were 30 subjects in each age group. The mean and SD of each of the three sections (Phonology, Syntax and Semantics) of LPT was obtained. It was found that the mean scores gradually increased over years. The findings of this study are on line with the earlier studies on Hindi Speaking adults as well as children of same age group. The norms thus established may be used for evaluation and identification of delayed language acquisition in older children in Kannada.*

*Key words: LPT, Normative data, Children*

rehabilitating patients to their best possible level of functioning. To accomplish that goal, the best quality of speech-language services must be provided. The Speech-Language Pathologists must use language assessment programs that have proved to be efficacious, so that the Speech-Language Pathologists share with other professionals the goal of they can be reliably utilized by all clinicians.

The 1960's saw an enormous spurt in the influence of linguistics on Speech Pathology. An increasing awareness of the benefits that accrue in terms of an understanding of the disorder and the increase in precision of the assessment and remediation process led to an incorporation of linguistic theory and principles in the assessment and remediation of speech-language disorders. The why of assessment has shifted from differential diagnosis to establishment of norms for providing a basis for remedial procedures both descriptive and prescriptive (Karanth, 1995).

The current study aimed at collection and analysis of large scale normative data on LPT on older school going children between 11+ years to 15+ years an extension of a previous study (Suchithra & Karanth, 1990) on a group ranging in age from 6+ years to 10+ years.

### Method

**Subjects:** 30 children each from Grade VI (11+ years) to X (15+ years) were the subjects in the current study. These children were:

- 1) Healthy normal children with no physical or sensory disabilities.
- 2) Native speakers of Kannada.
- 3) Were studying in Kannada medium.
- 4) All the subjects belong to middle socio-economic status
- 5) As there was no other Indian Standardized Language Screening Test to screen language of children in grades VI to X (namely 11 years to 15 years), the scores of the upper most grade i.e. V grade on LPT (Suchithra M.G. & Karanth, 1990) which was already standardized was used as a cut off score and children who scored above the specified score (for grade V) were considered as subjects for the present study.

The subject details are given in Table 1.

Age Group	No. of subjects		Total
	Male	Female	
11+ years	17	13	30
12+ years	13	17	30
13+ years	15	15	30
14+ years	12	18	30
15+ years	10	20	30

Table 1: Age groups and the No. of Subjects in each age group

**Procedure**

The Linguistic Profile Test (LPT) was administered during the second term of the academic year. In the earlier studies (Karanth, 1984, Kudva, 1991) each subject was tested individually on all items of all subsections. The subsequent study (Suchithra & Karanth, 1990) focused on normative data for children in Grades I to V. The procedure of test administration for the present study which aimed at collecting normative data in the higher age groups i.e. children in grades VI to X (11+ years to 15+ years) was same as the earlier study except that the test items administered in groups of 15 in the previous study (Suchithra & Karanth, 1990) where as the test items were administered to group of 30 in the present study.

**Results**

The Mean and Standard Deviation of LPT scores (total scores) are given in Table 2.

Age Group	Mean Scores (Total Scores)	S.D.
11+ years	266.21	19.43
12+ years	279.67	8.10
13+ years	282.36	6.87
14+ years	286.60	5.58
15+ years	287.38	4.94

Table 2: Mean and S.D. of LPT Scores

The results indicate that the mean score ranged from 266.2 to 287.4. It is observed that the mean scores have increased gradually over years i.e. from 11+ years to 15+ years.

In mean scores and SD of the three sections of LPT, namely phonology, syntax and semantics are given in Table 3.

Age Group	Phonology		Syntax		Semantics		Total Scores	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
I (11+ yrs)	100	0.00	85.83	4.02	83.73	10.56	266.21	19.43
II (12+ yrs)	100	0.00	85.70	4.87	93.96	4.05	279.67	8.10
III (13+ yrs)	100	0.00	85.68	5.65	96.70	2.08	282.36	6.87
IV (14+ yrs)	100	0.00	86.40	5.51	100.00	0.00	286.60	5.58
V (15+ yrs)	100	0.00	87.41	4.92	100.00	0.00	287.38	4.94

Table 3: Means and Standard Deviations for Different Age Groups

Especially with a close observation at the Means and SD, the following aspects can be visualized. It is found that mean scores (please see Table 3) have gradually increased over years from 11+ years to 15+ years. Maximum scores have been obtained by children of 11+ years for phonology and 14+ years for semantics sections of LPT.

The maximum score is not obtained even by children of 15+ years (i.e. maximum age limit for this study) for syntax section. Further it is also observed that over years, as the mean scores increase the SD is found to decrease. This is indicative of the validity and reliability of the sample. The sample studied here is thus representing the population and can be used as norms during routine speech and language evaluation. The significance of difference (on Newman / Keul's Range test) between Means indicated no significant differences in higher age groups (i.e. 11+ to 15+ years). But, when compared with the younger age groups (i.e. 6+ - 10+ years) indicated significant differences at 0.05 levels.

It was already observed in the earlier study (Suchithra & Karanth, 1990) that the mean scores obtained for Phonology was significantly higher reaching the maximum limit (i.e. 100) by 6+ years. The same results are maintained throughout this study across age groups 11+ years to 15+ years.

The Mean scores obtained for the other two sections – Syntax and Semantics also increased gradually with age. The Mean scores in the Syntax section ranged from 85.8 to 87.4 (see Table 4). Thus, the maximum limit was not reached even at 15+ years. It is evident that the increase is very gradual over years (i.e. from 11+ years to 15+ years).

Sl. No.	Items	11+ years		12+ years		13+ years		14+ years		15+ years	
		X	SD	X	SD	X	SD	X	SD	X	SD
A.	Morphophonemic Structure	8.3	0.3	8.5	0.6	8.7	0.7	8.6	0.7	8.7	0.9
B.	Plural Forms	4.3	0.4	4.7	0.6	4.7	0.6	4.6	0.4	4.8	0.3
C.	Tenses	4.3	0.6	3.8	0.7	4.3	0.8	4.5	0.6	4.6	0.6
D.	PNG Markers	8.3	0.6	9.4	0.7	9.1	0.8	9.1	0.9	9.2	0.6
E.	Case Markers	8.7	0.7	8.7	0.6	8.6	1.1	8.3	1.2	8.8	0.8
F.	Transitive Intransitive & Causatives	7.6	0.8	8.2	0.8	8.3	1.1	8.5	0.9	8.2	0.9
G.	Sentence Types	9.0	0.5	9.3	1.3	9.4	1.1	9.2	1.1	9.0	0.9
H.	Predicates	9.4	0.3	9.5	0.8	9.4	1.1	9.4	1.5	9.2	0.9
I.	Conjunctives Comparatives & Quotatives	8.1	1.4	7.5	1.3	8.1	1.3	8.2	1.4	8.4	1.5
J.	Conditional Clauses	8.1	1.3	8.2	1.4	7.5	2.1	8.2	1.7	8.9	1.5
K.	Participial Constructions	7.9	1.5	8.0	1.7	7.2	1.8	8.3	1.3	8.3	1.3

Table 4: Mean scores and SD for different items of the Syntax section of LPT

The Mean scores of Index of sensitivity (A) was calculated for the present study as in the previous study (Suchithra & Karanth, 1990). The Mean scores of Index of Sensitivity obtained for different sub items of Syntax section of LPT for Different age groups are given in Table 5.

Sl. No.	Items	11+ years	12+ years	13+ years	14+ years	15+ years
A.	Morphophonemic Structure	0.90	0.93	0.93	0.93	0.93
B.	Plural Forms	0.95	0.95	0.97	0.97	0.98
C.	Tenses	0.82	0.84	0.91	0.94	0.95
D.	PNG Markers	0.86	0.96	0.92	0.96	0.95
E.	Case Markers	0.93	0.93	0.93	0.91	0.93
F.	Transitive Intransitive & Causatives	0.89	0.89	0.91	9.94	0.91
G.	Sentence Types	0.96	0.96	0.96	0.97	0.96
H.	Predicates	0.96	0.97	0.96	0.98	0.97
I.	Conjunctives Comparatives & Quotatives	0.94	0.93	0.88	0.88	0.89
J.	Conditional Clauses	0.83	0.88	0.82	0.91	0.94
K.	Participial Constructions	0.78	0.84	0.78	0.85	0.87
X		0.91	0.91	0.91	0.92	0.93

Table 5: Mean Scores of Index of Sensitivity (A) for different age groups

As seen from Table 5, it is evident that plurals were the most sensitive in all the five age groups studied here. The items of Predicates, Sentence types, Tenses, PNG markers were relatively more sensitive compared to other items. The sensitivity to predicates exhibits a constant and higher sensitivity throughout the 5 age groups studied (11+-15+ years). There is a steep rise in sensitivity to tenses at around 13+ years, after which a more gradual rise is noticed from 14+ years to 15+ years. The items Morphophonemic structures, case markers, Conditional clauses, Conjunctions, Comparatives and Quotatives exhibit a lower sensitivity

compared to other groups. The item of Participial construction exhibits lowest sensitivity. These findings are in line with the findings of previous study with younger age groups (6+ years – 10+ years). The Ranking of subcategories (items of Syntax section) based on sensitivity index is given in Table 6.

Rank	11+ yrs. Items	Rank	12+ yrs. Items	Rank	13+ yrs. Items	Rank	14+ yrs. Items	Rank	15+ yrs. Items
1.5	G & H	1	H	1	B	1	H	1	B
3	B	2.5	G & D	2.5	G & H	2.5	G & B	2	H
4	I	4	B	4.5	E & A	4	D	3	G
5	E	6	I & A & E	6	D	5.5	F & C	4.5	C & D
6	A	8	F	7.5	C & F	7	A	6	J
7	F	9	J	9	I	8.5	E & J	7.5	A & E
8	D	10	K & C	10	J	10	I	9	F
9	J			11	K	11	K	10	I
10	C							11	K
11	K								

Table 6: Ranking of subcategories (items of Syntax section) based on sensitivity index

The Mean scores and Standard deviation for different items of the Semantic section are given in Table 7. The Mean scores in the Semantic section ranged from 83.7 to 100. The maximum score i.e. 100 was scored by children of 14+ years.

Item No.	11+		12+		13+		14+		15+	
	X	SD	X	SD	X	SD	X	SD	X	SD
A.										
1.	5.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	5.0	0.0
2.	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0
3.	5.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	5.0	5.0
B.										
1.	20.0	0.0	20.0	0.0	20.0	0.0	20.0	0.0	20.0	0.0
2.	10.93	1.97	13.6	1.52	13.8	1.75	15.0	0.0	15.0	0.0
3.	4.70	1.04	4.7	0.83	5.0	0.0	5.0	0.0	5.0	0.0
4.	4.03	1.52	4.7	0.87	5.0	0.0	5.0	0.0	5.0	0.0
5.	2.96	1.74	3.0	1.56	5.0	0.0	5.0	0.0	5.0	0.0
6.	10.00	0.0	10.00	0.0	10.00	0.0	10.00	0.0	10.00	0.0
7.	3.68	1.99	4.8	0.6	5.0	0.0	5.0	0.0	5.0	0.0
8.	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0
9.	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0
10.	3.8	1.8	4.2	0.7	5.0	0.0	5.0	0.0	5.0	0.0
11.	3.3	1.9	4.3	1.0	5.0	0.0	5.0	0.0	5.0	0.0

Table 7: Mean and S.D. for different items of the Semantic Section of LPT

In the Semantic section, better performance is observed for all items under Section III-A Semantic Discrimination (viz. Colours, Furniture, and Body parts) – maximum scores have been obtained by children of 11+ years, the lowest age group in the present study. Under Section III-B Semantic Expression, better performance is observed for item Nos. 1, 6, 8 and 9 (i.e. Naming, Polar Questions, Paradigmatic relations, Syntagmatic relations respectively). Maximum scores have been obtained by children of 11+ years. The scores for the rest of the item Nos. 3, 4, 5, 7, 10 and 11 reaches maximum level at around 13+ years (viz., Synonyms, Antonyms, Homonyms, Semantic Anomaly, Semantic contiguity, Semantic similarity). For item No. 7 (i.e. Lexical category) maximum scores are obtained only by 14+ years.

### Discussion

The results of the studies on older children (Bohannon 19786, Scholl & Ryan, 1980) suggest that children gradually make judgements more and more like those of adults focusing attention on evaluating the properties of the sentence per se.

In a study on acquired language disorders (Karanth, Ahuja, Nagaraja, Pandit and Shivashankar 1990, 91) 100 normal literate and illiterate adults were evaluated on the Syntax section of LPT. It was found that for literate group the Mean index of sensitivity was 0.95 and

for illiterate group it was found to be 0.72 leading to the observation that literacy in itself is an important variable affecting grammaticality judgements. The Mean index of sensitivity is 0.93 for the 15+ years age group i.e. the highest age group in the present study (Karanth, Ahuja, Nagaraja, Pandit and Shivashankar 1990, 91) where the index in literate adults is 0.95.

The findings of the study (Sharma 1995) on a similar group (11+ years – 15+ years) on Hindi speaking population is in agreement with the findings of the current study with the Mean index of sensitivity of that study (Sharma 1995) being 0.96 for 15+ years. Thus, the overall findings of the present study also confirms the findings of the previous study (Karanth, 1984) that adult like sensitivity to grammar judgement is acquired by adolescence.

The findings of the present study support the earlier findings by Pereira (1984) who reported that accusative, infinitive constructions, relative clauses and complement clauses are acquired by older age group (i.e. not below 9 or 10 years of age).

The findings of studies by sociolinguists that accusative and infinitive constructions (represented by the Chomsky Model) are found only in very formal English and are not learnt in years between 5-11 years, but only in Secondary School (Pereira 1984) support the findings of the present study. Pereira (1984) also observed that the relative clauses with “whom” “whose” or “preposition are the product of mature writers. Complement clauses in subject position are also produced by older or abler children, and these constructions are typically not used by children before 9 to 10 years and many do not use them until they are in their third or fourth grade of secondary schooling.

The results are in agreement with the earlier study (Suchithra & Karanth 1990, Karanth & Suchithra 1993) that the emergence of grammatically judgement and literacy acquisition has a definite role in Metalinguistic awareness and skills such as grammaticality judgement and agrees with the notion reported in the above study that this has an important implication for agrammatic judgement in linguistic theory and interrelationship between metacognitive and metalinguistic abilities.

Scholes (1993) study on utterance acceptability criteria showed increased sensitivity to written presentation, concluding that written presentation enhances subject's sensitivity to correctness. Similar findings are reported in study by Miller (1993) and our earlier study by Karanth & Suchithra (1993). In the current study i.e. the children of age ranging from 11+ years to 15+ years have more exposure to written presentations and hence performance on judgement tasks have improved gradually. The results of the study by Kudva (1991) are on similar lines i.e. grammaticality judgement skills increase with age in childhood and are apparently enhanced by the acquisition of literacy, a consistently significant better performance was seen in school going children of comparable age.

Under semantic section, the scores for item No. 2 (furniture) under Semantic Discrimination III-A, the maximum scores have been obtained in the earlier age group in the previous study by Suchithra & Karanth (1990) and the same has been maintained throughout. The results of Hindi speaking population (Sharma 1995) is in agreement with the present study but in Sharma's study maximum score was obtained by the lowest age group itself i.e. 6+ years. Istomia (1963) and Johnson (1977) from their study report that even though among earlier adjectives used by children are 'colour' words – yet young children are notoriously bad at using colours appropriately. The results of their investigation support the result of the present study. For item No. 3 (body parts) Maximum score has been obtained in the present study even in the lowest age group studied i.e. 11+ years. In Sharma's (1995) study maximum score has been explained as a result of the constant use of English words (for names of body parts) in Hindi speaking population.

The results of sub-items III-B Semantic Expression are in close agreement with Sharma's (1995) study. For item Nos. 1, 4, 6, 7, 8, 9, 10 and 11 i.e. Naming, Antonyms, Polar questions, Semantic Contiguity and Semantic similarity respectively) – maximum score has been obtained by 14+ years in the current study and by 13+ years in Sharma's (1995) study.

## Conclusion

The normative data is useful as it gives a clear picture of individual linguistic profiles at various age levels. Norms are essential for comparing the performance of the patient with the various age levels and finding out the age level at the patient performs.

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