

## **Development of Morphophonemic Structures in Typically Developing Kannada Speaking Children of Age Range 4-8 Years**

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**Abstract**

Language is the most important aspect in the life of all being. We use language to express inner thoughts and emotions, make sense of complex and abstract thought, and also to learn how to communicate with others. Language acquisition is a hierarchical process which develops from birth to several years of life. Morphophonemic changes are phonological or sound modification that results when morphemes are placed together. The present study focuses on the development of morphophonemic structure among children who are native speakers of Kannada language. The study highlights the need to carry out more research in this area for better understanding of language acquisition among these children in order to develop both assessment and intervention programmes. Presently, the lack of acquisition data has hinged the development of any standardized tests in Kannada. Hence, the present study aims to explore morphophonemic structures in Kannada speaking typically developing children with the objective of analysis the data of among these children across 4-8 years. The result show that these structure start developing by 4years of age. Most importantly as age increases these structures acquisition also increases. By 7-8 years of age most of these structures develop completely. The study also discusses various studies supporting the results.

**Introduction**

Language is the most important aspect in the life of all beings. We use language to express inner thoughts and emotions, make sense of complex and abstract thought, and also to learn how to communicate with others. When we communicate with native speaker, we

need a good language and pronunciation. So that in English we know about linguistic and its process of learning. Linguistic of morphology is the study of word structure. It seeks to characterize the system of categories and rules involved in word formation and interpretation. When we talk about morphology, it related with Morphophonology. Morphophonology is a branch of linguistics which studies about the phonological structure of morphemes, the alternative series which serve a morphological function and the combinatory phonic modifications of morphemes which happen when they are combined. Morphophonemics may be defined as analysis and classification of the phonological factors which affect the pronunciation of morphemes or, correspondingly, the morphological factors which affect the appearance of phonemes. In Morphophonemics, we basically study interaction between morphological and phonological processes and how they these factors affect each other. Morphophonemic change usually occurs at morpheme boundaries and it involves sounds that are associated with separate phonemes.

Morphophonemic changes are phonological or sound modifications that result when morphemes are placed together. For example, electric changes to electricity (Ingram, 1947). Several rules for morphophonemic change are learned gradually throughout elementary school. One rule, usually learned by first grade, pertains to the regular plural –s (Berko, 1958; Menyuk, 1964). The 5- to 6-year-old has the rule for /s/ and /z/ but not for /Iz/ (Berko, 1958). Will recall that /s/ is used with voiceless and /z/ with voiced ending consonants. In contrast, /z/ is used on words that end with a sibilant sound, such as /s/, /z/, /sh/, and /z/. Nouns ending in -sk and -st clusters may be difficult for some students to pluralize, even in third grade (Stephen M. Koziol, 1973). During the school years the child also learns the rules for vowel shifting. For example, the /ai/ sound is divine changes to an /I/ in divinity. Knowledge of vowel shifting is gained only gradually. The 5-year-old child does not understand the rules (Arlene I. Moskowitz, 1973). It is not until age 17 that most children learn to apply all the rules (Myerson, 1976).

At present very little is certain about children's development of the adult system of phonological representation. Generative theory implies that when Children's speech resembles adult speech, children must be forming and using segmental representation (Noam Chomsky & Morris Halle, 1968; Schane, 1973), but how abstract children's segments are at any stage is unclear.

Chomsky, 1970 has shown that children are still learning vowel shifts a morphophonemic change for such cases as evade, evasive, and evasion into their adolescent years. Segment changes appear, however, even in inflected forms used by pre-school children. For example in (Berko, 1958), children used [s] for the plural morpheme affixed to word forms ending in a voiceless consonants (e.g. bikes) and [z] for word-forms ending in voiced consonants. Berko's data supplies little evidence concerning children's abilities to make segment changes in base morphemes, however on nonsense items where such changes might have occurred (\*Bing and \*gling), only 4 of 80. Children changed the vowel to form a

past tense (e.g., [ran] or Eg1ae9d]). Using real words, seventeen first graders, but no nursery, schoolers changed ring to rang. Whether children represent-forms such as ring and rang and get and getting as separate lexical items or whether they are aware, of the semantic and/or phonological relationships has not yet been determined. Some writers have suggested that children's segments may be closer to the phonetic level than the morphophonemic level hypothesized for adults--for example, they may at some point represent the various positional-allomorphs of /t/ (see example 2 above) as categorically distinct segments (Chomsky, 1970; Sayin, 1972).

Research on language acquisition in India has been carried out mostly through thesis and dissertation (Sucharitha, Sujatha and Karanth, 1995; Monteiro & Kumaraswamy, 2013; Nitha & Rao, 2010; Radhika & Kumaraswamy, 2010; Rajalakshmi & Rao, 2003; Ranjan & Rao, 2005; Shastry & Rao, 2011). Large scale data in any one language for different age range is unavailable. Hence it is difficult to visualize and describe language acquisition in many Indian languages. Literature review in different Indian languages shows that even though several morphophonemic structures are assessed in typically developing children, few are limited studies were done on morphophonemic aspects in Kannada language.

Kumaraswamy (2019) investigated descriptive analysis of language in Kannada speaking children with Intellectual disability. The result revealed that the usage of enunciative vowel (100%), glide insertion (30%), glide reduction (90%), vowel deletion (75%), consonant cluster reduction (70%) and addition of clusters (90%) in typically developing group of 4-6 years and in subjects with intellectual disability group it can be seen that only enunciative vowels (100%), glide insertion (57%), glide reduction (33%), vowel deletion (67%), consonant cluster reduction (47%), stop insertions (61%), consonant substitution (33%) were used by the subjects. Sruthy, Gupta and Kumaraswamy (2018) suggested that acquisition of morphophonemic structures in Malayalam speaking children with intellectual disability showed poorer performance as compared to typically developing children.

Subba Rao, 1995 evaluated development of Kannada language in 4-6 year old children with mental retardation matched on mental age. The study noted delayed and deviance in development of several language structures. In morphophonemic section, normal (4-5 years and 5-6 years group) showed four (enunciative vowel, glide insertion, vowel deletion and consonant cluster reduction) out of eight in their samples. Subjects with mental retardation of 4-5 years lower mental age group performed better than higher mental age (5-6 years). When both groups were compared, only enunciated vowel structures were found in both the groups in equal percentage. Some structures like glide insertion were found only in lower mental age group.

## **Need for the Study**

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The studies reported are more of western studies. In India researches on language acquisition has been done through thesis and dissertation (Sucharitha, Sujatha and Karanth, 1995; Monteiro & Kumaraswamy, 2013; Nitha & Rao, 2010; Radhika & Kumaraswamy, 2010; Rajalakshmi & Rao, 2003; Ranjan & Rao, 2005; Shastry & Rao, 2011). Large scale data in any one language for different age range is unavailable. Hence it is difficult to visualize and describe language acquisition in many Indian languages. Literature review in different Indian languages shows that even though several morphophonemic structures are assessed in typically developing children, few are limited studies were done on morphophonemic aspects in Kannada language. Hence the present study was taken to investigate the development of morphophonemic structures in Kannada.

### **Aim of the Study**

The development of morphophonemic structures in typically developing Kannada speaking children in the age range of 4-8 years.

### **Objectives of the Study**

1. Keeping the current situation review in focus the present study focuses to obtain and analyze the comprehensive language data using natural spontaneous speech elicitation module.
2. The data in Indian language will expand the existing knowledge of language development in typically developing children.
3. Will help us verify the data veracity across linguistic and cultural group.

### **Method**

#### **Participants:**

*Group-A:* 20 Kannada speaking children of aged 4-5 years (10 Male; 10 Female).

*Group-B:* 20 Kannada speaking children of aged 5-6 years (10 Male; 10 Female).

*Group-C:* 20 Kannada speaking children of aged 6-7 years (10 Male; 10 Female).

*Group-D:* 20 Kannada speaking children of aged 7-8 years (10 Male; 10 Female).

**Research Design:** Krushkal Willis test and Mann Whitney test was used.

**Materials:** Linguistic Profile test in Kannada (Karanth, 1995)

**Procedure:** Informed consent was obtained from the participants of all the groups. Each participant was tested individually in a noise free room. Data was collected using natural spontaneous speech elicitation module and picture description task.

**Scoring:** A score of '1' was assigned for each correct response. Score of '0' was assigned for each incorrect response.

### **Results and Discussion**

The data obtained were subjected to statistical analysis using SPSS-17 software. Statistical test used were Krushkal Willis test. The results of the present study are presented below:

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**Table 1: The results for enunciative vowels across age**

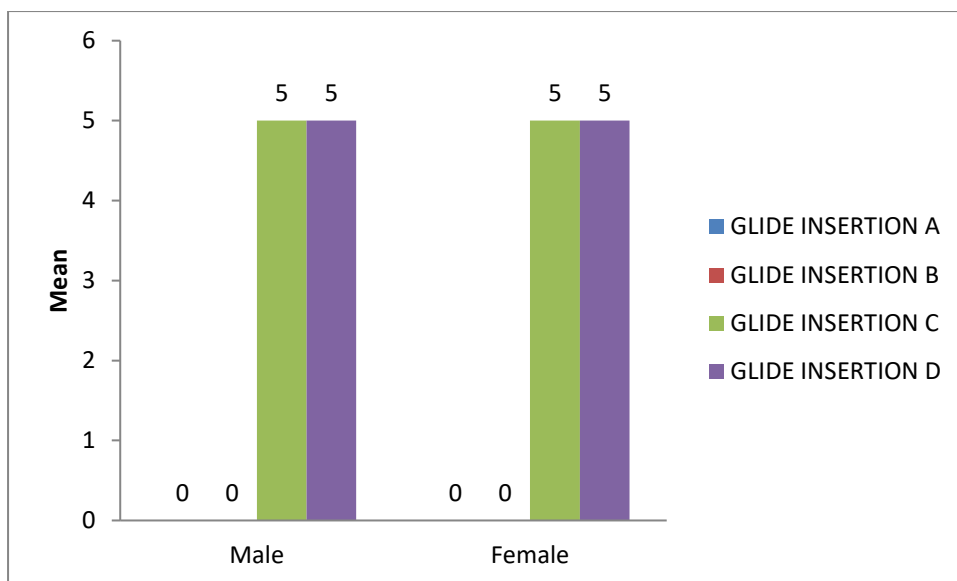
<b>GENDER</b>	<b>GROUP</b>	<b>NUMBER</b>	<b>MEAN</b>	<b>SD</b>
MALE	A	10	5.00	.00
	B	10	5.00	.00
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	5.00	.00
	B	10	5.00	.00
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 1, performance of enunciative vowels across age indicated mean = 5.00; SD= .00. The performance of enunciative vowels across age was not statistically significant at 0.05 level of significance.

**Table 2: The results for glide insertion across age.**

<b>GENDER</b>	<b>GROUP</b>	<b>NUMBER</b>	<b>MEAN</b>	<b>SD</b>
MALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 2, performance of male group A and B for glide insertion (M=.00, SD= .00) and performance of male group C and D for glide insertion (M= 5.00, SD= .00). The performance of female group A and B for glide insertion (M = .00, SD=.00) and performance of female group C and D for glide insertion (M= 5.00, SD=.00). No gender difference was seen across the age for glide insertion.



**Fig 1: Performance across age for glide insertion.**

Results in table 2 and fig1: indicates that, the group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD =.00 for males. The group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD =.00 for females. The performance across the groups A, B and C, D indicated significant differences at 0.05 levels. The groups A, B of males and females performed poorly on enunciative vowels in comparison with the groups C, D of males and females.

**Table 3: The results for glide reduction across age.**

GENDER	GROUP	NUMBER	MEAN	SD
MALE	A	10	.00	.00
	B	10	4.00	2.11
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	1.00	2.11
	B	10	4.00	2.11
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 3, Performance of group A (M= .00, SD=.00); group B (M= 4.00, SD= 2.11) and group C, D (M=5.00, SD= .00) for glide reduction in males. Performance of group A (M= 1.00, SD=2.11); group B (M= 4.00, SD= 2.11) and group C, D (M=5.00, SD= .00) for glide reduction in females. The performance of group C and D was more for glide reduction in comparison with group A and B.

**Table 4: The results for vowel deletion across age**

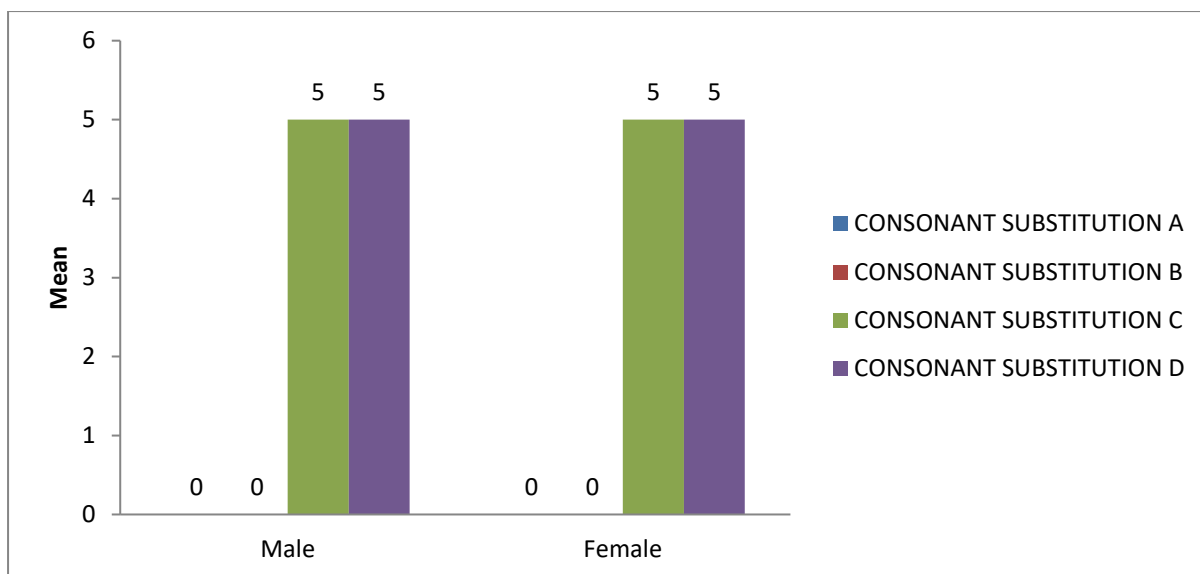
<b>GENDER</b>	<b>GROUP</b>	<b>NUMBER</b>	<b>MEAN</b>	<b>SD</b>
MALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 4, performance of male group A and B for vowel deletion (M =.00, SD = .00) and performance of male group C and D for vowel deletion (M = 5.00, SD = .00) for the males. The performance of female group A and B for vowel deletion (M = .00, SD =.00) and performance of female group C and D for vowel deletion (M= 5.00, SD=.00) for females. The performance of group C and D was more for vowel deletion in comparison with group A and B.

**Table 5: The results for consonant substitution across age**

<b>GENDER</b>	<b>GROUP</b>	<b>NUMBER</b>	<b>MEAN</b>	<b>SD</b>
MALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 5, performance of male group A and B for consonant substitution (M = .00, SD = .00) and performance of male group C and D for consonant substitution (M = 5.00, SD = .00). The performance of female group A and B for consonant substitution (M = .00, SD =.00) and performance of female group C and D for consonant substitution (M = 5.00, S =.00). The performance of group C and D was more for consonant substitution in comparison with group A and B.



**Fig 2: Performance across age for consonant substitution**

Results in table 5 and fig 2: indicates that, the group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD= .00 for males. The group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD= .00 for females. The performance across the groups A, B and C, D indicated significant differences at 0.05 levels of significance. The groups A, B of males and female performed poorly on consonant substitution in comparison with the groups C, D of males and females.

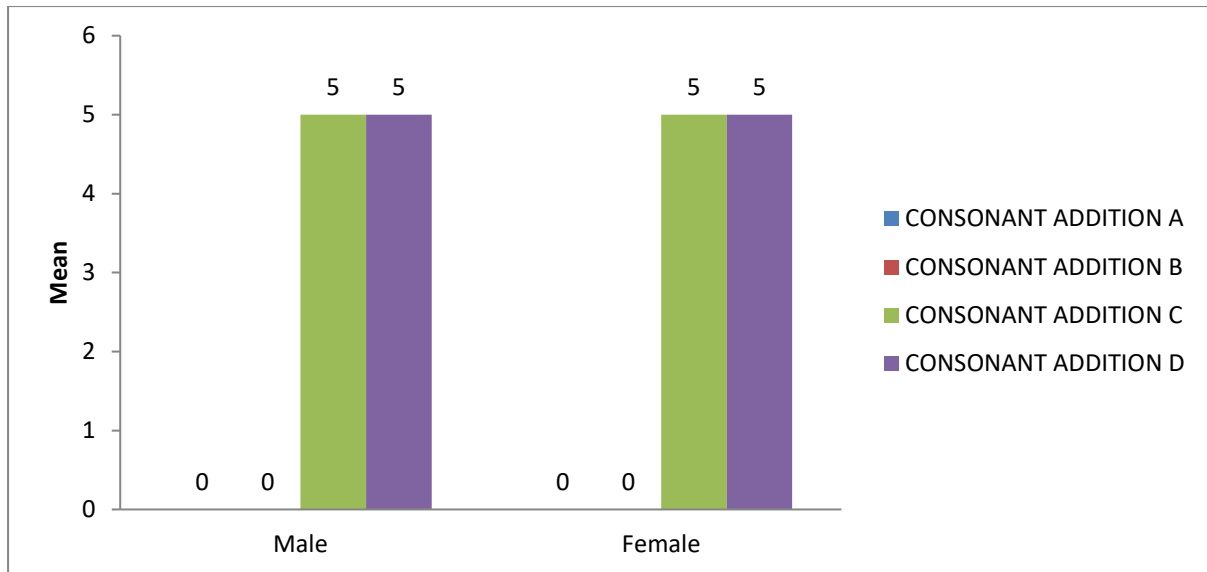
**Table 6: The results for consonant addition across age**

GENDER	GROUP	NUMBER	MEAN	SD
MALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00
FEMALE	A	10	.00	.00
	B	10	.00	.00
	C	10	5.00	.00
	D	10	5.00	.00

As shown in table: 6, performance of male group A and B for consonant addition (M =.00, SD = .00) and performance of male group C and D for consonant addition (M = 5.00, SD = .00). The performance of female group A and B for consonant addition (M = .00, SD =.00) and performance of female group C and D for consonant addition (M = 5.00, SD =.00).



The performance of group C and D was more for consonant addition in comparison with group A and B.



**Fig 3: Performance across age for consonant addition**

Results in table 6 and fig 3: indicates that, the group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD= .00 for males. The group A and B had mean value of .00, SD =.00 and the group C and D had mean value of 5.00, SD= .00 for females. The performance across the groups A, B and C, D indicated significant differences at 0.05 levels of significance. The groups A, B of males and females performed poorly on consonant addition in comparison with the groups C, D of males and females.

### Conclusion

Present study investigated the acquisition of morphophonemic structures across the age and gender. The analysis of speech samples revealed that there was a significant difference in the acquisition of morphophonemic structures across the age with the exception of Enunciative vowels. These results were supported by the study done by Kumaraswamy, (2018). It has been found that Enunciative vowels were used by the age of 4 years. The study also revealed that there was a significant difference in the acquisition of other morphophonemic aspects such as glide insertion, glide reduction, vowel deletion, consonant substitution and consonant addition across the age. Glide insertion were used by the age of 6years. Glide reduction were used by the age of 5 years. Vowel deletion was used by the age of 6 years. Consonant substitutions were used by the age of 6 years and consonant additions were used by the age of 6 years. The study also compared the results across the gender, and it was found to be no significant difference across the gender for the acquisition of morphophonemic structures.

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