Relationship between Morphology and Reading in Kannada

Kuppuraj, S., Ph.D. Candidate
Abhishek, B. P., Ph.D. Candidate
Prema K. S. Rao., Ph.D.

==

The state of reading research today, more than ever before, is bringing us closer to an understanding of the cognitive processes that underlie learning to read (Snowling & Hulme, 2005). Reading emerges from child's oral language. Oral language is important for reading, and it continues to serve reading development (Hiebert, Pearson, Taylor, Richardson, & Paris 1998). Hiebert et al., (1998) quoted that, to comprehend decoded text the readers need to extract the meaning (semantics) and structure (syntax) of spoken language. In addition, children who exhibit reading difficulty generally lack the ability to process and manipulate speech sounds, and therefore, the link among oral language, phonological skills and reading development appear to have been well established (Sonali & Snowling, 2005).

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   397

Phonological awareness and reading

Majority of the research in early reading has been reported from the Western countries. Consequently, the language that was studied extensively was English that emphasize the significant contribution of phonological sensitivity to early reading skills. Phonological awareness (term used alternative to "phonological sensitivity" in the present paper) refers to the broad range of skills in the awareness and manipulation of sound structures at the syllable, onset/rime and phonemic level (e.g. counting of syllables, rhyming and isolating initial phonemes). Phonological awareness has been found to influence early reading in English that has alphabetic script (Ehri, 1999; Lonigan, Burgess, Anthony, & Barker, 1998; Wagner, Torgesen, & Rashotte, 1994; Wood & Terrell, 1998).

Recent evidence from studies by Burgess & Lonigan (1998), indicate that phonological sensitivity and reading are reciprocally related. That is, phonological sensitivity facilitates the development of early reading and the vice versa. Study by Lonigan et al., (1998) revealed that phonological sensitivity can be assessed in young preschool children and that lower levels of phonological sensitivity may serve as developmental precursors to higher levels of phonological sensitivity as the child develops.

Influence of language and script structure on reading acquisition

The influence of language and script structure on reading acquisition and reading disorders was examined by researchers who examined children from non-English speaking countries. There was convincing evidence to state that the nature of script (transparency or opaqueness) does play a role in reading acquisition (See orthographic depth Hypothesis by Katz & Frost, 1992). The hypothesis postulates that learning to read a transparent orthography such as German (Wimmer & Hummer, 1990), Greek (Goswami, Porpodas, & Wheelwright, 1997), Italian (Thorstad, 1991), Spanish (Goswami, Gombert, & De Barrera, 1998), Turkish (Öney & Durgunoglu, 1997), or Welsh (Ellis & Hooper, 2001) is easier than learning to read a language that is orthographically opaque such as French or English (Goswami, Gombert, & De Barrera, 1998; Landerl, Wimmer, & Frith, 1997).

The script that has direct connection between orthography and phonology is considered to be transparent while that with lesser connection between these two levels is considered opaque.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada 398

Alphabetical languages like English and Portuguese need letter mapping while reading, where every letter has to get converted into its respective sound. In alpha-syllabic languages, the mapping happens at syllable level while reading.

The alpha-syllabic languages are a group of orthographies that represent sounds at the level of the syllable but have distinctive features to indicate sub-syllabic information (Bright, 1996). Kannada, a south Indian Dravidian language, is a typical example of alpha-syllabic orthography. In alpha-syllabary, the basic unit of the orthographic symbol is the Akshara. The Akshara usually maps to phonology at the level of the syllable. Linguistic features of the alpha-syllabaries suggest that subtle differences exist in sound-to-symbol mapping when compared with the alphabetic and logographic orthographies since the mapping units are bigger in Kannada compared to English.

The logographic script as in Chinese has even bigger level of mapping unit compared to letter and syllabic mapping. Current evidence indicates that irrespective of whether it is the matching of phonemes to letters (as in alphabetic orthographies like English and Spanish) or the linking of morphemes to characters (as in logographic orthographies like Chinese), reading acquisition depends on becoming skilled with sound and symbol mapping. Further, the degree of consistency in the sound and symbol mapping facilitates or slows down reading acquisition. Children learning to read transparent, consistent alphabetic orthographies, acquire reading more rapidly than children learning to read in the more opaque, orthographically inconsistent languages like Portuguese and English (Seymour, Aro & Erskine, 2003). However, the type of cognitive processes relied upon when mapping phonemes to letters can be expected to differ from the mapping processes for morphemes and characters (Ellis, 1993).

Role of Morphological Knowledge

In character reading, as in languages like Kannada for example, morphological knowledge may play a more crucial role when compared to letter reading (McBride-Chang, Shu, Zhou, Wat, & Wagner, 2003). As the mapping unit changes from smaller to bigger units (alphabetic as in English, alpha syllabic as in Kannada to morphemes as in Chinese), the significance of phonological awareness (sensitivity) for reading acquisition is questioned by many investigators.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   399

Studies on Indian languages like Kannada, Hindi and Oriya report that phonemic awareness is not so crucial in learning to read (Karanth & Prakash, 1996; Prakash, 1987; 1994; 1999; Prakash, Rekha, Nigam, & Karanth, 1993; Prema, 1998). McBride-Chang, Cho, Liu, Wagner, Shu, Zhou et al., (2005) state that phonological awareness is important in reading in English and French, but morphological awareness is important to learn to read Korean and Chinese script that are morphemic in nature. The significance of morphological sensitivity over phonological sensitivity has been studied and reported in literature over couple of decades.

Morphological awareness and reading

Studies that investigated beyond the alphabetical scripts resulted in growing evidence on significance of morphological awareness to reading. Morphological awareness is the awareness of words' morphemic structure and the ability to reflect on and manipulate that structure (Carlisle, 1995). In order to examine morphological awareness, majority of studies have considered derivational morphology and inflectional morphology that are linguistically distinct from each other (for an overview see Bybee, 1985, 1988, 1995). Derivational morphology concerns the generation of distinct words from a base morpheme across different grammatical categories. For example, *darkness,* and *darken* all derive from a single base morpheme *dark*. Inflectional morphology is concerned with the systematic marking of grammatical information on a word stem. For example, nouns may have distinct case forms; adjectives may agree with the nouns they modify; and verbs may have distinct forms for tense, aspect, mood, voice, and valence, as well as number, person, and gender agreement. In an inflectional expression, semantic units are bound into a single word in the form of affixes to a stem (e.g. *looked*) or in the form of a change in the stem itself (e.g. *saw*). Unlike derivations, inflections are morphemes that do not change the class of the word they are affixed to and generally can be added to every word within the same grammatical class. Therefore, for manipulation of morphemes, such morphological awareness either at implicit or at explicit levels is mandatory for reading acquisition.

Bellugi and Brown (1964), Brown (1973), and Miller (1981) studied the development of morphemes in English language by children at different age. At around two years the child is expected to acquire inflectional morphemes and at the age of four he is expected to begin

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   400

acquiring derivational morphemes. The morphology develops as the vocabulary increases, with both morphological knowledge and vocabulary development mutually facilitating each other.

Devaki (1983) studied morphological development in Kannada language and reported that development of different types of morphemes in Kannada is complete by the age of seven years.

Study by Karanth and Suchitra, (1993) and Scholes, (1993) revealed that school going children become increasingly proficient in identifying grammatical inaccuracies from Grade I through VII. Carlisle (1995) conducted a longitudinal study which followed children from kindergarten till Grade II and found that first-grade morphological awareness made a significant contribution to later reading achievement. With regard to spelling in the early elementary years, Verhoeven and Perfetti (2003), state that progress in reading acquisition requires gaining knowledge of morphemes as abstract linguistic units. They also state that the relationship between awareness of morphology and progress in reading acquisition can also be seen as reciprocal and mutually facilitative in that morphological awareness develops as a consequence of reading instruction. Studies of adults and older children have demonstrated that morphological knowledge plays a role in reading complex words (e.g. Elbro, 1990; Fowler & Liberman, 1995; Elbro & Arnbak, 1996; Nagy, Berninger, & Abbott, 2006) as well as in spelling and reading comprehension. Nunes, Bryant, and Bindman (2006) found that six-year old children's inflectional spellings predicted their morphological awareness performance at the ages of seven and eight. In the alphabetical language like English research has already highlighted the predominant role of derivational morphological awareness to reading (E.g. Venezky, Jastrzembski & Lucas, 1980; Sowell &Yanigahara, 1989; Massaro, Taylor, Stahl & Nagy, 2006; Balota, Yap, Cortese, Hutchison, Kessler, Loftis, et al. 2007 and Matthews, 2007).

Nagy, Berninger, and Abbott (2006), using structural equation modeling evaluated the contribution of morphological awareness, phonological memory, and phonological decoding to reading comprehension, reading vocabulary, spelling, and accuracy and rate of decoding morphologically complex words for Grade IV and V students, Grade VI and VII students, and Grade VIII and IX students. Morphological awareness made a significant unique contribution to reading comprehension, reading vocabulary, and spelling for all the 3 groups, to all the measures of decoding rate for the Grades VIII/ IX students, and to some measures of decoding accuracy

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   401

for the Grade IV/V students. Morphological awareness also made a significant contribution to reading comprehension above and beyond that of reading vocabulary for all the 3 groups. Casalis, Colé, and Sopo (2004) studied the phonological process in dyslexics. Casalis' and colleagues reported that the deficit in the phonological paradigm is compensated by intact morphological paradigm in these dyslexics, thus enabling them to read.

In addition to these and other reports on the role of morphology in reading complex words (See study by Elbro, 1990; Elbro & Arnbak 1996 and supporting studies), some cross-sectional research (Carlisle, 1995; Singson, Mahony, & Mann, 2000) indicated that the influence of morphological awareness on reading increases as reading becomes more sophisticated. This increase is logically predicted by models of reading development that include a shift in emphasis from phonological to orthographic and morphological information over development (e.g. Ehri, 1999; Seymour, 1999). Other longitudinal studies indicate stable contributions of morphological awareness over time (Deacon & Kirby, 2004).

There is similar but more limited evidence for the connection between morphological awareness and reading in French, a transparent orthographic language. Plaza and Cohen (2003, 2004) studied French language and reported that morphological awareness in the first grade determined a significant portion of children's reading and spelling ability that year and of their spelling one year later, even after controlling for phonological awareness and naming speed.

The hypothesis that morphological awareness contributes to reading is further supported by research demonstrating its role across a range of alphabetic and nonalphabetic orthographies (e.g., Abu-Rabia, Share, & Mansour, 2003; Ku & Anderson, 2003; McBride-Chang et al., 2003; McBride-Chang, Cho et al., 2005; for parallel research on spelling, see Levin, Ravid, & Rappaport, 1999). In their comprehensive study, McBride-Chang et al. (2003) reported that morphological awareness was related to Chinese character recognition in the second grade. This link survived controls for age, phonological awareness, naming speed, speed of processing, and vocabulary. This research bolsters the conclusion that morphological awareness has an independent role in the reading development of monolingual children. Relationship between morphological knowledge and vocabulary development has already been established in English by Emden and Harrington (2007). Bowers, Kirby and Deacon (2010), studied the vocabulary development in two groups, one of them receiving morphological instructions and the other not

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   402

receiving it. The authors concluded that the group that received morphological training tends to learn vocabulary faster compare to the group that did not receive formal instruction on explicit morphology.

Review of studies suggest that there are evidences towards the role of morphological awareness in the acquisition of reading, reading complex words, reading at higher grades although the details of the developmental pattern of its contribution is not very clear. The existing studies link morphological knowledge and vocabulary development (oral language) in alphabetical language and also in other alpha-syllabic languages. However the direct relation between morphological sensitivity and reading development is yet to be derived for Dravidian alpha syllabic language, Kannada.

The need for the present study is justified by the lack of studies on examining relationship between morphological sensitivity to reading development in Kannada. The present study uses a reading task along with inflectional/derivational morphologies in sentence completion and priming task through grades IV, V and VI in order to find out the empirical relation between morphological sensitivity and reading. Thus the aim of the present study is to examine explicit morphological knowledge of children using sentence completion task through grades IV, V and VI. The study also aims to examine child's implicit awareness of morphology using morphological priming task through grades IV, V and VI and evaluate the relation across tasks. The study intends to trace the development in morphological knowledge as reading performance increases and report the correlation between morphological knowledge and literacy.

Method

Participants

Ten children each were selected from Grade IV, V and VI studying in a Kannada medium school in Mysore city. All the participants were administered the WHO Ten Disability questionnaire (Singhi, Kumar, Malhi, & Kumar, 2007) to screen for developmental disabilities. The participants did not have any academic difficulties as informed by their teachers.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   403

Material

Word reading task

Reading ability of the participants was examined using 50 words selected from Frame Work for Testing Kannada Reading on the Bases of Automaticity, Rules of Orthography, and Sequential Processing (Purushotama, 1986). (See Appendix for 50 words used in the present study).

Experiment 1 (Sentence completion task)

The participants were given sentence completion task in which they were asked to complete a set of 15 sentences each by choosing either inflectional and/or derivational morphemes suitable to the context (see Appendix for sample sentences). A sample response form is given in Appendix. (Sentence completion task has been used frequently in literature to examine explicit morphological skills of participant (e.g. Carlisle, 1995; Fowler & Liberman, 1995).

E.g. Inflectional sentence completion: Rama… bana ("na" a possessive inflectional marker to be inserted)

E.g. Derivational sentence completion: avanubudhi….. ("vantha" to be inserted)

Experiment II (Priming task)

Priming task was designed with 15 stimuli each for inflectional and derivational morphemes. The prime appeared on the top of the screen for duration of 500 milliseconds following the target which was aligned at the center and appeared for duration of 1000 milliseconds. The prime was a bound morpheme and the target was root word. The participants were required to judge whether the bound morpheme with the root word is appropriate or inappropriate (lexical decision task). He/she has to press '0' on the keyboard if the bound morpheme is judged inappropriate with that root and '1' if the bound morpheme is judged appropriate with the word (See Appendix for test materials used).

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   404

Procedure

a) Word reading task: The Word reading test was administered as individual task. Words were typed using Baraha in Kannada, with 14 fonts, black colour and printed on A4 sheet. Each participant read the words and the responses were noted.

b) The experiment I was a group task. All the 10 participants from a class were given Sentence completion task in which they were instructed to complete the given sentences by choosing the correct morphemes from the list of options.

c) In experiment II, each participant was tested on a priming task individually and the Reaction Time (RT) and accuracy of responses were recorded.

d) Testing was carried out in a quiet environment.

Scoring and analysis of data

On the word reading task, Children were asked to read and each correct response was given the score of 'one' and words those were either read with errors or incorrectly are given score of 'zero'.

Binary scoring system was followed for responses obtained in Experiment 1.A score of 'one' was given when the participant had used correct inflectional/derivational morpheme to fill the blank. A score of 'zero' was given when inappropriate morphemes were used to fill the blanks. Total score for each participant was computed for a maximum of 15 each for inflectional and derivational morphemes.

Reaction Time for the target responses of all the participants was recorded in Experiment II.The reaction time taken by the participants to judge the word as correct or incorrect was noted using DMDX software in milliseconds. Incorrect responses were eliminated from scoring.

Results

Results were analyzed for scores on Word reading task, sentence completion task (Experiment I) and priming task (Experiment II). Descriptive statistics were used to find out the average scores on this 50 word reading task across grades IV, V and VI. Average of correct

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   405

responses for Grade IV was 39, Grade V was 41 and Grade VI was 46, showing a steady increase in the performance.

i) Explicit Inflectional morphology

The results of sentence completion task (Experiment 1) is described in Table 1for all the three grades respectively (IV, V and VI). Descriptive statistics was used to find out the average scores on sentence completion task. Table 1 show that the mean scores for inflectional morphemes for a maximum of 15 sentences for Grade IV is 6.8, Grade V is 8.1 and Grade VI is 8.7. The increase in mean scores is seen from Grade IV to Grade VI. While there was an increase in the mean score by 2.7 for explicit inflectional morphological skills between Grade IV and Grade V, that between Grade V and Grade VI was only 0.7 indicating rapidity in the acquisition of inflectional morphological skill, yet being only 50% of the maximum score by Grade VI suggesting that the skill is not completely achieved (Figure 1).

ii) Explicit Derivational morphology

The mean scores for sentence completion task with derivational morphemes also showed consistent improvement across Grades IV (5.1), V (6.2) and VI (7.4). The increase in mean score from Grade IV to Grade V was 1.1and that from Grade V to Grade VI was 1.2. The performance of children on inflectional and derivational morphemes showed a consistent developmental trend across the three grades. However, the development for inflectional morphemes was relatively better across the grades than for derivational morphemes suggesting that inflectional morphemes are acquired earlier to derivational morphemes.

Table 1. Mean Scores on Inflection and Derivational Morphemes across Grades

Grades Type of morphemes	Grades					
	IV Inflection	IV Derivation	V Inflection	V Derivation	VI Inflection	VI Derivation
Mean scores	6.8/15	5.1/15	8.1/15	6.2/15	8.7/15	7.4/15

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   406

iii) Implicit morphological knowledge task

The priming task required the participant to judge the sentence as correct or incorrect. The reaction time for judgment was measured using the DMDX software. The mean reaction time for Grade IV was 2286.53 milliseconds, Grade V was 1833.62 milliseconds and Grade VI was 1759.66 milliseconds.
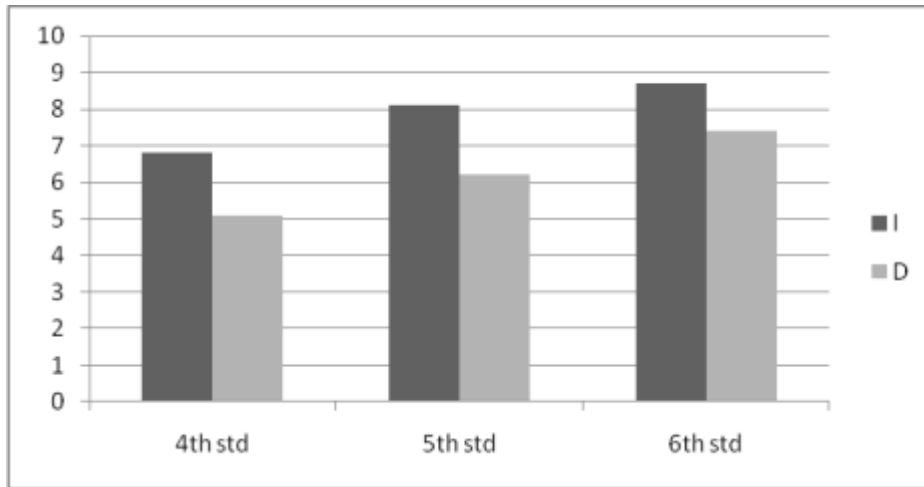
Figure 1: Comparison of Performance across Grades on Inflectional and Derivational Morphemes using sentence completion task. X-axis representing Grades and Y-axis representing average of correct responses on 15 sentence completion task. I- sentence completion using inflectional morphemes, D- sentence completion using derivational morphemes.

The gradual decrease in the reaction time with increasing Grades from Grade IV through VI suggests that participants from higher grades were faster in judging the sentences as correct/incorrect. The reduction in Mean Reaction Time for Grade V is ~450 milliseconds compared to Grade IV, whereas only ~70 milliseconds for Grade VI compared to Grade V (see Table 2). This could be compared to explicit sentence completion task performance of the participants where the Grade V mean scores were relatively better than Grade IV and that Grade VI was better than Grade V (see Table 1).

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   407

Table 2. *Overall Mean Reaction Times across Grades*

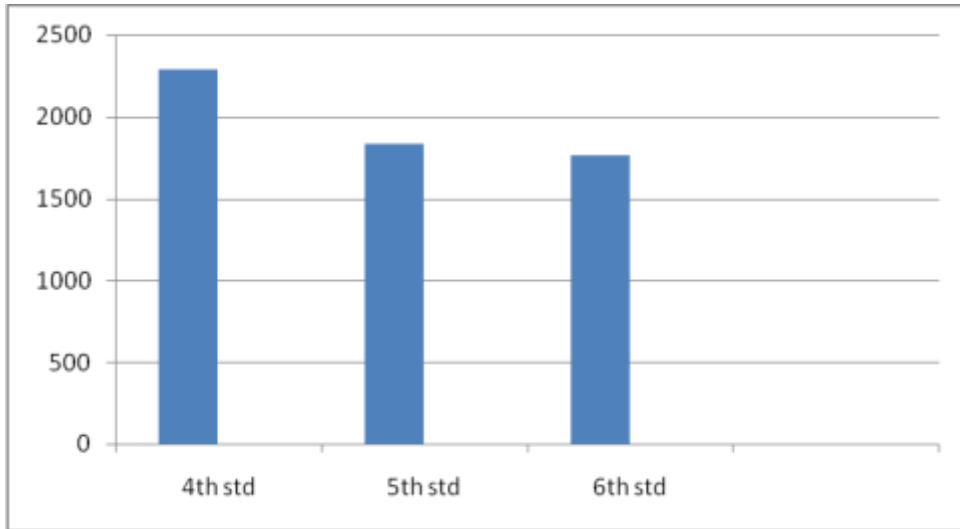| Particulars	Grades		
	IV	V	VI
Overall mean reaction time in milliseconds	2286.53	1833.62	1759.66

Figure 2: *Mean Reaction Times of Grades on priming tasks. X- axis representing the grades and Y-axis representing the average reaction times in milliseconds.*

Table 3 shows the correlation value between morphological sensitivity and Reading across Grades IV, V and VI. The correlation values between inflectional morphemic sensitivity and Reading are 0.809, 0.829 and 0.537 for Grades IV, V and VI respectively. The correlation values show that inflectional morphemic sensitivity is highly correlating with reading on Grades IV and V and moderately with Grade VI. The correlation values between Derivational morphemic sensitivity and Reading are 0.535, 0.232 and 0.452 for Grades IV, V and VI respectively. The correlation values show that Derivational morphemic sensitivity is moderately correlating with Grade IV reading and where as the correlation of Grade V and VI derivational morphemic ability with reading is lower than Grade IV. To summarize, the correlation results revealed that the

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   408

correlation degree between morphological sensitivity and Reading reduces as Grades increases suggesting a better correlation at lower grades (IV and V).

Table 3. Correlation value between reading and morphological sensitivity (on sentence completion task only) across Grades IV, V and VI.

(Grades)	Reading and Morphological sensitivity correlation	
	Inflectional	Derivational
IV	.809 ***	.535**
V	.829 ***	.232 *
V	.537 **	.452 *

*low correlation
**moderate correlation
***high correlation

Discussion

The present study administered a Word reading test (Purusothama, 1986) which revealed that selected participants showed improved performance with increasing grades (39, 41 and 46 for grades IV, V and VI respectively, 50 being the maximum). The present study examined the explicit knowledge of children studying in Grade IV through Grade VI in Kannada medium on knowledge of inflectional and derivational morphemes.

Results show that the knowledge of inflectional morpheme increases with increase in Grade. However the increment is more prominent between Grade IV to Grade V. The improved performance on morphemes at these Grade levels is also reported by McCutchen, Green, and Abbott (2008). McCutchen et al, found that morphological awareness continued to develop from Grades IV through VI, and the development was most pronounced when derivational morpheme forms required phonological changes to their root words (i.e., phonologically opaque items like signature/sign).

Karanth and Suchitra, (1993) and Scholes, (1993) reported that school going children become increasingly proficient in identifying grammatical inaccuracies from Grade I through VII. Similarly Anglin (1993) also estimated that children between Grades III and V develop more derived morphemic knowledge than their knowledge of single morphemic roots itself. The statement by Anglin could be contained to English language and nay be to related orthographies.,

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   409

because derivational morphemes play major role in English reading (See Venezky, Jastrzembski, & Lucas, 1980; Sowell &Yanigahara, 1989; Massaro, Taylor, Stahl, & Nagy, 2006; Balota, Yap, Cortese, Hutchison, Kessler, Loftis, et al. 2007; Matthews, 2007).

The present study, however, did not attempt to measure the single morphemic root's growth in the Grades tested. Nevertheless the increase in performance on derived morphemes across Grades IV, V and VI in present study could be compared with study by Anglin (1993). Researchers commented that the growth might be related to children's knowledge to recognize morphological relationships among words and apply that knowledge into better language fluency and expanded vocabulary (e.g. Anglin, 1993; Derwing, Smith, & Wiebe, 1995; Nagy & Anderson, 1984; Nagy & Scott, 2000; Nagy et al., 2006).

The present study also showed consistent development in both inflectional and derivational morphemes in Grades IV, V and VI. The difference in the development of inflectional and derivational morphemes is also stated by Wolter, Wood, and D'zatko, (2009). Wolter and colleagues compared the development of inflection and derivational morphology in English. They identified that first grade was time for spurt of development of inflectional morphemes [and] the later elementary grades were identified as a time of derivational growth in English. The scores of inflection morphemes being higher than derivational morphemes in the present study suggest that knowledge of inflectional morphemic rules was relatively better compared to derivational rules (see also Devaki, 1983 for order of acquisition of morphological rules in Kannada).

The study also examined the implicit morphological knowledge using priming task designed using inflectional morphemes. Priming paradigm of the present study also exhibited increased sensitivity of morphemes while reading from Grades IV through VI. The results show that children who read better also scored better on implicit usage of inflectional morphemes in priming task. Similar priming study was conducted on Grade IV French readers by Casalis, Dusautoir, Cole´, and Ducrot (2009) using morphological and orthographical priming paradigm. Their results revealed the significance of morphological knowledge for visual word recognition. McCutchen, Logan, and Biangardi-Orpe (2009) also studied the significance of morphological knowledge for reading using priming paradigm. Children in their study read target words more

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   410

quickly and more accurately when primed by words that were morphologically related compared with words that had only general semantic or orthographic and phonological overlap with targets. The results on priming task of present study also showed that children from higher grades responded faster when primed by morphemes, suggesting greater significance of morphemic sensitivity.

Morphology and reading have been related empirically by researchers in the past. Wei-Lun Chung and Chieh-Fang Hu (2007) suggested from their research findings that facilitative effect of morphological knowledge in reading was not significant in very initial stages of reading acquisition. However the facilitation effects are likely to appear at later elementary Grades. Siegel and Linda (2008) also reported that morphological awareness was more significantly related to reading and spelling over phonological awareness and oral language skills. Authors extended the findings into individuals with dyslexia and found that Dyslexics had significantly lower scores than normally achieving readers on the morphological awareness tasks. The relation between explored relationship between morphology, reading and vocabulary size is also studied in deaf adults by Bastien, Dubuisson, Bélanger, and Daigle (2006) and reported a positive correlation among the variables. A large number of studies have documented a significant connection between children's derivational morphological awareness and their reading and spelling skills (e.g., Carlisle, 1987, 1988, 1995, 2000; Carlisle & Stone, 2005; Champion, 1997; Elbro & Arnbak, 1996; Fowler & Liberman, 1995; Green et al., 2003; Mahoney, Singson, & Mann, 2000; Nagy, Berninger, & Abbott, 2006; Singson, Mahoney, & Mann, 2000; Windsor, 2000). Majority of these studies not only found such associations in normal children but also in children with reading and language/learning disabilities.

In the present study also, an increase in the performance of participants from Grade IV through Grade VI on all the three tasks under study-word reading, sentence completion tasks with inflectional and derivational morphemes, and priming tasks with inflectional morphemes suggest the possibility of relationship between reading skills and knowledge of inflectional and derivational morphology. The results of the present study suggests that facilitating morphological awareness may also facilitate word reading (Parel, 2005), thus a alternative view to intervention of children with Reading difficulty in Kannada language.

==

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   411

===

References

Abu-Rabia S., Share, D., and Mansour, M. (2003). Word Recognition and Basic Cognitive Processes among Reading-Disabled and Normal Readers in Arabic. *Reading and Writing: An Interdisciplinary Journal*, 16, 423-442.

Anglin, J. M. (1993). Vocabulary development: A morphological analysis. *Monographs of the Society of Research in Child Development*, 58 (10, Serial No. 238).

Balota, D. A., Yap, M. J., Cortese, M. J., Hutchison, K. A., Kessler, B., Loftis, B., et al. (2007). The English Lexicon Project. Behavior Research Methods, 39, 445-459.

Bastien, M., C. Dubuisson, N. Bélangeret D. Daigle (2006) "Relationship between morphology, reading and vocabulary knowledge in deaf adults", soumis à Second Language Research Forum (SLRF 2006), Seattle, University of Washington, octobre.

Bellomo, T.S (2009). Morphological Analysis and Vocabulary Development: Critical Criteria *The Reading Matrix*, 9 (1). 44-55.

Bellugi, U. & Brown, R. (1964). *The acquisition of language*. Monographs of the Society for Research in Child Development.

Bowers, P. N., Kirby, J. R., & S. H. Deacon. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research, 80, 144-179.*

Bright, W. (1996). Kannada and Telugu writing. In P. Daniels & W. Bright (Eds.), The world's writing systems. (pp. 413–419). New York: Oxford University Press.

Brown, R. (1973). A first language: The early stages. Cambridge: Harvard University Press.

Burgess, S.R., & Lonigan, C.J. (1998). Bidirectional relations of phonological sensitivity and prereading abilities: Evidence from a preschool sample. *Journal of Experimental Child Psychology, 70, 117-141.*

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   412

Bybee, J. L. (1985). Morphology. A study of the relation between meaning and form. Amsterdam: John Benjamins.

Bybee, J. L. (1988). Morphology as lexical organization. In M. Hammond & M. Noonan (Eds.), Theoretical morphology: Approaches in modern linguistics (pp. 119–141). London: Academic.

Bybee, J. L. (1995). Regular morphology and the lexicon. *Language and Cognitive Processes* 10, 425–455.

Carlisle, J. (1987). The use of morphological knowledge in spelling derived forms by learning disabled and normal students. *Annals of Dyslexia*, 37, 90–108.

Carlisle, J. (1988). Knowledge of derivational morphology and spelling ability in fourth, sixth, and eighth graders. *Applied Psycholinguistics*, 9, 247–266.

Carlisle, J. (1995). Morphological awareness and early reading achievement. In L. B. Feldman (Ed.), Morphological aspects of language processing (pp. 189–209). Hillsdale, NJ: Erlbaum.

Carlisle, J. (2000). Awareness of the structure and meaning of morphologically complex words: Impact on reading. *Reading and Writing: An Interdisciplinary Journal*, 12, 169–190.

Carlisle, J., & Stone, A. (2005). Exploring the role of morphemes in word reading. *Reading Research Quarterly*, 40, 428–449

Casalis, S., Colé, P., &Sopo, D. (2004). Morphological awareness in developmental dyslexia. *Annals of Dyslexia, 54*(1), 114-138.

Casalis, S., Dusautoir, M., Cole, P., & Ducrot, S. (2009). Morphological effects in children word reading: A priming study in fourth graders. *British Journal of Developmental Psychology*, 27, 761–766.

Champion, A. (1997). Knowledge of suffixed words: A comparison of reading disabled and nondisabled readers. *Annals of Dyslexia*, 47, 29–55.

Deacon, S. H. & Kirby, J. R. (2004). Morphological: Is it more than phonological? Evaluating the roles of morphological and phonological awareness in reading development. *Applied Psycholinguistics,* 25, 223-238.

Derwing, B. L., Smith, M. L., & Wiebe, G. E. (1995). On the role of spelling in morpheme recognition: Experimental studies with children and adults. In L. Feldman (Ed.), Morphological aspects of language processing (pp. 3–27). Hillsdale, NJ: Erlbaum.

Devaki, L. (1989). Development of morphological rules in Children, CIIL.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   413

Ehri, L.C. (1999). Word reading by sight and by analogy in beginning readers. In C. Hulme& R.M. Joshi (Eds.), *Reading and spelling: Development and disorders* (pp. 87-111). Mahwah, NJ: Lawrence Erlbaum Associates Inc

Elbro, C. (1990). Differences in dyslexia: A study of reading strategies and deficits in a Linguistic perspective. Copenhagen: Munksgaard.

Elbro, C., &Arnbak, E. (1996). The role of morpheme recognition and morphological awareness in dyslexia. *Annals of Dyslexia, 46,* 209-240.

Ellis, N. C., & Hooper, A. M. (2001). It is easier to learn to read in Welsh than in English: Effects of orthographic transparency demonstrated using frequency-matched cross linguistic reading tests. *Applied Psycholinguistics,* 22, 571-599.

Feldman, L. B., Rueckl, J., DiLiberto, K., Pastizzo, M. &Vellutino, F. R. (2002).Morphological analysis by child readers as revealed by the fragment completion task. *Psychonomic Bulletin & Review 9,* 529–53.

Fowler, A., & Liberman, I. (1995). Morphological awareness as related to early reading and spelling ability. In L. Feldman (Ed.), Morphological aspects of language processing (pp. 157–188). Hillsdale, NJ: Erlbaum.

Fowler, C. A., Napps, S. E., &: Feldman, L. B. (1985). Relations among regular and irregular morphologically related words in the lexicon as revealed by repetition priming. *Memory & Cognition, 13*, 241-255.

Giraudo, H. (2001). Rôleetreprésentation de l'informationmorphologique chez l'apprentilecteur et l'enfantdyslexique [Role and representation of morphological information in the beginning reader and dyslexic child]. *Annales du FondationFyssen, 16,* 81–90

Goswami, U., Gombert, J. E., & de Barrera, L. (1998). Children's orthographic representations and linguistic transparency: Nonsense word reading in English, French and Spanish. *Applied Psycholinguistics*, 19, 19–52.

Goswami, U., Porpodas, C., & Wheelwright, S. (1997). Children's orthographic representations in English and Greek. *European Journal of Psychology of Education*,12, 273–292.

Green, L., McCutchen, D., Schwiebert, C., Quinlan, T., Eva-Wood, A., & Juelis, J. (2003). Morphological development in children's writing. *Journal of Educational Psychology*, 95, 752–761.

Hiebert, E. H., Pearson, P. D., Taylor, B., Richardson, V., & Paris, S. G. (1998).*Every child a reader*. Ann Arbor, MI: Center for the Improvement of Early Reading Achievement.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   414

Karanth, P. and Suchitra, M.G. (1993).Literacy acquisition and grammaticality judgments in children [speakers of Hindi and Kannada]. In R.J. Scholes (Ed.), *Literacy and language analysis. Hillsdale, N.J*, 143-156. Lawrence Erlbaum.

Karanth, P., & Prakash, P. (1996). Developmental investigation on onset, progress and stages of literacy acquisition: Its implication for instructional processes. Research Project (F: 2-17/89/eric/1147). Report was submitted to and was funded by the National Council of Educational Research and Training, New Delhi.

Katz, L., & Frost, R. (1992). Reading in different orthographies: The orthographic depth hypothesis. In R. Frost & L. Katz (Eds.), Orthography, phonology, morphology, and meaning (pp. 67–84).Amsterdam: New Holland

Ku, Y.-M., & Anderson, R. C. (2003). Development of morphological awareness in Chinese and English. *Reading and Writing: An Interdisciplinary Journal,* 16, 399- 422.

Landerl, K., Wimmer, H., &Frith, U. (1997). The impact of orthographic consistency on dyslexia: A German–English comparison. *Cognition,* 63, 315–334.

Levin, I., Ravid, D., & Rappaport, S. (2001). Morphology and spelling among Hebrew-speaking children: From kindergarten to first grade. *Journal of Child language*, 28, 741-769.

Lonigan, C.J., Burgess, S.R., Anthony, J.L. & Barker, T.A. (1998).Development of phonological sensitivity in two to five-year old children. *Journal of Educational Psychology, 90*, 294-311

Mahoney, M., Singson, M., & Mann, V. (2000). Reading ability and sensitivity to morphological relations. *Reading and Writing: An Interdisciplinary Journal,* 12, 191–218.

Massaro, D. W., Taylor, G.A., Venezky, R.L., Jastrzembski, J.E., and Lucas, P.A. (1980) Letter and word perception. Amsterdam: North-Holland.

Matthews, P.H. (2007). The Concise Oxford Dictionary of Linguistics. Oxford UP.p. 11.

McBride-Chang, C., Cho, J.-R., Liu, H. Y., Wagner, R. K., Shu, H., Zhou, A. B., et al. (2005). Changing models across cultures: Associations of phonological awareness and morphological structure awareness with vocabulary and word recognition in second graders from Beijing, Hong Kong, Korea, and the United States.*Journal of Experimental child Psychology*, 92, 140–160.

McBride-Chang, C., Shu, H., Zhou, A.B., Wat, C.P. & Wagner, R.K. (2003). Morphological knowledge uniquely predicts young children's Chinese character recognition. *Journal of Educational Psychology, 95*, 743–751.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   415

McCutchen, D., Green, L., & Abbott, R.D. (2008). Children's morphological knowledge: Links to literacy. *Reading Psychology, 29*(4), 289–314.doi:10.1080/02702710801982050

McCutchen, D., Logan, B., &Biangardi-Orpe, U. (2009). Making meaning: Children's sensitivity to morphological information during word reading. *Reading Research Quarterly,* 44, 360–376.

Moats, and Smith,(1992). Derivational Morphology: Why It Should Be Included in Language Assessment and Instruction. Language, Speech, and Hearing Services in Schools, 23: 312-319

Nagy, W. E., & Anderson, R. C. (1984). The number of words in printed school English. *Reading Research Quarterly, 19,* 304 –330.

Nagy, W. E., & Scott, J. (1990). Word schemas: Expectations about the form and meaning of new words. *Cognition and Instruction,* 7, 105–127.

Nagy, W., Berninger, V., & Abbott, R. (2006). Contributions of morphology beyond phonology to literacy outcomes of upper elementary and middle school students. *Journal of Educational Psychology,* 98 (1), 17–34.

Nunes, T., Bryant, P., & Bindman, M. (2006).The effects of learning to spell on children's awareness of morphology. *Reading and Writing, 19*, 767-787.

Oney, B. & Durgunoglu, A.Y. (1997).Beginning to read in Turkish: A phonologically transparent orthography. *Applied Psycholinguistics*, 18, 1-15.

Plaza, M., & Cohen, H. (2003).The interaction between phonological processing, syntactic sensitivity and naming speed in the reading and spelling performance of first-grade children. *Brain and Cognition*, 53, 287–292.

Plaza, M., & Cohen, H. (2004). Predictive influence of phonological processing, morphosyntactic skills and naming speed on spelling performance. A longitudinal study from Grade 1 to Grade 2. Brain and Cognition, 55, 368–373.

Prakash, P. (1987). Reading development, metalinguistic awareness and cognitive processing skills. Unpublished doctoral dissertation, Utkal University, Bhubaneswar.

Prakash, P. (1994, December 15-16). Development of metaphonological awareness and communication. Paper presented at the International conference on Early Childhood Communication. Central Institute of Indian Languages, Mysore.

Prakash, P. (1999). Reading disability and knowledge of orthographic principles. *Psychological Studies, 44*, 59-64.

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   416

Prakash, P., Rekha, D., Nigam, R., & Karanth, P. (1993).Phonological awareness, orthography, and literacy. In R.J. Scholes (Ed.), Literacy and Language Analysis (pp. 55-70). Hillsdale, NJ: Lawrence Erlbaum Associates.

Prema, K.S. (1998). Reading acquisition profile in Kannada. Unpublished Doctoral dissertation, University of Mysore, Mysore.

Purushothama, G (1986). Frame Work for Testing Kannada Reading on the Bases of Automaticity, Rules of Orthography, and Sequential Processing. Submitted in partial fulfillment of the requirements of the requirements of the degree DOCTOR OF EDUCATION, The University of Rochester, Rochester, New York.

Raveh, M., &Rueckl, J. G. (2000). Equivalent effects of inflected and derived primes: Long-term morphological priming in fragment completion and lexical decision. *Journal of Memory and Language,* 42, 103-119.

Seymour, P.H.K., Aro, M., & Erskine, J.M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, *94*, 143–174.

Siegel, L. S. (2008). Morphological awareness skills of English language learners and children with dyslexia. *Topics in Language Disorders,* 28: 15-27.

Singson, M., Mahoney, D., & Mann, V. (2000). The relation between reading ability and morphological skills: Evidence from derivational suffixes. *Reading and Writing: An Interdisciplinary Journal*, 12, 219–252.

Singson, M., Mahony, D., & Mann, V. (2000). The relation between reading ability and morphological skills: Evidence from derivational suffixes. *Reading and Writing: An Interdisciplinary Journal, 12*, 219-252.

Snowling, M.J. & Hulme, C. (Eds.) (2005). The science of reading: A handbook. Oxford: Blackwell Publishing.

Sonali, N., &Snowling, M.J. (2005).Cognitive profiles of poor readers of Kannada. *Reading and Writing*.DOI: 10.1007/s11145-010-9258-7

Stahl, S.A. and Nagy, W.E. (2006) Teaching word meanings. Mahwah, NJ: Lawrence Erlbaum.

Stolz, J. A., & Feldman, L. B. (1995).The role of orthographic and semantic transparency of the base morpheme in morphological processing. In L. B. Feldman (Ed.), Morphological aspects of language processing (pp. 109-154). Hillsdale, NJ: Lawrence Erlbaum.

Thorstad, G, (1991). The effect of orthography on the acquisition of literacy skills.*British Journal of Psychology*, 82, 4, 527-537

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   417

Van Emden H.F,& Harrington R. (Eds), 2007 – Aphids as crop pests. CAB International, Oxford, 717 pp.

Verhoeven, L., & Perfetti, C. A. (2003). Introduction to This Special Issue: The role of morphology in learning to read. S*cientific Studies of Reading*, *7*(3), 209-218.

Wagner, R.K., Torgesen, J.K. & Rashotte, C.A. (1994). Development of reading related phonological processing abilities: New evidence of bi-directional causality from a latent variable longitudinal study. *Developmental Psychology, 30*, 73-87.

White, T.G., Sowell, J., and Yanigahara, A. (1989) Teaching elementary students to use word-part cues. The Reading Teacher, 42(4), 302-308.

Wimmer, H. and Hummer, P. (1990). How German speaking first graders read and spell: doubts on the importance of the logographic stage. *Applied Psycholinguistics*, 11, 349-368.

Windsor, J. (2000). The role of phonological opacity in reading achievement. *Journal of Speech, Language, and Hearing Research,* 43, 50–61.

Wolter, J.A., Wood, A. &D'zatko, K.W, (2009).The influence of morphological awareness on the literacy development of first-grade children. *Language, Speech & hearing Services in Schools*, 40, 3, p. 286-298.

Wood, C. & Terrell, C. (1998). Pre-school phonological awareness and subsequent literacy development. *Educational Psychology, 18*, 253-274.

===

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   418

Appendix

Selected words from word reading task of Purushothama (1986)

ಆಗಲ	ಇತರ	ಉದಯ	ಎರಡು	ಮಣ್ಣು
ಚಮಚ	ಭಾರ	ದೀವಟಿಗೆ	ಮುದ್ದು	ದೊರೆ
ಶಕುನ	ಕಾರ್ಯ	ಪುರುಷ	ಮೂಲಂಗಿ	ವೊಗ್ಗು
ಮೀನು	ವಜ್ರ	ಲಕ್ಷಣ	ಚರಕ	ನ್ಯಾಯ
ಚಕ್ರ	ಸ್ವಾತಂತ್ರ	ಸಂತೆ	ಮೇಷ್ಟ್ರು	ನೇಯ್ಗೆ
ಜೈಲು	ಆದ್ಭುತ	ಗಾಳ	ರಾಷ್ಟ್ರ	ಬ್ರಹ್ಮ
ಬಸ್ಸ	ಕಠಿಣ	ಕಳ್ಳ	ಸ್ವಲ್ಪ	ತಾರತಮ್ಯ
ಆಂತಃಕರಣ	ಘರ್ಜನೆ	ಆಮ್ಲಜನಕ	ನೀರು	ಧ್ವನಿ
ಸಾವಿರ	ಸಮುದ್ರ	ಏಡಿ	ಗಾಳ	ಹಿಮಾಲಯ
ಘಂಟೆ	ಗಣಿತ	ಖಾದಿ	ಡಬ್ಬ	ಆರ್ತಹೀನ

Sentence completion task (inflectional morphemes)

1. ರಾಮ.. ಬಾಣ(ರಾಮನ)
2. ನಾನು ಊರಿ.. ಹೋಗಿದ್ದೆ(ಊರಿಗೆ)
3. ಜಾಣ್ಮೆ.. ಕೆಲಸ ಮಾಡಬೇಕು (ಜಾಣ್ಮೆಯಿಂದ)
4. ನಿಧಾನ.. ಬಾಲನೆ ಮಾಡು (ನಿಧಾನವಾಗಿ)
5. ನಿನ.. ಆತ್ಮವಿಶ್ವಾಸವಿರಬೇಕು (ನಿನಗೆ)
6. ನಾನು ಜಾತ್ರೆ.. ಹೋಗಿದ್ದೆ(ಜಾತ್ರೆಗೆ)
7. ಆವನು ಕೋಪ... ಕೂಗಾಡಿದ (ಕೋಪದಿಂದ)
8. ಪುಸ್ತಕ.. ಮೇಲೆ ಪೆನ್ನಿದೆ (ಪುಸ್ತಕದ)
9. ವಿದಾನ.. ಬದಲವಣೆ ಆಗತ್ಯ (ವಿಧಾನದಲ್ಲಿ)
10. ಆವನು.. ಜೈಲ್ ಕರೆದೊಯ್ಯಲಾಯಿತು (ಆವನನ್ನು)
11. ಭಾರತ.. ರಾಜಧಾನಿ ಡೆಲ್ಲಿ(ಭಾರತದ)
12. ಆವನು ಆನ್ವೆಷಣೆ.. ತೊಡಗಿದ್ದಾನೆ (ಆನ್ವೆಷಣೆಯಲ್ಲಿ)
13. ಮಗು.. ಆಳುತಿತ್ತು(ಮಗುವು)
14. ರಾಮನ ಮಾತು.. ಕೇಳಿ ರಾಜುಗೆ ಕೋಪ ಬಂತು (ಮಾತನ್ನು)
15. ಆವಳು.. ಬುದ್ಧಿ ಇಲ್ಲ(ಆವಳಿಗೆ)

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   419

Sentence completion task (Derivational morphemes)

1. ಆವನು ಗುಣ..(ವಂತ)
2. ರಾಮ ಶ್ರಮ..(ಗಾರ)
3. ಆವನು ಆದೃಷ್ಟ..(ವಂತ)
4. ಮೂಲ ಸ್ವಾರ್ಥ..(ಸ್ವಾರ್ಥಿ)
5. ಆರಮನೆಯನ್ನು ವೈಭವ..(ಕರ)ವಾಗಿ ಸಿಂಗಾರ ಮಾಡಲಾಯಿತು
6. ಆವನು ಮೋಜು...(ಗಾರ)
7. ಆವಳು ಬಹಳ ಆದೃಷ್ಟ...(ವಂತೆ)
8. ಕೈದಿ ಕ್ರೂರ..(ಕ್ರೂರಿ)
9. ಇಂದು ಮಂಗಳ...(ಕರ)ವಾದ ದಿನ
10. ಆತ ಕಲೆ...(ಕಲಾವಿದ)
11. ಆವನು ದ್ರೋಹ..(ದ್ರೋಹಿ)
12. ಆವನ ಮರಣ ದುರಾದೃಷ್ಟ..(ಕರ)
13. ಬಹಳ ಸಾಲ ಮಾಡಿದ್ದಾನೆ, ಈಗ ಆವನು ಸಾಲ..(ಗಾರ)
14. ಆವನು ಬಹಳ ನೀತಿ...(ವಂತ)
15. ಗೀತ ಪ್ರತಿಭಾ..(ವಂತ)ಹಾಡುಗಾತಿ

Priming task using inflectional and derivational morphemes

	Prime	Target
1.	ಬಾಣ	ಬಾಣಗೆ
2.	ಕಾಡು	ಕಾಡಲ್ಲಿ
3.	ಆಕಾಶ	ಆಕಾಶಕ್ಕೆ
4.	ಹಾಡು	ಹಾಡಲ್ಲಿ
5.	ರಾಜ	ರಾಜಗೆ
6.	ನೀತಿ	ನೀತಿವಂತ
7.	ಪೋಡ	ಪೋಡದ
8.	ಹೂವು	ಹೂವನ್ನು
9.	ಜನ	ಜನಗೆ
10.	ಹುತ್ತ	ಹುತ್ತದಲ್ಲಿ
11.	ಕ್ರೂರ	ಕ್ರೂರಿ
12.	ನೋವು	ನೋವಿಗೆ
13.	ಶ್ರಮ	ಶ್ರಮಗೆ
14.	ಬುದ್ದಿ	ಬುದ್ದಿಗಾರ
15.	ಸ್ವಾರ್ಥ	ಸ್ವರ್ಥವಂತ

Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   420

==

Kuppuraj. S.
Junior Research Fellow
All India Institute of Speech and Hearing
Mysore 570 006
Karnataka
India
kuppu_k7@yahoo.co.in

Abhishek. B. P.
Junior Research Fellow
All India Institute of Speech and Hearing
Mysore 570 006
Karnataka
India
abhiraajaradhya@gmail.com

Prema K. S. Rao., Ph D.
Professor
All India Institute of Speech and Hearing
Mysore 570 006
Karnataka
India
premarao@aiishmysore.com

Language in India www.languageinindia.com
12 : 7 July 2012
Kuppuraj, S., Ph.D. Candidate, Abhishek, B. P., Ph.D. Candidate and Prema K. S. Rao., Ph.D.
Relationship between Morphology and Reading in Kannada   421