

ANALYSIS OF THE ACQUIRED DISORDERS OF READING IN KANNADA*

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The paper describes contemporary research on the analysis of acquired disorders of reading within the model-building approach, along with details of the classificatory system arrived thereby and the tools used therein. The potential that research on the analysis of acquired disorders of reading in bi and multilinguals, specially among those one of whose languages is English, is highlighted. The paper concludes by providing parallel lists in Kannada to the Coltheart word lists which are now being increasingly used in the analysis of acquired disorders of reading in English.

Introduction

The study of the acquired dyslexias or reading disorders have increasingly shifted from the neuro-anatomical and the general cognitive to the model-building approach, in the last decade. While the neuro-anatomical approach attempted to correlate specific disorders of reading with specific lesions of the brain, the general cognitive approach investigates the effects of damage to a general cognitive process such as visual perception to a more specific task such as reading. Contemporary work on the analysis of the acquired disorders of reading has moved from these two approaches to that of the model building approach wherein the study of specific cognitive functions, such as reading are approached with a specific theoretical model consisting of explicit sets of processing stages connected by a network of pathways. The disorders of reading are then explained in terms of an impairment in one of the processing stages in these multicomponent models. An explicit discussion of the relative merits of these three approaches to the study of the disorders of reading may be found in Coltheart (1982).

Contemporary Work

Within the model-building approach a detailed analysis of the psycholinguistic features of the various acquired disorders of reading is carried out to predict

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which psycholinguistic properties, of words will influence, whether they can be read or not and which properties will have no influence upon reading. The models suggest what the relevant psycholinguistic variables will be. Several such models have been put forth in recent years.

The analysis of reading disorders within the format of these models have resulted in the identification of specific subtypes of acquired dyslexia such as pure alexia or letter by letter reading- deep dyslexia, surface dyslexia . phonological dyslexia, attentional dyslexia and neglect or positional dyslexia. Briefly, the chief characteristics of these subtypes of acquired dyslexia are as follow.

"Pure alexia" or "letter by letter reading" is that type of reading disorder wherein the patient can read words only by spelling it out to himself, This results in the entire process being delayed, the time taken to read words being directly proportional to the length of the words. Naming letters is often though not always perfect.

The term "deep dyslexia " refers to a reading disorder in which the patient, while trying to read aloud single words with no time pressure, often produces a wrong response which is semantically related to the stimulus word. The writing of these patients is often deficient and generally contain semantic errors.

" Surface dyslexia " is that dyslexia where the patient fails to recognize words directly and has to resort to reading words aloud by working out their letter—sound relationships or using analogies with similar words. In languages like English this leads to disordered reading of irregular words. Spelling is also impaired and generally the misspelt words are phonetically correct.

One of the more recently identified dyslexias is a Condition whose major characteristic is a normal or near normal ability to read aloud words correctly, accompanied by a total or near total inability to read non-words. This condition termed as " phonological dyslexia" has understandably been missed until recently for the disorder becomes obvious only when the patient is asked to read non-words.

In "attentional dyslexia "the patient has difficulty in attending to one item among other such as in reading one letter presented among other letters or one word among other words. At the same time, the letter and or word is read correctly when presented in isolation.

Patients who make errors with only one part of a word (either the first or the last part of words) and read the rest of it correctly are termed as " neglect " or " positional " dyslexics.

Another type of dyslexia termed 'direct dyslexia' has been identified and described in only one case so far and is characterised by good reading of words including exception and non-words. This type of dyslexia is accompanied with poor comprehension of the words that have been read.

Analysis of the Acquired Disorders of Reading

The following figure from Coltheart (1981, p. 9) succinctly describes the procedure followed in the analysis of acquired dyslexia.

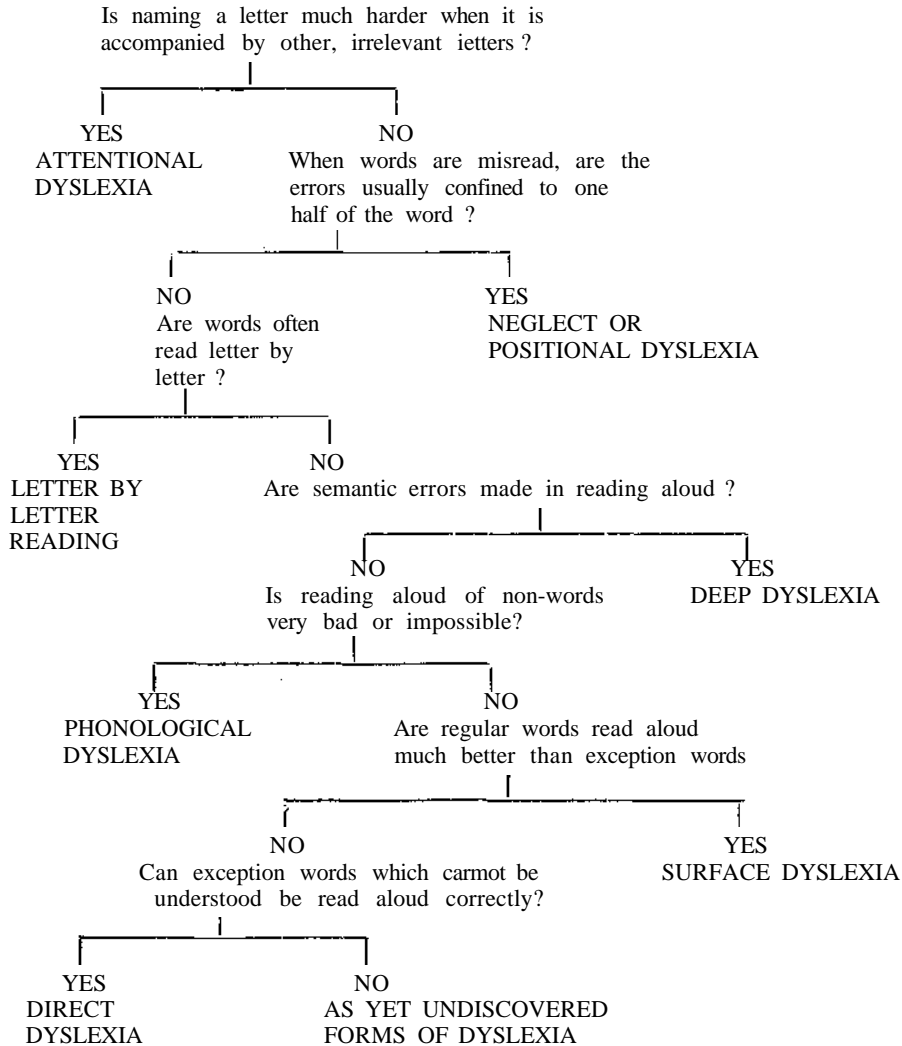


FIG. 1. Analysing Acquired Dyslexia

This procedure is based *on* the major premise of the model-building approaches to the study of reading which can be stated as follows : that reading is achieved by the use of a complex information processing system consisting of a number of sub-components each responsible for performing a specific sub-task.

The Acquired Dyslexia in Languages Other Than English

Much of the work on dyslexia has been carried out in the English speaking population and has consequently been geared towards the idiosyncrasies of the English language. The major criteria for the diagnosis of surface dyslexia, for instance, is the patient's inability to read, irregular words. This leads to the question of whether surface dyslexia can occur in languages which do not contain irregular words and those that cannot have a non-lexical procedure for reading aloud. This interesting theoretical question has led to the search for surface dyslexia in languages with regular writing systems. A few such, studies are reported in Coltheart (1982). In languages like Spanish which do not contain irregular words but do have homophones by virtue of having identical pronunciations for different letters (for example ' bazar'—market and ' vasar'—kitchen shelf are written differently in Spanish but pronounced identically thus making them homophones), Coltheart concludes that the homophone confusion as also the phonological spelling errors seen in the writing of these patients are symptomatic of surface dyslexia as the phenomenon that underlies the failure to read irregular words correctly is also the one that leads to homophone confusion.

In languages like Chinese with, an ideographic script, the only procedure for reading is lexical. Therefore, surface dyslexia which is consequent to an impairment of the non-lexical procedure could not technically exist in Chinese. However, drawing parallels from the Spanish example quoted above, Coltheart postulates that a Chinese dyslexic who confuses one, printed homophone with its mate in tests of reading comprehension and in tests of writing to dictation could be diagnosed as a surface dyslexic. That is a speaker who makes homophonic errors even when the context made it clear as to which of the two homophonic words was to be written, could be diagnosed as a surface surface dyslexic.

However, as Coltheart points out surface dyslexia cannot occur in languages like Italian which not only lack irregular words. In languages like Italian in which not only there are no homophones but also alternative spellings of a single sound are impossible. The same is true of Dravidian languages like Kannada where the semisyllabic script bears such, a close resemblance to the phonology that the language not only lacks irregular words but also homophones. The homonyms that are to be found in Kannada are both homophones and homographs. The only possible exception in Kannada might be that of the nasal anusvaara which is the one grapheme in Kannada which, represents more than one phonemic value.

Such a grapheme may be representative of /m/, /n/, /h / n/, and / n/, its value in individual instances being determined by its phonemic context. Such errors are often found in children identified as poor readers.

The Coltheart Words

Contemporary work on the acquired dyslexias in English are increasingly being carried out through the use of what have come to be known as the Coltheart word lists. These test materials consist of

- (1) Cross case non-word matching
- (2) Reading non-words aloud
- (3) Lexical decision tasks
- (4) Synonym judgements
- (5) Imageability and reading aloud
- (6) Reading aloud of irregular words and
- (7) Silent tests of phonology.

The cross case non-word matching task aims at testing whether patients can judge that two letters are the same even when they are visually different. The task requires the patient to classify as " same " and " different " pairs of words which consist of the same letter in upper and lower case (Nn) and those which consist of two different letters (Ad).

The patient's ability to use letter-to-sound translation rules are tested by asking the patient to read simple non-words aloud. The non-words consist of both pseudohomophones and non-pseudohomophones.

The lexical decision task is given in order to check whether the patient can discriminate between genuine words and those that are not. For this purpose the patient is given a list of words interspersed with non-words that follow the phonological constraints of English but are not actual English words. There are two versions of this test—(1) an easy lexical decision task which consists of very common English nouns and an equal number of non-words produced by altering letters from these words, and (2) a difficult lexical decision task which consists of infrequent words which have more than 11 letters, more than 5 syllables and are relatively abstract in meaning. The non-words are produced by interchanging two syllables. The patient is expected to sort these into words and non-words.

The synonym judgement task consists of two lists of synonym pairs—low imageability and high imageability—which are interspersed with non-synonymous word pairs generated by rearranging the synonym pairs. The patient is asked to sort these into same-meaning and different-meaning categories.

The contribution of the factor of imageability in reading aloud is checked by asking the patient to read a list of words consisting of an equal number of words that are high in imageability and those that are low in imageability, the two groups being matched for word frequency, number of syllables, morphemes and vowels.

The patient's reliance on letter-sound translation or analogy in reading aloud is assessed by asking him to read a matched (for number of letters, part of speech, number of syllables and word frequency) set of regular and irregular words interspersed randomly.

Finally, in order to distinguish between patients who fail to read aloud because they cannot gain access to the phonology of a printed word and those who know the phonology but cannot generate the corresponding articulation, three silent tests of phonology are administered. Of these, the first consists of non-word pairs, half of which have the same pronunciation and the rest which have different pronunciation, the patient being required, to sort them into "same", "different" pronunciation categories so that if the patient relies entirely on letter-sound conversion rules, he will perform at chance. The second of the silent tests of phonology contain only regular words so that the sorting task can be done either by the letter-sound conversion rules or by direct, recognition. The "leading non-words aloud" test may also be used to check the patient's ability to derive phonology from print by asking the patient to sort out the non-words into those which sound like English words and those which do not.

Studies of Dyslexia in Bilinguals

Most of the subtypes of acquired dyslexia described above have been identified and described with reference to speakers of English and other related European languages. As such this classification and description needs to be confirmed in other languages whose orthography differs from that of English. Research on the acquired dyslexias in non-alphabetic orthographies like Japanese (Sasanuma 1980) have already contributed towards a further clarification of the issues involved in the psycholinguist classification of the acquired dyslexias by confirming the presence of certain types of dyslexia and not allowing the occurrence of certain other types because of the uniqueness of the orthography.

Ideally the best experimental situation for the study of the role of orthographic features in the classification of dyslexia would be the study of dyslexia in bilinguals

one of whose two languages is English wherein much of contemporary research has taken place, thereby providing a norm, the other being a language whose orthography differs considerably from that of English. The multilingual situation in India where English continues to be one of the languages of literate multilinguals, allows ample scope for such research. Research such as this can be best carried out by using parallel test material so as to allow valid comparisons. With this purpose in mind parallel lists of the Coltheart words have been drawn in Kannada on the same rationale as that of Coltheart (1981) and may be found in Appendix I. Tests of silent phonology however can have no parallel in Kannada as Kannada does not contain irregular words and homophones also does not allow two words (or non-words) that are written identically to have two different pronunciations or *vice versa*. Similar lists may be drawn in other Indian languages.

It is likely that the study of the acquired dyslexias in languages like Kannada may bring forth hitherto unidentified and undescribed types of dyslexia which are unique to the particular orthography. Conceivably, the dyslexic in Kannada might have a disability in mapping and identifying the primary and secondary features of the Kannada orthography. The distinctiveness *versus* close proximity of some of the letters in the Kannada orthography may be yet another direction in which the study of the dyslexias in Kannada would shed more light.

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APPENDIX I

List I—Non-words :

Ask subject to read aloud.

1. / riga /	ರಿಗ	11. / ula /	ಉಲ
2. / cata /	ಚತ	12. / genda /	ಗೆಂದ
3. / pana /	ಪನ	13. / pugi /	ಪುಗಿ
4. / sapa /	ಸಪ	14. / vandu /	ವಂದ
5. / daba /	ದಬ	15. / heba /	ಹೆಬ
6. / jara /	ಜರ	16. / haki /	ಹಕ
7. / dela /	ದಲ	17. / taya /	ತಯ
8. / gagu /	ಗಗು	18. / sasa /	ಸಸ
9. / naka /	ನಕ	19. / yaca /	ಯಕ
10. / madi /	ಮದಿ	20. / laka /	ಲಕ

List II—Lexical Decision :

Easy Lexical Decision : Ask subject to indicate by ticking or card sorting which are Kannada words and which, are not in a random presentation.

1. / biidi /	ಬೀದಿ	22. / daari /	ದಾರಿ
2. / benki /	ಬೆಂಕಿ	23. / ka aru /	ಕಾರು
3. / Saale /	ಶಾಲೆ	24. / kocne /	ಕೋಣೆ
4. / devaalaya /	ದೇವಾಲಯ	25. / duddu /	ದುದ್ದು
5. / magu /	ಮಗು	26. / taddu /	ತದ್ದು
6. / hengasu /	ಹೆಂಗಸು	27. / tiila /	ತಿಲೆ
7. / peete /	ಪೇಟೆ	28. / caada /	ಚಾದ
8. / uuta /	ಊಟ	29. / mantya /	ಮಂತ್ಯ
9. / niiru /	ನೀರು	30. / kraanu /	ಕ್ರಾನ್
10. / mukha /	ಮುಖ	31. / cenka /	ಚೆಂಕ
11. / baagilu /	ಬಾಗಿಲು	32. / goore /	ಗೋರೆ
12. / pustaka /	ಪುಸ್ತಕ	33. / kungura /	ಕುಂಗುರ
13. / huduggi /	ಹುಡುಗಿ	34. / pane /	ಪನೆ
14. / kai /	ಕೈ	35. / paka /	ಪಕ
15. / mane /	ಮನೆ	36. / padi /	ಪದಿ
16. / huduga /	ಹುಡುಗ	37. / tuurya /	ತುಯಾ
17. / kannu /	ಕಣ್ಣು	38. / ganke /	ಗಂಕೆ
18. / nela /	ನೆಲ	39. / guumi /	ಗುಮಿ
19. / tale /	ತಲೆ	40. / ceetuvc /	ಚೇತುವ
20. / meeju /	ಮೇಜು	41. / bendati /	ಬೆಂಡತಿ
21. / gandasu /	ಗಂಡಸು	42. / liipa /	ಲೀಪ

43. /laadu / ಲಾದು
44. / hamma/ ಹಮ್ಮು
45. / saagada / ಸಾಗದ
46. / goole / ಗೋಲಿ

47. / maayi / ಮಾಯಿ
48. / palapa / ಪಳಪ
49. / muudu / ಮೂದು
50. / dane / ದಣ

List III—Lexical Decision :

Difficult Lexical Decision : Ask subject to indicate by ticking or card sorting which are Kannada words and which are not in a random presentation.

- | | |
|--------------------------------------|-------------------------------------|
| 1. /paripaalisu / ಪರಿಪಾಲಿಸು | 21. / pavasamiirti / ಪವನಮೀರ್ತಿ |
| 2. /silaabaalike / ಶಿಲಾಬಾಲಿಕೆ | 22. / toosapaarika / ತೋಷಪಾರಿಕೆ |
| 3. / nadavalike / ನಡವಳಿಕೆ | 23. / tistaaprapane / ತಿಷ್ಟಾಪ್ರಪನ |
| 4. / belavanige / ಬೆಳವಣಿಗೆ | 24. / nubhuusaahaati / ನುಭ್ನುಸಾಹಾತಿ |
| 5. / saubhaagyavati / ಸೌಭಾಗ್ಯವತಿ | 25. / pradaayisaanka / ಪ್ರದಾಯಿಸಾಂಕ |
| 6. / bahiskarisu / ಬಹಿಷ್ಕರಿಸು | 26. / karavargiina / ಕರವರ್ಗೀಣ |
| 7. / pariskarisu / ಪರಿಷ್ಕರಿಸು | 27. / taavaasamada / ತಾವಾಸಮದ |
| 8. / lavalavike / ಲವಲವಿಕೆ | 28. / dakiisampaaya / ದಕೀಸಂಪಾಯ |
| 9. / aniriikeita / ಅನಿರೀಕ್ಷಿತ | 29. / bhramaparina / ಭ್ರಮಾಪರಿಣ |
| 10. / udaaharane / ಉದಾಹರಣೆ | 30. / maathipaaraka / ಮಾಥಿಪಾರಕ |
| 11. / spastiiikarana / ಸ್ಪಷ್ಟೀಕರಣ | 31. / karisthirisu / ಕರಸ್ಥಿರೀಸು |
| 12. / sahajjivana / ಸಹಜೀವನ | 32. / muudaaayika / ಮೂದಾಸಾಯಿಕ |
| 13. / samaaloocone / ಸಮಾಲೋಚನೆ | 33. / kaararaajani / ಕಾರರಾಜಣಿ |
| 14. / pratipaadana / ಪ್ರತಿಪಾದನ | 34. / haanumabhaava / ಹಾನುಮಭಾವ |
| 15. / raastriikarana / ರಾಷ್ಟ್ರೀಕರಣ | 35. / karadradiina / ಕರದ್ರಧೀಣ |
| 16. / pratibhatane / ಪ್ರತಿಭಟನೆ | 36. / vanimaduga / ವಣಿಮದುಗ |
| 17. / samaaraadhane / ಸಮಾರಾಧನೆ | 37. / raavra punatti / ರಾವ್ರಪುನತ್ತಿ |
| 18. / vicaaravanta / ವಿಚಾರವಂತ | 38. / karavaasiina / ಕರವಾಸೀಣ |
| 19. / vaartaapatrike / ವಾರ್ತಾಪತ್ರಿಕೆ | 39. / kaaliisamana / ಕಾಲೀಸಮನ |
| 20. / raasaayanika / ರಾಸಾಯನಿಕ | 40. / laukipaaraka / ಲೌಕಪಾರಕ |

List IV—Synonym Judgement.

High Imageability and Synonym Matching : Ask subject to sort into " same-meaning " and " different-meaning " categories in random presentation.

TV (A). SYNONYMOUS PAIRS

- | | | | |
|-------------|---|-----------|--------------|
| 1. /duddu / | — | / hana / | ದುಡ್ಡು—ಹಣ |
| 2. /hattu / | — | / eeru / | ಹತ್ತು—ಏರು |
| 3. /nadi / | — | / hole / | ನದಿ—ಹೊಳೆ |
| 4. /honnu / | — | / cinna / | ಹೊನ್ನು—ಚಿನ್ನ |

5. /udyaana /	--	/toota /	ಉದ್ಯಾನ - ತೋಟ
6. /amma /	--	/tanyi /	ಅಮ್ಮ - ತಾಯಿ
7. /dabba /	--	/pellige /	ಡಬ್ಬ - ಪೆಟ್ಟಿಗೆ
8. /aranya /	--	/kaadu /	ಅರಣ್ಯ - ಕಾಡು
9. /batte /	--	/vastra /	ಬಟ್ಟೆ - ವಸ್ತ್ರ
10. /hennu /	--	/hengasu /	ಹೆಣ್ಣು - ಹೆಂಗಸು
11. /raaja /	--	/arasa /	ರಾಜ - ಅರಸ
12. /appa /	--	/tande /	ಅಪ್ಪ - ತಂದೆ
13. /kate /	--	/kandambari /	ಕತೆ - ಕಾದಂಬರಿ
14. /gida /	--	/sasi /	ಗಿಡ - ಸಸಿ
15. /purusa /	--	/gandasu /	ಪುರುಷ - ಗಂಡಸು
16. /huu /	--	/puspa /	ಹೂ - ಪುಷ್ಪ
17. /raita /	--	/beesaayagaara /	ರೈತ - ಬೇಸಾಯಗಾರ
18. /hadagu /	--	/nanke /	ಹಡಗು - ನೌಕೆ
19. /nuulu /	--	/daara /	ನೂಲು - ದಾರ
20. /maduve /	--	/vivaha /	ಮದುವೆ - ವಿವಾಹ

IV (5). NON-SYNONYMOUS PAIRS

1. /nuulu /	--	/arasa /	ನೂಲು - ಅರಸ
2. /duddu /	--	/beesaayagaara /	ದುಡ್ಡು - ಬೇಸಾಯಗಾರ
3. /hadagu /	--	/tande /	ಹಡಗು - ತಂದೆ
4. /kate /	--	/pellige /	ಕತೆ - ಪೆಟ್ಟಿಗೆ
5. /nadi /	--	/sasi /	ನದಿ - ಸಸಿ
6. /maduve /	--	/vastra /	ಮದುವೆ - ವಸ್ತ್ರ
7. /raaja /	--	/kandambari /	ರಾಜ - ಕಾದಂಬರಿ
8. /appa /	--	/kaadu /	ಅಪ್ಪ - ಕಾಡು
9. /gida /	--	/hole /	ಗಿಡ - ಹೊಳೆ
10. /hennu /	--	/nanke /	ಹೆಣ್ಣು - ನೌಕೆ
11. /huu /	--	/gandasu /	ಹೂ - ಗಂಡಸು
12. /amma /	--	/ceru /	ಅಮ್ಮ - ಕೆರೆ
13. /aranya /	--	/vivaha /	ಅರಣ್ಯ - ವಿವಾಹ
14. /hennu /	--	/toota /	ಹೆಣ್ಣು - ತೋಟ
15. /batte /	--	/cinnu /	ಬಟ್ಟೆ - ಚಿನ್ನ
16. /purusa /	--	/puspa /	ಪುರುಷ - ಪುಷ್ಪ
17. /udyaana /	--	/tanya /	ಉದ್ಯಾನ - ತಾಯಿ
18. /raita /	--	/tanyi /	ರೈತ - ತಾಯಿ
19. /dabba /	--	/daara /	ಡಬ್ಬ - ದಾರ
20. /hattu /	--	/hengasu /	ಹತ್ತು - ಹೆಂಗಸು

List V Low Imageability Synonym Matching :

Ask subject to sort into 'same-meaning' and 'different-meaning' in random presentation.

V (A). SYNONYMOUS PAIRS

1. /padya /	—	/haadu	ಪದ್ಯ—ಪಾಡು
2. /dappa /	—	/toora /	ದಪ್ಪ—ತೋರ
3. /sittu /	—	/koopa /	ಸಿಟ್ಟು—ಕೋಪ
4. /eerpaadu /	—	/vyavasthe /	ಏರ್ಪಾಡು—ವ್ಯವಸ್ಥೆ
5. /bele /	—	/dara /	ಬೆಲೆ—ದಾರ
6. /hecu /	—	/tumbaa /	ಹೆಚ್ಚು—ತುಂಬಾ
7. /kelasa /	—	/kaarya /	ಕೆಲಸ—ಕಾರ್ಯ
8. /upakaara /	—	/sahaaya /	ಉಪಕಾರ—ಸಹಾಯ
9. /maddu /	—	/ausadhi /	ಮದ್ದು—ಔಷಧಿ
10. /bhaya /	—	/hedarike /	ಭಯ—ಹೆದರಿಕೆ
11. /pakkane /	—	/kuudale /	ಪಕ್ಕನೆ—ಕೂಡಲೆ
12. /maryaade /	—	/gaurava /	ಮರ್ಯಾದೆ—ಗೌರವ
13. /santoosa /	—	/harsa /	ಸಂತೋಷ—ಹರ್ಷ
14. /nadu /	—	/madhya /	ನಡು—ಮಧ್ಯ
15. /svalpa /	—	/kammi /	ಸ್ವಲ್ಪ—ಕಮ್ಮಿ
16. /saavu /	—	/marana /	ಸಾವು—ಮರಣ
17. /daye /	—	/karune /	ದಯೆ—ಕರುಣೆ
18. /avasya /	—	/agatya /	ಅವಶ್ಯ—ಅಗತ್ಯ
19. /sanna /	—	/cikka /	ಸಣ್ಣ—ಚಿಕ್ಕ
20. /lekka /	—	/ganita /	ಲೆಕ್ಕ—ಗಣಿತ

V (B). NON-SYNONYMOUS PAIRS

1. /daye /	—	/haadu /	ದಯೆ—ಪಾಡು
2. /saavu /	—	/harsa /	ಸಾವು—ಹರ್ಷ
3. /avasya /	—	/cikka /	ಅವಶ್ಯ—ಚಿಕ್ಕ
4. /bhaya /	—	/vyavasthe /	ಭಯ—ವ್ಯವಸ್ಥೆ
5. /sittu /	—	/dara /	ಸಿಟ್ಟು—ದಾರ
6. /maddu /	—	/marana /	ಮದ್ದು—ಮರಣ
7. /bele /	—	/nacu /	ಬೆಲೆ—ನಾಡು
8. /pakkane /	—	/agatya /	ಪಕ್ಕನೆ—ಅಗತ್ಯ
9. /maryaade /	—	/kuudale /	ಮರ್ಯಾದೆ—ಕೂಡಲೆ
10. /santoosa /	—	/chikka /	ಸಂತೋಷ—ಚಿಕ್ಕ
11. /upakaara /	—	/hedarike /	ಉಪಕಾರ—ಹೆದರಿಕೆ
12. /svalpa /	—	/gaurava /	ಸ್ವಲ್ಪ—ಗೌರವ
13. /heccu /	—	/ganita /	ಹೆಚ್ಚು—ಗಣಿತ
14. /dappa /	—	/kaarya /	ದಪ್ಪ—ಕಾರ್ಯ
15. /lekka /	—	/koopa /	ಲೆಕ್ಕ—ಕೋಪ
16. /sanna /	—	/agatya /	ಸಣ್ಣ—ಅಗತ್ಯ
17. /eerpaadu /	—	/ausadhi /	ಏರ್ಪಾಡು—ಔಷಧಿ
18. /madhya /	—	/kammi /	ಮಧ್ಯ—ಕಮ್ಮಿ
19. /kelasa /	—	/karune /	ಕೆಲಸ—ಕರುಣೆ
20. /padya /	—	/tumbaa /	ಪದ್ಯ—ತುಂಬಾ

List VI: Imageability and reading aloud :

Ask the subject to read the words aloud given in random order. Check whether the high imageable words are read better.

LOW IMAGEABLE

1. /muula / ಮೂಲ
2. /beesara / ಬೇಸರ
3. /gati / ಗತಿ
4. /vaibhava / ವೈಭವ
5. /kaddu / ಕಡ್ಡು
6. /guttu / ಗುಟ್ಟು
7. /sullu / ಸುಳ್ಳು
8. /addi / ಅಡ್ಡಿ
9. /dveesa / ದ್ವೇಷ
10. /moosa / ಮೋಸ
11. /duura / ದೂರ
12. /suddha / ಶುದ್ಧ
13. /vaara / ವಾರ
14. /niiti / ನೀತಿ
15. /putta / ಪುಟ್ಟ
16. /daye / ದಯೆ
17. /accu / ಅಕ್ಕು
18. /caali / ಚಾಳಿ
19. /guna / ಗುಣ
20. /kaala / ಕಾಲ
21. /gaali / ಗಾಳಿ
22. /beega / ಬೇಗ
23. /mata / ಮತ
24. /bhaya / ಭಯ
25. /pratigne / ಪ್ರತಿಜ್ಞೆ

HIGH IMAGEABLE

26. /daari / ದಾರಿ
27. /kivi / ಕಿವಿ
28. /kooote / ಕೋಟೆ
29. /samudra/ ಸಮುದ್ರ
30. /guru / ಗುರು
31. /gavi/ ಗವಿ
32. /pasu / ಪಶು
33. /ajji / ಅಜ್ಜಿ
34. /kaayi / ಕಾಯಿ
35. /maga / ಮಗ
36. /caaku / ಚಾಕು
37. /hallu / ಹಲ್ಲು
38. /akki / ಅಕ್ಕಿ
39. /kaaphi / ಕಾಫಿ
40. /dviipa / ದ್ವೀಪ
41. /haasige / ಹಾಸಿಗೆ
42. /haaluu / ಹಾಲು
43. /raani / ರಾಣಿ
44. /yuddha / ಯುದ್ಧ
45. /niiru / ನೀರು
46. /kaasu / ಕಾಸು
47. /belaku / ಬೆಲಕು
48. /katte / ಕತ್ತೆ
49. /kaadu / ಕಾಡು
50. /hannu / ಹಣ್ಣು