# LEXICAL NEIGHBOURHOOD TEST (LNT) FOR CHILDREN IN KANNADA

Apoorva. H.M

Prof. Asha Yathiraj

# Content

# Preface

Speech stimuli have been found to aid in detecting perceptual difficulties that may go undetected if only pure-tones were used. Pathologies in the retro-cochlear region and higher auditory pathways have been reported to not manifest themselves if evaluated only using pure-tones. Several word identification tests are available to determine the auditory perceptual difficulties of children with hearing impairment. At one extreme are simple tests such as the pattern perception test. On the other extreme are phonemically-balanced open-set word tests that can be made more difficult by adding distortion such as noise. For children who are in the process of developing speech and language, there is a need for a speech identification test that is neither too easy nor too difficult. The Lexical Neighbourhood Test (LNT), developed by Kirk, Pisoni, and Osberger (1995) has been found to serve as one such test. This test permits the evaluation of the auditory perceptual difficulty of children with hearing impairment before they get to the stage where they can be evaluated with PB words. It assesses spoken word recognition in order to reveal the perceptual processes employed by children, especially among those using cochlear implants. The LNT test items were formed based on the frequency of occurrence of words in the language (word frequency) and the number of phonetically similar words surrounding the word (lexical density). In view of the need for language specific tests, the LNT has been developed in different languages such as Mandarin, Cantonese) and Chinese. In India it is currently available only in Indian English and in Hindi.

**LEXICAL NEIGHBOURHOOD TEST (LNT) FOR CHILDREN IN KANNADA by Ms Apoorva. H.M , in part-fulfilment of her Master's dissertation under the guidance of Prof. Asha Yathiraj.** The aim of the study was to develop a Lexical Neighbourhood test in Kannada for children aged 6 to 8 years, who were divided into two age groups (6 to 6; 11 years and 7 to 8 years). The study also aimed to check the utility of the developed test on the target group and in children with hearing impairment using cochlear implants; and check if there was any difference in performance between the two age subgroups.

# Introduction

## Brief description about the test

The study was carried out in two phases. The first phase involved the development of the Lexical Neighbourhood Test in Kannada for children aged 6 to 8 years. In the second phase, the developed material was administered on normal hearing children and children with hearing impairment using cochlear implants. The development of the material involved determining the familiarity of words that were in the vocabulary of 6 year old children; checking the lexical density of the familiar words; and determining the frequency of occurrence of the familiar words. Based on the frequency of occurrence and lexical density, the words were categorized as 'lexically easy' and 'lexically hard' words. The lexically 'easy' words had 'more frequently occurring' words with 'sparse neighbourhood'. The lexically 'hard' words had 'less frequently occurring' words with 'dense neighbourhood'. Thus, two word lists containing 40 words each were constructed taking into account the lexical density as well as the frequency of occurrence of the words.

The participants were instructed to repeat what they heard and the verbal outputs of the participants were noted by the tester on a response sheet. The responses were later scored for both word scores and phoneme scores. The material developed can be used as a valid clinical tool for assessing the speech perception abilities in children.

- ➢ The test can be administered on those children who perform well on simple closet set tests but perform poorly on open set PB word tests, as the difficulty of the test lies in between these two extremes of perceptual difficulty.
- ➢ It can be helpful in selection of appropriate listening devices.
- ➢ The test may provide guidelines in planning the therapy effectively.
- ➢ Also, the test may help in monitoring the progress of a child overtime thus helping to evaluate the effectiveness of any therapy approach/ procedure.
- ➢ As the developed material represented different lexical difficulties, it can be used to tap the perceptual differences in children and can be used as a valid clinical tool in examining perceptual processes underlying spoken word recognition in Kannada language.

# Test Material

## LNT- List 1

| Sl no | Words | | Easy/Hard | Sl no | Words | | Easy/Hard |
|---|---|---|---|---|---|---|---|
| 1. | ಊಟ | /u:Ta/ | Easy | 21. | ಮಗು | /magu/ | Easy |
| 2. | ಕೊಳೆ | /koLe/ | Hard | 22. | ಬಳೆ | /baLe/ | Hard |
| 3. | ಇಷ್ಟ | /ishTa/ | Hard | 23. | ಪ್ರಾಣಿ | /pra:Ni/ | Easy |
| 4. | ಐದು | /aidu/ | Hard | 24. | ಮೂಗು | /mu:gu/ | Hard |
| 5. | ಕಾಗೆ | /ka:ge/ | Easy | 25. | ರೊಟ್ಟಿ | /roTTi/ | Easy |
| 6. | ಹಿಡಿ | /hiDi/ | Hard | 26. | ನಡಿ | /naDi/ | Hard |
| 7. | ಕುರ್ಚಿ | /kurchi/ | Easy | 27. | ಸೂರ್ಯ | /su:rya/ | Easy |
| 8. | ಹಲ್ಲು | /hallu/ | Hard | 28. | ಚಾಕು | /cha:ku/ | Hard |
| 9. | ಕೋತಿ | /ko:ti/ | Easy | 29. | ಶಕ್ತಿ | /shakti/ | Easy |
| 10. | ಸಾರು | /sa:ru/ | Hard | 30. | ಕರಿ | /kari/ | Hard |
| 11. | ಕಷ್ಟ | /kashTa/ | Easy | 31. | ಸ್ವಲ್ಪ | /swalpa/ | Easy |
| 12. | ವಾರ | /va:ra/ | Hard | 32. | ಕೂಗು | /ku:gu/ | Easy |
| 13. | ಚಂದ್ರ | /chandra/ | Easy | 33. | ಶಿಕ್ಷೆ | /shikshe/ | Easy |
| 14. | ಲೋಟ | /lo:Ta/ | Hard | 34. | ಕಚ್ಚು | /kachchu/ | Hard |
| 15. | ನಿಮ್ಮ | /nimma/ | Easy | 35. | ರಾಜ | /ra:ja/ | Easy |
| 16. | ಮುಳ್ಳು | /muLLu/ | Hard | 36. | ಕಾಸು | /ka:su/ | Hard |
| 17. | ತಾತ | /ta:ta/ | Easy | 37. | ಹಬ್ಬ | /habba/ | Easy |
| 18. | ಬೀಳು | /bi:Lu/ | Hard | 38. | ಆರು | /a:ru/ | Hard |
| 19. | ಬಸ್ಸು | /bassu/ | Easy | 39. | ಹೊಟ್ಟೆ | /hoTTe/ | Easy |
| 20. | ಬಾಯಿ | /ba:yi/ | Hard | 40. | ಅನ್ನ | /anna/ | Hard |

# LNT- List 2

| SI. no | Words | | Easy/Hard | SI. no | Words | | Easy/Hard |
|---|---|---|---|---|---|---|---|
| 1. | ಇದೆ | /ide/ | Easy | 21. | ಬಣ್ಣ | /baNNa/ | Easy |
| 2. | ಮಾತ್ರೆ | /ma:tre/ | Hard | 22. | ಮಳೆ | /maLe/ | Hard |
| 3. | ಒಬ್ಬ | /obba/ | Easy | 23. | ಟೋಪಿ | /To:pi/ | Hard |
| 4. | ಬಾಲು | /ba:lu/ | Easy | 24. | ಮಣ್ಣು | /maNNu/ | Hard |
| 5. | ಕಪ್ಪೆ | /kappe/ | Hard | 25. | ಯಾಕೆ | /ya:ke/ | Easy |
| 6. | ಹುಳಿ | /huLi/ | Hard | 26. | ನಂದು | /nandu/ | Hard |
| 7. | ಕಸ | /kasa/ | Easy | 27. | ಸೇಬು | /se:bu/ | Easy |
| 8. | ಹಳ್ಳಿ | /haLLa/ | Hard | 28. | ಜಾರು | /ja:ru/ | Hard |
| 9. | ಗಿಡ | /giDa/ | Easy | 29. | ಶಾಲೆ | /sha:le/ | Easy |
| 10. | ಸಾಕು | /sa:ku/ | Hard | 30. | ಕಡ್ಡಿ | /kaDDi/ | Hard |
| 11. | ಕೋಪ | /ko:pa/ | Easy | 31. | ಸುತ್ತ | /sutta/ | Easy |
| 12. | ರಜ | /raja/ | Hard | 32. | ಕಾಳು | /ka:Lu/ | Hard |
| 13. | ಚಿತ್ರ | /chitra/ | Easy | 33. | ಸಿಂಹ | /simha/ | Easy |
| 14. | ಬನ್ನಿ | /banni/ | Easy | 34. | ಕಪ್ಪು | /kappu/ | Hard |
| 15. | ಜಾಣ | /ja:Na/ | Easy | 35. | ರಾತ್ರಿ | /ra:tri/ | Easy |
| 16. | ಮುತ್ತು | /muttu/ | Hard | 36. | ಕಾಯಿ | /ka:yi/ | Hard |
| 17. | ತುಂಬ | /tumba/ | Easy | 37. | ಹಸು | /hasu/ | Easy |
| 18. | ಬಿಚ್ಚು | /bichchu/ | Hard | 38. | ಏಳು | /e:Lu/ | Hard |
| 19. | ಬೇಕು | /be:ku/ | Easy | 39. | ಮೊಲ | /mola/ | Easy |
| 20. | ಬಾವಿ | /ba:vi/ | Hard | 40. | ಅಲ್ಲಿ | /alli/ | Hard |

# Normatives

*Mean and Standard Deviation (SD) of the word scores (easy words, hard words and the total word scores) for 6 children with hearing impairment.*

| List | Word type | Mean | S.D | Range | |
|------|-----------|------|-----|-------|-------|
| | | | | Min | Max |
| **List 1** | *Easy | 15.83 | 0.98 | 14 | 17 |
| | *Hard | 12.50 | 1.51 | 10 | 14 |
| | #Total | 28.33 | 2.42 | 24 | 31 |
| **List 2** | *Easy | 15.83 | 1.17 | 14 | 17 |
| | *Hard | 12.33 | 1.63 | 11 | 15 |
| | #Total | 28.17 | 2.48 | 25 | 32 |

Note: *Maximum scores for easy and hard words = 20; #Maximum Total score = 40*

*Mean and Standard Deviation (SD) of the phoneme percentage scores (easy words, hard words and the total word scores) for 6 children with hearing impairment.*

| List | Word type | Mean | S.D | Range | |
|------|-----------|------|-----|-------|-------|
| | | | | Min | Max |
| **List 1** | Easy | 90.32 | 3.85 | 83.87 | 94.62 |
| | Hard | 87.65 | 4.06 | 80.25 | 91.36 |
| | Total | 89.08 | 3.86 | 82.18 | 93.10 |
| **List 2** | Easy | 91.57 | 2.80 | 86.75 | 93.98 |
| | Hard | 87.02 | 3.07 | 83.74 | 90.70 |
| | Total | 88.76 | 2.97 | 85.21 | 92.30 |