Lexical Neighbourhood Test – An Indian English Version for Children

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PREFACE

The All India Institute of Speech and Hearing (AIISH) is a premier organization in the country mandated for human resource development, research, clinical care and public education in the field of communication disorders. The institute promotes research by giving particular emphasis to clinically relevant applied research on causes, control and prevention of communication disorders, assessment and treatment issues as well as the testing and refinement of new technologies for the speech, language and hearing disorders. A considerable number of tests, word lists and therapy materials are being created as by-products of such research works carried out as postgraduate and funded research. However, these valuable resources are mostly unused as they are not readily accessible for use in the clinical settings. Hence, a project has been initiated to identify, reorganise into suitable formats and publish clinically useful research works carried out at AIISH as independent books, and make them useful for the practicing audiologists and speech-language pathologists working across the country in different setups for the evaluation and management of communication disorders.

All the tests/ therapy materials that are prepared under this project are published under a series titled "*AIISH Tests & Therapy Resources*". The project team comprises: Dr. Prashanth Prabhu P., Assistant Professor in Audiology (Principal Investigator), Dr. Priya M.B., Lecturer in Speech Sciences (Principal Investigator), Dr. Shijith Kumar C., Library and Information Officer (Co-Investigator) and Ms. Merin Susan Mathew and Ms. Rekha D (Research Officers).

This book titled **Lexical Neighbourhood Test - An Indian English Version for Children** is an outcome of the effort in the above direction. It was originally developed by **Mr. Chhayakanta P.,** in partial fulfilment of his Master's dissertation under the guidance of **Prof. Asha Yathiraj.**

Dr. M. Pushpavathi
Director, AIISH

CONTENTS

Introduction

Speech stimuli have been found to aid in detecting perceptual difficulties that may go undetected if only pure tones were used. Pathologies in the retrocochlear region and higher auditory pathways have been reported to not manifest themselves if evaluated using only 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 (PB) 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) (Kirk, Pisoni, & 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 test items of LNT 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).

Brief description about the test

The Lexical Neighbourhood Test in Indian English has been developed and administered on 30 typically developing children (17 boys & 13 girls) in the age range of 6 to 8 years who studied in English medium schools for two to four years. The utility of the test was also examined by administering it on five children with hearing impairment whose language age was at least 6 years. The test has two word lists with 40 words each, constructed based on the frequency of occurrence and lexical density. Each list has equal number of 'hard' and 'easy' words i.e., 20 easy words and 20 hard words which are randomized (Appendix A). Lexically easy words refer to more frequently occurring words with sparse neighbourhood whereas lexically hard words refer to less frequently occurring words with dense neighbourhood. The recorded word lists are presented through loudspeakers placed at zero degree azimuth. The subject will be instructed to

listen to the words carefully and repeat them.

Presentation Level: 40 dB SL ref Speech Recognition Threshold

Scoring

Score '1' for each correct response and '0' for incorrect response in the score sheet (Appendix B). If the purpose of evaluation is to get an overall idea of the perceptual difficulties of the child, then calculation of only word score is adequate. However, if the purpose of evaluation is to determine the specific difficulties of the child and to plan auditory listening training, then phoneme scores can be calculated which would enable in planning therapy better.

Interpretation

The scores of the subject can be compared with the scores obtained from the study (Appendix C) to infer the results.

Clinical Implications

1. The test material is a clinically valid tool for assessing speech perception abilities in children.

2. The test can be administered on those children who perform well on simple closed set tests but perform poorly on open set phonemically balanced word tests, as the difficulty of the test lies in between these two extremes of perceptual difficulty.

3. The scores obtained in the test are helpful in selection of appropriate listening devices and provide guidelines for planning therapy effectively.

4. The scores help in monitoring the progress of the child overtime, thereby being useful to evaluate the effectiveness of any therapy approach.

5. The test is used to tap the perceptual differences in children and can be used as a valid clinical tool in examining the perceptual processes underlying spoken word recognition in Indian English.

Appendix A

List 1

Sl. No.	Easy Words		Sl. No.	Hard Words	
1.	Teach	/ʈīʧ/	21.	Nail	/neɪl/
2.	Zoo	/zū/	22.	Mat	/mæʈ/
3.	Pond	/pɔ:nḏ/	23.	Ink	/ɪŋk/
4.	Fish	/fɪʃ/	24.	Dot	/ḏɔ:ʈ/
5.	Bus	/bəs/	25.	Pin	/pɪn/
6.	One	/ʋən/	26.	Map	/mæp/
7.	Week	/vīk/	27.	Tip	/ʈɪp/
8.	Bird	/bərḏ/	28.	Bee	/bī/
9.	Twin	/ʈʋɪn/	29.	Ring	/rɪŋg/
10.	Voice	/ʋɔɪs/	30.	Sail	/seɪl/
11.	Grapes	/grēps/	31.	Have	/hǣv/
12.	Shoe	/ʃʋ/	32.	Feed	/fīḏ/
13.	Leg	/lɛg/	33.	West	/vesʈ/
14.	Rich	/rɪʧ/	34.	Far	/fār/
15.	Stand	/sʈænḏ/	35.	Sell	/sɛl/
16.	Live	/lɪv/	36.	Hat	/hǣʈ/
17.	Ant	/ænʈ/	37.	Bear	/bēr/
18.	Thief	/tʰīf/	38.	Tank	/ʈæŋk/
19.	Much	/məʧ/	39.	Hit	/hɪʈ/
20.	Lion	/ləjən/	40.	Skip	/skɪp/

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Appendix A

List 2

Sl. No.	Easy Words		Sl. No.	Hard Words	
1.	Time	/ʈəɪm/	21.	Not	/nɔːʈ/
2.	Spoon	/spūn/	22.	Tree	/ʈrɪ/
3.	Speed	/spīɖ/	23.	Snake	/snēk/
4.	Full	/fʊl/	24.	Hide	/həɪɖ/
5.	Dog	/ɖɔːg/	25.	Pot	/pɔːʈ/
6.	Wife	/vəɪf/	26.	Meal	/mīl/
7.	Talk	/ʈɔːk/	27.	Top	/ʈɔːp/
8.	Bush	/brəʃ/	28.	Post	/pōsʈ/
9.	Tree	/ʈrɪ/	29.	Rock	/rɔk/
10.	Egg	/ɛg/	30.	Low	/lo/
11.	Door	/ɖɔːr/	31.	Kite	/kəɪʈ/
12.	Wash	/ʋɔːʃ/	32.	Van	/væn/
13.	Bunch	/bəɲʧ/	33.	Wipe	/ʋəɪp/
14.	Rose	/rōz/	34.	Race	/rēs/
15.	Saw	/sɔ/	35.	Sit	/sɪʈ/
16.	Love	/ləv/	36.	Hut	/həʈ/
17.	Toy	/ʈɔːj/	37.	Beat	/bīʈ/
18.	True	/ʈrʊ/	38.	Sand	/sænɖ/
19.	Moon	/mūn/	39.	Hear	/hɪjər/
20.	Lock	/lɔːk/	40.	Ship	/ʃɪp/

Appendix B

Score Sheet - List 1

Sl. No.	Easy Words	Score	Sl. No.	Hard Words	Score
1.	Teach		1.	Nail	
2.	Zoo		2.	Mat	
3.	Pond		3.	Ink	
4.	Fish		4.	Dot	
5.	Bus		5.	Pin	
6.	One		6.	Map	
7.	Week		7.	Tip	
8.	Bird		8.	Bee	
9.	Twin		9.	Ring	
10.	Voice		10.	Sail	
11.	Grapes		11.	Have	
12.	Shoe		12.	Feed	
13.	Leg		13.	West	
14.	Rich		14.	Far	
15.	Stand		15.	Sell	
16.	Live		16.	Hat	
17.	Ant		17.	Bear	
18.	Theif		18.	Tank	
19.	Much		19.	Hit	
20.	Lion		20.	Skip	

	Score
No. of Easy Words Correct	
No. of Hard Words Correct	
Total	

Appendix B
Score Sheet – List 2

Sl. No.	Easy Words	Score	Sl. No.	Hard Words	Score
1.	Time		1.	Not	
2.	Spoon		2.	Tree	
3.	Speed		3.	Snake	
4.	Full		4.	Hide	
5.	Dog		5.	Pot	
6.	Wife		6.	Meal	
7.	Talk		7.	Top	
8.	Bush		8.	Post	
9.	Tree		9.	Rock	
10.	Egg		10.	Low	
11.	Door		11.	Kite	
12.	Wash		12.	Van	
13.	Bunch		13.	Wipe	
14.	Rose		14.	Race	
15.	Saw		15.	Sit	
16.	Love		16.	Hut	
17.	Toy		17.	Beat	
18.	True		18.	Sand	
19.	Moon		19.	Hear	
20.	Lock		20.	Ship	

	Score
No. of Easy Words Correct	
No. of Hard Words Correct	
Total	

Appendix C

Scores

For children with Normal Hearing Sensitivity

List	Word Type	Mean *	SD	Range	
				Minimum	**Maximum**
List 1	Easy Words	18.33	0.98	17.00	20.00
	Hard Words	15.60	0.99	13.00	17.00
List 2	Easy Words	18.20	1.20	16.00	20.00
	Hard Words	15.53	1.18	14.00	17.00

*Maximum scores = 20

For children with Hearing Impairment

List	Word Type	Mean *	SD	Range	
				Minimum	**Maximum**
List 1	Easy Words	11.60	2.07	9.00	14.00
	Hard Words	7.60	1.94	5.00	10.00
List 2	Easy Words	11.80	0.83	11.00	13.00
	Hard Words	7.80	1.09	6.00	9.00

*Maximum scores = 20

AIISH: GENESIS AND GROWTH

The All India Institute of Speech and Hearing is a premier institute in the country imparting training in the field of Speech and Hearing. Established on 9th of August 1965 as an autonomous organization, AIISH caters to manpower generation in the field, promoting research and providing rehabilitation services in the area. The institute is located on a sprawling area of 39 acres (two campuses) in Mysore. The institute registered as a Society under the Societies Registration Act XXI of 1860 (Punjab Amendment Act, 1957) and its functioning as an autonomous body under the aegis of the Union Ministry of Health and Family Welfare. Established primarily as training institute, it started training programs at postgraduate level in 1967 followed by B.Sc (Speech and Hearing) in 1968. The institute now offers three Diploma programs: Diploma in Hearing Aids and Ear mould technology, Diploma in Training the Young Hearing Impaired, Diploma in Hearing, Language and Speech through distance mode; two graduate programs: Bachelors in Audiology, Speech and Language Pathology (B. ASLP) and B. S. Ed (Hearing Impairment); three Master Programs (M.Sc. in Audiology, M.Sc. in Speech- Language Pathology and M.S.Ed. in Hearing Impairment); two PG Diploma courses (PG Diploma in Forensic Sciences and Technology, Clinical Linguistics for SLPS); two doctoral programs (Ph.D. in Audiology and Speech-Language Pathology); and Post-Doctoral Fellowships. The institute also conducts short- term training and orientation programs for professionals in allied specialties.

The institute has been recognized as a Centre of Excellence in the area of deafness (WHO), as a centre for advanced research (UGC) and as a Science and Technology Institute (DST). The institute is affiliated to the University of Mysore for the award of degrees. The academic programs of the institute have the recognition of the Rehabilitation Council of India. The institute has also been recognized as a Nodal Center for the implementation of the National Program for Prevention and Control of Deafness, Ministry of Health and Family Welfare, Government of India as well as for generating manpower for the same. Owing to its academic and research excellence, the institute has been assessed and accredited by NAAC with 'A' grade . Also, it is an ISO 9001:2015 certified organization for its brilliance of quality. Furthermore, it has been recognized as College with Potential for Excellence by the UGC, and as a Collaborative Organization for the Rashtriya Bal Swasthya Karyakram (RBSK), a Govt. of India scheme under the Ministry of Health and Family Welfare. The institute is a Centre of Excellence in Communication Disorders and a Govt. of India recognized Disability Certification Centre.

The functioning of the institute is under the direction of the Executive Council with Hon'ble Union Minister for Health and Family Welfare as the Chairman and the Hon'ble Minister of Health and Family Welfare, Government of Karnataka as Vice- Chairman. The other statutory bodies of the institute are the Finance Committee and the Academic Sub Committee.

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