

AIISH Tests & Therapy Resources Series

# DICHOTIC WORD TEST FOR NATIVE HINDI SPEAKING CHILDREN

**Mukesh Kumar  
Chandni Jain**



All India Institute of Speech and Hearing

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1. Dr. Prashanth Prabhu P., Assistant Professor in Audiology as Principal Investigator,
2. Dr. Priya M.B., Lecturer in Speech Sciences as Principal Investigator,
3. Dr. Shijith Kumar C., Library and Information Officer as Co-Investigator
4. Ms. Merin Susan Mathew and Ms. Rekha D., as Research Officers

## 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 **Dichotic Word Test for Native Hindi Speaking Children** is an outcome of the effort in the above direction. It was originally developed by **Mr. Mukesh Kumar**, in partial fulfilment of his Master's dissertation under the guidance of **Dr. Chandni Jain**.

Dr. M. Pushpavathi  
Director, AIISH

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## Introduction

Dichotic listening tests are among the most powerful of the behavioral auditory processing test battery for the assessment of hemispheric function, inter-hemispheric transfer of information, development and maturation of the auditory nervous system, and the identification of lesion of the central auditory nervous system. In this, the two ears are stimulated simultaneously with different speech sounds and the subject is asked to report what is being heard, either in both ears (free recall) or in one of the ears, either left or right (directed attention). Commonly used speech stimuli for dichotic testing are consonant-vowel (CV) nonsense syllables, digits, words, spondees, and sentences. Among these, sentences have most contextual cues followed by words and the cues are least for monosyllabic words. Hence, standardized dichotic CV word lists are frequently used, and an open-set stimulus makes them neither too easy nor too difficult which results in recognition performance in the middle of the difficulty continuum.

It is ideal to have speech tests in all languages as an individual's perception of speech is influenced by his/her first language or mother tongue.

## Brief description about the test

Dichotic Word Test in Hindi assesses the binaural integration phenomenon in Hindi speaking children and can be used as an assessment tool for Central Auditory Processing Disorders. The test is developed and validated by administering it on 90 normal hearing children (45 males and 45 females) between the age range of 7 and 12 years.

**Stimuli:** The stimuli set consists of two lists as given in Appendix A. Each list includes 5 trial word pairs and 20 paired bisyllabic words as test stimuli. The two words of each pair differ in initial syllable and neither have the same starting phoneme nor the same vowel. These paired words are aligned and imposed on a stereo track in such a way that they can be played simultaneously into both ears with difference in duration between the two words of a pair being not greater than 10 ms.

**Presentation Level:** Most comfortable level - 40 dB SL ref Speech Recognition Threshold

**Instructions:** “You will be hearing two words, one in each ear at the same time. You should repeat both the words that you hear”.

## Scoring

Record the subject's responses on the response sheet (Appendix B). The responses are scored as follows:

- ***Right - Correct Score (RCS)***: Total number of correct responses to stimuli presented in the right ear
- ***Left - Correct Score (LCS)***: Total number of correct responses to stimuli presented in the left ear
- ***Double Correct Score (DCS)***: Total number of correct responses to stimuli presented in both ears.

## Interpretation

The scores obtained by an individual can be calculated and compared with the scores obtained from the study (Appendix C) to infer the results.

## Clinical Implications

Dichotic listening tests can be used in the assessment of auditory processing disorders in children and other clinical populations such as learning disability, aphasia, demyelinating disorders, primary degenerative dementia and closed head injury.

## Appendix A

### Dichotic Word List I

Sl. No.	Right Trial Words		Left Trial Words	
1.	नाच	/nāɟʃ/	बेच	/bēɟʃ/
2.	देख	/d̪ēkʰ/	धूप	/d̪ʱūp/
3.	जीभ	/d̪ʒībʰ/	देर	/d̪ēr/
Sl. No.	Test Words		Test Words	
1.	मौत	/mɔʈ/	काट	/kāt/
2.	तीर	/t̪īr/	खोल	/kʰōl/
3.	लाख	/lākʰ/	बीच	/bīɟʃ/
4.	लौट	/lɔʈ/	रोज	/rōd̪ʒ/
5.	बैल	/bæɭ/	ताक	/tāk/
6.	याद	/jād̪/	चोट	/ɟʃōʈ/
7.	काट	/kāt/	खोद	/kʰōd̪/
8.	खोल	/kʰōl/	दिल	/d̪il/
9.	सच	/səɟʃ/	मौत	/mɔʈ/
10.	तेज	/t̪ēd̪ʒ/	बैल	/bæɭ/
11.	जोर	/d̪ʒōr/	लौट	/lɔʈ/
12.	कौन	/kɔn/	तीर	/t̪īr/
13.	जीत	/d̪ʒīt̪/	लाख	/lākʰ/
14.	रोज	/rōd̪ʒ/	याद	/jād̪/
15.	ताक	/tāk/	सच	/səɟʃ/
16.	चोट	/ɟʃōʈ/	बाल	/bāl/
17.	खोद	/kʰōd̪/	तेज	/t̪ēd̪ʒ/
18.	बीच	/bīɟʃ/	जोर	/d̪ʒōr/
19.	दिल	/d̪il/	कौन	/kɔn/
20.	बाल	/bāl/	जीत	/d̪ʒīt̪/



## Dichotic Word List I

Sl. No.	Right Trial Words		Left Trial Words	
1.	नोट	/nōṭ/	हार	/hār/
2.	खेत	/k <sup>h</sup> ēt/	भैंस	/b <sup>h</sup> æns/
3.	तेल	/tēl/	कान	/kān/
Sl. No.	Test Words		Test Words	
1.	भाग	/b <sup>h</sup> āg/	गोल	/gōl/
2.	रोक	/rōk/	धूल	/d <sup>h</sup> ūl/
3.	दिन	/ḍin/	नाक	/nāk/
4.	घूस	/g <sup>h</sup> ūs/	रोक	/rōk/
5.	नाम	/nām/	खेल	/k <sup>h</sup> el/
6.	बोल	/bōl/	भाग	/b <sup>h</sup> āg/
7.	धूल	/d <sup>h</sup> ūl/	चाय	/tʃāj/
8.	गोल	/gōl/	घर	/g <sup>h</sup> ər/
9.	नाक	/nāk/	मोर	/mōr/
10.	जाल	/dʒāl/	रोग	/rōg/
11.	चोर	/tʃōr/	दाग	/dāg/
12.	घर	/g <sup>h</sup> ər/	बोल	/bōl/
13.	चाय	/tʃāj/	घूस	/g <sup>h</sup> ūs/
14.	खेल	/k <sup>h</sup> el/	चैन	/tʃæn/
15.	नीम	/nīm/	जाल	/dʒāl/
16.	लिख	/lik <sup>h</sup> /	चोर	/tʃōr/
17.	मोर	/mōr/	दिन	/ḍin/
18.	रोग	/rōg/	नीम	/nīm/
19.	चैन	/tʃæn/	नाम	/nām/
20.	दाग	/dāg/	लिख	/lik <sup>h</sup> /

## Appendix B

### Score Sheet - I

List I			
<i>Sl. No.</i>	<i>Right Ear-Test Word</i>	<i>Response RCS</i>	<i>Left Ear -Test Word Response LCS DCS</i>
1.	/mɔ̃t̃/		/kāt/
2.	/t̃r̃/		/k <sup>h</sup> ōl/
3.	/lāk <sup>h</sup> /		/bīf̃/
4.	/lɔ̃t̃/		/rōd̃z̃/
5.	/bæl/		/t̃āk/
6.	/jād̃/		/f̃ōt̃/
7.	/kāt/		/k <sup>h</sup> ōd̃/
8.	/k <sup>h</sup> ōl/		/d̃l̃/
9.	/səf̃/		/mɔ̃t̃/
10.	/t̃ēd̃z̃/		/bæl/
11.	/d̃z̃ōr̃/		/lɔ̃t̃/
12.	/kɔ̃n/		/t̃r̃/
13.	/d̃z̃īt̃/		/lāk <sup>h</sup> /
14.	/rōd̃z̃/		/jād̃/
15.	/t̃āk/		/səf̃/
16.	/f̃ōt̃/		/bāl/
17.	/k <sup>h</sup> ōd̃/		/t̃ēd̃z̃/
18.	/bīf̃/		/d̃z̃ōr̃/
19.	/d̃l̃/		/kɔ̃n/
20.	/bāl/		/d̃z̃īt̃/
<b>Total</b>		<b>Total</b>	

*Score Sheet - II*

<b>List II</b>				
<i>Sl. No.</i>	<i>Right Ear-Test Word</i>	<i>Response RCS</i>	<i>Left Ear -Test Word</i>	<i>Response LCS DCS</i>
1.	/b <sup>h</sup> āg/		/gōl/	
2.	/rōk/		/ḍ <sup>h</sup> ūl/	
3.	/ḍm/		/nāk/	
4.	/g <sup>h</sup> ūs/		/rōk/	
5.	/nām/		/k <sup>h</sup> ēl/	
6.	/bōl/		/b <sup>h</sup> āg/	
7.	/ḍ <sup>h</sup> ūl/		/ḥāj/	
8.	/gōl/		/g <sup>h</sup> ər/	
9.	/nāk/		/mōr/	
10.	/ḍzāl/		/rōg/	
11.	/ḥōr/		/ḍāg/	
12.	/g <sup>h</sup> ər/		/bōl/	
13.	/ḥāj/		/g <sup>h</sup> ūs/	
14.	/k <sup>h</sup> ēl/		/ḥæn/	
15.	/nīm/		/ḍzāl/	
16.	/l <sup>h</sup> k/		/ḥōr/	
17.	/mōr/		/ḍm/	
18.	/rōg/		/nīm/	
19.	/ḥæn/		/nām/	
20.	/ḍāg/		/l <sup>h</sup> k/	
<b>Total</b>		<b>Total</b>		

## Appendix C

### Scores

Age Group (years)	Gender	List I						List II					
		RCS		LCS		DCS		RCS		LCS		DCS	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
7-7.11	M	10.33	1.66	6.33	1.58	2.44	1.33	10.67	1.41	6.11	2.84	2.56	1.74
	F	10.55	2.07	6.78	1.39	2.11	2.09	10.89	2.42	6.89	0.93	2.22	0.97
8-8.11	M	11.78	1.30	8.33	1.58	3.78	2.33	11.11	2.08	8.44	3.09	3.56	2.60
	F	11.11	1.17	8.44	1.01	3.89	2.31	11.56	1.67	8.11	2.42	3.44	1.13
9-9.11	M	13.00	1.41	9.22	2.11	5.89	1.16	13.11	1.27	9.22	2.11	6.11	1.05
	F	12.89	1.76	9.44	1.33	6.11	1.27	13.11	1.83	9.33	2.00	6.00	1.00
10-10.11	M	15.55	1.67	12.33	2.34	9.44	2.13	15.66	1.22	12.11	1.54	9.33	1.32
	F	15.33	1.12	12.56	1.51	9.56	1.01	15.67	1.32	12.67	1.00	9.67	1.00
11-11.11	M	17.00	1.00	15.00	0.71	13.22	0.83	16.67	1.00	15.00	1.22	13.44	1.13
	F	17.11	1.54	15.11	1.45	13.44	1.51	17.22	1.20	15.56	2.29	13.78	2.33

*Note: RCS – Right Correct Score; LCS – Left Correct Score; DCS – Double Correct Score*

## Appendix D

### Sample Scoring Sheet - I

Name: XXX

Date: xx/xx/xxxx

Age/Sex: 11 yrs/Male

Responses:

<b>List I</b>								
<i>Sl</i>	<i>No. Left Ear - Test Word Response LCS</i>			<i>Right Ear - Test Word Response RCS</i>			<i>DCS</i>	
1.	/mɔʈ/	/mɔʈ/	1	/kāt/	/kāt/	1	1	
2.	/ṭīr/	/ṭīr/	0	/k <sup>h</sup> ōl/	/k <sup>h</sup> ēl/	0	0	
3.	/lāk <sup>h</sup> /	/lāk <sup>h</sup> /	1	/bīṭ/	/bīṭ/	1	1	
4.	/lɔʈ/	/lɔʈ/	1	/rōḍʒ/	NR	0	0	
5.	/bæɭ/	NR	0	/ṭāk/	/ṭāk/	1	0	
6.	/jād/	/jād/	1	/ṭōṭ/	NR	0	0	
7.	/kāt/	/kāt/	0	/k <sup>h</sup> ōḍ/	NR	0	0	
8.	/k <sup>h</sup> ōl/	NR	0	/ḍīl/	/ṭīl/	0	0	
9.	/səṭ/	/səṭ/	1	/mɔʈ/	/mɔʈ/	1	1	
10.	/ṭēḍʒ/	NR	0	/bæɭ/	NR	0	0	
11.	/ḍōr/	NR	0	/lɔʈ/	NR	0	0	
12.	/kɔn/	/kɔn/	1	/ṭīr/	NR	0	0	
13.	/ḍīṭ/	NR	0	/lāk <sup>h</sup> /	/lāk <sup>h</sup> /	1	0	
14.	/rōḍʒ/	NR	0	/jād/	NR	0	0	
15.	/ṭāk/	/ṭāk/	1	/səṭ/	NR	0	0	
16.	/ṭōṭ/	NR	0	/bāl/	/pāl/	0	0	
17.	/k <sup>h</sup> ōḍ/	/k <sup>h</sup> ōḍ/	1	/ṭēḍʒ/	/ṭēḍʒ/	1	1	
18.	/bīṭ/	NR	0	/ḍōr/	NR	0	0	
19.	/ḍīl/	NR	0	/kɔn/	NR	0	0	
20.	/bāl/	/bāl/	1	/ḍīṭ/	/ṭīṭ/	0	0	
<b>Total</b>			9	<b>Total</b>			6	4

**Scoring:**

Right Correct Score - 9

Left Correct Score - 6

Double Correct Score - 4

**Interpretation:** Indication of Poor Binaural Integration

### Sample Scoring Sheet - II

Name: YYY

Date: xx/xx/xxxx

Age/Sex: 10 yrs/Female

Responses:

<b>List I</b>							
<i>Sl</i>	<i>No. Left Ear - Test Word Response LCS</i>			<i>Right Ear - Test Word Response RCS</i>			<i>DCS</i>
1.	/mɔt̪/	/mɔt̪/	1	/kāt̪/	/kāt̪/	1	1
2.	/t̪ir/	/t̪ir/	1	/k <sup>h</sup> ōl/	NR	0	0
3.	/lāk <sup>h</sup> /	/lāk <sup>h</sup> /	1	/bīf̪/	/bīf̪/	1	1
4.	/lɔt̪/	/lɔt̪/	1	/rōd̪ʒ/	NR	0	0
5.	/bæɭ/	NR	0	/t̪āk/	/t̪āk/	1	0
6.	/jād̪/	/jād̪/	1	/t̪ōt̪/	/d̪ʒōt̪/	0	0
7.	/kāt̪/	NR	0	/k <sup>h</sup> ōd̪/	NR	0	0
8.	/k <sup>h</sup> ōl/	/k <sup>h</sup> ōl/	1	/d̪ɪɭ/	/d̪ɪɭ/	1	1
9.	/səf̪/	/səf̪/	1	/mɔt̪/	/mɔt̪/	1	1
10.	/t̪ēd̪ʒ/	/t̪ēf̪/	0	/bæɭ/	NR	0	0
11.	/d̪ʒōr/	/d̪ʒōr/	1	/lɔt̪/	/lɔt̪/	1	1
12.	/kɔn/	/kɔn/	1	/t̪ir/	NR	0	0
13.	/d̪ʒīɭ/	/d̪ʒīɭ/	1	/lāk <sup>h</sup> /	/lāk <sup>h</sup> /	1	1
14.	/rōd̪ʒ/	/rōd̪ʒ/	1	/jād̪/	/jād̪/	1	1
15.	/t̪āk/	/t̪āk/	1	/səf̪/	NR	0	0
16.	/t̪ōt̪/	/t̪ōt̪/	1	/bāl/	/bāl/	1	1
17.	/k <sup>h</sup> ōd̪/	/k <sup>h</sup> ōd̪/	1	/t̪ēd̪ʒ/	/t̪ēd̪ʒ/	1	1
18.	/bīf̪/	/bīf̪/	1	/d̪ʒōr/	/t̪ōr/	0	0
19.	/d̪ɪɭ/	/d̪ɪɭ/	1	/kɔn/	/kɔn/	1	1
20.	/bāl/	/bāl/	1	/d̪ʒīɭ/	/d̪ʒīɭ/	1	1
<b>Total</b>			17	<b>Total</b>			12 11

**Scoring:**

Right Correct Score - 17

Left Correct Score - 12

Double Correct Score - 11

**Interpretation:** Indication of Normal Binaural Integration

## 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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