THE EFFECT OF TRAINING AND NATIVE LANGUAGE ON SCORING THE RESPONSES ON A SPEECH DISCRIMINATION TEST IN ENGLISH

Reg. No.

A Dissertation

Presented to University of Mysore in partial Fulfillment of the Requirements for the Degree of Master of Science in Speech and Hearing

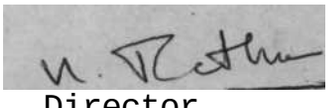
May 1983

To

My parents

C E R T I F I C A T E

This is to certify that the dissertation entitled "The effect of Training and Native language on scoring the responses on a Speech Discrimination test in English" is the bonafide work done in part fulfilment for the degree of Master of Science (Speech and Hearing) of the student with Register No.



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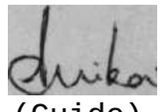
C E R T I F I C A T E

This is to certify that this dissertation entitled "The effect of Training and Native language on scoring the responses on a Speech Discrimination test in English" has been prepared under my supervision and guidance.



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D E C L A R A T I O N

This dissertation entitled "The effect of Training and Native language on scoring the responses on a Speech Discrimination test in English" is the result of my own study undertaken under the guidance of Dr.(Miss)Shailaja Nikam, Professor & Head of the Department, Department of Audiology, All India institute of Speech and Hearing, Mysore, and has not been submitted earlier at any University or Institution for any other diploma or degree.

Mysore

Dated: May 1983.

Register No.

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CONTENTS

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C H A P T E R

I N T R O D U C T I O N

> "The fact of the matter is that the 'real world' is to a large extent unconsciously build up on the language habits of the group . . . we see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation"
>
> - Edward Sapir

When the conversation is between two people of different cultures, many things may go wrong. Although both may have the best of intentions, they may perceive one another as aloof and unfriendly, agressive and pushy, impatient, overly, passive, rude or bored. The way communication is sequenced, the content and style of expression (the way another's communication is sequenced, the content and style of expression), the way another's communication is interpreted, form a part of a system which differ across languages and cultures.

As cultures differ, differences in languages is observed. The non-native speaker transfers the presuppositions and expectations of his native language and culture to his interaction in the second language. For Ex: the word 'Thank You' to an Indonesian is refusal and to an American is

acceptance. This means that though the nonnative speaker's grasp of the lexical, syntactic and semantic elements may be quite good, he lacks communicative competence. Communicative competence refers to the social rules of language used which differ across languages.

The perception and production of a language is not only determined by its social rules, but also by the native language of the speaker and listener. The native language interferes with the other at phonemic, grammatical and lexical levels. (Weinrich's concept of interference, 1954).

Several cross-language studies have been done using different types of stimuli such as vowels, consonants, words and sentences. Different authors have tried analysing different linguistic aspects to find out to what extent the language background influences his perception. Gandour and Harshman have found based on the aspect of linguistic tone, a tone language speaker can be easily distinguished from speakers of a non-tone language.

With vowels as the stimuli (Stevens et. al, 1969) found linguistic experience had no effect. Bagli (1972) studied the acoustical and perceptual

analysis of eight vowels in English spoken by four different nationalities and found that standard American English and the amount of experience with the language were closely related.

Many studies have been done with consonants as the stimulus and the results of all the studies indicate that the mother-tongue affected the perception. Singh (1966) using plosives found a difference between Hindi and English speakers in the recognition of voicing. Singh and Black (1966) found a significant interaction between consonants and listeners while studying four language groups: Arabic, English, Hindi and Japanese. Abranson and Lisker (1970) in a cross-language study dealing with voicing distinction and found it to differ with the language spoken by the subject. Miyawaki et. al (1975) in their cross-language study using the two sounds /r/ and /l/ which was a phonemic contrast to our language group and not to the other, found that linguistic experience is important, but it specifically affected perception only in the "speech mode".

Using a combination of vowel and consonant plus stress pattern, Sapon and Carroll (1957), in a

cross-language study with English, Japanese and Spanish found that language spoken by the individual affected the perception.

Certainstudies have been done using words and sentences as the stimuli, Irwine (1977) used a word test and a sentence test and found

Gat and Keith (1978) in their cross-language study found that a limited linguistic experience resulted in a persistent deterioration of auditory word discrimination under impoverished conditions of audition. 'Limited linguistic experience' refers to nonnative speakers and 'impoverished condition' refers to discrimination in the presence of noise in this study.

Some studies have been done on early linguistic experience on infant speech perception. Eilers, Garia and Wilson (1979) found that experience plays a central role in infant speech perception. The task in this study was the discrimination of VOT contrast. Eilers et. al did another study with naturally produced speech and again found that it does play a major role in infant speech perception.

Speech audiometry being an indispensible tool to an audiologist in diagnosis and rehabilitation, the fact that native language influences the perception of a non-native language should not be overlooked. As audiologists most often score oral responses in a speech discrimination test, there is a possibility that the discrimination scores obtained are as a result of the true discrimination of the subject and the effect of perception of the tester which is influenced by his native language. To obtain the true discrimination scores, the error in scoring due to the tester's perception which is based on his native language has to be ruled.

This study aimed at finding out whether training helps an individual to overcome the influence of the native languages on his perception. Nelson and ChaiMin (1969) have found examiner's experience to be a critical variable in scoring a speech discrimination test. The difference in scores obtained by experienced and inexperienced examiners were significantly different.

The other aim of this study would be to find out if scoring during a speech discrimination test, a Dhravidian group of testers would be significantly

different from an Indo-Aryan group of testers. As review of literature indicates that the native language does influence perception to a great extent, theme is a likelihood of difference existing in the scores obtained by the two language groups such as Dravidian and Indo-Aryan as the two language groups are different even begining with their origins.

NEED FOR THE STUDY

Having known the fact that the native language of the tester affects the way he perceives a non-native language, it is necessary to know if undergoing training helps him to overcome this influence of his native language in perception and thus overcome the effect in scoring a speech discrimination test. If training is not found to be of help, it calls for special training in this particular aspect.

Though an audiologist is trained, it does not make him proficient in all the fifteen Indian languages (Times of India Dictionary and Yearbook, 1982) to administer test in all these languages. Though speech discrimination tests have been developed in quite a few Indian languages, it is not

practical to expect an audiologist to always be able to administer a test in a subject's native language, though that would be ideal. All audiologists knowing English, there are a few speech discrimination tests in English which have been standardized and a majority of the Indians speak English, it seems justified in using an English (non-native) test in India. Knowing the fact that the native language influences the perception of the non-native language, we have to find out to what extent the Indian languages affect the perception of an English test. The fifteen Indian languages can be broadly classified into two large categories based on their origins - Dravidian and the indo-Aryan.

SUMMARY AND STATEMENT OF THE PROBLEM

Being justified in using an English speech discrimination test and knowing the fact that the native language influences the perception of a non-native language, the aims of this study are:

1. To find out if training helps an audiologist to overcome the influence of his native language in scoring a speech discrimination test (Auditory discrimination test NU-6 Form A) in a non-native language.

2. To find out if there is a significant difference in the scores when the responses are evaluated by native speakers of Dravidian languages compared to those evaluated by native speakers of Indo-Aryan languages.

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C H A P T E R II

REVIEW OF LITERATURE

Speech audiometry makes use of various kinds of stimuli for the purpose of speech discrimination testing. They are the non-sense syllables, monosyllabic words and sentences, similarly, cross-language studies have been done using different kinds of stimuli such as vowels, consonants, syllables, words and sentences.

The cross-language studies with vowels, consonants (stops and glides) and syllables as stimuli are:

Sapon and Carroll (1957) studied the perception of speech sounds in three groups of monolingual subjects whose mother-tongues were English, Japanese and Spanish. They used a combination of vowel plus consonant plus stress patterns as the stimuli. The responses were analysed in terms of distinctive features. Their conclusions of the study were:

1) The three groups differed significantly in terms of perception and discrimination of sounds.

2) The listener's language determined the probability of a sound being perceived in a given environment.

3) The direction and magnitude of the errors are systematically related to the language spoken by the listeners. Thus, given the stimulus sound and the language of the listener, the direction and

magnitude of the errors can be predicted.

Singh (1966) studied the influence of the subject's mothertongue on the perception of speech sounds. Two groups of subjects were tested, one group was made up of subjects whose native language was English and the other's native language was Hindi. The perceptual confusions of plosive phonemes were studied under two conditions of distortions i.e., temporal segmentation and filtering, There was a difference in the two groups in recognising voicing. Native speakers of English responded erroneously more often than native Hindi speakers on the voicing feature. Results indicated that there is a difference in the perception of the two groups.

Singh and Black (1966) also studied the influence of the subject's mother-tongue on the perception of speech sounds. The subjects for the study were from four language groups: Arabic, English, Hindi and Japanese. The results indicated that the mother-tongue affected the perception of speech sounds. They also found that a significant interaction was present between the consonants used as a stimuli and the listeners.

Stevens et. al (1969) in their cross-language study dealing with vowels found that linguistic experience had no effect. The subjects were Swedish and American listeners. The stimuli used were synthetic vowels which were phonemically distinct for the one group and not for the other. The discrimination of both the groups was found to be the same.

Abranson and Lisker in 1970 conducted a cross-language study dealing with voicing distinction in stops and obtained results contradictory to that found by Stevens et. al (1969). More accurate discrimination was observed at those positions on the stimulus continuum that corresponded to the different positions of the voicing boundary for the language spoken by the subjects.

The difference in discriminability obtained with vowels and stops may be related to articulatory, acoustic and perceptual differences between the two classes of sounds. This difference was limited to speech-like condition and not in isolation.

The linguistic experience affects the perception of vowels and stop consonants differently is

probably related to other differences between these two classes of sounds. Vowels are represented directly in the sound stream; they are like most sounds perceived in continuous fashion; and according to some investigators (Abranson and Lisker, 1970) they can be apparently processed in either cerebral hemispheres, stop consonants, on the other hand, are complexly encoded in the sound stream? they are perceived in nearly categorical fashion; and they are apparently needed to be processed in the left hemisphere.

Bagli (1972) studied the effect of linguistic experience on the acoustical and perceptual analysis of eight basic vowels in English, spoken by four groups of three different nationalities: American, British and Indian. Her results show that adequate pronunciation of standard American English was closely related to the amount of experience with the language.

Miyawaki et. al (1975) studied the effect of linguistic experience on the perception of a cue. The task was the perception of a cue that helped distinguish between /r/ and /l/ in English, (/r/ and /l/ are liquids and are different from the

classes of stops and consonants. The liquids are some way intermediate between the stops and consonants). The thirteen speech stimuli used in this set varied in the initial stationery frequency of the third formant (F_3) and its subsequent transition into the vowel over a range sufficient to the perception of /ra/ and/la/ for American subjects and to produce /ra/ which is not a phonemic contrast to /la/ for Japanese subjects. Comparable set of stimuli consisting of isolated third formant components formed a 'non-speech' control. For Americans, the discrimination of the speech stimuli was nearly categorical i.e., comparison pairs which were identified as different phonemes were discriminated with high accuracy, while pairs which were identified as the same phonemes were discriminated relatively poorly. The Japanese subjects, in, discriminating speech stimuli, were only slightly better than chance for all comparison pairs. In discriminating nonspeech stimuli, both the groups showed highly accurate discrimination of all comparison pairs. Thus the results suggested that the effect of linguistic experience is specific to perception in the "Speech mode".

Gandour and Harshman tried to determine the

dimensions underlying the perception of linguistic tone, and to what extent an individual's language background influenced his perception. The three languages chosen for the investigation were Thai and Yoruba, the tone languages and English, the nontone language. Thirteen different pitch patterns were superimposed on a synthetic speech like syllable. Paired comparison judgements were obtained from the subjects.

Results revealed that along the five dimensions- average pitch, direction, length, extreme end point and slope which are the perceptual structures underlying the dissimilarities data, language subgroup variation in relative importance of these dimensions appears to be primarily related to subgroup differences in the way pitch is used to convey linguistic information, so, most individual speakers of a tone language (Thai or Yoruba) can be easily distinguished from speakers of a nonnative language (English) on the basis of their distinctive patterns of perceptual saliency for these five dimensions. Results also indicated that the average pitch and length dimensions were common to all the three language groups, although the groups differed considerably in relative importance attached

to these dimensions and presumably in the employment of these dimensions psychologically, and that the direction and slope dimensions are restricted to the tone language groups.

Some cross-language studies have been done using words and sentences as the stimulus.

Gat and Keith (1978) studied the effect of linguistic experience on the auditory discrimination of words. The CID W-22 auditory test was administered. 18 subjects were tested of which six were native and twelwe non-native speakers of English.

In the absence of noise, the results of all the groups were similar. As noise level increased word discrimination deteriorated for all three groups with non-native speakers of English obtaining results significantly poorer than native speakers At 0 dB SPL, individual variability of non-native speakers of English, regardless of their original linguistic background was much smaller than that found for native speakers of English.

This study indicated that limited linguistic experience resulted in a persistent deterioration of auditory word discrimination under adverse conditions of audition.

Most of the cross-language research on speech perception examined the discrimination of phonetic segments by a group of native speakers of English or other groups of non-native speakers of English. Generally, a difference in the ability to discriminate phonemes or speech-like sounds can be attributed to the linguistic experience with certain phonemes or syllables in various languages when compared to their frequency of occurence in English.

Iriwine (1977) conducted a series of experiments on a group of students to investigate their performance on two tests of speech intelligibility. A single word test and a sentence test were administered. It was found that the non-native English groups had a better understanding of written words than they had of spoken words.

In 1979, Eilers, Gavin and Wilson, tested the perception of speech in both Spanish and English learning infants. Both groups were examined for discrimination of a VOT contrast. The results suggested that linguistic experience played a central role in infant speech perception.

Aslin and Pisoni (1980) have commented on the

study done by Eiler et. al (1979) that as only a single stimulus dimension and that as only synthetic stimuli were employed, their findings cannot be accepted. They are of the opinion that only after studying a wide variety of stimulus types, it is possible to assess the relative importance during the first years of experience and other factors like the inherent saliency of the acoustic cues under study. They also opine that the effect of experience does not seem to be important in all cases as in the case of VOT. They conclude that though several natural stimulus pairs and a variety of acoustic cues have been studied, it is still only possible to speculate on the extent of the impact of early linguistic experience.

Eilers, William J. Ganin and others tried to investigate the possibility of the effect of early linguistic experience on infant speech perception. It was a cross-linguistic study with naturally produced speech stimuli. Both groups (Spanish and English learning infants 6 - 8 months of age) showed statistically significant discrimination of English and Czech. Only the Spanish learning infants provided evidence of discrimination of the Spanish contrast. The groups discriminated the English

contrast at similarly high levels, but the Spanish learning infants showed significantly better performance than the English on both the Spanish and Czech contrasts. This study suggested that early experience does affect discrimination. These studies are supported especially because the stimuli used were natural.

EFFECT OF TRAINING

Not many studies have been done on the effect of training in scoring a speech discrimination test. Nelson and Chaiklin (1969) have studied the aspect of experience. They compared writedown and talkback responses from eight listeners, it was scored by eight experienced and eight inexperienced examiners- half of them monitoring at 70 dB SPL and the other half at 60 dB SPL. Results were as follows:

1. Inexperienced examiners awarded significantly higher mean talkback discrimination score than the mean write-down discrimination score.
2. Experienced examiners produced talkback discrimination scores that were not significantly different from the mean writedown discrimination score.
3. Decreasing the monitoring level from 70dB SPL to 60 dB SPL increased inexperienced examiner's mean

correct bias (an inclination to overestimate correct responses) but the experienced examiners' mean talk back discrimination score did not change significantly with monitoring level.

4. Inexperienced examiners made more scoring errors than experienced examiners at both monitoring levels.

This study indicated that examiner's experience and monitoring levels are critical variables. Thus, from this study, it can be concluded that training is an important factor in scoring a speech discrimination test.

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C H A P T E R III

M E T H O D O L O G Y

The main aim of this study was to find out

1. The effect of native language in scoring response on a speech discrimination teat in a non-native language.
2. If theree exists a difference in the scores scored by trained and untrained testers.

Subjects:

Two groups of subjects were tested. The first group consisted of twenty 'listeners' to whom the NU-6 Auditory discrimination test form A was administered. The second subjects group of forty subjects formed the testers. The testers were ten trained Dravidians, ten untrained Dravidians, ten trained Indo-Aryans and ten untrained Indo-Aryans. 'Trained' refers to graduates and final year B.Sc speech and Hearing students and 'Untrained' refers to those laymen to the field of Speech and Hearing. The selection of subjects in general had to satisfy the following criteria:-

1. Be within the age range of eighteen to twenty eight years.
2. Should have had English as the medium of instruction for atleast five years.

3. Pass the English proficiency test.

4. Have normal hearing in both ears in the frequency range of 250 HZ to 8000HZ (ANSI 1969).

5. Have a negative history of ear infection, hearing loss and head injury.

II. The 'listeners' in particular had to fulfill the following criteria in addition to the five mentioned above:-

1. Should be kannada - English bilinguals, Kannada being their mother tongue.

III. The 'Testers' in particular had to fulfill the following criteria:-

1. The twenty trained 'Testers' should be either graduates in Speech and Hearing Science or final year B.Sc Speech and Hearing students.

2. The twenty untrained 'Testers' sould be laymen to the field of speech and Hearing.

3. Both trained and untrained 'Testers' should have one of either Dravidian or indo-Aryan languages as their mother tongue.

An attempt was made at keeping the number of subjects with different mother tongue equal under the trained and untrained groups. The Dravidian group consisted of three tamil speakers, three kannada speakers.

two malayalam and two telegu speakers in both the trained and untrained groups.

In the Indo-Aryan group, the trained group and the untrained group had the number of four Hindi speakers, one oriya speakers and two konkani speakers. In the other languages, punjabi speakers in the trained group were two and in the untrained group one, and the trained group had two Mythili speakers,in all ten in each group.

Test Material:

The test material consists of -

1. English proficiency test.
2. Speech material.

1. English Test:- "A Test of English Ability" (constructed at Central Institute of English and Foreign Languages 1980) (Appendix I) was administered to all the subjects to evaluate their proficiency in English. As the test did not have any scoring system an arbitrary scoring system was adopted. Each item was given a credit score of 1 point or 1.5 point based on their difficulty giveing a total of hundred points for the test items. An arbitrary point of fifty points was decided as the cut-off between pass and fail. Only those who passed this test were taken for the study.

2. Speech Material: Two kinds of speech material were used in this study. They are the spondees and CNC monosyllables. All the spondees from CID W-l (list A) were used for assessing the Speech Reception Threshold (Appendix II). The CNC monosyllables constituted the material used for the discrimination test. Four lists of Form A of NU Auditory test No.6, (Appendix III) were used for this purpose* These lists and the spondees were, tape recorded.

Recording procedure:

The test stimuli were recorded in an anechoic room using a tape recorder (GRSM—33TT) (Grundig TK 745) with a stereo microphone (GDSN 331)- All the recordings were made on magnetic tapes at a tape speed of 7½ c.p.s (19 cms/sec).

The recording was made by an young adult male talker with a fundamental frequency with in the normal ramge "The spondees word recorded with the carrier phrase "you will say.....". The level of the carrier phrase was allowed to peak at '0' and the spondee was recorded with equal stress on each syllable following a natural manner. An interval of five seconds was given between successive spondees to allow the subject to give an oral response.

The monosyllabic words were similarly recorded but with a time interval of eight seconds between successive words to allow the subject to give both an oral and written response. The words were spoken naturally with equal effort.

The tape was played on a stereo tape recorder (Uher Variocord 263). Its output was given to a level recorder (B and K 2305). The level of all the words of all the lists were recorded on the level recorder. The peak average was found out separately from each list. A l000Hz tone was then recorded from a Beat frequency oscillator (B&K 1020) at the beginning of each list. The level of the 1OOOHz tone was at the level of the peak average. The maximum deviation of any given peak with respect to the lOOOHz tone was within $\pm$ 1.0 dB for all the four lists.

Instrumentation:

The instruments used in this study are:

1. A two channel audiometer (Madsen OB 70).
2. Stereo tape recorder a Uher (Logic S563). The output of the tape recorder was given to the input of the audiometer. The output of the audiometer was. given to the earphones (TDH 39 with MX 41/AR Ear cushions). The Audiometer was calibrated to ANSI (1969) specifications. Calibration procedure

is given in Appendix (IV). Frequency response characteristics of the earphones is also given in the appendix (V). Objective calibration was done periodically.

Test Environment:

The test environment consisted of a two room situation. The subjects were made to sit in the sound treated room. The talker was seated at the centre and the two testers at the two corners behind the talker. Noise levels in test room were measured Using a Sound Level Meter (B and K 4165) and found to be within permissible levels (Appendix VI).

Test Procedure:

The air conduction and bone conduction thresholds of both ears were obtained using modified Hughson-westlake procedure (Carhart and Jerger 1959).

The test ear was always the better ear, or when both ear theresholds were equal, the test ear was randomly chosen keeping both ears equal. The speech reception threshold of the test ear was obtained using CID W-l list A.

Speech Reception Threshold: Test procedure: The subject was first familiarised with the entire list

which was read out in the alphabetical order in a face to face situation.

The instructions were as follows:
"You will hear a man's voice saying the words ..... (the whole list in the alphabetical order). Before each word you will hear the phrase "you will say....." You have to repeat the word that follows this phrase. If you are not sure of the word, then try to guess. Do you have any questions?"

To determine the SRT, the test was begun by presenting two spondees at 30 dBHL; If both were repeated correctly, the intensity was reduced in l0dB steps with two spondees being presented at each level. This was continued till the level where he failed to repeat both. Then the intensity was increased by 8 dB. If the two spondees were repeated correctly, the level was reduced in 2 dB steps and two spondees were presented at each level. The intensity was reduced till the subject missed five out of six words. The lowest level at which he repeated both the spondees, minus 1 dB. for those words repeated correctly from then on, was the SRT.

Speech Discrimination Threshold: Procedure-

Four lists of form A of NU Auditory test No.6 was presented at 8 dB, 16 dB, 24 dB, 32 dB and 40 dB, above SRT. All the four lists were listened to by all the subjects, but only at four of the above mentioned levels, the list and sensation level combination being chosen using a random number table.

Response sheets were provided to obtain the written responses.

Instructions given to the 'Listener' was: "You will now hear four lists of words some of them loud, some of them soft. In each list there are fifty words. Before each word you will hear the phrase "You will say. . . . . " Concentrate on the word that follows and write it out on the response sheet as well as say it aloud. If you are doubtful, try to guess, if you feel you are unable to guess, leave a blank against the Serial No. and go on to the next. Do you have any questions?"

All the lists were presented in a single session, while the spondees and monosyllables were being presented, the tape recorder gain was adjusted so as to peak the 1KHz tone at VU '0' on the audiometer.

As the 'listener' responded by saying out the monosyllable loudly, the trained and untrained testers (belonging to both Dravidian and Indo-Aryan groups) were scoring them by writing out the response.

Scoring:

The response sheets of both the 'listeners' and 'testers' were corrected to find out if there existed any error in scoring due to the influence of

1. Native language.
2. Training.

These results were analysed using statistical procedures to find out if the error in scoring due to the influence of the native language and training were statistically significant.

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CHAPTER IV

RESULTS

The written responses of the twenty listeners to the NU-6 Auditory discrimination test was obtained. The percentage of discrimination scores for each individual was obtained by the twenty trained and twenty untrained testers writing out the oral response of the listeners.

The mean of the percentage of discrimination scores for the four lists was obtained. Two way Analysis of variance was computed to find out if there was any significant difference between the two major categories of language groups - the Indo-Aryan and Dravidian. Results are given in table I. Differences between the two groups was not found to be significant at the 0.05 level.

Two-way Analysis of variance was computed to find out if there was a significant difference in the scoring of trained and untrained individuals. Results are given in Table II. There was no significant difference between the two groups at the O.O5 level.

Trained Dravidian

Sl.No.	Native language	List I	List II	List III	List IV	Average
1	Kannada	91.30	93.75	93.75	93.75	93.14
2	Kannada	91.84	l00.00	86.00	90.00	91.95
3	Kannada	82.98	95.12	76.60	93.75	87.11
4	Tamil	89.80	95.75	82.98	97.75	91.57
5	Tamil	87.23	95.12	80.85	93.75	89.24
6	Tamil	86.04	80.00	77.55	75.51	79.78
7	Telugu	79.17	90.32	87.23	86.84	85.89
8	Telugu	92.00	89.80	90.00	94.00	91.45
9	Malyalam	93.75	90.32	91.49	89.47	91.26
10	Malyalam	94.44	93.62	90.70	96.00	93.69

Trained indo-Aryans

Sl.No.	Native language	List I	List II	List III	List IV	Average
1	Hindi	83.33	79.17	64.58	76.09	75.79
2	Hindi	91.89	85.11	97.67	86.00	90.17
3	Hindi	72.50	83.33	89.19	90.70	83.93
4	Hindi	60.00	66.00	77.55	79.59	70.79
5	Mythili	80.00	86.96	86.49	83.72	84.29
6	Mythili	64.OO	70.00	73.47	75.51	70.75
7	Konkani	95.65	85.42	95.84	87.50	91.10
8	Konkani	89.80	93.61	87.50	8O.OO	87.73
9	Panjabi	91.49	90.48	92.00	87.76	90.43
10	Oriya	85.11	85.71	94.00	89.80	88.66

untrained Dravidian

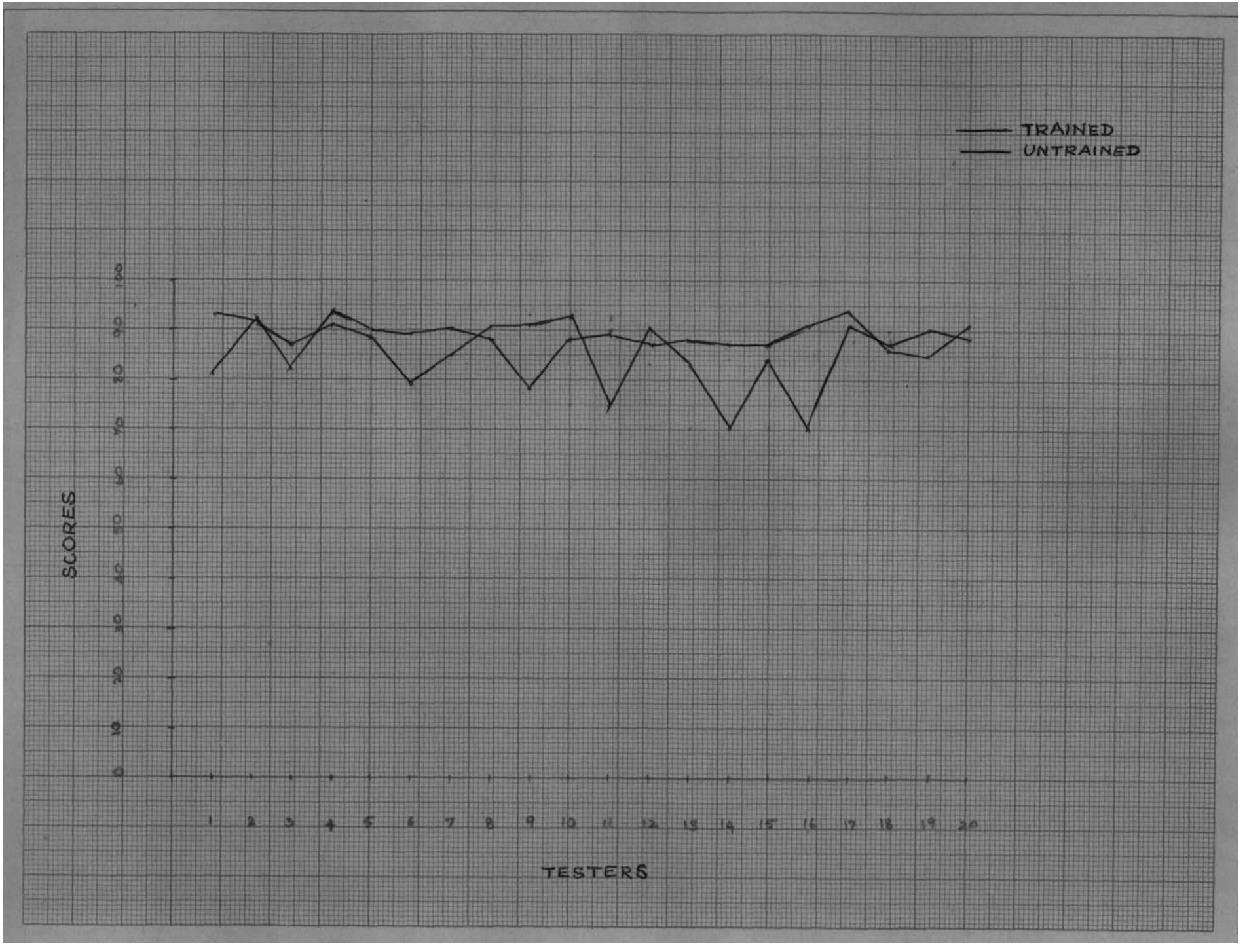
Sl.NO.	Native language	List I	List II	List III	List IV	Average
1	Kannada	78.72	87.23	72.OO	86.OO	80.99
2	Kannada	97.67	78.00	93.88	98.00	91.89
3	Kannada	87.76	89.58	76.09	78.00	82.00
4	Malayalam	92.OO	86.00	96.00	97.96	92.99
5	Malayalam	89.80	85.11	86.36	1OO.00	90.32
6	Tamil	87.18	81.63	93.94	93.33	89.O2
7	Tamil	95.92	87.50	87.23	88.OO	89.66
8	Tamil	90.OO	92.66	85.71	93.75	88.54
9	Telagu	75.00	81.25	81.25	78.26	78.94
lo	Telugu	93.88	91.67	82.60	86.OO	88.54

Untrained Indo-Aryan

Sl.No.	Native Language	List I	List II	List III	List IV	Average
1	Hindi	82.05	87.76	93.94	93.33	89.27
2	Hindi	90.10	82.00	87.76	88.00	87.12
3	Hindi	86.00	95.45	88.00	84.00	88.36
4	Hindi	84.00	95.45	84.00	86.00	87.36
5	Punjabi	87.23	91.49	80.00	90.00	87.18
6	Punjabi	84.00	96.00	92.00	93.88	91.47
7	Konkani	97.96	93.18	92.00	94.00	94.29
8	Konkani	86.04	86.00	87.76	85.71	86.38
9	Rajasthani	88.00	90.24	75.51	87.50	85.31
10	Oriya	96.00	82.71	92.00	94.00	91.18

ANOVA TABLE

Source of Variance	Sum of Squares	Degrees of freedom	Mean squares or variance	Variance ratio or 7
Between Indo-Aryan & Dravidian groups	-74.57	1	-74.59	-74.57/31.80 = -2.34
Within groups	597.0	19	31.42	31.42/31.80 = 0.99
Remainder or Error	604.24	19	31.80	
Total		39		


TRAINED
UNTRAINED
SCORES
0
10
20
30
40
50
60
70
80
90
100
1
2
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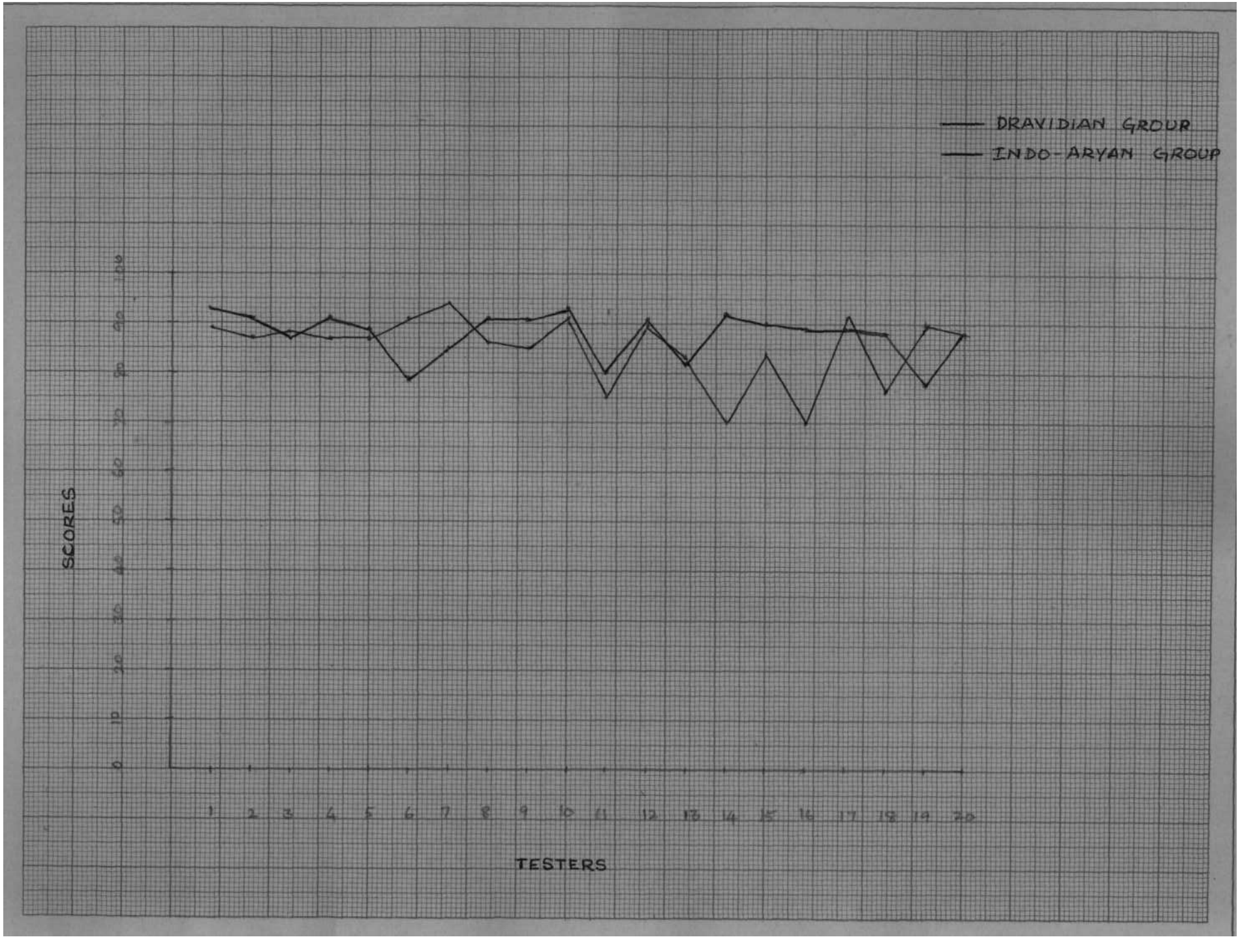
19
20
TESTERS


DRAVIDIAN GROUP
INDO-ARYAN GROUP
SCORES
0
10
20
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40
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80
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100
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3
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11
12
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14
15
16
17
18
19
20
TESTERS

C H A P T E R V

D I S C U S S I O N

The results of the study can be discussed along the following lines.

(i) Effect of native language,
(ii) Effect of training.

Effect of native language:-

The results indicate no significant difference between the effect of the Dravidian languages and the Indo-Aryan languages in scoring the responses on the English Speech discrimination test.

This finding can be explained based on the following assumptions:

1. The effect of languages belonging to the two language groups though being two entirely different families, is possibly the same.

2. Most of the Dravidian group of subjects knew atleast one indo-Aryaa language i.e., Hindi. Likewise, the subjects in the Indo-Aryan group were all exposed to the regional language Kannada which is a Dravidian language. Among the Indo-Aryan subjects, the trained subjects were exposed

to Kannada for a maximum period of four to five years and the untrained to a minimum of 10 years as all of them were domiciles of Karnataka. So, the Dravidian group being exposed to Indo-Aryaa languages and the Indo-Aryan group being exposed to Dravidian languages might have presented in a similar linguistic experience causing no significant difference in the effect between the two groups.

So, the assumption can be proved by studying two groups of pure dravidian and Indo-Aryan language speakers knowing English.

Effect of training:

There was no significant difference between the mode of scoring a non-native speech discrimination test of the trained and the untrained testers. The performance of both the groups being similar and both groups being equally familiar with the test lists (Devaraj, 1983), it can be said that the two groups are equally influenced by their native languages in perceiving non-native language. To overcome this influence of the native language, special emphasis has to be given to the aspect of listening to sounds of a non-native language during

training program.

However, the two groups (trained and untrained) were not quantitatively different according to the analysis. Error analyses could reveal if there exists a qualitative difference.

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C H A P T E R V I

SUMMARY AND CONCLUSIONS

This study was aimed at finding out

(i) If native languages of the tester had an effect on scoring the response of a speech discrimination test (Nu Auditory Test No.5) in English.

(ii) If training had a significant effect on the scoring of responses on the speech discrimination test (Nu Auditory test No.6).

Two groups of subjects were selected for this purpose. One group consisted of a group of twenty listeners who were native speakers of Kannada with adequate knowledge of English as determined by their performance on a English proficiency test. The four lists of the NU Auditory test No.6 were administered to these subjects at different levels and the oral and written responses were obtained. The oral responses were scored by forty testers of whom twenty were trained and twenty were untrained. Of the twenty, ten were from the Dravidian group and ten from the indo-Aryan group. These testers were asked to write down the oral responses of the listeners.

The written responses of the testers were scored with a credit of two percent for each response, being scored with reference to the written responses of the listeners.

These scores were analysed using appropriate statistical procedures and the following results were obtained.

1. There is no significant difference between the responses as heard (evaluated) by the trained and the untrained testers.
2. There is no significant difference between the responses as scored by the Dravidian and Indo-Aryan testers.

From the above results, the following conclusions can be drawn:

(i) Training does not bring about a difference in the performance of the two groups. This indicates that training program used at present does not help the individual to overcome the effect of his native language on scoring a non-native speech discrimination test (NU Auditory test No.6). in training, Special emphasis has to be given to listening to the sounds of a non-native language. This may improve the performance of the trained group.

(ii) The fact that there was no significant difference between the mode of scoring of both the Dravidian and the indo-Aryan testers indicates

a) the effect of languages belonging to either of the language families is the same, or that

b) the knowledge of languages of the other group might have resulted in a similar linguistic experience among the subjects of the two groups.

SUGGESTIONS FOR FURTHER RESEARCH

(i) To study the effect of Dravidian and indo-Aryan languages, subjects purely Dravidians and indo-Aryans who have not been exposed to the other languages have to be studied.

(ii) Error analysis is to be done to find out if there exists a qualitative difference between the Dravidian and the indo-Aryan groups and the trained and the untrained groups.

(iii) To study the effect of each language in both the Dravidian and indo-Aryan families, a study with a larger sample of the different languages has to be done.

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APPENDIX I

A TEST OF ENGLISH ABILITY
(CIEFL DB 2B 1980)

SECTION A

(I) Write suitable articles in the blanks in the following sentence.

(1) This is _____ worst thing that cluld have happened

(2) Mr. Sankar is _____ honest man

(II) Write suitable prepositions in the blanks in the following sentences.

(1) He was born _____ the summer _____ 1969.

(2) She fell unconscious _____ hearing the shocking news.

(III) Write suitable pronouns in the blanks in the following sentences.

1. The children have gone for a holiday with _____ parents.
2. Is this cycle _____ ? I've seen you using it.

(IV) Write suitable articles, prepositions or pronouns in the blanks in the following sentences.

1. The children are scared of him because _____ shouts at _____
2. The doctor has advised _____ to live _____ fruits alone as he found that she had _____ very bad liver.
3. There are _____ number of good films in Hyderabad now. I want to see them all. To do that, I must see them at _____ rate of one a day. Even then, I am afraid. I may miss some _____ them.

(V) Insert suitable articles, prepositions or pronouns wherever necessary in the following sentences.

Example: Mt. Everest is the highest peak in the world

1. As there is lot of money in bank thieves are attracted by it.
2. I asked the teacher to explain me the new topic in Science.
3. The principal wants you to inform as soon as you arrive.
4. Talking about the accident, she said she had seen with own eyes.
5. If you are in need of anything ask it.

SECTION B

(i) Insert the right form of the verb given in brackets into each of the following sentences.

1. He_____(go) there yesterday.
2. She_____(go) to school by bus everyday.
3. I must_____(meet) the Principal tomorrow.
4. He_____(have) his tea when I_____ (telephone) him yesterday.
5. He_____(live) here since 1934.

(II) Put a ( )mark against all the sentences which are grammatically correct and an (X) mark against those not grammatically correct.

1. Last year I walk to school every day. /_____/

2. Last year I have walked to school every day. / /

3. Last year I walked to school every day. /_____/

4. Last year I was walk to school every day. /_____/

5. Hari did not came to class. /_____/

6. Hari has not come to class. /_____/

7. Hari has not came to class. /_____/

8. Hari does not come to class. /_____/

9. Kamal was been swimming since sunrise. /_____/

10. Kamal swimming since sunrise. /_____/

11. Kamal swims since sunrise. /_____/

12. Kamal has been swimming since sunrise. /_____/

(III) Make questions whose answers will be the following statements. Use the words given in brackets to begin the questions.

1. The students like science fiction. (What)

_____

2. Hari has broken my glasses. (Whose)

_____

3. The children go to school by bus. (How)

SECTION C

(I) Read each sentence and decide if there is an error in any underlined part. Write the letter of the wrong part in the box. If there is no error write D. (NB stands for 'NO ERROR')

1. An object (A) normally becomes (B) hot when place it (C)
in the sun. (NE) (D) /_____/

A.1.4

2. Ranjit and his sister are studying in same school.
   A B
   (NE)
   D
3. Balu and brother came to my house last night.
   A B C
   (NE) /_____/
   D
4. She does not know anyone who works in that office.

   (NE) /_____/
   D
5. Why did you gave him my book? (NE) /
   A B C D
6. I did not been able to pay my fees yet. (NE) / /
   A B C D
7. it was difficult for me to hearing the speaker.
   A B
   (NE)
   D
8. The Police complain that cyclists seldom observe
   A B
   traffic rules. (NE)
   D
9. Mother asked to my friends why they were leaving
   A B

   so soon. (NE)
   D
10* I still do not understand that how a steam engine works
    A B C
    (NB) /_____/
    D
11. You will lose your purse unless you are not careful.
    A B C
    / /
    ' D
12. We searched everywhere but could not
    A B
anywhere find the watch. (NE) / /
          C D

13. A friend of her told me that she has passed.
A B C

(NE)
D

14. The Principal himself must sign both the copies
A B

of the application. (NE) / /
C D

15. I was sure he would join this college although
A B

he did not do so. (NE) /
C . D

SECTION D

(I) Select words from the list given to fill in the blanks in the sentences:

List of words:

is	' what	who	although
are	when	whom	because
was	where	whose	However
were	which	that	therefore
am	while	so that	but

He left the place early hecould reach home before sunrise.

2. I thought he would join the college_ he did not do so.

3. When I telephoned him yesterday he told me_ he _____returning only next week

4. _____ are the candidates _____ are to be interviewed to day?

5. He does not have the needed qualifications, he has been given a temporary appointment.

6. _____ the rains came late, farmers are hopeful of a good crop.

(II) Rewrite the following sentences correcting the mistakes in them.

1. He used to laughing at others.

_____

2. How you open this gate?

_____

3. He has left the college in 1978.

_____

4. Can you tell how does it work?

_____

5. Having booking the ticket much in advance, we enjoyed a comfortable journey.

6. The man whom I met him yesterday is the new warden.

SECTION E

Read each passage and the statements that follow it. Decide whether each statement is true or false, according to the passage, and put a /_____/ or a /____/ in the box.

(I) Rani asked Raju if he wished to own a scooter. He said he did not mind spending seven thousand rupees on buying one. But he could not spend two hundred rupees a month just for maintaining it.

1. Rani wants to sell a scooter for Rs.7000/- /____/
2. Raju cannot imagine spending so much money on a scooter. /_____/
3. Raju can afford to pay Rs.7000/- for a scooter. /_____/
4. Raju thinks that maintaining a scooter is expensive.

(II) "No!" said Julie's father. "It's not right to keep a dog in a flat in the middle of a big town. Wait for a few weeks. Then we will have our own house with a garden.

5. Julie had asked her father to get a pet dog. /_____/

6. Julie's father does not like pet dogs. /_____/

7. Julie's family were about to move to a new house. /_____/

(III) When my aunt was young there was no electricity or running water in the house. She used to walk half a mile everyday to fetch water from the village well.

8. My aunt walks half a mile everyday. /_____/

9. She does not go to the village well now. /____/

10. She usually fetches water from the well. /____/

(IV) We lived in Hyderabad many years ago. We were there for four years. Then my family moved to Madras. We haven't been to Hyderabad since then.

11. We are now living in Madras. /_____/

12. We used to live in Hyderabad. /_____/

13. We visited Madras from Hyderabad four years ago. /_____/

14. We lived in Madras for four years before returning to Hyderabad. /_____/

15. We haven't visited Hyderabad for many years now.

SECTION F

The frail man wearing a jibba and dard glasses, and carrying a walking stick, was a familiar figure all over India. One day, people returning home from offices in Madras were surprised to find him walking along the road to the Centrail Railway station just

like an ordinary man. There were surprised looks and excited inquiries. People asked one another, "Why is he walking in this crowd? it could be dangerous." The main they were talking about was Chakravarthi Rajagopalachari, the Chief Minister of Madras state. When Rajaji, as he was popularly and affectionately known, was asked why he was going to the station on foot, he had a simple answer. He nad actually come by car. But the traffic jam near the station had forced the car to stop. He had to reach the station in time, so he had got out of the car and was walking. In any case, he did not see any reason why he should not walk a few steps even though he was the Chief Minister of the State.

1. At what time of day did pepple see Rajaji walking on the road?

   (a) early in the morning (c)at about 10.00 a.m.

   (b) late at night (d)at about 5.00 p.m. /___/

2. What information supports your answer to question 1?

   a) He was carrying a walking stick
   b) He was wearing dark glasses.
   c) The road near the station was crowded / /
   d) People were returning home from offices.

3. There were surprised looks and excited enquiries because

   a) it was dangerous for a minister to walk in a crowd.
   b) Rajaji's train might have been delayed
   c) the Chief Minister was walking along the road / /
   d) the crowd had forced the Cnief Minister's car to stop but he was facing the situation bravely.

Rajaji's reason for walking to the station was that

   a) he believed in simple Gandhian principles.
   b) he thought walking would be more effective in the traffic jam.
   c) his popularity depended on being close to the common man. / /
   d) the crowd was hostile and he would be safer in the station.

5. "In any case, he did not see any reason why he should not walk . . . . ." This statement indicates that Rajaji felt that ministers should

   a) always walk and set an example. /____/
   b) be prepared to walk whenever it seemed necessary.
   c) walk on the steps of buildings, not on the reads.
   d) help prevent traffic jams by not using big official cars.

6. Find the word nearest in meaning to the word in capitals which occurs in the passage.

   FRAIL : a) fierce b) weak c)important d)simple /_/

   INQUIRIES: a) rumours b) slogans c) questions
   d) notices /_____/

   ACTUALLY : a) really b) usually c) earlier
   d) accidentally /_____/

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APPENDIX II

CID W-l

1. Grey hound
2. School boy
3. Ink well
4. White wash
5. pan cake
6. Mouse trap
7. Eardrum
8. head light
9. Birthday
10. duck pond
11. side walk
12. hot dog
13. padlock
14. mushroom
15. hardware
16. Workshop
17. horse shoe
18. arm chair
19. base ball
20. Stairway
21. Cowboy
22. Iceberg
23. North west
24. Rail road
25. Playground
26. airplane
27. woodwork
28. oat meal
29. Toothbrush
30. Fare well
31. Grandson
32. drawbridge
33. door mat
34. hot house
35. day break
36. sunset.

APPENDIX III

Nu AUDITORY TEST No. 6

	List I	List II	List III	List IV
1.	Land	pick	base	pass
2.	boat	room	mess	doll
3.	Pool	nice	cause	back
4.	nag	said	map	red
5.	limb	fail	good	wash
6.	shout	south	luck	sour
3.	sub	white	walk	bone
8.	Vine	keep	youth	get
9.	dime	dead	pain	wheat
10.	goose	loaf	date	thumb
11.	whip	dab	pearl	sail
12.	tough	numb	search	yearn
13.	puff	juice	ditch	wife
14.	keen	chief	talk	such
15.	death	merge	ring	neat
16.	sell	wag	germ	peg
17.	jake	rain	life	mob
18.	fall	witch	team	gas
19.	raise	soap	lid	check
20.	third	young	pole	join
21.	gap	ton	road	lease
22.	fat	key	shall	long
23.	met	calm	late	chain
24.	jar	tool	cheek	bill
25.	door	pike	beg	whole

Continued....

Appendix III Continued.

	List I	List II	List III	List IV
26.	Love	mill	gun	lean
27.	sure	hush	jug	take
28.	Knock	shack	sheep	tire
29.	choice	read	five	dip
30.	hash	rot	rush -	rose
31.	lot	hate	rush	rose
32.	ride	live	void	fit
33.	hurl	book	wire	make
34.	moon	voice	half	vote
35.	page	gaze	note	judge
36.	yes	pad	when	food
37.	reach	thought	name	ripe
38.	king	bought	thin	have
39.	home	turn	tell	rough
40.	rag	chair	bar	kick
41.	which or witch	lose	mouse	lose
42.	week	bite	hire	near
43.	size	haze	cab	perch
44.	mode	match	hit	shirt
45.	bean	learn	chat	bath
46.	tip	shawl	phone	time
47.	chalk	deep	soup	hall
48.	jail	gin	dodge	mood
49.	burn	goal	sieze	dog
50.	kite	far	cool	should

* *

APPENDIX IV

CALIBRATION PROCEDURE

PURE TONE CALIBRATION

The intensity and frequency calibration of the pure tone generated by the audiometer (Madsen OB 70 Clinical Audiometer) was done.

INTENSITY CALIBRATION :

The intensity calibration was done with the audiometer output set at 70 dB HL. The acoustic output of the audiometer was given through earphones (TDH 39 with MX 41/AR ear cushions), condensor microphone(B & K 4144), which was coupled to aa artificial ear (B & K 4152). The microphone was connectedto a B and K preamplifier type 2616. Then the signal was fed into a B and K SPL meter. The SPL output level at all the frequencies were measured. When there was a difference of more than 2.5 dB from the specified output, the audio-meter was internally calibrated to meet the ANSI (1969) standards, internal calibration was done by adjusting the presets in the "Calibration deck" within the audiometer. Thus the output levels did not differe by more than 2.5 dB from the specified

ANSI standards.

Both air conduction and bone conduction calibration was done. Air conduction calibration was done with the audiometer output at 7OdB HL and bone conduction calibration was done using an artificial mastoid (B and K type 4390) with the output of the audiometer set at 40 dB HL (ANSI, 1969).

FREQUENCY CALIBRATION:

Frequency calibration of the audiometer was done usipg a Rodart 203 frequency counter. The electrical output of the audiometer was fed to the counter which gave a digital read out of the frequency. The frequency of the tone generated by the audiometer was found to be within the permissible 3% variation from the dial reading.

CALIBRATION OF TAPE INPUT

Calibration of the tape,input was done using two different measurements. one was done using pure tones and the other with speech spectrum noise.

The following was the procedure used to check if there was any mismatch between the tape

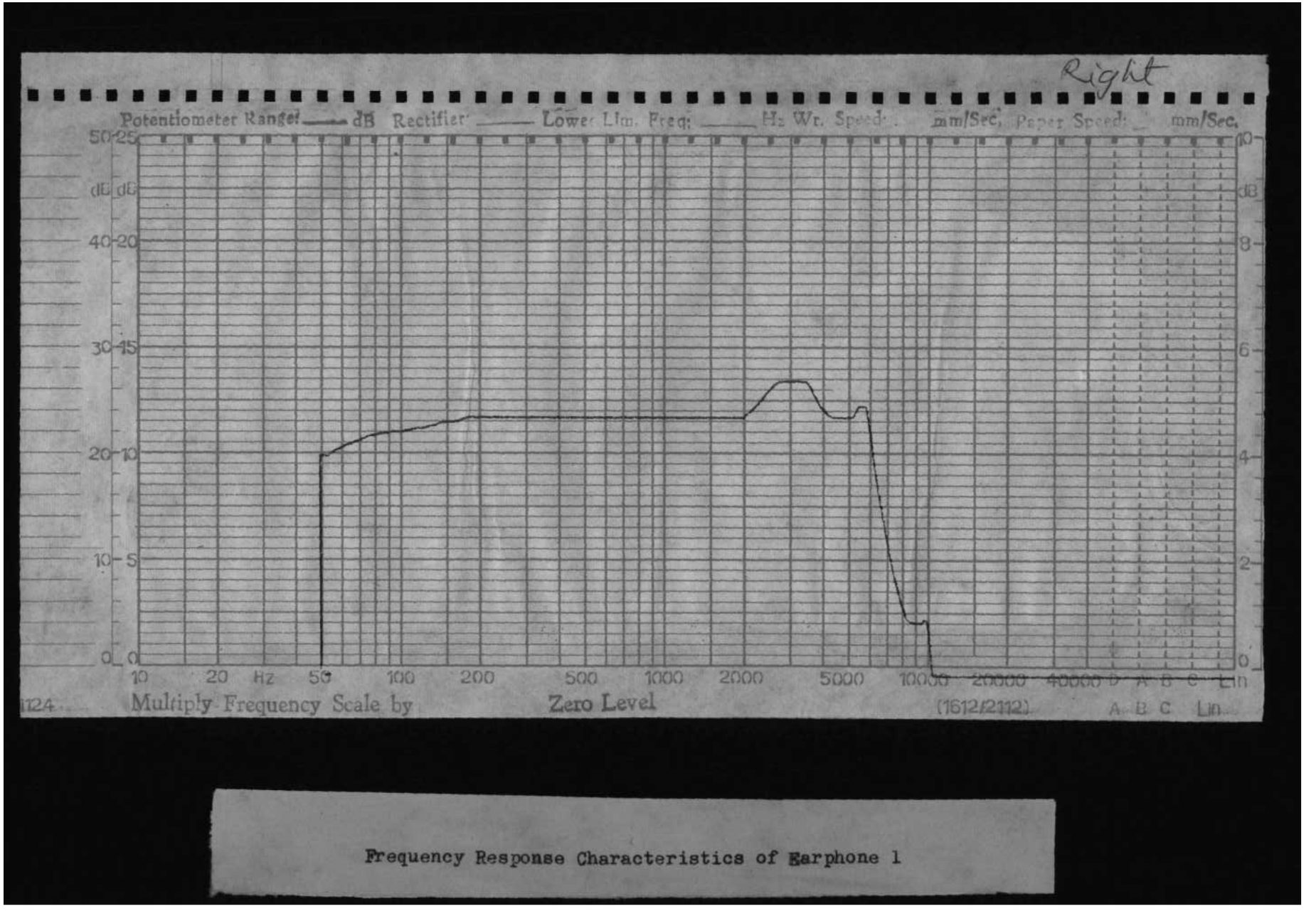
output and the audiometer input.

Pure tones of the frequencies 500 Hz, IK Hz, 2 KHz and 4 KHz were recorded separately on a magnetic tape with the input being maintained at a constant intensity level. The electrical output of the audiometer Betone-2OO-C was used. The frequency of the tone generated by the audiometer was within the specified range. The tape recorder used was Uher SG 631.

The tape recorder output was given to the tape input of the Madsen OB 70 clinical audiometer. The levels of the 500 Hz, 1 KHz, 2 KHz and 4 KHz tones were measured (at 70 dB HL). These measurements were done with the same set up as in intensity calibration. Thus, no mismatch was found between the tape output and the audiometer input.

To check the tape output of the audiometer, speech spectBum noise was used. The noise was recorded using the same tape recorder from Beltone 200 C. The recording was done with the input level being kept constant with the tone levels.

The tape was played through the audiometer (Madsen 0B70). The output was measured through



Frequency Response Characteristics of Earphone 1

output and the audiometer input.

Pure tones of the frequencies 500 Hz, IK Hz, 2 KHz and 4 KHz were recorded separately on a magnetic tape with the input being maintained at a constant intensity level. The electrical output of the audiometer Betone-200-C was used. The frequency of the tone generated by the audiometer was within the specified range. The tape recorder used was Uher SG 631.

The tape recorder output was given to the tape input of the Madsen OB 70 clinical audiometer. The levels of the 500 Hz, 1 KHz, 2 KHz and 4 KHz tones were measured (at 70 dB HL). These measurements were done with the same set up as in intensity calibration. Thus, no mismatch was found between the tape output and the audiometer input.

To check the tape output of the audiometer, speech spectrum noise was used. The noise was recorded using the same tape recorder from Beltone 200 C. The recording was done with the input level being kept constant with the tone levels.

The tape was played through the audiometer (Madsen 0B70). The output was measured through

the earphones(TDH 39 with MX 41/AR ear cushions). The output was measured using the SPL meter and the output was 9O dB SPL (with the input at 70 dB HL) which is in agreement with the ANSI specifications.

EAR-PHONE FREQUENCY RESPONSE CHARACTERISTICS

This was checked using a B and K frequency oscillator model 1022, and a level recorder model 2305. The frequency of the pure tones generated by the Madsen OB 70 audiometer was checked previously with a Rodart 203 counter and was found to be satisfactory. The electrical output of the audiometer was given to the earphones(TDH 39 with MX-41/AR ear cushions). The earphone's output was collected by a B and K condensor microphone type 4144 connected to a B and K pre-amplifier type 2616. This was given to a B and K level recorder type 2305. The frequency response of the earphones was thus graphically recorded on recording paper QP 1124. The frequency response characteristics of the earphones used in the study are depicted in Appendix V.

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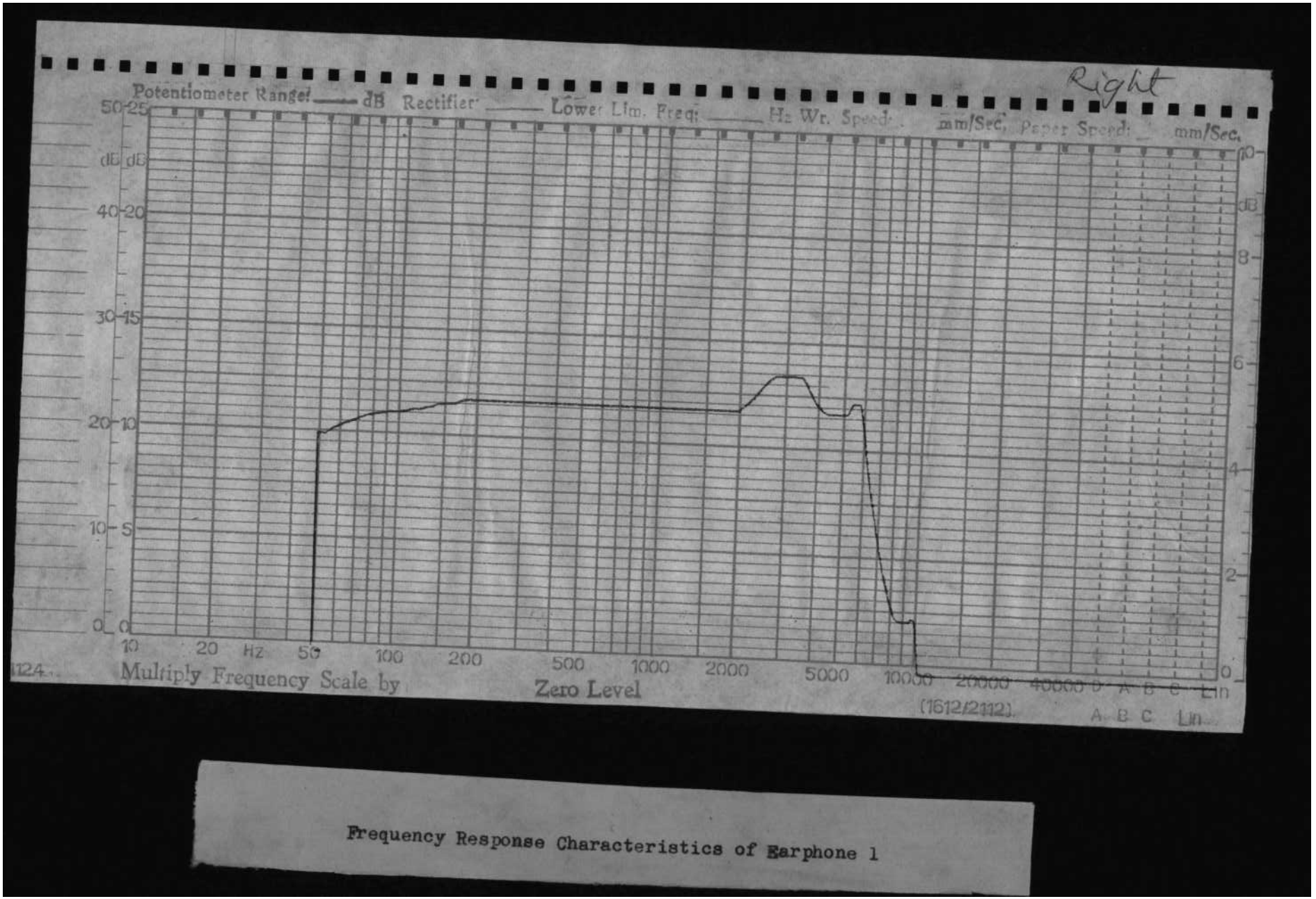
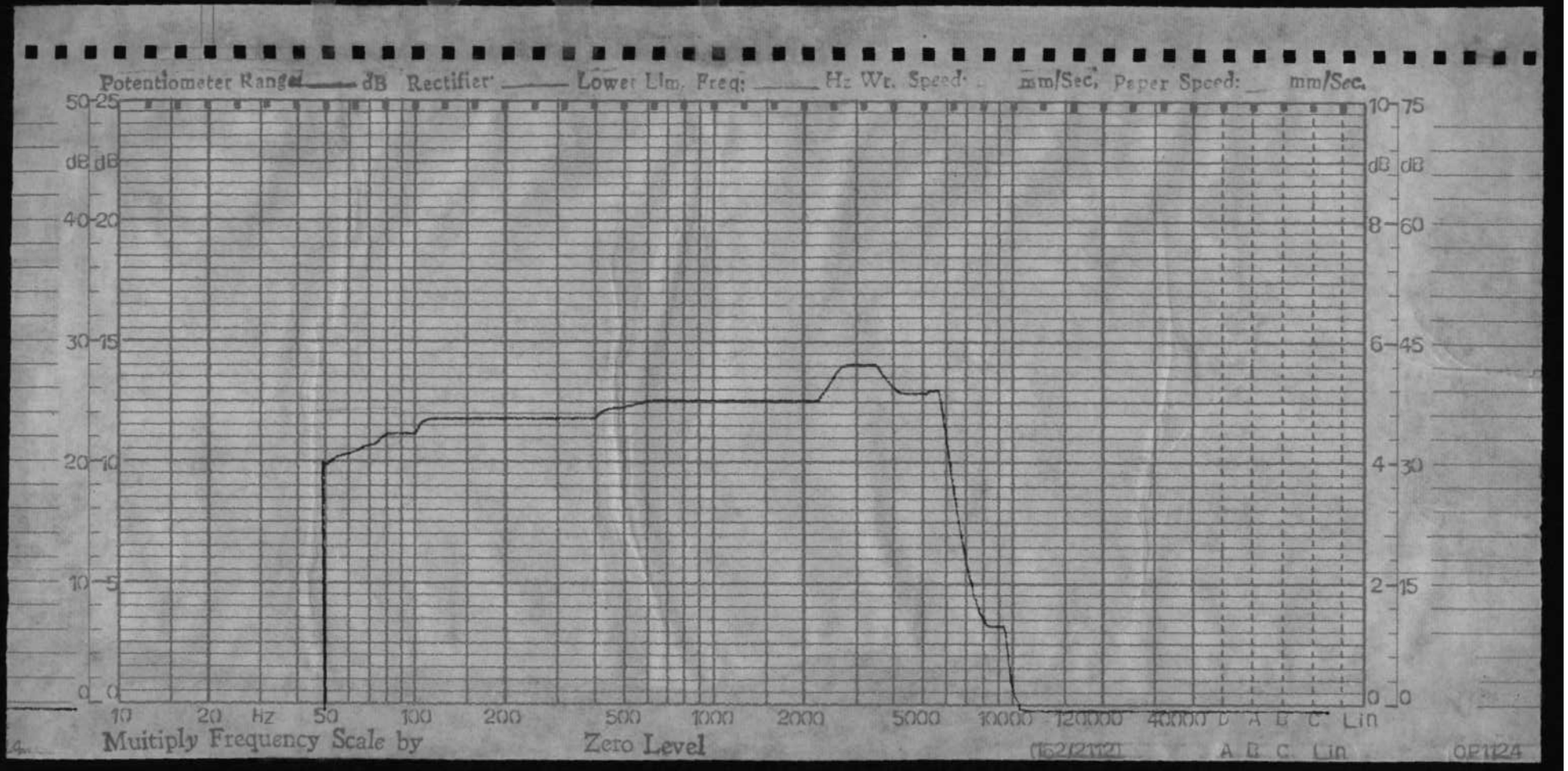
APPENDIX V



Frequency Response Characteristics of Earphone 1



Frequency Response Characteristics of Earphone 2

APPENDIX VI

The noise levels in the test room were as follows.

Octave Frequencies in Hz	Level in SB SPL
125	30
250	21
500	12
1000	12
2000	10
4000	10
8000	10
C - Scale	33

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