

EFFECT OF WORD FAMILIARITY ON SPEECH DISCRIMINATION SCORES

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One of the basic requirements of any organism is the need to communicate. Speech has been the most commonly used mode of communication among human beings.

A breakdown in speech communication can take place at three levels :

1. At the transmitter level i.e., the speaker.
2. During transmission i. e., any interference of speech during its transmission and;
3. At the receiver level i. e., the listener.

A defective speech discrimination is one of the factors leading to a communication breakdown. This could result from an interference at any or all of the above three levels. At the listeners level factors such as his linguistic background (Bagli, 1972) and his familiarity with the test words (Rosenberg and Postman, 1951 ; Black, 1952; Hirsh et al, 1952; Owens 1961 ; Schewartz and Goldman, 1974) can affect the speech discrimination scores. In a speech audiometry test, not only does the listener's familiarity of the test words affect the scores, but also *the* testers.

Malini (1981) found the mean and median scores obtained at any sensation level, for all four tests of the Nu Auditory test No. 6 to be consistently lower than those obtained by Rintelmann, Schumater and Jetty (1974). One factor that could have resulted in this discrepancy in scores, could have been the subjects' familiarity with the test words. Despite the fact that Tillman and Carhart (1966) had tested the words for familiarity and found a sizeable proportion of them to be very common by the American population, the same cannot be expected of the Indian population who served as Malini's (1981) subjects. Words that are familiar to the American population may not be found to be equally familiar by the Indian population, for the Americans are native speakers of the language, whereas the Indians are non/native speakers of English.

The purpose of the present study is to see if word familiarity does affect the speech discrimination scoring. If it does affect the scores, then Nu Auditory test No. 6 will have to be modified, before it can be used on the Indian population,

The present study aimed at answering the following questions :

1. What effect does the familiarity of the test words have on the speech discrimination scores ?
2. Is there any significant difference between trained and untrained testers, with respect to the familiarity of the test words?

Methodology :

Subjects — Two groups of subjects were taken (a) Listeners twenty young adults (age range 18 years to 27 years mean being 22 years) of whom ten were males and ten were females served as listeners. All had Kannada as their mother tongue, (b) Testers : Twenty trained testers (age range 20 to 26 years, mean being 22 years) and twenty untrained testers (age range of 19 to 26 years, mean being 22 years) scored the responses of the 'listeners'. The trained group consisted of subjects who had more than two years of speech and hearing training.

All the subjects were required to pass the English "A test of English, Ability" Constructed at Central Institute of English and Foreign Languages, (1980). All had normal hearing as per ANSI (1969) standards.

Material:

To determine the speech reception threshold, the CID W-1 list A (Hirsh et al, 1953) was used, while the CNC mono-syllables from form A of the Nu Auditory Test No. 6, (Tillman and Carhart, 1966) was utilised to determine the speech discrimination.

Recording ; The speech material was recorded in an anechoic chamber. A young Indian male, whose English was considered to represent Indian English, served as the talker.

Instrumentation:

The instruments used were a tape recorder (Uher SG 631) a clinical audiometer (Madson OB 70) with ear-phones (TDM-39) housed in ear cushions (MX-41/AR) calibration was done regularly.

Test environment

The testing was carried out in a sound treated room, the noise levels of which were within the permissible limits.

Test procedure

The pure tone A. C. and B-C thresholds for the frequencies 250 Hz to 8 KHz and 250 Hz to 4 KHz respectively, were found for all sixty subjects. The modified Hughson-Westlake procedure was used (Carhart and Jerger, 1959).

For all the listeners the speech reception threshold of the test ear which was chosen randomly was obtained using Ho CID W-1 spondee list. The procedure used was that used by Rintehmann and his associates (1974). Oral responses were obtained.

Following this, the speech discrimination score was obtained for the listeners, utilising the four CNC word lists of Nu Auditory test No. 6, Form A, Each listener heard each of the four tests at any one of the following sensation levels, 8dB SL, 16 dB SL, 24 dB SL, 32 dB SL and 40 dB SL. The list level combination was randomized such that no intensity or list was repeated for any one listener. Written as well as oral responses were obtained.

Two testers were required to score the oral responses of the listeners by writing down the responses.

Scoring : A score of 2% was assigned for each correct response.

testing for familiarity of the test words (Nu Auditory Test No. 6)

All sixty subjects had to rate the words as being "Highly familiar", "familiar", "Just familiar" and "Unfamiliar" based on the specific criterion that was given to them.

(a) Effect of word familiarity on the discrimination scores of listeners.

Chi-square analysis revealed that there was a significant difference between the correctly discriminated and wrongly discriminated test words with respect to the familiarity at the 0.01 level of significance. The contingency coefficient was found to be 0.22 which was statistically significant. This indicated that Words that are "highly familiar" to an individual, have greater probability of being correctly discriminated than those that are not so familiar.

- (b) Effect of familiarity of test words on discrimination scores at different intensity levels, for the listeners.

Analysis of variance indicated that the listeners familiarity with the test words had no influence on their discrimination scores, when the words were presented at different sensation levels, i. e., 8 dB SL, 16 dB SL, 24 dB SL, 32 dB SL and 40 dB SL even at the 0.05 level of significance. This shows that familiarity of the test words played a similar effect on the individuals' ability to discriminate the words, regardless of whether they were presented at a difficult listening condition i. e., low sensation level or at an easy listening condition i.e., high sensation level.

However, there was a steady increase in the discriminability familiarity ratio (dyF ratio) with an increase in the sensation level, though not a statistically significant one. This increase was more evident for 'highly familiar' and 'familiar' words and not for the just familiar and 'unfamiliar words'. Thus, even under an easy listening condition, i. e., higher sensation level, the listeners wrongly identified the 'just familiar' and 'unfamiliar' words.

- (c) Inter list difference in familiarity

The means of the familiarity rating for each that was determined. List III and IV were found to have the greatest number of 'highly familiar' words i. e., 48 each, followed by list I and list II having 47 and 45 highly familiar words respectively.

- (d) Difference between trained and untrained testers

Two way analysis of variance revealed that there was no significant difference between the trained and untrained testers with respect to their familiarity with the test words even at the 0.05 level of significance. It can be extrapolated from the findings of the listeners, that the testers familiarity with the test words can affect their discrimination ability and thus affected the scoring when oral response are being scored, for they were not 'highly familiar' with all the test words.

- (e) Words that were not found highly familiar

The following words include those that were not found 'highly familiar' by a majority of subjects (i. e , 55% and more) : dab, dime, keg, haze, lore, nag,,shack, yearn. These words should be excluded from the word lists, as they influence the speech discrimination of the listeners despite the fact that they have normal hearing.

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