

Cross Linguistic Study of Some Temporal Parameters

M. P. Ravanan

Student, A.I.I.S.H, Mysore

Speech is a neuromuscular activity. The output of this activity is the acoustic signal, which is used for communication as speech. Today it is possible to measure the acoustic aspects of speech with sophisticated equipments. The use of computer for this analysis is an outcome of the recent development in speech research.

The acoustic analysis of some aspects of speech also has shown that there is variability across the languages and across the individuals. Voice onset time (VOT) and vowel duration (VD) are two of the parameters among the temporal aspects of speech which are considered to be important in understanding speech. Studies have shown that Voice onset time (VOT) and vowel duration (VD) varies independently of language, individuals and sex.

This study was conducted to investigate the voice onset time (VOT) and vowel duration (VD) differences in Kannada, Hindi, Tamil & English. Also the inter & intra Subject variability were investigated.

Four Hypothesis for VOT were made as follows :-

There will be no difference between the VOT

1. Indifferent languages and between native Non native speakers.
2. Within and across speakers
3. Of stops in various places of articulation
4. Of stops followed by various vowels.

Four hypothesis for VD were made as follows :-

1. indifferent languages and between native and non native speakers.
2. With in & across speakers
3. Of different voweles in their mother tongue
4. Of different voweles in the non-native language.

To test these hypotheses nine subjects were taken. The nine subjects were divided into there groups based on their mother tongue. The subjects of different groups were matched with reference to age. The subjects with Kannada were able to speak Hindi and English. The subjects with Tamil as mother tongue were able to speak English, similarly Hindi speakers could read and speak English. Thus all the subjects could speak English. Group 1 (Kannada speakers) could use Hindi also. These subjects were used to make a cross linguistic study. For the purpose of this study meaningful sentences were constructed consisting of words which contained /p/, /t/, /tʃ/ and /k/ stops occurring in the initial position and the vowels a,i,u,o,e following these stops. These were constructed in each language i.e., in Hindi, Kannada, Tamil & English.

The subjects were instructed to read the sentences. The speech samples were simultaneously recorded using a Philips tape deck and a computer. Each subject was asked to repeat each sentence five times. Thus twenty sentences for each subject and a total of hundred sentences were recorded.

The initial segments of the words having the above said stops and vowels were separated and displayed using wide band spectrogram program in the

screen of the computer. Voice onset time (VOT) and vowel duration (VD) were measured.

Thus from the study it was concluded that

1. There is significant difference across and between the subjects in terms of voice onset time (VOT) of the speech sounds having a language as mother tongue.
2. There is significant difference between the languages in terms of voice onset time (VOT) of different sounds as spoken by subjects using their mother tongue.
3. There is significant difference in the repetitions of the same sound by the same subject in terms of voice onset time (VOT).
4. There is no significant difference in the voice onset time (VOT) in the production of additional language as spoken by subjects having different mother tongue.
5. There is no significant difference in voice onset time (VOT) across the vowel environment.
6. There is a consistent increase in voice onset time (VOT) with respect to the position of articulator construction as it moves backwards in the oral cavity.

7. There is significant difference in the vowel duration in the speech of subjects having a language as mother tongue

8. There is significant difference in vowel duration (VD) in the utterances of the subjects speaking a second language and third language who had different mother tongues.

Recommendation for further study :-

1. The study may be carried out with a larger sample in each age and language.
2. The analysis could be extended to the varied consonants.
3. Voice onset time (VOT) & Vowel duration (VD) in running speech, isolated sounds may be studied for normal adults.
4. Voice onset time for stops in medial and final positions of words may be studied.
5. Voice onset time and vowel duration for stop sounds in isolation may be studied for various language speakers to see whether voice onset time and vowel duration for isolated sounds are language dependent.