

# VOT in Different Age Ranges\*

RAVISHANKAR, K. C.

Voice Onset Time (VOT) is one of the parameters among the temporal aspect of speech, which indicates laryngeal function. VOT has been defined as "The Duration Between the Release of a Complete Articulatory Constriction or Burst Transient and the Onset of Phonation" (Lisker and Abramson, 1964, 1967). Studies have shown that the VOT values change with age.

This study was conducted to find out the changes in VOT values with age in males and females of 4 to 10 years.

The following hypotheses were posed :

- (1) There will be no difference in the mean VOT values for voiceless stop sounds as age advances :
  - (a) in males,
  - (b) in females.
- (2) There will be no difference in the mean VOT values for voiced stop sounds as age advances :
  - (a) in males,
  - (b) in females.
- (3) There will be no difference between the mean VOT for voiceless stop sound and its voiced counterpart :
  - (a) in males,
  - (b) in females.

- (4) There will be no difference in the mean VOT values between males and females of the same age group.
- (5) There will be no difference between the mean VOT values for each sound with respect to the point of articulatory constriction :
  - (a) in males,
  - (b) in females.

To test these hypotheses, 30 males and 30 females were randomly selected in each age group from 4 to 10 years. They were instructed to repeat, after the experimenter, the syllables in isolation with the stop sounds [ p, t, ʈ, k, b, (d), (ḍ) ] and [g] of Kannada language in CV paradigm.

The speech samples were recorded using a tape recorder. The utterances of 5 males and 5 females in each age group were selected and analysed using a Voice Identification (INC)7-00 series sound spectrograph. VOT measurements were made using the technique given by Lisker and Abramson (1964).

## Conclusions

The following conclusions were drawn from this study :

- (1) There is no significant difference in mean VOT values for voiceless stop sounds with increasing age in both males and females.

\* Master's Dissertation, University of Mysore, 1981.

(2) Mean VOT's for voiced stop sounds show changes with age in both males and females. The differences in mean VOT's for voiced stops of 4-5 years, 5-6 years and 6-7 years are not statistically significant from each other but the mean VOT's of all the three age groups are significantly different from the mean VOT's 7-8 years and onwards. This was observed for both males and females.

(3) There is a difference in VOT between each voiceless stop sound and its voiced counterpart at all age groups, except for a few subjects who show overlapping patterns below 7 years. All other subjects exhibit voicing lag for the voiceless stop sounds (indicated by positive numbers) and a voicing lead for voiced stop sounds (indicated by negative numbers).

(4) There is no significant difference in the mean VOT values between males and females of the same age group.

(5) A consistent increase in mean VOT values with respect to the point of articulatory constriction is seen in both males and females after 7 years.

### Recommendations for Further Study

(1) The VOT's between normal children and the VOT's of children with normal non-fluency and stutters may be compared.

(2) The same study may be repeated with a large number of subjects in each age group.

(3) A similar study may be carried out in the age range below 4 years and above 10 years in both males and females.

(4) VOT for stop sounds in running speech and in isolated words may be studied in different age ranges.

(5) VOT's can be studied by oscillographic method and the results can be compared with spectrographic method.

### Conclusion