

Coarticulatory Effects In /t/ Misarticulation Case: A Single Case Study

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The purpose of this study was to analyse the coarticulatory acoustic effects of /V/ sound in different vowel and consonant contexts in Kannada in pre and post speech therapy situations in a single case. The subject was a 15 years old, female who was diagnosed as having functional misarticulation of /V/. 46 meaningful words in Kannada in different combinations V, C/t, V (List-I); C/t, V, C (List-II); C/t, C, V, (List-III); ;C, C/t, V (List-IV); were selected. The words were written on flash cards and presented to the subject one by one. The subject was instructed to read the presented word. The word as uttered by the subject was recorded on a high fidelity spool tape using sound spectrograph - VII [voice identification incorporated] - 700 deck tape recorder with 7 1/2 inches per second speed with the help of directional microphone (AKG D.222), in a controlled sound treated room. The same word list was used in Pre and Post therapy recordings. The spectral analysis of the speech sample was carried out on PC using software programme "SSL-spectrograph" developed by VSS-Bangalore. Parameters like, preceding vowel duration, following vowel duration, preceding consonant duration, following consonant duration, stop duration, voice onset time, transition duration of F₂ and F₃ and speech of transition of F₂ and F₃ were taken up. Table-12 gives the summary of changes in parameters that are seen from pre and post speech therapy situations.

The stop duration and VOT consistently reduced in post therapy situation in all contexts (V, C/t V; C/t, V, C; C/t, C, V; C, C/t, V). The transition duration of F₂ and F₃, speed of transition of F₂ and F₃ varied depending upon the contexts. The preceding vowel duration and following consonant duration reduced in V, Ct/t, V; C, C/t, V; C, C/t, V; contexts respectively increased in post therapy situation.

From the results of the study it is clear that the features of the sound are modified in the post therapy situation. Thus, with the help of acoustical analysis, we can objectively monitor and judge the improvement in articulation disorders.

Literature on normals showed that the acoustic features of a sound are changed due to the coarticulatory influences. The same is found even in misarticulation cases. From the present study it is concluded that -

1. Right to left coarticulatory influences are strong than left to right influence.
2. The vowel duration is reduced when followed by a voiceless consonant.
3. Consonant clusters need more time for production than consonant vowel combination and hence seem to be difficult to learn. Hence it may be presumed that in the remediation process, consonant vowel combination facilitate correct production of the error sound than the consonant clusters. Among the vowels /a, i/ vowels seem to facilitate in the correct production of the error sound than other vowels /e, u, o/.

Table-12

Summary of changes seen in different parameters in different contexts in post therapy situation.

Parameter	List-I	List-II	List-III	List-IV
Stop duration	-	-	-	-
Voice onset time	-	-	-	-
Transition duration of F ₂	+	-	+	+
Transition duration of F ₃	+	+	-	-
Speed of transition of F ₂	-	-	+	-
Speed of transition of F ₃	-	NT	NT	NT
Preceding vowel duration	-	+NT	+NT	-NT
Following vowel	+	-	NT	NT
Preceding consonant duration	NT	NT	+	NT
Following consonant duration	NT	NT	NT	-

+ ' - indicates increase in duration in post therapy situation

' - indicates decrease in duration in post therapy situation

NT - not tested.