

An Acoustic Study of VOT in Maithili Stops

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ABSTRACT

This paper mainly examines voice onset time (VOT) of eight word-initial voiceless stop consonants in the Maithili language. These four aspirated (i.e., /p^h/, /t^h/, /tʰ/, /k^h/) and four unaspirated (i.e., /p/, /t/, /t̪/, /k/) Maithili stop consonants were investigated to present distinctive acoustic features. Stop consonants in a monosyllabic structure, consonant-vowel-consonant (CVC) followed by three vowels /i, a, u/ and preceded by the word ends with the low open vowel /a/ in connected speech frame were gathered from twelve native speakers of Maithili. The objective of this study was to probe the effect of stop type, place of articulation (POA) and following vowel contexts on VOT values of stops. The findings revealed that there were significant effects of stop type ($p=0.000000005$) and place of articulation ($p=0.000000018$) on VOT. However, no significant influence of the following vowel contexts ($p=0.816$) on VOT was found. The results clearly suggested that the aspirated stops had a significantly longer VOT than the unaspirated ones. VOT significantly increased from anterior to posterior position in the vocal tract. Therefore, the bilabial stops had the shortest VOT, the dental/retroflex (coronal) had intermediate VOT and the velar stops had the longest VOT. As a result, VOT is sufficiently a distinctive acoustic cue to distinguish the voiceless stop consonants in Maithili.

Keywords: Voice onset time, stop type, place of articulation, vowel contexts