



On the Lingual Articulation in Vowel Production: Case Study
from Ningbo Chinese(ABSTRACT)

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Lingual articulation is of particular importance to understand both physiological and acoustic aspects of speech production. This paper presents a PARAFAC modeling of lingual articulation in vowel production in Ningbo Chinese. The lingual articulatory data were acquired from seven Ningbo speakers using Carstens' s Eelectromagnetic Articulograph (EMA). Results show that a two-factor model best captures the tongue movement of vowel production, and the model explains about 90% of variance. The PARAFAC modeling of vowels is a speaker-independent generalization concerning the sampled tongue positions and the inferred lingual gestures. The results from Ningbo Chinese are consistent with those from English and other European languages. The fact that the extracted lingual movement mechanisms are comparable to the functional representation of tongue muscle forces from the EMG study (Maeda & Honda, 1994; Honda, 2000) suggests that the PARAFAC model of lingual articulation has physiological implications and reflexes speech motor organization for vowel articulation.

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