

ACOUSTIC CORRELATES OF DIFFERING ARTICULATORY STRATEGIES

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In an earlier EMG and vowel identification study (Bell-Berti et al., 1978) we hypothesized that inter-speaker differences in the perception of vowels, variously described as differing in tongue tension or tongue height, reflect differing articulatory strategies. In an attempt to explain the perceptuo-productive relationships more fully, we subjected the utterances of the nine subjects in the EMG experiments to acoustic analysis.

Method

The acoustic analyses were performed on /əpVp/ utterances, where V=/i,ɪ,e/ or /ε/, using a digital waveform and spectral analysis system. Averages of the first three formant frequencies and vowel durations, for each speaker, were computed for a minimum of 15 repetitions of each utterance.

Results

Preliminary results do not reveal systematic differences between formant frequency patterns of speakers using differing articulatory strategies. Inter-speaker differences, however, were revealed by durational analysis: speakers who differentiated the members of the /i-ɪ/ and /e-ε/ pairs on the basis of tongue tension showed a greater durational difference between the members of the pairs than did speakers who used tongue height to differentiate the members of the pairs.

References

Bell-Berti, F., L. J. Raphael, D. B. Pisoni, and J. R. Sawusch (1978): "Some relationships between articulation and perception," Haskins Laboratories Status Report on Speech Research SR-55.

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