THE PALATALIZATION OF ALVEOLAR FRICATIVES IN AMERICAN ENGLISH

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The palatalization of alveolar consonants across word boundaries, as in "got you"(/gat^{h}yu/ →[gačụ]), is a common phenomenon in casual American English. As part of a larger study of this process, we examined the acoustic-phonetic characteristics of the alveolar fricatives /s/ and /z/ in palatalizing contexts. The inquiry was focussed on two issues: (1) in which phonetic contexts can palatalization occur? and (2) how do the acoustic correlates of the resulting palatalized fricative compare to those of the palatals /š/ and /ž/?

Method

The speech material, collected from six speakers, contained many examples of single fricatives, as well as across-word-boundary sequences like /-s##s-/, /-š##š-/, /-š##s-/, /-s##š-/ and /-s##y-/. Measurements, made on both wideband spectrograms and a computer display of waveforms and spectra, included (1) duration, (2) an estimate of spectral concentration at the midpoints of segments, and (3) an estimate of the frequency onset of turbulence noise for midpoint spectra.

Results

On both spectral measurements, the sequence /šs/, as in "tunafish sandwich", shows a clear shift from /š/-like values to /s/-like values, while the reverse sequence /sš/, as in "gas shortage" remains approximately constant at values near those for /sš/, /š/ and /s^y/. This suggests that /sš/ can be palatalized to a single articulatory gesture, while /šs/ requires two discrete gestures, a conclusion which is consistent with spectrographic observations and transcriptions which indicate a single homogeneous fricative for /sš/, and two distinct fricatives for /šs/. Moreover, the duration of /sš/ is shorter than /šs/, as expected if /sš/ merges to a single gesture. A similar pattern of results is found across the voicing variable. Possible explanations of this asymmetry are discussed from the point of view of low-level phonetic rules and articulatory constraints.