New Media Technology As Sociophonetic Data Collection Tools

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This paper will evaluate the usefulness of 5 non-traditional recording formats for the purposes of sociophonetic analysis focussing on the reliability of measurements of the first two formant frequencies.

One male and one female speaker read a word list containing 10 English monophthongs in h_d context (e.g. heed, hid, hood etc.) into a Roland Edirol R-09 (WAV) recorder using the built-in stereo condenser microphone. Following the methods of Byrne and Foulkes (2004), 3 simultaneous recordings were made using the Voice Memo feature on the Apple iPhone (saved as Apple m4a), the internal microphone in the Macbook Pro (saved as WAV) and the built-in microphone on the Mino Flip video camera (saved as AVI). An additional recording was produced by uploading the Mino Flip file to Youtube (saved as FLV) which was then subsequently retrieved in Mp4 format via the webservice Keep It! and converted back to a WAV file for acoustic analysis in PRAAT 5.1.29. All words were read 3 times by each speaker while seated in a quiet room with each recording device placed on a table in front of them.

Measurements of the trajectories for F1 through F4 were taken from all words. These values were then compared using a Multivariate ANOVA in SPSS with onset, midpoint and offset measurements as dependant variables and recording device as the independent factor with separate runs for each formant. In light of previous research (Gonzalez et al. 2001), it was expected that lossy compressed formats or the lower-quality microphones would produce significant deviations from the lossless uncompressed format (i.e. the Edirol recorder). Preliminary MANOVA results and Tukey post-hoc tests for the female subject reveal several significant differences between the uncompressed format and Mino and Youtube formats. All words except HEAD, HAD, HAWED showed increases in F1 frequency for at least 1 point along the F1 trajectory (either onset, midpoint or offset). With the exception of one word, HOOD, no differences in F2 were found between the uncompressed recording and any others. No other recordings were significantly different from the Edirol recording.

Based on these results the Macbook Pro and iPhone Voice Memo appear to be suitable recording options for contexts such as the sociolinguistic interview (Labov 1984), at least for analyses of the first and second formants. The Mino recording and its Youtube derivative show a number of significant deviations that cast doubt on their effectiveness as sociophonetic recording tools.

References:
Boersma, P. & Weenink, D. 2010. Praat: doing phonetics by computer (Version 5.1.29) [Computer program].