Title: Keeping up with Cait: A longitudinal analysis of F0 and [s] in the speech of Caitlyn Jenner

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Abstract:

The sociophonetic literature examining the speech of transgender individuals, while growing, remains sparse. Those studies which have been done have been largely synchronic in nature (with the notable exception of Zimman, 2012), and have focused entirely on those individuals who have already begun or completed the process of transitioning. Data is rarely available from years *prior* to gender transition. As a result it is unclear whether the speech of trans individuals remains relatively static over the lifespan, or whether trans individuals undergo a process of "linguistic transition" mirroring gender transition in other facets of style.

This study presents a longitudinal analysis of fundamental frequency (F0) and the spectral mean of [s] in the speech of Caitlyn Jenner (born William Bruce Jenner) --- a world-famous former Olympic athlete, assigned male at birth, who in the spring of 2015 publicly came out as a transgender woman. Data for the study were extracted from episodes of the unscripted reality TV show *Keeping up with the Kardashians*, on which Jenner is a central character. Ten forty-minute episodes were analyzed in total, one from each year of the show's 10 year history (2007-2016).

The data indicate a substantial and sustained shift in Jenner's F0 between the 2012 and 2013 recordings, jumping from an average of 126.8 Hz in 2007-2012 to an average of 142.5 Hz in 2013-2016. The results of a Tukey HSD test as well as a post-hoc mixed effects model confirm the statistical significance of this jump ($p<0.001$). While predating her public transition by two years, this shift coincides with what Jenner has since described as a renewed commitment in her own mind to pursue eventual transition. Around this time Jenner came out as transgender to a small group of friends and began taking discrete steps towards eventual transition.

The data also indicate a jump in Jenner's spectral mean of [s] between 2014 and 2015, coinciding with her public transition. Jenner's average spectral mean of [s] rises from an average of 3800 Hz in 2014 to an average of nearly 4600 Hz across the 2015 and 2016 recordings. Again, a Tukey HSD test confirms this jump as highly significant ($p<0.001$).

None of the surgeries or hormone treatments which Jenner has undergone have any known effect on realizations of F0 or [s]. Furthermore, biological aging of the vocal tract has no known effect on realizations of [s] (provided no tooth loss), and those effects which have been noted for F0 are inconsistent with the patterns found here. These linguistic shifts therefore do not appear to be physiologically motivated. Given the indexical associations that high realizations of these two variables have with stereotypical conceptualizations of femininity, I argue instead that the increases in both F0 and [s] spectral mean may be interpreted as linguistic strategies employed by Caitlyn in the (re-)construction of her identity as a woman and member of the trans community.

References:
Zimman, L. (2012). Voices in Transition: Testosterone, transmasculinity, and the gendered voice
      among female-to-male transgender people (Doctoral dissertation, University of Colorado).