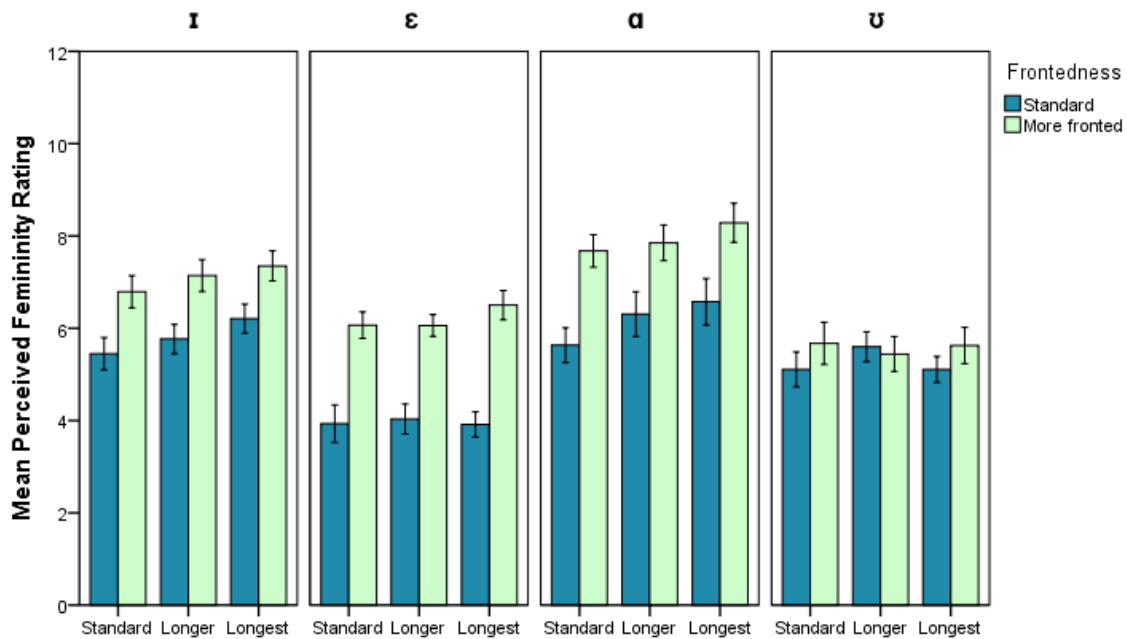


Vowel fronting and lengthening as related to Southerners' perception of femininity

Among other sociolinguistic variables, vowel fronting (correlated with the higher second formant F2) and vowel lengthening have been associated with perceived femininity in Northern American English (Foulkes, 2010; Hancock & Garabedian, in press). Most of the existing research on perceived masculinity and femininity, however, has been conducted in the Northern United States and Canada (Munson & Babel, 2007). Few studies have been conducted in the South, where linguistic diversity may interact with genderlect and perception in ways that vary from those in the North (Campbell-Kibler, 2007). The goal of this study was to investigate whether listeners' perception of femininity in the Southern state of Louisiana is influenced by relative fronting and lengthening of vowels.

Twenty speakers of Southern American English (SAE) participated in a perception experiment. Stimuli were created from recordings of eight words (*tick, tech, tock, took, pit, pet, pot, and put*) produced by a SAE speaker trained in linguistics. Sixteen productions were selected: eight of them had F2 values intermediate between standard female and male values for [i, ε, α, υ] (Hillenbrand *et al.*, 1995); the other eight had relatively high F2 values as measured in Praat (Boersma & Weenink, 2014). Next, the vowel length was manipulated in three steps: standard (Clopper, Pisoni, & de Jong, 2005), 1.25 times, and 1.5 times standard length. Stimuli were repeated three times and presented to listeners in a random order. Listeners were asked to rate each stimulus on a 1-12 femininity goodness scale where 1 was equivalent to "not at all feminine" and 12 was "very feminine." Listener ratings averaged across three repetitions of each stimulus word were submitted to a mixed-effects regression analysis with Vowel (4), Frontedness (2), and Length (3) as fixed factors, and Listener and Word as random factors.



The rating analysis yielded a significant effect of Vowel [$F(3,935) = 2.87, p = .036$], Frontedness [$F(1, 935) = 103.60, p < .001$], and the interaction between these two factors [$F(3, 935) = 9.03, p < .001$]. Figure 1 above illustrates these results. Namely, [ɪ, ε, ʌ] fronting facilitated the perception of words as feminine sounding ($p = .011$, pairwise comparisons with Bonferroni corrections). Vowel lengthening, on the other hand, did not seem to significantly affect perceived femininity judgments.

This study shows that in addition to the well-documented effect of F0, vowel fronting in some vowels also influences the perception of femininity by SAE dialect speakers. The lack of vowel lengthening effect could be explained by the tendency for all SAE speakers to lengthen vowels, not only women (Clopper & Pisoni, 2005; Holden, 1998; Hillenbrand, 1995). When our participants heard lengthened, or fronted and lengthened vowels, they self-reported that they perceived the words as "Southern" or "country." It is also possible that the effect of length was obscured by uneven sampling of participants (14 females, 6 males). A post-hoc analysis suggested that Southern male listeners might interpret vowel length as indexing femininity whereas Southern females do not. Our future study will address this hypothesis.

References

- Boersma, P., & Weenink, D. (2014). *Praat: doing phonetics by computer*.
- Campbell-Kibler, K. (2007). Accent, (ING), and the social logic of listener perceptions. *American Speech*, 82(1):32-64.
- Clopper, C. G., Pisoni, D. B., & de Jong, K. (2005). Acoustic characteristics of the vowel systems of six regional varieties of American English. *Journal of the Acoustical Society of America*, 118(3), 1661-1676.
- Foulkes, P. (2010) Exploring social-indexical variation; a long past but a short history. *Laboratory Phonology* 1, 5-39.
- Hancock, A.B., & Garabedian, L. (in press). Transgender voice and communication treatment: A retrospective chart review of 25 cases. *International Journal of Language and Communication Disorders*.
- Holden, C. (1998). U.S. dialects persist by both region and race. *Science*, 279(5355), 1311.
- Hillenbrand, J., Getty, L.A., Clark, M.J., & Wheeler, K. (1995). Acoustic characteristics of American English vowels. *The Journal of the Acoustical Society of America* 97(3): 3099-3111.
- Munson, B., & Babel, M. (2007). Loose lips and silver tongues: projecting sexual orientation through speech. *Linguistics and Language Compass* 1, 416-449.