

Pitch, affect and gender: the interaction of social and physiological factors in the speech of non-binary individuals

It is customary to assume that average pitch differences exist in the speech of women and men (e.g. Titze 1994). While sociolinguists have recognised the potential for these differences to interact with other factors like sexuality (e.g. Gaudio 1994; Levon 2009, 2010, 2012; Russell 2015; Smyth *et al.* 2003), research has rarely challenged the assumption that the pitch properties of women's and men's voices differ in fundamental ways. This is because of an underlying belief in the existence of inherent physiological differences across genders – differences that affect the pitch properties observed in speech. But how does this assumption map on to the speech of trans people – individuals for whom physiological differences do not necessarily correspond to actual, self-described gender? In this paper, I examine pitch variation within a population of trans speakers in Southeast England in order to investigate the role of social and physiological factors in constraining observed prosodic patterns.

Data are drawn from a study of 28 individuals from Southeast England who all identify as non-binary (i.e. in several ways other than woman or man). In this paper, I focus on a sample of eight individuals split evenly by gender/sex assigned at birth, age (older or younger), gender presentation ("femme" or "masc") and sexuality ("LGB" or "queer"). I extracted approximately 300 intonational phrases (IPs) per speaker from speech collected during sociolinguistic interviews, resulting in a total dataset of 2,437 IPs for analysis. Initial mixed-model regressions considered how well the factors birth assignment, age, gender presentation and sexuality predicted three measures of pitch variation among speakers: mean pitch (measured in ERB), pitch range (in semitones) and pitch dynamism or slope (in st/sec). Subsequent analyses examined whether the affective content of talk (positive, neutral or negative) further conditioned observed patterns.

Analyses reveal that none of the four factors are significant predictors for mean pitch, though birth assignment is closest ($p=0.0838$). Birth assignment is the only significant predictor of pitch range ($p=0.0234$). In contrast, social factors play a bigger role in predicting pitch slope: sexuality ($p=0.0260$) and age ($p=0.0338$) are significant predictors, presentation nears significance ($p=0.0597$) while birth assignment is non-significant. When incorporating affect, its interaction with presentation acts as the best predictor of both mean pitch and pitch range: masc-presenting speakers have significantly lower pitch in affect-neutral IPs ($p=0.0011$) and greater pitch range in positive contexts ($p=0.0442$). While all social factors feature in at least one significant interaction with affect for pitch slope, the best predictor is the interaction with birth assignment and age: younger speakers assigned male show significantly less dynamism in neutral ($p<0.0001$) and positive ($p<0.0001$) contexts relative to negative.

All of this highlights that while physiology – better captured by birth assignment than gender itself – does play a role in determining some pitch characteristics, social and contextual factors also condition how the resource is strategically employed by speakers in interaction. This offers support for Zimman's (2017) call for more nuanced approaches to studying gendered voices, taking account of birth assignment, identity, presentation and more.

References

- Gaudio, Rudolf P. 1994. Sounding gay: pitch properties in the speech of gay and straight men. *American Speech* 69(1): 30–57.
- Levon, Erez. 2009. Dimensions of style: context, politics and motivation in gay Israeli speech. *Journal of Sociolinguistics* 13(1): 29–58.
- Levon, Erez. 2010. The politics of prosody: language, sexuality and national belonging in Israel. *Queen Mary's Occasional Papers Advancing Linguistics* 16: 1–27.
- Levon, Erez. 2012. The voice of others: identity, alterity and gender normativity among gay men in Israel. *Language in Society* 41(2): 187–211.
- Russell, Eric Louis. 2015. Sounding gay and sounding straight: the performance of male sexual identity in Italian. *Journal of Language and Sexuality* 4(1): 30–76.
- Smyth, Ron, Greg Jacobs and Henry Rogers. 2003. Male voices and perceived sexual orientation: an experimental and theoretical approach. *Language in Society* 32(3): 329–350.
- Titze, Ingo R. 1994. *Principles of Voice Production*. Englewood Cliffs, New Jersey: Prentice Hall.
- Zimman, Lal. 2017. Variability in /s/ among transgender speakers: evidence for a socially grounded account of gender and sibilants. *Linguistics* 55(5): 993–1019.