Högre seminarium via Zoom, 18 september 2024, Karolinska Institutet
Benjamin Munson, University of Minnesota

Gender Variation in Children's Speech: Evidence for Social Affiliation in Language Acquisition

Abstract: Language conveys information about the person who produced it. Individuals exercise social agency by choosing to speak in ways that convey aspects of their identity, such as their gender. Listeners are able to detect this phonetic variation in speech and make judgements about a speaker's physical and social characteristics, like age, race, and gender (Babel & Munson, 2014).

As a group, cisgender, adult women (i.e., women who were assigned female at birth) tend to speak at an overall higher frequency than cisgender adult men. One hypothesis is that these differences are due primarily to anatomical differences between cisgender men and women. However, there is phonetic variation in speakers not accounted for by an individual's sex assigned at birth. One key piece of evidence for this is the finding that gender is expressed differently in different speech communities: different languages, different dialects, and different social groups (as reviewed by Munson & Babel, 2019 and Tripp & Munson, 2021). For example, the magnitude of gender differences in /s/ in Glaswegian English varies systematically as a function of age and social class. Such variation would not be expected if gender differences were simply the passive consequence of uniform sex-dimorphism across the human species. Moreover, even those parameters that are plausibly sex-dimorphic, like f0 and average formant-frequencies, can be manipulated intentionally in 'performances' of gender (e.g., Cartei et al., 2012). Hence, gender differences can be seen as acts of social agency, which can be exercised by people of all genders (male, female, and genders that are neither exclusively male nor exclusively female) and by people who are cisgender, transgender, or neither exclusively cisgender nor transgender.

Another piece of evidence that gendered speech is learned is the finding that prepubertal children assigned male at birth (AMAB) and assigned female at birth (AFAB) speak differently. Reliable sex dimorphism in vocal-tract size and shape does not occur until after puberty, so this must reflect some learned behavior. (Perry et. al, 2001). Children as young as 2 ½ are able to be distinguished based on sex assigned at birth, much earlier than the development of anatomical differences in vocal tracts (Fung, Schertz, & Johnson, 2021; Munson, Lackas, & Koeppe, 2022).

This talk will discuss the results of a large, longitudinal study on the way that gender is expressed through patterns of phonetic variation. This study examined an archival corpus of the speech of 55 AMAB and 55 AFAB children who had participated in a longitudinal study on the relationship between vocabulary growth and phonological development. We examined these children at two time-points: between 2 ½ and 3 ½ years old and two years after the first time-point. The children all had normal hearing, and demonstrated a wide range of expressive language abilities and speech production accuracy. In our first study, we played single words produced by the children and asked adults to rate them on a scale from "definitely a boy" to

“definitely a girl”. We found that naive adults rated the AMAB children closer to the “boy” end of the scale and AFAB children closer to the “girl” end of the scale. This was true at both developmental time-points. The difference was bigger at the later time-point, owing entirely to the ratings of the AMAB children becoming more boy-like. A variety of speech and language skills at the earlier time-point predicted gender ratings at the second time-point, albeit weakly. Together, these results show that children, especially those who are assigned male at birth, learn gendered speech progressively during the developmental time-frame we examined.

We subsequently looked in detail at the acoustic characteristics of the AMAB and AFAB children’s speech to determine the specific speech features that differed between the groups. We found evidence that AMAB and AFAB children differ in ways that resemble the sex-dimorphic differences in cisgender adults: AMAB children had lower overall average formant frequencies than AFAB children. They also mirrored some of the gender differences in adults that are not plausibly grounded in sex dimorphism: AFAB children produced /s/ with a higher mean frequency than AMAB children.

The second part of the talk will describe the theoretical and clinical implications of this work. We will review studies from our and others’ laboratories showing that children’s language learning is influenced by epistemic trust. Epistemic trust refers to an individual's belief that another person's information and knowledge is accurate and reliable. Studies have shown that when children have more epistemic trust in a person, they learn language more readily from that individual. We propose that gendered speech learning follows the same principle: children learn speech styles from people whom they hold in high epistemic trust because they share social identities. The hypothesis that children selectively emulate the speech of a subset of the adults they encounter during language acquisition has powerful and profound influences on our understanding of the practice of speech-language pathology. In many SLP settings, children’s formative learning experiences are with a single SLP. Demographic skew in the profession means that this person is likely to be a woman. Male-identified children’s drive to sound male-like could provide a barrier to their learning speech from someone who doesn’t share this identity. We will discuss empirical evidence for this, and will provide some potential ways that this barrier could be addressed in speech and language therapy.

Cited References:

Babel, M., & Munson, B. (2014). Producing socially meaningful linguistic variation. In M. Goldrick, V. Ferreira, & M. Miozzo (Eds.), The Oxford handbook of language production (pp. 308–325). Oxford University Press.
Koeppe, K. (2021). The Emergence of Gendered Phonetic Variation in Preschool Children: Findings from a Longitudinal Study [Unpublished doctoral dissertation]. University of Minnesota.
Munson, B., Crocker, L., Pierrehumbert, J., Owen-Anderson, A., & Zucker, K. (2015). Gender Typicality in Children's Speech: A comparison of the Speech of Boys with and without Gender Identity Disorder. Journal of the Acoustical Society of America, 137, 1995-2003. DOI: https://doi.org/10.1121/1.4916202

Munson, B., Johnson, J. M., & Edwards, J. (2012). The role of experience in the perception of phonetic detail in children's speech: a comparison between speech-language pathologists and clinically untrained listeners. American journal of speech-language pathology, 21(2), 124–139. https://doi.org/10.1044/1058-0360(2011/11-0009)
Munson, B., Lackas, N., & Koeppe, K. (2022). Individual differences in the development of gendered speech in preschool children: evidence from a longitudinal study. Journal of Speech, Language, and Hearing Research, 65, 1311-1330
Perry, T. L., Ohde, R. N., & Ashmead, D. H. (2001). The acoustic bases for gender identification from children's voices. The Journal of the Acoustical Society of America, 109(6), 2988–2998. https://doi.org/10.1121/1.1370525
Shriberg, L. D., Gruber, F. A., & Kwiatkowski, J. (1994). Developmental phonological disorders III: Long-term speech-sound normalization. Journal of Speech, Language, and Hearing Research, 37, 1151-1177.
Wiefferink, K., van Beugen, C., Wegener Sleeswijk, B., & Gerrits, E. (2020). Children with language delay referred to Dutch speech and hearing centres: caseload characteristics. International journal of language & communication disorders, 55(4), 573–582. https://doi.org/10.1111/1460-6984.12540
Zimman, L. (2017). Variability in /s/ among transgender speakers: Evidence for a socially grounded account of gender and sibilants. Linguistics, 55, 993-1019. https://doi.org/10.1515/ling-2017-0018

Recommended reading prior to the talk: Tripp & Munson (2022, WIRES), Munson et al. (2022)