

The other Kind of Phonological Acquisition: How Children learn to Convey Socially Meaningful Information through Speech

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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 ample 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 et al., 2021; Munson et al., 2022). This talk will discuss the results of a variety of studies in our lab addressing this topic. The first of these is 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. In this study, we showed that children learn gendered ways of speaking very early in life, and that differences between AMAB and AFAB children grow during the preschool years. A secondary analysis of these data showed that this growth happens in a variety of phonetic parameters (Wong et al., 2025). Some of these are surprising. We initially predicted, for example, that gender differentiation in /s/ would be later-acquired, given that /s/ is a generally later-acquired sound that requires considerable motor control to produce in an adult-like manner. In contrast, we found that children's earliest productions of /s/ can be gendered, suggesting that the drive to speak in appropriately gendered ways influences early speech-sound acquisition. The second study examined how children's learning preferences were influenced by the ways that adults express gender through speech (Zeng et al., 2025). In this study, we found that AMAB children prefer to learn language (in this case, labels for novel words) from adult men, while AFAB children prefer *not* to learn language from adult men. This finding provides a potential mechanism for how gendered ways of speaking are learned, as it suggests that children are selective in whom they imitate when learning language. Together, these findings have important implications for both theory and practice in speech-sound development and disorders,

as they suggest that children's acquisition is influenced by (and perhaps tailored to) the development of their identities, including their gender.

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