

Research explores the gender dynamics of voice recognition in infants

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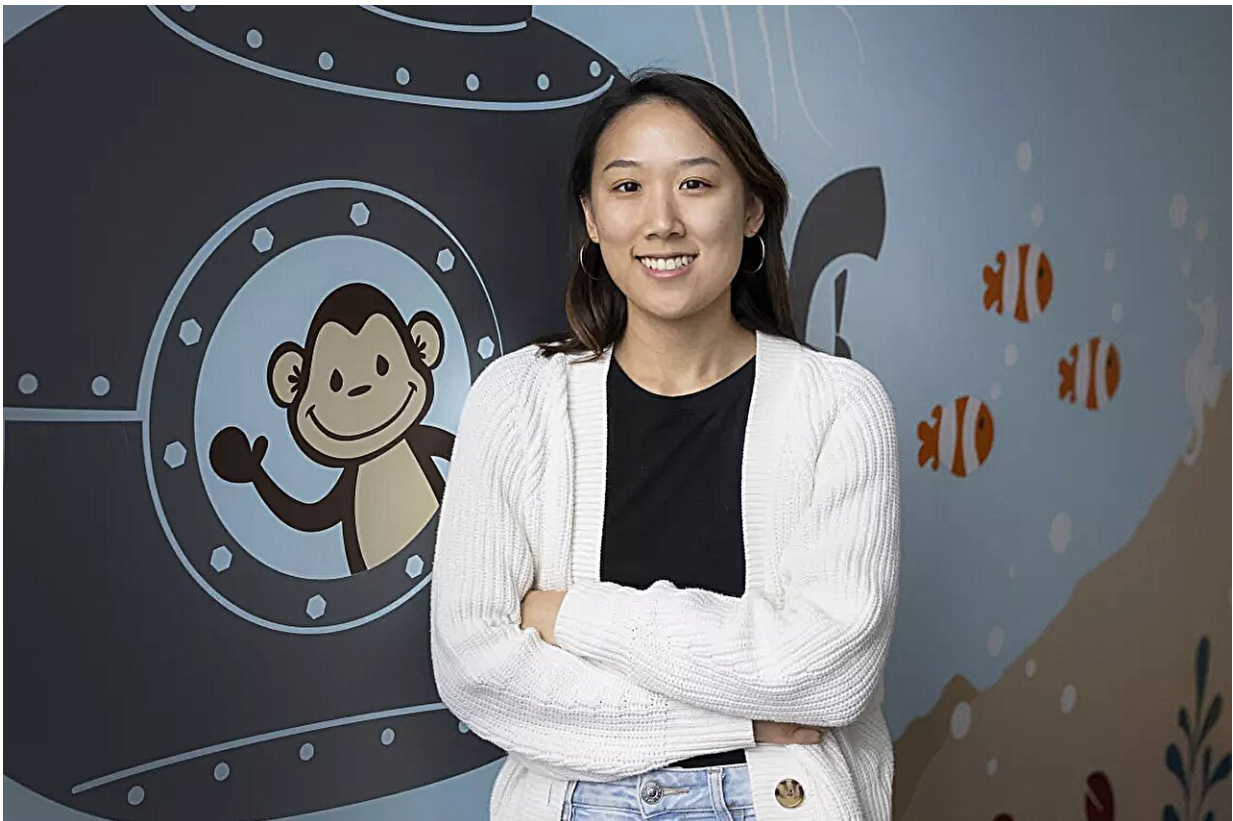
Credit: Anna Shvets from Pexels

A new study by a University of Toronto Mississauga psychology student has identified an intriguing difference in how babies relate to the voices of male and female adults.

Ph.D. candidate Madeleine E. Yu has found that when exposed to the voices of unfamiliar adults, [infants](#) are less likely to be able to distinguish between unfamiliar males versus unfamiliar females.

"This was not what we were expecting," says Yu, whose [study](#) was published in January in the journal *JASA Express Letters*. "It seems like there's something going on with this difference in how infants respond to unfamiliar male voices."

Yu is a researcher in the UTM Child Language and Speech Studies (CLASS) Lab, and she collaborated on this study with CLASS lab director Elizabeth Johnson and former lab research associate Natalie Fecher.



PhD candidate Madeleine Yu and collaborators from Child Language and Speech Studies Lab studied how infants respond to unfamiliar male voices. Credit: Nick Iwanyshyn

In 2019, Johnson and Fecher completed a study on how well 4.5-month-old infants can distinguish unfamiliar female voices. Yu replicated the procedures of this earlier study but changed the talkers to males to determine how gender might impact the findings.

The participants were 48 infants from the Greater Toronto Area who were all ages 4 to 5 months and monolingual English learners. Mothers were primary caregivers for at least 46 of the babies.

Seated on their caregiver's lap in a specialized booth that minimized external sounds, each infant was exposed to [audio recordings](#) of 40 unrelated simple sentences spoken by pairs of adult males. The male talkers were all native English speakers born and raised in Canada with acoustically similar voices, and spoke their sentences in a neutral tone of voice.

When an audio recording played, a multi-colored flickering checkerboard with a blinking red star in the center would activate on a computer monitor in front of them. When the infants responded to the audio by turning their attention to the monitor, the researchers tracked how long they looked at it. The first phase involved familiarizing the infants with one male talker by playing his recordings repeatedly.

Then, the researchers conducted four trials: two same-voice trials (with recordings by the same familiar male), and two different-voice trials (with recordings from a new, unfamiliar male).

The researchers found that the lengths of times the infants looked at the monitor were the same during both trials. This result differs from that of Johnson and Fecher's 2019 study, where the infants looked significantly longer during the same-voice trial than during the different-voice trial. This suggested to the researchers that the infants were less able to detect a talker change with the male voices than with the female voices.

"It's possible that the infants' greater exposure to females [as their primary caregivers] shaped their perception to better tell apart female versus male voices," Yu says.

"Another explanation is that it could be evolutionary," Johnson says.

"We know the [auditory system](#) develops before the [visual system](#), and we also know that identifying your caregiver is really important [for survival]. Historically, females have tended to be the primary caregiver. So, there could be some evolutionary argument for being more tuned into female voices early on than male voices."

The study builds on a body of speech processing and talker recognition research that Yu has completed throughout her educational career, which includes earning a bachelor of science in cognitive and behavioral science at University of California San Diego and a master's degree in psychology at U of T. She is also examining differences in how we recognize the [voices](#) of individuals with familiar and unfamiliar accents, a topic that is the focus of her doctoral dissertation.

Yu and Johnson say the year-long study research was painstaking, as they needed to organize their trials around the unpredictable nap times, feeding schedules and temperaments of the infants. But Yu says the effort was worth it, as the study fills a glaring gap in infant voice recognition literature—which features almost exclusively female talkers—and so provides a rare look at how infants perceive the world.

"I think it's really fascinating that, by testing differences in looking behavior, we can make inferences about the differences in the perception of a four-month-old," Yu says.

More information: Madeleine E. Yu et al, Learning to identify talkers: Do 4.5-month-old infants distinguish between unfamiliar males?, *JASA Express Letters* (2024). DOI: [10.1121/10.0024271](https://doi.org/10.1121/10.0024271)

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