

Hearing loss in one infant twin affects mother's speech to both babies

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Is it possible that hearing loss in one infant from a pair of twins can affect the mother's speech to both infants? A new acoustics study zeroes in on this question and suggests that not only is this alteration of speech entirely possible, but that mothers speak to both infants as if they are hearing impaired.

The study explores the acoustic characteristics of three [mothers'](#) speech towards their infant twins. The results will be presented by Maria V. Kondaurova, a postdoctoral fellow in the Department of Otolaryngology at Indiana University's School of Medicine at the 168th Meeting of the Acoustical Society of America (ASA) will be held October 27-31, 2014, at the Indianapolis Marriott Downtown Hotel.

At the heart of the study are a 15.8-month-old pair of twins with normal hearing; an 11.8-month-old pair with a normal-hearing twin and a hearing-impaired twin with a mild degree of [hearing loss](#) (who received hearing aids); and a 14.8-month-old pair with a normal-hearing twin and a hearing-impaired twin born with severe-to-profound degree of hearing loss (who received a cochlear implant in the right ear).

"During the course of a year, at three intervals, we recorded the mothers' speech in the laboratory while they played with their child as they normally would do at home using quiet toys," said Kondaurova. Mothers' speech to an adult experimenter was also recorded during the first session.

These recordings were then studied for several acoustic characteristics of the mothers' speech style and vocabulary productions directed to their infants.

"We discovered that mothers used lower pitch and more variable intonation with a larger pitch range while speaking to the normal-hearing as compared to hearing-impaired twin pairs," Kondaurova said.

"Mothers produced more syllables, and used a faster speaking rate and longer sentence duration in speech to normal-hearing twins compared to the other two pairs."

When the researchers also compared how clearly vowels were produced in infant-directed versus adult-directed speech, their analysis revealed that mothers produced clearer vowels in infant-directed speech for all three pairs.

These new findings will help enhance our understanding of how "a child's hearing loss may disrupt the natural reciprocal pattern of communication in mother-infant dyads when both the family environment and genetic makeup of children are controlled," explained Kondaurova.

The study's key message is that "an infant's hearing loss affects not only the infant but also the caregiver's language behavior, which is an important environmental variable that contributes to infant linguistic and cognitive development," she added.

Caregivers' speech input is a salient predictor of future language development of both normal-hearing and hearing-impaired infants, so the study's results are particularly relevant for speech-language therapists and parents of hearing-impaired children who have siblings.

More information: Presentation #4aSCb9, "Acoustic characteristics

of infant-directed speech to normal hearing and hearing-impaired twins with hearing aids and cochlear implants: A case study," by Maria V. Kondaurova, Tonya R. Bergeson-Dana and Neil A. Wright will be presented during a poster session on Thursday, October 30, 2014, from 8:00 AM to noon in Marriott 5. The abstract can be found by searching for the presentation number here:

asa2014fall.abstractcentral.com/planner.jsp

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