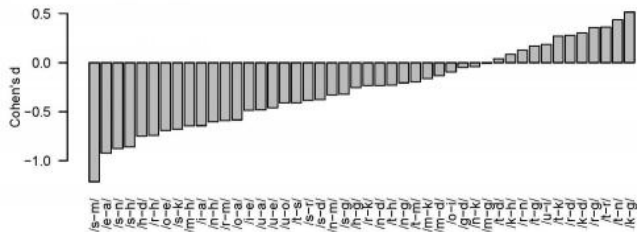


Mothers don't speak so clearly to their babies

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Differences in speech clarity between infant-directed and adult-directed speech. Negative numbers indicate sound pairs for which infant-directed speech is less clear than adult-directed speech. Credit: RIKEN

People have a distinctive way of talking to babies and small children: We speak more slowly, using a sing-song voice, and tend to use cutesy words like "tummy". While we might be inclined to think that we talk this way because it is easier for children to understand, new research published in *Psychological Science* suggests that, surprisingly, mothers may actually speak less clearly to their infants than they do to adults.

The research represents a collaborative effort between scientists from the RIKEN Brain Science Institute (BSI) in Japan and researchers from the Laboratoire de Sciences Cognitives et Psycholinguistique in Paris. Using speech samples recorded at RIKEN, the two teams set out to test the widely-accepted hypothesis that parents pronounce sounds more distinctly when addressing children in an unconscious attempt to help them learn the sounds of the language.

The researchers began by recording the speech of 22 Japanese mothers speaking both to their child and to an adult, and then extensively annotating these recordings with detailed transcriptions of each mother's speech. Next, they applied a technique developed by the Paris team to measure

the acoustic similarity between any two syllables, like 'pa' and 'ba', or 'po' and 'bo'. The group used this process to examine the 118 most frequent syllable contrasts in both the adult- and child-directed speech. The results were surprising: Mothers spoke slightly less clearly when talking to their child than to the experimenter.

"This finding is important," says Alejandrina Cristia, one of the Parisian scientists, "because it challenges the widespread view that parents do and should hyperarticulate, using very robust data and an analysis based on a study of 10 times as many syllable contrasts as previous work."

"Our results suggest that, at least for learning sound contrasts, the secret to infants' language-learning genius may be in the infants themselves. The fact that they are able to pick up sounds from input that is less clear than that used by adults with each other makes this accomplishment all the more remarkable," explains Andrew Martin, the first author of the paper.

The researchers note that their interdisciplinary approach - which drew from developmental psychology, linguistics, and speech technology - provides a promising avenue for gaining a large-scale perspective on the nature of the input that [children](#) use to acquire their native language.

Of course, these new findings raise additional questions that Cristia, Martin, and colleagues hope to explore. For example, why are mothers pronouncing sounds less clearly? The researchers suspect they are instinctively focusing on other goals within and beyond language - such as communicating emotions or on engaging the child's attention - and slightly less-clear pronunciation is an inadvertent consequence of these other goals. And collaborations with other labs around the world could help to answer another fascinating question: Do parents from other cultures do the same thing?

Provided by RIKEN

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