

Study analyzes what babies hear, say on six continents

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Elika Bergelson, associate professor of psychology at Harvard University, studies how infants and toddlers learn language from the world around them. The developmental psychologist specifically strives

to parse the various theories that account for the onset and eventual mastery of language comprehension and production.

Bergelson's latest paper, [published this month in the *Proceedings of the National Academy of Sciences*](#), represents a more global approach to developing and testing such theories.

Written with Alejandrina Cristia at the École normale supérieure, PSL University, and 11 others, the paper is based on an extremely large sample of two- to 48-month-olds. Day-long audio recordings captured the babbling and baby talk of 1,001 children representing 12 countries and 43 languages. Analysis was completed with the help of machine learning.

Results show that the main predictors of [language](#) development are age, clinical factors such as prematurity or dyslexia, and how much speech children receive from the world around them. In contrast to previous research, no effects were found related to gender, multilingualism, or socioeconomics.

The study was able to simultaneously consider many variables that are usually looked at separately while also considering how big their effects were. "Notably, it wasn't just child factors like age or risk for language delay that mattered, but a key environmental factor too: how much speech children heard from adults," Bergelson said. "For every 100 adult vocalizations [children](#) heard per hour, they produced 27 more vocalizations themselves, and this effect grew with age."

The work also touches on well-worn critiques of low-income parents and caregivers. "There's been much debate and discussion in the literature in recent years about how [socioeconomic status](#) does or doesn't link to language input and language output," noted Bergelson. "We looked in many, many, many different ways ... In no form did we ever find

evidence that moms with more education had kids who produced more speech in these tens of thousands of hours of recordings from daily life."

More information: Erika Bergelson et al, Everyday language input and production in 1,001 children from six continents, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2300671120](https://doi.org/10.1073/pnas.2300671120)

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