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In-home study suggests babies learn to talk more from context then repetition

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(Medical Xpress)—A small team of researchers affiliated with MIT and Stanford's Department of Psychology has conducted a very unusual experiment—they have recorded every utterance of a single child as he learned to talk and then used the video to undertake a novel study meant to better understand how we humans learn to speak to other people. They have detailed what they learned in a paper they have had published in

Scientists and others, especially new [parents](#), have been fascinated by the process that goes on when a [child](#) learns to talk, since the dawn of time—it is one of the most important skills children learn—but the actual mechanism has been hard to study; most parents are not that eager to have researchers hanging around or cameras capturing their private life. That is what made this latest study so interesting, both of the parents of the [baby boy](#) involved are [language](#) scientists, and both were eager to learn more using their son as the source of a massive set of data. The parents rigged up their house with cameras and microphones to capture every waking moment of the boy's life (approximately 200,000 hours) starting the moment he came home from the hospital, and keeping it up until he was three years old. The cameras also captured the parents of course, and their interactions with their son. Over time, the parents, with assistance from other team members, transcribed the video data into hard facts (focusing most specifically on words spoken by adults that the child was able to hear and those words spoken by the child) that were then put into a database which allowed for lengthy analyses.

After all that work (and enjoyment in raising their son) the researchers came to one grand conclusion: children (at least theirs) do not learn to speak words primarily due to hearing words over and over—what really matters, they found, was context. Thus, if the child heard a word over and over again, always in the same context, he was less likely to start speaking that word than if he heard another word (such as "Momma," the first word he spoke at age nine months) spoken just as much or even less often, but in a wider variety of contexts, e.g. "Smile for Momma?" "Who is Momma?" "Come to Momma."

Abstract

Children learn words through an accumulation of interactions grounded in context. Although many factors in the learning environment have been shown to contribute to word learning in individual studies, no empirical synthesis connects across factors. We introduce a new ultradense corpus of audio and video recordings of a single child's life that allows us to measure the child's experience of each word in his vocabulary. This corpus provides the first direct comparison, to our knowledge, between different predictors of the child's production of individual words. We develop a series of new measures of the distinctiveness of the spatial, temporal, and linguistic contexts in which a word appears, and show that these measures are stronger predictors of learning than frequency of use and that, unlike frequency, they play a consistent role across different syntactic categories. Our findings provide a concrete instantiation of classic ideas about the role of coherent activities in word learning and demonstrate the value of multimodal data in understanding children's language acquisition.