

Infant language exposure shapes brain circuitry

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An infant wears the LENA audio recording device in a pocket on the front of a special vest. Credit: Dr. Kathryn L. Humphreys

The type and quantity of an infant's language exposure relates to their brain function, according to new research published in *JNeurosci*.

Babies learn their [native language](#) by interacting with their caregivers. Rather than simply overhearing adult words, taking turns in a "conversation" predicts an infant's future [language](#) abilities. But it is unclear how language exposure shapes brain circuitry. The brain's language networks may develop in two stages: a bottom-up auditory-processing network begins developing in gestation, and a top-down network for processing more complex syntax and semantics develops in [early childhood](#).

King et al. documented the at-home language exposure of 5 to 8-month-old infants and used fMRI to measure their resting language network activity while they slept in the scanner. Regions in each of the two language subnetworks activated together, indicating coordinated activity. Participating in a greater number of conversational turns at home was associated with weaker connectivity in the bottom-up subnetwork. Brain connections can both weaken and strengthen as they are refined throughout development; future research may reveal how weaker connectivity related to more conversations influences infant language development.

Regardless, the results highlight the importance of early life environments in shaping infant [brain function](#) and development, and the need to support caregivers in providing enriching environments.

More information: Naturalistic Language Input is Associated with Resting-State Functional Connectivity in Infancy, *JNeurosci* (2020). [DOI: 10.1523/JNEUROSCI.0779-20.2020](https://doi.org/10.1523/JNEUROSCI.0779-20.2020)

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