LENA SP provides a rich picture of a child’s language environment for anyone in need of detailed, scientifically reliable speech-language measurements of children 2 months to 48 months old. This document is designed to help you get a sense of LENA’s potential for use in research and clinical settings.

### Bilingualism


### Brain Science


### Deaf and Hard of Hearing


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**Using LENA to understand how conversation affects developing brains**

Researchers at MIT and Harvard used LENA technology in two studies investigating how conversational turns relate to brain structure and function. The first study shed light into the underlying neural mechanism that makes conversational turns — the back-and-forth interactions between children and their adult caregivers — so critical for early brain development. The second study investigated how conversational turns relate to white matter connectivity between Broca’s area and Wernicke’s area, two regions of the brain critical for language.

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**Increased activation in one area of the brain and increased connectivity between one region and another together suggest that when there’s more conversational turns the whole brain works together better.**

- Dr. Rachel Romeo, lead author on study
**Coaching parents on early talk benefits children**

A 2018 study from the University of Washington shows that coaching parents on how to talk with their babies positively affects child development.

“We wanted to explore whether parents benefit from ‘coaching’ by adapting their own speaking style and whether this would affect their child’s language outcomes,” said Patricia Kuhl, co-director of I-LABS, in a press release.

Using LENA technology, researchers provided parents with feedback on their child’s language environment and strategies for increasing interactive talk and “parentese,” a form of speech that’s slow and clear, with exaggerated vowels and intonation.

Babies whose parents received coaching during the study were significantly more verbal by 14 months of age. Parents in the coaching group increased speech directed at their child and increased their use of parentese by 15 percent, compared to a seven percent increase in the control group.

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**Deaf and Hard of Hearing, cont’d**


**Intervention Studies**


**TV/Electronics**


Preschool


Low Socioeconomic Status Populations


See also Wiesleder, A., & Fernald, A. under “Validation in Other Languages”

Conversational turns with teachers are positively related to language skills in children who are at risk

A team of researchers at the University of Miami (UM) used LENA technology to evaluate how interactive talk in child care settings influences the language development of children from low-income or high-risk circumstances.

Over the course of a year, Dr. Lynn Perry collected hundreds of hours of audio from the child language environment at the UM Linda Ray Intervention Center, which LENA technology turned into data.

Analysis of the data suggests that children who experienced more conversational turns with their teachers developed better language skills. These language skills form the foundation for later school readiness skills like literacy and social/emotional skills, Perry said.

The use of cutting-edge LENA recording devices has broadened our data collection options and allowed us to work as a team to both examine language experiences and utilize data to provide feedback to teachers upon which to build their strategies for infants and toddlers with developmental delays.

- Lynne Katz, director of UM Linda Ray Intervention Center
Linking Early Measures to Outcomes


Researchers use LENA to study how the auditory environment shapes infant cognition

At the University of Oregon, Dr. Caitlin Fausey leads a team of researchers investigating how the everyday experiences of young children shape their development. The team is using LENA technology to understand what auditory information young children experience on a daily basis. They’re particularly interested in identifying musical moments that occur in infants’ lives on a daily basis.

Research Focusing on Adults


Autism Spectrum Disorder


Knowing more about the everyday soundscape — and how it changes over the first few years of life — will help us understand how children build knowledge about the people, objects, and actions of our world.

- Dr. Caitlin Fausey
Autism Spectrum Disorder, cont’d


Neonatal Intensive Care Unit


Validation in Other Languages


LENA technology helps to evaluate effectiveness of NICU intervention program

Researchers at Teachers College, Columbia University are using LENA to evaluate the outcomes of a program designed to foster connections between babies born prematurely and their parents.

When a baby is born prematurely and needs to be cared for by medical staff in the neonatal intensive care unit (NICU), the family may experience emotional trauma from separation. Premature birth can put children at risk for behavioral problems, learning difficulties, communication problems, and autism spectrum disorders.

To prevent these long-term challenges, Family Nurture Intervention (FNI) teaches parents strategies for creating an emotional connection with their child. The research team is using LENA technology as a tool to capture data for a broader study that will evaluate the effectiveness of the FNI.