NEWS RELEASE:

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LENA Foundation Announces the Development of an Automatic Autism Screen

March 30, 2009, Boulder, CO – The LENA Foundation announced today that its researchers have developed an automatic autism screen based on detectable acoustic patterns in the recorded vocalizations of children with autism. Based on a study of 75 typically developing children, 30 language-delayed children, and 34 children diagnosed with autism, the screen can distinguish between non-autistic and autistic children with better than 85 percent accuracy for children ages 24 to 48 months.

"We're excited about the results and confident that our accuracy will increase as we collect more recordings and work with other researchers to optimize the technology," said Dongxin Xu, Ph.D., the foundation's manager of software and language engineering.

The automatic screen is a revolutionary new tool based on LENA™ System technology. The LENA System comprises advanced processing software and children's clothing fitted with a lightweight LENA Digital Language Processor (DLP)—essentially a small, unobtrusive digital recorder. Designed for use in the natural home environment, the DLP can save up to 16 hours of high-quality audio, capturing all of a child's vocalizations as well as adult speech and other sounds.

The LENA software partitions the audio recording into segments based on pre-defined acoustic features and categorizes each segment by the recognized sound source, such as the child wearing the DLP, adult males and adult females interacting with the child, and TV and electronic media. The audio segments are processed again to produce a set of more than 40 acoustic feature categories that broadly approximate commonly accepted phoneme categories. The screen uses this feature set to estimate the probability that the child's vocalization patterns are consistent with autism spectrum disorders (ASD).

The foundation is in the process of submitting the automatic autism screen for peer review and recruiting research organizations to conduct an independent and blind validity and reliability study. It hopes to complete the study within the next three months to facilitate the release of the automatic screen this fall. Meanwhile, the LENA System has already demonstrated its usefulness in monitoring the fidelity of treatment for autism and is in use at over 20 research institutions and children's hospitals.

"Based on what I have seen so far, I am confident that we can both improve the accuracy of the autism screen and perhaps detect the acoustic markers for autism in children as young as 18 months, maybe even younger," Xu added. "Of course, the biggest impact of the LENA System will likely be its use to improve the treatment of autism and other language disorders and delays when used by parents to monitor their own interactions with their child."

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About LENA Foundation

Established in 2009, the LENA Foundation develops advanced technology for the early screening, diagnosis, research, and treatment of language delays and disorders in children and adults. Philanthropists Terry and Judi Paul formed the not-for-profit organization through a multimillion-dollar gift and the donation of assets from Infoture Inc. Over a five-year period, Infoture created the LENA (Language ENvironment Analysis) System, the world's first automatic language collection and analysis tool and the foundation's principal product. The foundation employs a team of scientists and engineers who are skilled in computerized speech and speaker recognition, microelectronics, statistical research, and children's language acquisition and development; they are passionately devoted to helping the foundation enhance language development worldwide.