

Pair of Bionic Ears Helps to Distinguish Left from Right

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Can a pair of bionic ears benefit a hearing-impaired child? Cynthia Zettler, a postdoctoral fellow in Ruth Litovsky's laboratory at the University of Wisconsin-Madison thinks so.

At the 157th meeting of the Acoustical Society of America in Portland, she and her colleagues will present initial data from a five year longitudinal study of children suggesting that over the course of years implants can partially restore a child's ability to identify what direction a sound is coming from.

Several decades ago, the first cochlear implant -- a bionic ear that works by directly stimulating auditory nerves -- was surgically implanted in a hearing-impaired adult. But only within the last decade has the U.S. Food and Drug Administration approved the use of [cochlear implants](#) in both ears. Now more than 5,000 children have received these "bilateral" implants, which have been shown to help infants acquire language and to improve quality of life for hearing-impaired children.

The research team investigated whether the devices could also restore the 'ability of children to localize sounds they encounter in their daily lives. The researchers played a moving human voice through speakers placed at different points around a child, and asked the child whether the voice was coming from the left or the from the right. The children best able to identify the directionality of the sound -- typically the oldest who had been wearing the implants for the longest amount of time -- performed almost as well as children born with normal hearing. They

could discriminate left from right until the voice was almost directly in front.

But not all of the children performed this well. As fundamental as the ability to distinguish left from right seems to people born with normal hearing, some of the children with bilateral implants could never discriminate left from right, even when the voices were directly to the side. Zettler believes that there may be an adjustment period for the brain to adapt to the implants. As the study continues, she hopes to pin down the factors that determine why the [implants](#) work better for some [children](#) than for others.

Provided by American Institute of Physics

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