

Word learning in deaf children with cochlear implants

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Learning words may be facilitated by early exposure to auditory input, according to research presented by the Indiana University School of Medicine at the American Association for the Advancement of Science Annual Meeting in San Diego, Feb. 18-22.

A growing body of evidence points to the importance of early auditory input for developing [language skills](#). Indiana University Department of Otolaryngology researchers have contributed to that evidence with several projects, including their study involving 20 [deaf children](#) (22- to 40-months-old and 12 to 18 months after cochlear implantation) and 20 normal hearing children (12- to 40-months of age) that was presented Feb. 21 at the AAAS meeting.

The study's principal author, Derek Houston, Ph.D., associate professor and Philip F. Holton Scholar at the IU School of Medicine, said the study found that deaf children's word-learning skills were strongly affected by their early auditory experience.

"This research is significant because surgery at very young ages requires more expertise," said Dr. Houston. "It is important to know if the increased benefit of early auditory input warrants surgery at younger ages."

Currently, the [Food and Drug Administration](#) guidelines approve cochlear implantation at one year of age, although many children are implanted as young as 6 months of age.

Dr. Houston said the research showed that deaf children's word-learning skill was strongly affected by their early auditory experience, whether that experience was through normal means or with a cochlear implant. Children who received the implant by the age of 13 months performed similarly to their normal-hearing counterparts while children who received a cochlear implant later performed, on average, more poorly than their normal-hearing peers.

Adding to the evidence that early auditory input is important was the finding that children who had some level of normal hearing early in life, before cochlear implantation, exhibited word-learning skills similar to the early implanted children, Dr. Houston said.

"Taken together, the findings suggest that early access to auditory input, even if the access to sound is quite impoverished, plays an important role in acquiring the ability to rapidly learn associations between spoken words and their meanings," summarized Dr. Houston.

The team used the Intermodal Preferential Looking (IPL) paradigm to investigate the language ability of the children. The IPL paradigm requires the child to listen to a repetitive noun while looking at an object. The child continues to look at the screen that displays the original object and a second object while the speaker repeats the word associated with the object. A hidden camera records the movement of the child's eyes to see if he identifies the correct picture with the object's correct name.

Dr. Houston and his colleagues are collaborating with other cochlear implant centers to launch a study with more children to continue the investigation into the effects of early auditory experience on word learning.

Provided by Indiana University School of Medicine

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