

Messersmith's work focuses on effective use of cochlear implants

Spotlight On

UNIVERSITY OF
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In 1985, the FDA granted approval to cochlear implants, which are devices that provide sound to people who are deaf or hard of hearing.

Since that time, advances in technology have been made, but more is still being learned.

Dr. Jessica Messersmith, Ph.D., an assistant professor of Communication Sciences & Disorders at USD, currently is taking part in several studies that aim to help those with cochlear implants – especially children – use them as effectively as possible.

"We're not going to make life perfect for them, but we really should be able to make life better for them," Messersmith said.

The studies Messersmith is performing with other doctors and graduate students take a look at how children with normal hearing and cochlear implants use sound.

"We're interested in what parts of a sound they pay closest attention to, and how that might be related to their early literacy skills," she said.

One way to do that for children with cochlear implants is to play a word for them, and then adjust the implant based on the

results.

"We're always interested in speech, and what they use when listening to words," Messersmith said. "We play them words, and we play them in different types of noise. I can vary the noise, and how much noise there is in different pitch ranges, and look at how that impacts the word they say they heard."

Adjustments also can be made relating to pitch, she said.

A cochlear implant works based on electricity, and is similar to a hearing aid in that there is an outside component that a person can wear on their ear.

"A hearing aid takes sound and amplifies it ... and then sends it through the auditory system. A cochlear implant works differently in that the outside part picks up the sound and changes it into electrical impulses," Messersmith said. "Those electrical impulses are fed to the hearing nerve directly through a surgically-implanted device."

While a person with a cochlear implant will never have "normal" hearing, Messersmith said this should really never be the goal.

"We're giving them electrical sound," she said. "For people with a cochlear implant, sound is different to them, and



unfortunately, we really can't say what sound 'sounds like' to them, because it's different for each person. Whenever the brain is involved, it's always different from person to person. ...

"A reasonable goal for most people with a cochlear implant would be to have a conversation with three or four people in quiet," she said.

For people with cochlear implants, this goal probably could not be met with regular hearing aids.

"There would still be situations that would be difficult," Messersmith said. "Anything dealing with a large room, auditoriums, churches, things like that, are still going to be difficult. The telephone for most individuals with a cochlear implant is going to be difficult, and that's just because they have to rely solely on their hearing, rather than having some of the visual cues."

Messersmith had been a cochlear implant audiologist since 2004, and has been involved in this type of research since 2007. She has been at

USD since August of 2009.

"One of my goals when coming to USD was starting a cochlear implant clinic. I was able to start seeing patients in November of 2010," she said. "Since that time our clinic has just expanded, and really exploded in terms of the number of patients."

"We do not have a surgeon, but I have several surgeons that I work with, and so we are a full-service cochlear implant clinic," she said.

The clinic serves about 30 patients overall, some of them coming from Sioux Falls and Omaha.

Advances in cochlear implant technology continue to be made, to the point now where they can be connected directly with MP3 devices.

"We have a lot to learn about them," Messersmith said. "Since about 2004, 2005, the processing that goes on in the cochlear implant has gotten extremely good just as processing in our home computers has gotten better."

"As those changes happen, we need to make sure that in the clinic

we're staying on top of it, and using the most efficient practices to make sure they're hearing the best that they can," she said.

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