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Researchers studying hearing loss find auditory regions of the brain convert to the sense of touch

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Virginia Commonwealth University School of Medicine researchers have discovered that adult animals with hearing loss actually re-route the sense of touch into the hearing parts of the brain.

In the study, published online in the Early Edition of the Proceedings of the National Academy of Sciences the week of March 23, the team reported a phenomenon known as cross-modal plasticity in the auditory system of adult animals. Cross-modal plasticity refers to the replacement of a damaged sensory system by one of the remaining ones. In this case, the sense of hearing is replaced with touch.

About 15 percent of American adults suffer from some form of hearing impairment, which can significantly impact quality of life, especially in the elderly.

"One often learns, anecdotally, that 'grandpa' simply turned off his hearing aid because it was confusing and no longer helped. Our study indicates that hearing deficits in adult animals result in a conversion of their brain's sound processing centers to respond to another sensory modality, making the interpretation of residual hearing even more difficult," said principal investigator Alex Meredith, Ph.D., a professor in the VCU Department of Anatomy and Neurobiology.

"Whether this becomes a positive feedback cycle of increasing hearing

difficulty is currently under investigation, but these findings raise the possibility that even mild hearing loss in adult humans can have serious and perhaps progressive consequences," Meredith said.

The findings provide researchers and clinicians with insight into how the adult brain retains the ability to re-wire itself on a large scale, as well as the factors that may complicate treatment of hearing loss with hearing aids or cochlear implants.

Source: Virginia Commonwealth University

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