

Scientific Dispatch #4

Hearing Aid Use and Cognition – More Evidence of Cognitive Improvement

In 2011, Dr. Frank Lin published a bomb-shell longitudinal research study correlating hearing loss with cognitive decline. Further study showed that when an individual has hearing loss, the brain reorganizes itself, pulling in more areas to aid in understanding speech. The theory is that having brain resources reallocated to assist in hearing leaves fewer brain resources for other cognitive functions, which then leads to cognitive decline. The biggest question now is whether or not wearing hearing aids can prevent or reverse this decline. Initial evidence has suggested that hearing aid use can delay cognitive decline, however a new study out of the University of Colorado Boulder provides evidence that hearing aids can reverse cortical reorganization.

Drs. Hannah Glick and Anu Sharma studied two groups of individuals – 28 adults with mild to moderate age-related hearing loss who had never used hearing aids, and 13 age-matched adults with normal hearing. Each individual was given a high-density EEG, speech in noise testing, and cognitive testing at the beginning of the study. The hearing loss group was given appropriately fit hearing aids which were worn for six months at which point the EEG, speech testing, and cognitive testing were repeated.

As seen in the chart at right, results show a return to normal EEG function after six months of consistent hearing aid use. The first column shows brain impulses with audio/visual stimulation at the beginning of the study, while the second column shows brain impulses with the same stimuli after six months of hearing aid usage. The results in the second column, post hearing aid use, are almost identical to those of the normal hearing cohort. The study also shows an increase in performance listening to speech in noise and an improvement on all cognitive measures following six months of hearing aids use.

Future studies will likely focus on whether these cognitive changes remain consistent with long-term hearing aid use, and whether the hearing aid fitting itself (self-fit or professionally fit) have any impact on the results. In the meantime, these results are encouraging, and suggest the possibility that appropriately fit amplification can reverse some of the cortical reorganization present in individuals with mild to moderate hearing loss, and improve both auditory performance and cognitive function.

