Stay Tuned! Comparing the Effects of Long and Short-Term Auditory Stimulation for Increasing the Sensitivity of a Person’s Hearing

Garth, Alexandra

In this investigation, the high frequency hearing sensitivity of 200 subjects were tested, replicating the author’s study performed in 2008 with 178 subjects. The results of this longitudinal study clearly demonstrate that those who play high register instruments such as flutes or violins are more sensitive to high frequencies than those who don't. In both studies, the median of the highest frequency perceived for this flutes and violins' group was 640 Hz above the median for the total sample. These results support the theory of neuroplasticity, where repetitive stimulation can increase the brain's processing speed by increasing the density of nerve tissue and escalating the branching of neural networks. More significantly, of the 118 subjects tested in both studies, 11 subjects who picked up the playing of a flute, violin or piano in the interim period had an average hearing sensitivity increase of 165 Hz, as opposed to the average degenerative drop of 1500 Hz for the other 107 subjects over the same period. A clinical study, with 11 of the 200 subjects, was then conducted to see if short-term auditory stimulation can increase the sensitivity of a person’s hearing. Pure tone audiometry (PTA) tests and distortion product otoacoustic emission (DPOAE) tests were performed before and after exposure to a targeted-pitched 60 dB tone for 3 intervals, totaling 2.5 hours within a 24 hour period. No significant change in hearing perception was observed, leading to the conclusion that long-term repetitive auditory stimulation is required to have any measurable improvement in a person’s hearing.

Awards Won:

Acoustical Society of America: Third Award of $1,000