

ACOUSTICS2008/1657 auditory localization with linear and compression hearing aids

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The question of how well hearing-impaired individuals can localize sound (with or without amplification) is still not fully resolved. This study was designed to compare sound localization with two types of hearing-aid (HA) processing, wide dynamic range multichannel compression (WDRMCC) and linear amplification (LA) with compression limiting, during the first 32 weeks of HA use. HAs from two different manufacturers were included to compare different digital signal processing implementations, (1) fast Fourier transform (FFT), necessitating a 10 ms delay, and (2) non-FFT signal processing with a shorter time delay (~ 1 ms). We found an initial degradation of sound localization, relative to original unaided performance, for both WDRMCC and LA in both FFT and non-FFT platforms. We found no difference between WDRMCC and LA processing. However, sound localization with non-FFT platform improved consistently throughout 32 weeks of HA use and was better than the original unaided measurements at 16 and 32 weeks. In contrast, localization with the FFT platform showed no consistent change throughout the 32-week test period and remained inferior to original unaided performance. The continuing localization problems present for the FFT, but not the non-FFT, implementations of LA and WDRMCC may be due to its 10-ms processing delay.