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A model for predicting hearing aid benefit

Michael Nilsson and Victor Bray

Sonic Innovations, 2795 East Cottonwood Parkway, Suite 660, Salt Lake City, UT 84121, USA

A 'large n' database was created incorporating demographic information as well as speech-recognition-in-noise measurements from several hundred subjects who participated in field trials with wearable DSP hearing aids. Performance measures were obtained across multiple hearing aid styles (CIC to BTE) with multiple signal processing technologies (multi-channel compression, digital noise reduction, directionality). The database was previously analyzed using various regression techniques (results presented at AAS-2005, IHCON-2006, AAS-2007). The current analysis includes additional parameters that were not in the earlier models and uses a more robust statistical analysis. Aided speech-understanding-in-noise can be predicted based on factors of (a) unaided thresholds for tones (b) unaided thresholds for speech in quiet, (c) unaided thresholds for speech in noise, (d) hearing aid technology, and (e) subject age. We conclude that a model for hearing aid benefit can be used as a new tool for evidence-based management of hearing aid clients. Patient parameters may be entered into the model to serve as a basis for prediction of benefit in speech-understanding-in-noise using various forms of amplification treatment.