Aging & Speech Communication International Meeting-

November 3-6, 2019

Title: Speech-based individualized signal processing strategy (ISPS) for hearing aid fitting

Authors: #Anusha Yellamsetty[*], David A. Eddins[*]

Affiliations: [*]Department of Communication Sciences and Disorders, University of South Florida4202 E. Fowler Ave, PCD 1017, Tampa, FL 3262

Financial Disclosures/Conflicts of Interest:

Partially funded by NIH NIDCD SBIR Sub-award/ Securboration

Abstract (**400 words):**

More than 30% of older adults aged above 70 years and 16% of adults aged 20 to 69 years with hearing loss can benefit from hearing aids yet do not use them (NIDCD, Dec 2016; https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing). Two of the main reasons cited were poor benefit (29.6%) and bothersome background noise (25%) in addition to barriers to affordable hearing health care. One potential factor contributing to the issues around benefit and background noise is that current best-practice hearing aid fitting approaches use prescriptive gain-models that are based on average data from the patient population. In fact, more than 40% of individuals have preferred gain that falls above or below by 6 dB (Keidser & Dillon, 2006; Hearing care for adults, 133-142). A more ideal fitting for an individual may be provided if it can account and compensate for individual differences in speech perceptual differences and preferred speech audibility, particularly in background noise. The goal of the present study was to evaluate a novel approach to individualize the signal processing strategy for hearing aids using a speech-in-noise (SNR) task. The approach of the 'Individualized Signal Processing Strategy' (ISPS) involves establishing individualized gain-frequency models based upon the performance of an individual on a series of categorical perception tasks in which the speech stimuli are presented in background babble. In this version of the ISPS procedure, the spectral dimensions of the synthetic speech stimuli were systematically manipulated along ba/-/da/, /da/-/ga/ and /sa/-/ʃa/ continua to cover a targeted frequency range within the broader speech frequency range. Subjects indicated the point in the continuum at which the perceived speech sound changed from one canonical categorical sound to the other. Separate solutions were derived for 50 and 65 dB SPL speech presentation levels. This task results in presentation level-dependent gain-frequency response curves and the difference between the two levels reflects the need for amplitude compression. The results will be considered in terms of sound quality preference and relative sentence-in-babble speech reception thresholds based on the ISPS fitting and traditional (NAL-NL2) fitting. Work supported by NIH R44DC016249.

Presentation type: Podium