A weighting-function-based approach to subjectively modify the frequency response of a hearing aid. Andrew T. Sabin, Nicole Marrone, and Sumitrajit Dhar (Department of Communication Sciences and Disorders, Northwestern University, 2240 Campus Drive, Evanston, IL 60201, a-sabin@northwestern.edu)

While approaches that modify the frequency response of a hearing aid based on a listener’s subjective preference have demonstrated some success, they also have several limitations. Namely, these approaches (1) consider a small set of potential frequency-gain curves (FGCs) and (2) they converge on the final FGC, which makes the outcome dependent upon the starting point. Here we present a new approach that addresses these problems by (1) considering a much larger initial set of FGCs, and (2) using a method that is not convergence-based. First, the listener rates the clarity of short samples of speech filtered by a set of maximally different probe FGCs. A weighting function is then computed, where the weight given to each 1/3 octave frequency band is proportional to the normalized slope of the regression line between the listener’s rating and the within-band gain of the probe FGC. Next, the listener rates the clarity of speech samples filtered by the weighting function, which is multiplied by one of several, randomly ordered, scaling coefficients. The final FGC is the scaling coefficient that receives the maximum rating, multiplied by the weighting function, added to a hearing-loss-specific correction factor. Results will be compared to current fitting strategies.

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