

Modeling Speech Production in Noise to code the vocal effort for use with communication headsets

In an effort to alleviate some of the issues with communication in noise while wearing Hearing Protection Devices (HPD), a Radio Acoustical Environment (RAVE), mimicking a natural acoustical environment, will be developed. To create a genuine RAVE it is necessary to understand and model the speech production process in noise while wearing HPDs. Qualitative open-ear and occluded-ear models have been developed in the past. However, only few have taken into account the effect of communication distance on the speech production process and none have done so for occluded ears. We combine existing qualitative models with quantitative data to produce quantitative models of both the open-ear and occluded-ear condition to represent the relationship between vocal effort, communication distance, background noise level and type of HPD when applicable. Once the model for the occluded ear in noise is defined it can be implemented with different communication headsets to enhance the communication experience.