A clinical test battery for Better hEAring Rehabilitation (BEAR): Towards the prediction of individual auditory deficits and hearing-aid benefit

One aim of the Better hEAring Rehabilitation (BEAR) project is to define a new clinical profiling tool, a test-battery, for individualized hearing loss characterization. Recently, Sanchez-Lopez et al. (ISAAR 2019) proposed a test battery for hearing deficit characterization. The proposed tests were divided into six categories: audibility, middle-ear analysis, speech perception, binaural-processing abilities, loudness perception, and spectro-temporal resolution. The results of 54 listeners were analyzed using a data-driven approach (Sanchez-Lopez et al., 2018), which provided evidence for the existence of two independent sources of distortion and four different auditory profiles. The classification of the listeners into auditory profiles allows the prediction of the performance of the listeners on different psychoacoustic tasks as well as their expected performance while wearing hearing aids. For the classification, a decision tree with only the most predictive tests is desirable for a correct classification of the listeners. The present study aims to explore the optimal decision tree and to propose a reduced, reliable and time-efficient test battery that can classify listeners into the four auditory profiles in a clinical environment. The clinical test battery will be used in a large-scale study that will help implement a protocol for better hearing rehabilitation.