15_111

M31: TAKE-HOME EVALUATION OF MUSIC PRE-PROCESSING SCHEME WITH COCHLEAR IMPLANT USERS

Wim Buyens[1], Bas van Dijk[1], Marc Moonen[2], Jan Wouters[2]
[1]Cochlear Technology Centre Belgium, Mechelen, BEL
[2]KU Leuven - ESAT (STADIUS), Leuven, BEL
[3]KU Leuven - ExpORL, Leuven, BEL

Objective: Although cochlear implant (CI) users reach good speech understanding in quiet surroundings, music perception and appraisal generally remain poor. Music mixing preferences have been investigated in CI users with multi-track recordings and a mixing console, showing a preference for clear vocals while preserving bass and drums. Since multi-track recordings are not widely available, a music pre-processing scheme has been designed which allows adjusting the balance between vocals/bass/drums and other instruments for mono/stereo recordings. In the current study, the music pre-processing scheme is evaluated in a comfortable listening environment and with different genres of music in a take-home experiment. Preferred settings are correlated with speech and pitch detection performance.

Design: During the initial visit preceding the take-home experiment the speech-in-noise perception performance and pitch detection abilities are measured, and a questionnaire about the music listening habits is completed. The take-home device (iPhone) is provided including a custom-made app with the music pre-processing scheme and seven playlists with six songs each. The subject is asked to adjust the balance with a turning wheel to make the music sound most enjoyable for all songs and to repeat this three times.

Study Sample: Twelve post-lingually deafened CI users have participated in the study.

Results: All subjects prefer a balance significantly different from the original. Differences across subjects are observed which cannot be explained by perceptual abilities. The within-subject variability is explained in most subjects by an effect of training, genre or familiarity with the songs.

Conclusions: The music pre-processing scheme shows potential improvement in music appraisal with complex music and might be a good tool for music training or rehabilitation. Individual settings for music can be adjusted according to personal preferences.

Acknowledgment: This work was supported by a PhD grant of the Institute for the Promotion of Innovation through Science and Technology in Flanders (IWT090274) and Cochlear Technology Centre Belgium.