

Signal processing to ease of listening effort for persons with profound hearing loss

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Persons with profound hearing loss often have large problems with communication, especially in noisy situations. The person need to combine the auditory signal with visual input to be part of a conversation. Nevertheless, the communication is effortful and in order to reduce the effort there is a need of beneficial hearing aids.

Aim: The study aimed to investigate the impact of the Oticon Opn Sound Navigator on listening effort for speech perception for person with severe to profound hearing loss.

Method: Data from 19 adult experienced hearing aid users (aged between 23 and 70 years) with severe to profound hearing loss (i.e. PTA4 >70dB HL) are here to be presented. The participants were tested at the Audiological Research Centre, Örebro, Sweden, after a 14 days test period of the hearing aid in their own daily environment.

The participants were measured with hearing tests; measurements with both pure tones and speech signal, with cognitive tests and tests of listening effort; which were evaluated with pupillometry as well as subjective rating. The listening effort were evaluated with the Oticon Xceed hearing aid in two settings, with the Opn Sound Navigator on respectively off.

Results: The results shows that persons with profound hearing loss gain from an effective signal processing in order to reduce the strain of hearing speech in a noisy environment. More than half of the participants preferred the new hearing aid compared to their current hearing aid, and stated a better possibility to achieve spoken stimuli not just in the test setting but also in their daily environment. Compared to results in previous studies of listening effort, with the Opn Sound Navigator, the benefit is lower for persons with profound hearing loss than to persons with milder hearing loss probably due to the lack of visual input in the test setting.

Discussion: Since persons with profound hearing loss are more dependent on audio-visual stimuli than persons with milder hearing loss, there is a need of further studies to evaluate the total benefit of the signal processing system where audio-visual stimuli is used.

Preferred presentation: Either podium or poster (podium presentation is the preferred option).

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