Listening effort and cognitive functions in cochlear implant users

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Cochlear implant (CI) users often report difficulties in speech understanding in noise, which in turn requires from them more concentration, attention and listening effort. Due to the fact that the cognitive capacity is generally limited (Wingfield, 2016) an increased demand level such as speech perception in noise means fewer resources are available for other tasks. This led us to the hypothesis: the lower the cognitive capacity the higher the listening effort. To test it we investigated the relationship between cognitive functions, as well as, objective and subjective listening effort in CI users.

Since speech intelligibility in noise among CI users is variable due to age at implantation, listening experience, neural survival, speech processor programs, electrode position and percentage of active electrodes (Lazard et al. 2012); a fixed speech intelligibility in noise of 80% was targeted for each participant to ensure comparable performance. Different objective cognitive tests (reading span test, trail making test) have been carried out to measure cognitive functions such as working memory capacity, processing speed and executive functions. Furthermore, listening effort has been assessed objectively with an audio/visual dual task paradigm (Gagné et al. 2017) and a subjective adaptive listening effort scaling method (Krueger et al. 2017).

The poster presents first results from an ongoing study and discusses possible associations between cognitive functions and objective/subjective listening effort.

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**Literature:**


