Abstract: This study examined the relation between listening effort and speech comprehension level of cochlear implant (CI) acoustic simulations at different levels of perceptual difficulty, and whether listeners' acoustic cue-weighting strategies affected the behavioural gain from increase in cognitive effort.

Background

• Big individual differences in speech comprehension and life quality for CI fitting outcomes
• Listeners' temporal and spectral cue-weighting patterns affect speech comprehension and might also affect listening effort

Analysis

Mixed effect models using R package lme4 with fixed effects: pupillary responses (peak, mean, latency), individual cue-weighting coefficients, condition (easy SNR80% and hard SNR40%), sentence correct levels and random effect listener and sentence

Results & Discussion

For listeners weighting more on spectral cues, expending more cognitive effort was associated with better degraded speech perception performance.

Listeners were more efficient in using explicit cognitive effort to enhance degraded speech perception performance when perceptual difficulty level was low.