

Reduced listening effort in noise with StereoZoom™¹

Objective:

To investigate listening and memory effort with StereoZoom via:

- ▶ Objective EEG measurement &
- ▶ Subjective ratings



Changes in the alpha frequency band (8–12 Hz) reflect changes in listening effort²

Methodology:



StereoZoom: wirelessly connected binaural, directional microphone technology to improve speech intelligibility in loud background noise

Comparison of listening effort of:

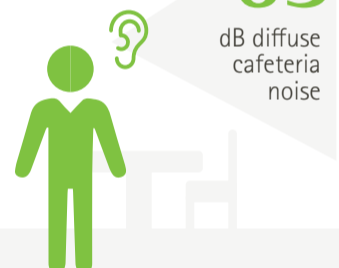


Task:

- ▶ Word Recall: 2 sentences consecutively - percentage of correctly recalled sentence parts

Measures:

- ▶ Recording of brain activity with EEG
- ▶ Subjective rating of effort



Results:

1. Objective EEG measurement
Lower alpha spectral density in noise with:

Phonak SPILN < Competitor SPILN

2. Subjective effort ratings

Phonak SPILN < Competitor SPILN

Subjective listening and memory effort ratings correlates with objective EEG findings

Subjective and EEG measuring show less effort with StereoZoom



Speech signal easier to understand



Less cafeteria noise to be suppressed by brain



Lower brain activity = lower listening effort

¹ Legarth, S., Latzel, M., & Rodrigues, T. (2018). Media streaming: The sound quality wearers prefer. Phonak Field Study. Retrieved from www.phonakpro.com/evidence.

² Winneke et al., 2016 a,b

³ Winneke, A. H., & Phillips, N. A. (2011). Does audiovisual speech offer a fountain of youth for old ears? An event-related brain potential study of age differences in audiovisual speech perception. *Psychology and aging*, 26(2), 427.

Winneke, A., Meis, M., Wellmann, J., Bruns, T., Rahner, S., Rennie, J., Wallhoff, F., Goetze, S. (2016a). Neuroergonomic assessment of listening effort in older call center employees. Proceedings 9. AAL Kongress in Frankfurt/Main vom 20.-21. April 2016.

Winneke, De Vos, Wagener, Latzel, Derleth, Appell, Wallhoff (2016b). Reduction of listening effort with binaural algorithms in hearing aids: an EEG Study. 43rd Annual Scientific and Technology Meeting of the American Auditory Society, March 3 - 5, Scottsdale, AZ.