Listening Effort and Cognitive Decline: An Exploratory Study Using Pupillometry

For today’s ageing population, hearing loss and dementia prevalence are expected to increase. Recent research suggests that hearing loss is the highest modifiable risk factor for dementia in midlife. Research also suggests a potential pathway between hearing and cognitive decline, with listening effort, working memory and cognitive load as principal mediators. Research examining hearing impairment, listening effort and fatigue is limited, although a growing amount of research tests listening effort objectively in laboratory settings. The current explorative proof-of-concept study investigates whether increased listening effort, measured objectively using pupillometry, is associated with cognitive function in healthy individuals and those affected by Mild Cognitive Impairment (MCI). For those exhibiting higher listening effort in noisy environments, cognitive performance and listening effort is examined with the use of hearing aids. A negative association is expected between listening effort and cognitive performance, and hearing aid use is expected to reduce listening effort and have a positive impact on cognitive function. Clinicians and practitioners are urged to act on dementia prevention, intervention and care to improve quality of life for society into the future. This study will provide results to design and support the implementation of listening effort testing as a complex intervention in point-of-care settings.

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