The Use of Acoustic Stimulation to Increase Slow-Wave Activity in Alzheimer's Disease Patients

(Technical Report)

The Struggle for Simpler Interfaces for Users with Cognitive Disabilities

(STS Research Paper)

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by

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Preface

How may the disadvantages of cognitive impairments be mitigated?

How can auditory stimulation enhance Slow-Wave Sleep (SWS) therapy in geriatric patients with Alzheimer's Disease (AD)? To slow cognitive decline in patients with Alzheimer's disease (AD), sleep cognitive therapeutic devices are safer but less effective than drugs. The project team contributed to the development of a sleepwear device for patients with Mild Cognitive Impairment (MCI). A successful device monitors polysomnographic activity, amplifying slow-waves via live auditory stimulation. In the project, vendor-supplied hardware gathers electroencephalogram (EEG) data. The final device must be easy to use and aesthetically fitted. The device will be tested through interviews and clinical trials among geriatric patients. Machine learning software that predicts upstate phases in the SWS oscillations controls audioplay.

How are advocates for populations that require simpler device interfaces promoting their agendas? Cognitive impairment (CI) can impose access barriers between CI users and digital devices. Impaired users typically require special features or frequent technical support. Advocates of persons with CI press for interface design changes or help users adjust. Above all, advocates seek to influence hardware and software companies early in the development process to bridge this gap in the digital divide.