

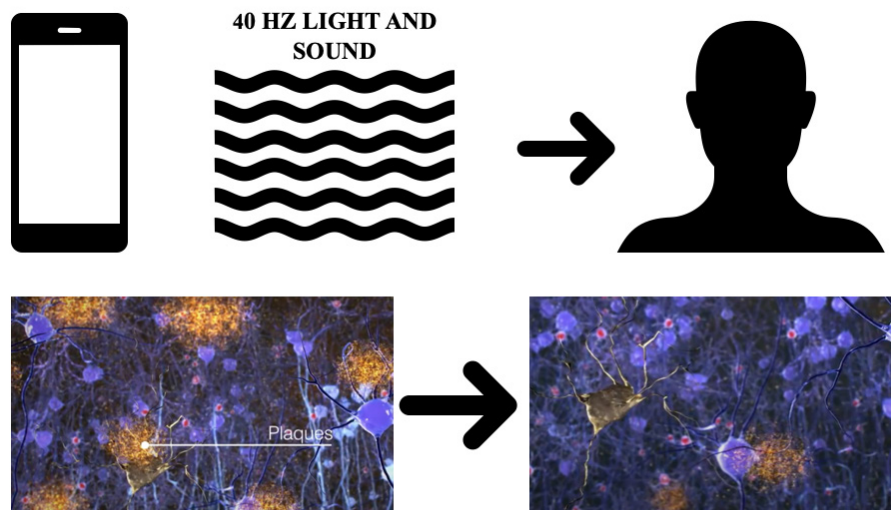
Design and Implementation of New Memory Games Compatible with Incorporation of 40 Hz Light and Sound into AlzLife App

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Alzheimer's is a progressive disease that breaks down neural pathways in the brain, which leads to deterioration of memory, speech, and other mental faculties. In the current marketplace, there are treatments for the disease that slow down the degeneration of brain cells, but no cure exists. This disease progresses through 7 stages and affects 5.5 million people in the United States. Research had been conducted by our PI and his company that found 40 Hz light and sound effective in mitigating the effects of Alzheimers. When patients were given a daily dosage of between 1-2 hours of light and sound therapy in the 40 Hz frequency, their progression of the disease slowed. The problem with current delivery of this therapy is that the patient is unwilling to stare daily and listen to this frequency. The dosage needed is effective when done daily for about an hour of constant exposure. We found that incorporating this therapy into games will allow the patient to get the therapy long enough for it to be effective. We designed criteria to find the best games for people with Alzheimer's, which for the most part consist of people older than 65 with mild and moderate Alzheimer's disease. The criteria found included attention, speed, memory, social skills, navigation, vocabulary, and intelligence. Before selecting games, we conducted research into which games were currently most popular among our intended age group to get a basic understanding of what they enjoyed. Then we chose possible games and each game was rated a score of 1 through 10. The top games were selected, edited to incorporate the 40 Hz therapy, and applied to an app. This app would encompass many games with varying difficulty and variety to capture the user for an extended period of time. The main implications of this app are that now the PI has a platform to deliver light and sound therapy. A platform which entices the user enough to stay on it and get an effective dosage. The main goal of bettering the lives of those living with a currently incurable disease has been accomplished and they can do this in an enjoyable manner. People aren't being forced to stare at a blank screen with flashing lights and sounds instead they get to play games while increasing their quality of life with a healthier brain in their given situation.



Left: build-up Amyloid plaques Right: Reduced Amyloid Beta levels by over 50% in the visual cortex after 40 Hz flickering light treatment