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# Effect of photic therapy and sound therapy on memory of healthy individuals

## Introduction:

In today's world, with the advent of electronic gadgets, the concept of a good memory is far behind us. This research explores a concept which combines the discipline of wave and particle physics with the vast discipline of the human biology in order to improve both the short-term and long-term memory in day to day lives. The reason behind why it can be theorized that light and sound waves can help in memory is because of evidence that the brain is a highly mosaic organ. Mosaic as in, it is constantly changing and evolving in response to a multitude of environmental stimuli collaborating into experiences.

The two physical concepts that this research relies upon are : Binaural beats and Stroboscopy.

- Binaural Beats: The sounds that we hear in everyday life are of different amplitude (loudness) and frequencies (pitch). These travel through the usual auditory pathway to reach the superior olivary nuclei on both sides. The fact about these different sounds we hear is that the instruments that produce them are no where near perfect and also because of the intervening particles between the source of the sound wave and the ear, they are in different frequencies. This means that, at any given moment, both our olivary nuclei in the brainstem are perceiving sounds of different frequencies and hence they automatically produce a new amplitude modulated wave which isn't actually heard as it is isn't in the human hearing range but still plays a role in the brain. The role that it plays is enhancing and developing neuronal connections between the two hemispheres of the brain. The sound waves when specifically engineered and synthetically produced can entrain the cerebral cortex to learn and grow rapidly.

- Stroboscopy: It is the phenomenon of flashing lights in high frequencies in order to create graphic images directly in our brain. It was first used by Harold Eugene Edgerton in 1931 for the study of moving objects, eventually resulting in graphic photographs of objects such as bullets in flight. Now, it is constantly being used at a commercial level in clubs, to give an illusion of slow motion, alarm systems, theatrical lighting etc. Previous experiments have shown that a process called "Stroboscopic Visual Training" can lead to better memory retention for a short duration of time. The visual flashes were thrown on the eye and then these memory experiments were conducted.

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**Objectives:** To compare the retention of different types of memory before and after treatment using specifically produced binaural rhythms along with stroboscopic visual training.

**Methodology:** The required simulation of Strobe flashes and Binaural rhythms will be engineered using a computer software. A set of words, numbers and pictures pertaining to different types of memory will be made a list of. There will be two similar lists with similar categories. One to be used before the therapy and one to be used after. A memory scale will be developed which balances on a system of points so as to provide some value as to the efficacy of the treatment.

**Focus group:** Healthy adults between the age of 19 to 25. Focus group number: 100

**Instruments:** o Good stereo audio hardware o Noise cancellation stereo headphones o Screen of reasonable size as an improvised strobe light.

**Environment of Therapy:** Dark, isolated, quiet room.

**Implications:** Though memory is an important aspect of life, there are some neurological conditions that are far more severe than simple forgetfulness. Following successful practical exhibition of enhanced acute memory in individuals after undergoing this therapy, other areas of neurological research can be explored. For example, psychosis. All forms of psychosis, be it schizophrenia or bipolarity are connected to abnormal chemical activity in the brain and one the most unique features of this organ is that the chemical events and the electrical events are so connected with each other than they are almost indistinguishable. Musical therapy has already been shown to improve Schizophrenics. Hence, such a conjunctive treatment involving both Stroboscopy and Binaural Rhythms can lead to new avenues of treatment.

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