Can light affect Brain Connectivity?

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EFFECTS OF LIGHT ON THE BRAIN

The discovery of a new retinal photoreceptor type called ipRGCs has stimulated interest in the study of the non-visual effects of light. The ipRGCs exist in the inner retinal layer and they are the primary input for the non-image forming (NIF) pathway, which also originates in the eye but takes a different route than vision to influence perception reaching different parts of the brain that are strongly related to cognition, attention, alertness, arousal and sleep. In this study we are investigating the effects of daytime light exposure on the brain by specifically targeting the ipRGCs with metamic light.

OUTPUT: NEUROIMAGING DATA

To quantify the NIF effects of light we used EEG, a noninvasive neuroimaging method, to continuously monitor the brain activity of the participants as they go through different lighting conditions. It is possible to derive different metrics from the EEG data. The main focus of this study will be to compare the EEG Connectivity Measures across the lighting conditions but other metrics such as EEG Power Spectral Measures and ERP measures will also be investigated.

We expect to find higher overall brain connectivity in the highest melanopsin condition in comparison to low melanopsin and dim light conditions.

This project is a part of the ETN LIGHTCAP, under the Marie Skłodowska-Curie actions framework. You can get more information about the project and the research team at this link:

1 Eindhoven University of Technology, 2018.