

Individuals exposed to blue wavelength lights experienced faster reaction times

June 10 2016



Credit: Vera Kratochvil/public domain

A new study found that blue wavelength light exposure led to subsequent

increases in brain activity in the dorsolateral prefrontal cortex (DLPFC) and the ventrolateral prefrontal cortex (VLPFC) when participants were engaging in a cognitive task after cessation of light exposure.

The results also showed that a short single exposure to blue [light](#) for half an hour is sufficient to produce measurable changes in reaction times and more efficient responses (answered more items correctly per second) during conditions of greater cognitive load after the [light exposure](#) had ended. Moreover, these improvements were directly associated with measurable changes in the activation of the [prefrontal cortex](#).

"Previous studies only focused on the effects of light during the period of exposure. Our study adds to this research by showing that these beneficial effects of blue wavelength light may outlast the exposure period by over 40 minutes," said lead author Anna Alkozei, PhD, postdoctoral fellow in the Department of Psychiatry at the University of Arizona. "Blue-enriched white light could be used in a variety of occupational settings where alertness and quick decision making are important, such as pilot cockpits, operation rooms, or military settings. It could also be used in settings where natural sunlight does not exist, such as the International Space Station. Importantly, our findings suggest that using blue light before having to engage in important cognitive processes may still impact cognitive functioning for over half an hour after the exposure period ended. This may be valuable in a wide range of situations where acute blue light exposure is not a feasible option, such as testing situations."

The research abstract was published recently in an online supplement of the journal *Sleep* and will be presented Sunday, June 12, 2016 and Wednesday, June 15, 2016 in Denver at SLEEP 2016, the 30th Anniversary Meeting of the Associated Professional Sleep Societies LLC (APSS).

"These findings are important as they link the acute behavioral effects of [blue light](#) to enhanced activation of key cortical systems involved in cognition and mental control," said William D. S. Killgore, PhD, the senior author and principal investigator of the project.

The study consisted of 35 healthy adults between the ages of 18 and 32 years. The participants were randomized to receive a 30-minute exposure to either blue (active) or amber (placebo) light immediately followed by a working memory task during functional magnetic resonance imaging (fMRI).

More information: Abstract Title: Exposure to Blue Wavelength Light is Associated with Increased Dorsolateral Prefrontal Cortex Responses, and Increases in Response times During a Working Memory Task. Abstract ID: 0072

Provided by American Academy of Sleep Medicine

Citation: Individuals exposed to blue wavelength lights experienced faster reaction times (2016, June 10) retrieved 4 May 2024 from <https://medicalxpress.com/news/2016-06-individuals-exposed-blue-wavelength-experienced.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--