

Emotion processing in the brain is influenced by the color of ambient light

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Researchers at the Cyclotron Research Centre (University of Liege), Geneva Center for Neuroscience and Swiss Center for Affective Sciences (University of Geneva), and Surrey Sleep Research Centre (University of Surrey) investigated the immediate effect of light, and of its color composition, on emotion brain processing using functional magnetic resonance imaging. The results of their study show that the colour of light influences the way the brain processes emotional stimuli.

We are all aware that a bright day may lift our mood. However the brain mechanisms involved in such effects of light are largely unknown. Researchers at the Cyclotron Research Centre (University of Liege), Geneva Center for Neuroscience and Swiss Center for Affective Sciences (University of Geneva), and Surrey Sleep Research Centre (University of Surrey) investigated the immediate effect of light, and of its color composition, on emotion brain processing using [functional magnetic resonance imaging](#). The results of their study (in Proceedings of the National Academy of Science of the USA) show that the colour of light influences the way the brain processes emotional stimuli.

[Brain activity](#) of healthy volunteers was recorded while they listened to “angry voices” and “neutral voices” and were exposed to blue or green light. Blue light not only increased responses to emotional stimuli in the “voice area” of the brain and in the hippocampus, which is important for memory processes, but also led to a tighter interaction between the voice area, the amygdala, which is a key area in emotion regulation, and the hypothalamus, which is essential for biological rhythms regulation by

light (see figure). This demonstrates that the functional organisation of the [brain](#) was affected by blue light.

The acute effects of ambient light on emotional processing might differ from its longer-lasting effects on mood, but the present findings in healthy subjects have important implications for our understanding of the mechanisms by which changes in lighting environment could improves mood, not only in mood disorders using light therapy, but also in our day to day life, by paying more attention to our light environment at home and in the work place.

More information: “The spectral quality of light modulates emotional brain responses in humans”, *Proceedings of the National Academy of Sciences, PNAS* (2010).

Provided by University of Liege

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