Neuroscience Informing Design: Impact of Fluorescent CCT on Neurodiverse Populations

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I. EXTENDED ABSTRACT

I.I. Methodology / Procedure

A purposive sampling was used to generate twenty subjects; taking into account gender, age, ethnicity, brain lateralization, as well as the exclusion of color blindness. The participants underwent 1) an anatomical scan and 2) a functional scan, using Functional Magnetic Resonance Imaging fMRI technology, while a random sequence of three types of illustrations from the aforementioned categories were projected by a computer controlled visual presentation system. Each image category included 6 images for a total of 18 images that every participant evaluates. Concomitantly, the participants were asked to respond to each image by fiber optic button devise, rating each image on a seven-point Likert satisfaction scale of 1=very dissatisfied and 7=very satisfied. Behavioral data was analyzed using t-test factor analysis and one-way analysis of variance, while the neural data maps were analyzed using FSL Neuroimaging Software.

I.2. Outcome / Discussion

Findings suggest that contrary to precedents (seeing color activates the ventral occipital and fusiform); the Warm White color temperature (2800K) did not show activation of the occipital cortex. This may indicate disinterest or dissatisfaction with the warm spectrum. Important to note that, under the Cool White spectrum (4100K) the activation of the Superior Temporal Gyrus implicated in critical structure of social interaction; the Middle Frontal Gyrus implicated in semantic and analytical tasks; and the activation of the Angular Gyrus implicated in memory retrieval, areas associated with brain cognitive functions, have been activated. Furthermore, under the daylight color spectrum, the cerebellum—emerging neuroscience indicates that is involved in cognitive brain processes—has been activated. These neural findings, in support of behavioral findings, suggest a higher satisfaction with cool white and daylight full spectrum than with the warm spectrum.

2. REFERENCES

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