

Effect of light color temperature on performance in perceptual and motor tasks

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Human visual perception has evolved in response to the natural variations of daylight patterns created by changing sky conditions. It is called the dynamic variation in color appearance of daylight, or light temperature. In the morning, and early evening the color temperature of the light is relatively low (2500 Kelvin) and this is the experience of yellow and orange light (i.e. warm light). At noon, the color temperature is the highest and is over 6000 K (blue or cold light). The aim of this research was to examine whether the color temperature of the light has an effect on perceptual and motor efficiency if the intensity (illuminance) of the light is kept constant. Participants (N=149) were distributed in three experimental groups with different light temperature (2700 K, 4000 K and 6500 K). They performed three tasks from the domain of visual perceptual-motor performance. The results for three tasks that were evaluated by the participants at different levels of difficulty are presented here. The difficult task was the Mirror tracer task, easier Two arm coordination test and the third, the easiest, Paper-pencil perceptual speed test. The results showed that there was no statistically significant difference in the evaluations of lighting comfort among experimental situations. The effect of light temperature was statistically significant only on the most difficult task (Mirror tracer task). Efficiency was better in the conditions of 6500 K. The results are consistent with previous research that showed similar trends on different criterion behaviors.

Are you currently an Early Career Researcher?

Yes, I am still a student or have not yet received my Ph.D.

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