

Poster

Light Preference and Mood in Extreme Chronotypes in Response to Different Office Lighting Conditions: Preliminary Results

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Introduction

Most people spend more than eight hours at working places and certain office lighting conditions may not be optimal for everybody. Thus, it becomes crucial to also take inter-individual differences into account. This study aimed to test the lighting preference under different lighting conditions and their impact on mood.

Methods

Based on diurnal sleep-wake preferences and as assessed by validated questionnaires, we only considered healthy young extreme chronotypes for the study. So far, eleven young morning types (MT) and seven evening types (ET) completed the study. The subjects came three times to the laboratory and spent sixteen hours under different lighting conditions. The three lighting conditions were 1) dim light (DIM; <5lux) condition; 2) bright light condition (BL; target vertical illuminance \approx 1000 lux), and 3) a self-selected lighting (SSL) condition. The BL and SSL condition comprised both day- and artificial light. Each study session started approximately one hour after habitual wake time. Participants were asked to regularly rate their light preference and mood on different questionnaires (every 30-60 min).

Results

Overall, subjects assessed significantly higher light preference under SSL than both, BL and DIM conditions (3-way rANOVA; main effect of 'condition'; $p < 0.05$). For BL, ET assessed significantly higher light

preference during the first eight hours of the study than in the second half ($p < 0.05$; Wilcoxon matched pairs test). MT assessed similar light preference at the beginning and the end of the study ($p > 0.6$). For BL, greater light preference was associated with higher correlated colour temperature (CCT; $r = 0.28$; $p < 0.05$). For the SSL condition, greater light preference was significantly related to higher CCT ($r = 0.15$; $p < 0.05$), and higher vertical illuminance at the eye level ($r = 0.19$; $p < 0.05$).

In the DIM condition, mood became worse at the end of the study session for both chronotypes (1-way rANOVA; main effect of 'time'; $p < 0.05$). This was not the case during the BL and the SSL condition, such that light prevented the decline of mood at the end of the study ($p < 0.05$). Better mood was correlated with a higher CCT for both light conditions (BL: $r = 0.18$; SSL: $r = 0.25$; $p < 0.05$).

Conclusion

Our preliminary results suggest differences in lighting preference between extreme chronotypes, which may reflect the effects of light exposure at different (internal) circadian phases. Whether light exerts also inter-individual effects on mood and other subjective and objective variables, needs to be analyzed with more subjects.

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