

Daily light exposure and feelings of alertness and vitality: Intermediate results of a longitudinal study

K. C. H. J. Smolders & Y. A. W. de Kort¹

¹ Eindhoven University of Technology, Human-Technology Interaction, Eindhoven, the Netherlands

In the current field study, we explore the relation between exposure to light during the day, sleep quality, and feelings of alertness, vitality and tension.

Introduction

Research has shown that light exposure is dependent on whether a person is indoors or outdoors, on time of day and season, and age. In addition, Hubalek and colleagues (2010) showed that daily light exposure had a significant and positive effect on subjective sleep quality, but not on self-reported pleasure and arousal at the end of day.

Other studies suggest that light exposure can have an influence on feelings of alertness and vitality. In addition, two experience sampling studies by Ryan and colleagues (2009) showed that being outdoors is related to subjective vitality. Results showed that participants who were outside for more than 20 minutes per day experienced greater vitality for that day, even when controlled for physical activity and social interaction. Presence in nature (partially) mediated the effect of being outdoors on self-reported vitality. Ryan et al. (2009) suggested that, in addition to nature, the presence of sunlight may have also induced experiences of vitality. We therefore investigated the relation between light, sleep quality, alertness, vitality and tension, controlling for activities, contexts and person characteristics.

Method

The method employed in this study was experience sampling, combined with continuous measurement of light exposure with a device, called Daysimeter, worn at eye level. It records both photopic light intensity, and intensity in the biologically effective range. Participants wore the measurement device and gave self-reports for three consecutive days between 8 am and 8 pm.

Self-reports included subjective feelings of vitality, alertness and tension, and the type of activity and location of the participant. These subjective measures were administered every hour between 8 am and 8 pm as feelings of alertness and mood seem to show diurnal variations. In addition, participants reported their subjective sleep quality every morning and filled in questions concerning duration of being outdoors, duration of physical activity, and time spent on social interaction every evening before going to sleep.

Analyses and results

This study started in October 2010 and will run a full year, until October 2011. Up to two persons participate each week, rendering data on a wide range of light exposures, activities, and settings (N=26, 13 male and 13 female, at the time of submission of this abstract; we expect to reach N=80-100 eventually). The results of these participants are analyzed using Hierarchical Linear Models. Data collection and analysis are still ongoing, but the results will be presented at the conference. These results will provide insight in the relation between light exposure and feelings of alertness and mood throughout the day, controlled for activities and contexts.

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References

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