Interaction between Visual Comfort and Thermal Comfort - The effect of personal control of light on thermal comfort

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To study the effect of individual control of the light on thermal comfort

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON51211

Source
ToetsingOnline

Brief title
Interaction between Visual Comfort and Thermal Comfort

Condition

- Other condition

Synonym
thermal comfort and metabolic health

Health condition

thermal comfort and metabolic health

Research involving
Human

Sponsors and support

Primary sponsor: Medisch Universitair Ziekenhuis Maastricht
Source(s) of monetary or material Support: TKI

Intervention

Keyword: Environmental Temperature, Health, Personal control of light, Thermal comfort

Outcome measures

Primary outcome

Difference in thermal comfort between with-control condition and no-control

condition.

Secondary outcome

- To test the hue-heat hypothesis - If the warmer light (lower CCT) can result

in a warmer temperature sensation.

- To investigate if the initial light conditions will affect the preferred

light condition (hysteresis effect).

- To investigate if CCT affects task performances and if the task performance

can be enhanced by personal control of CCT.

- To study the effect of the personal control of CCT on thermal physiological

parameters.

Study description

Background summary

In order to fulfil the demand of thermal comfort, current environmental design practice narrows the temperature into a small range. Expanding the temperature range offers a significant energy-saving potential and may elicit some important health benefits. Nevertheless, expanding the temperature range may compromise thermal comfort. Studies have shown that environmental factors can

interact with each other to a certain extent. Especially, the indoor light can affect thermal comfort, which provides a possible mean to expand the acceptable temperature range while providing comfort.

Study objective

To study the effect of individual control of the light on thermal comfort

Study design

This study is a within-subject experiment, which will include four lighting conditions. Those four lighting conditions are either with personal control of light or without personal control of light, in combination with two different initial light settings. To balance the order of the conditions, the orders are taken from a 4×4 Latin-square table and participants will be randomly assigned to one of the orders. During each condition, thermal perceptions, visual perceptions, physiological parameters, lighting control and cognitive performance will be measured.

Intervention

Participants will be exposed to thermally and visually uncomfortable environments either with personal control of light or without personal control of light. When personal control of light is introduced, participants are allowed to control their lighting environments.

Study burden and risks

This study carries no benefits for the subjects. It is not a therapeutic research. However, the study will lead to novel insights into the effect of personal control of light on thermal comfort and various health-related parameters such as blood pressure, heart rate and energy expenditure. The risk of COVID19 infection is low. The major burdens consist of recurrent study visits, a moderate time commitment and exposure to warmer and cooler environments than usual. Furthermore, subjects are asked to regulate their eating and exercise habits one day before each measurement day of the study to limit external influences on the measurement of physiological parameters. This may be a small social and psychological burden.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- Female on contraception and male
- Caucasian
- BMI: 18-27.5
- Age: 18-40
- Healthy
- Non-smoker
- Live in the Netherlands (or area near the Netherlands) for at least 2 months

Exclusion criteria

- Extreme chronotype
- Ocular pathologies
- Cardiovascular diseases
- Diabetes or abnormal sugar levels
- Colour blindness
- Hypertension (systolic/diastolic blood pressure >140/90)
- Hypotension (systolic/diastolic blood pressure <90/60)

- Any medical condition requiring treatment and/or medication that might interfere with the investigated parameters.
- Presence of Raynaud*s phenomenon
- Participation in another biomedical study within 1 month prior to a screening visit
- Jet lag or night shift work in the past 2 months

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	12-06-2021
Enrollment:	20
Type:	Actual

Ethics review

Approved WMO

Date:	08-04-2021
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

ID: 24613
Source: NTR
Title:

In other registers

Register	ID
CCMO	NL76263.068.20
OMON	NL-OMON24613