Emotions and thermal comfort – feeling warmer when feeling happier

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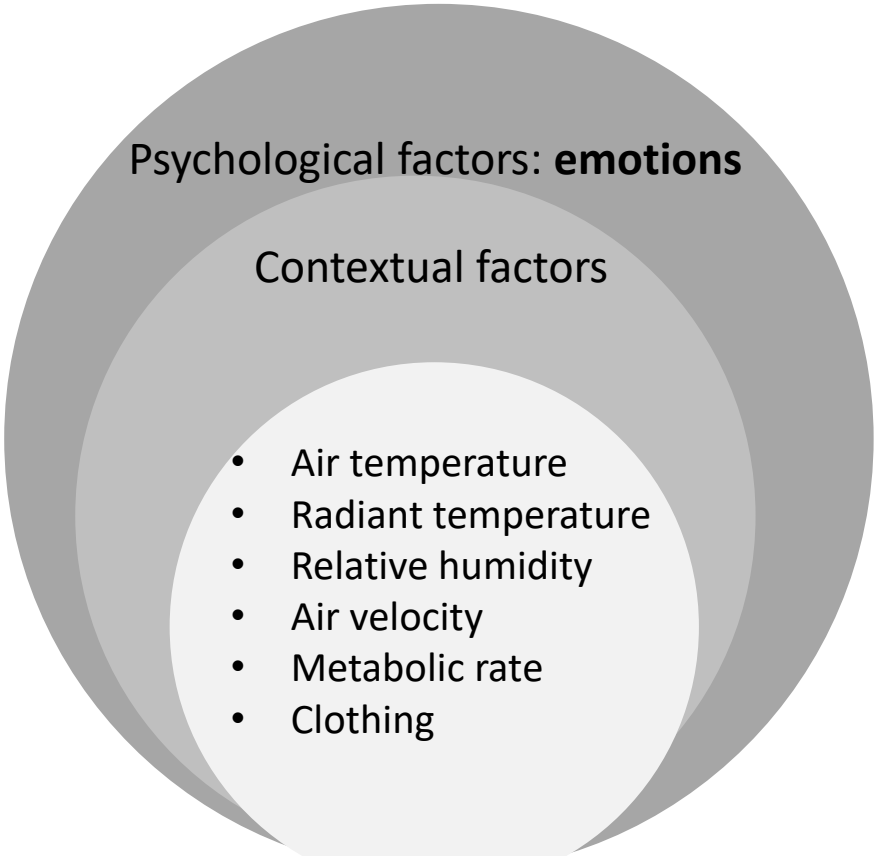
Symposium **SS-VIII-01**
Beyond the standards: The psychology of thermal comfort

ICEP a coruña 2017

Thermal comfort

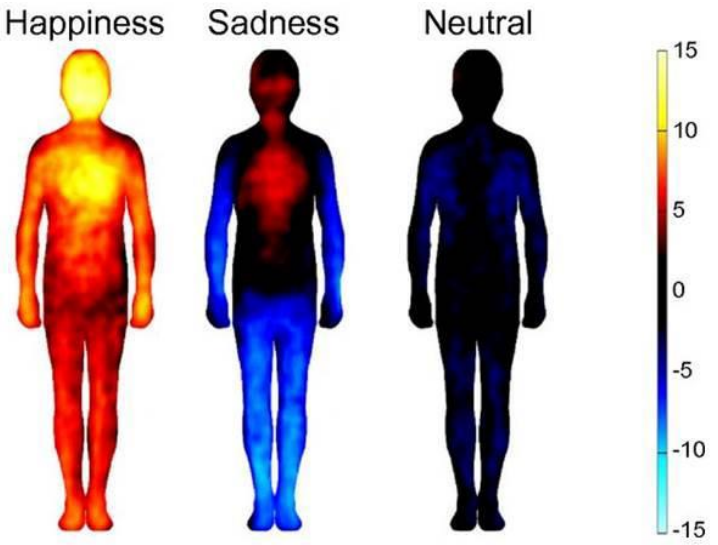
- "that state of ***mind*** that expresses satisfaction with the thermal environment" *(ASHRAE Standard 55)*



Emotion & 'warmth'

- Recall of a social exclusion experience results in lower estimates of room temperature *(Zhong & Leonardelli, 2008)*
- Acting in an environmentally friendly manner results in higher estimates of room temperature *(Taufik, Bolderdijk, & Steg, 2015)*
- Experiencing physical warmth promotes interpersonal warmth *(Williams & Bargh, 2008)*
- But:
  - **Room temperature ≠ thermal comfort!?** *(Huebner et al., 2016)*
  - **Issues of replication** *(Lynott et al., 2014)*
  - **Basic emotions?**

Emotion & perceived bodily activation



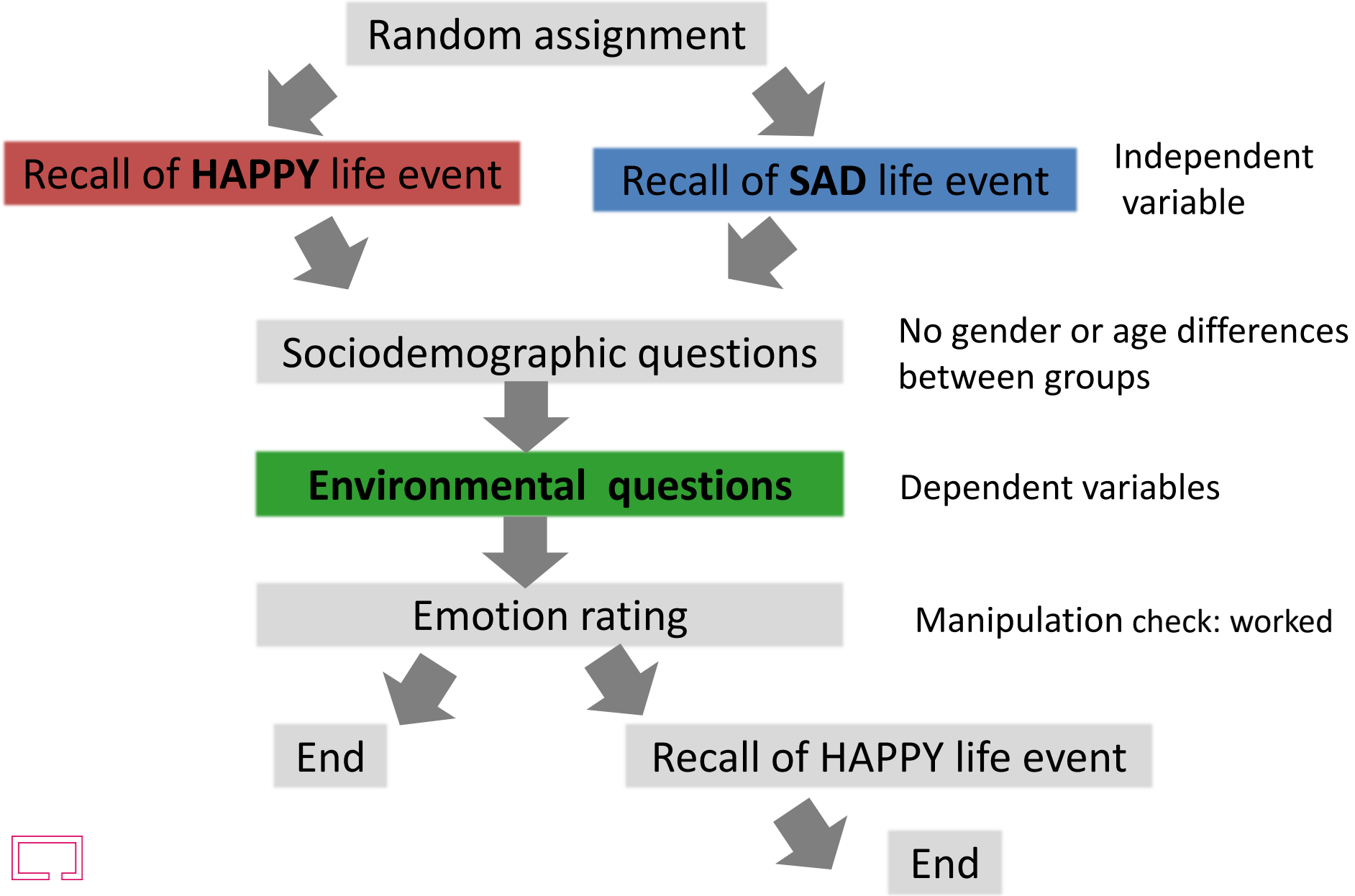
From: Lauri Nummenmaa et al. PNAS 2014;111:646-651
(parts of the figure extracted)

- Much greater PBA when feeling happy (than neutral / sad)
- Much lower PBA when feeling sad (than neutral / happy)

→ *Impact on metabolic rate?*

Methods

- Two experimental online survey studies using Amazon Mechanical Turk (N_1 = 300; N_2 = 200; autumn 2016, spring 2017)
- American participants
- Paid $0.70 for participation
  - Based on assumption survey would take 5 minutes
- Exempt from need for full ethics submission, approved by Departmental Ethics Coordinator


Random assignment
Recall of HAPPY life event
Recall of SAD life event
Independent variable
Sociodemographic questions
No gender or age differences between groups
Environmental questions
Dependent variables
Emotion rating
Manipulation check: worked
End
Recall of HAPPY life event
End

Manipulation check

- Worked!
  Those who recalled happy event were much happier and less sad!

Q1: Feeling now

Item: How are you feeling in this moment from 1 (cold) to 7 (hot)?

Hypothesis: *Participants feel warmer after recall of happy life event than sad life event.*

$t(296) = 3.17,\ p = .002$

$t(192) = 1.71,\ p = .080$

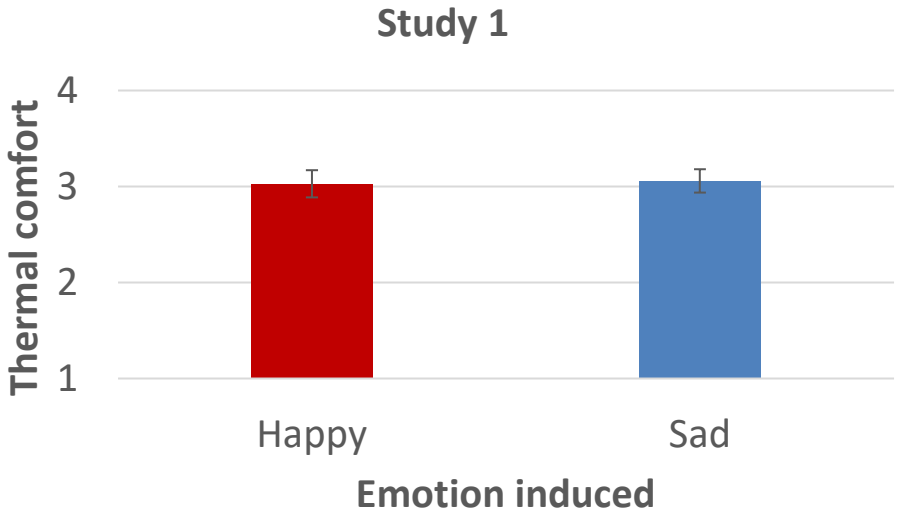
Q2: Thermal comfort

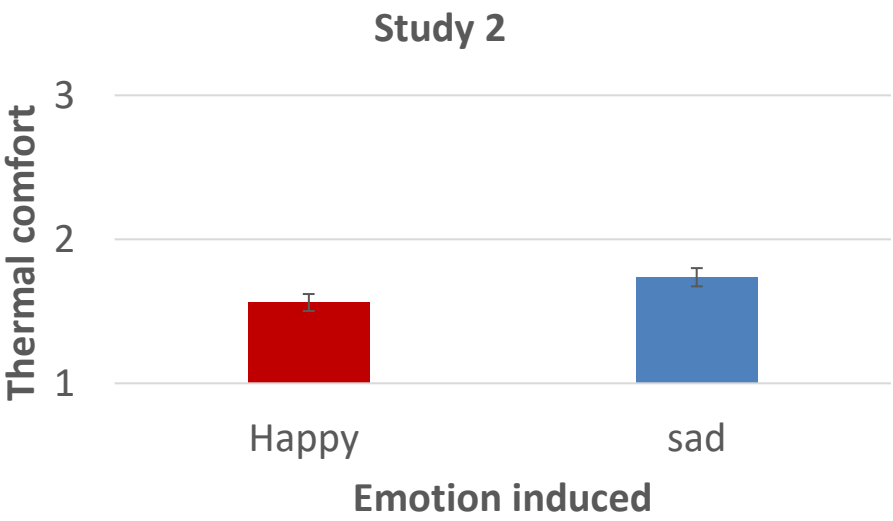
Item: How thermally comfortable are you in this moment from….

… 1 (comfortable) to 7 (extremely uncomfortable)? (Study 1)

…. 1 (comfortable) to 4 (not comfortable)? (Study 2)

Hypothesis: *Participants feel more thermally comfortable after recall of happy life event than sad life event.*





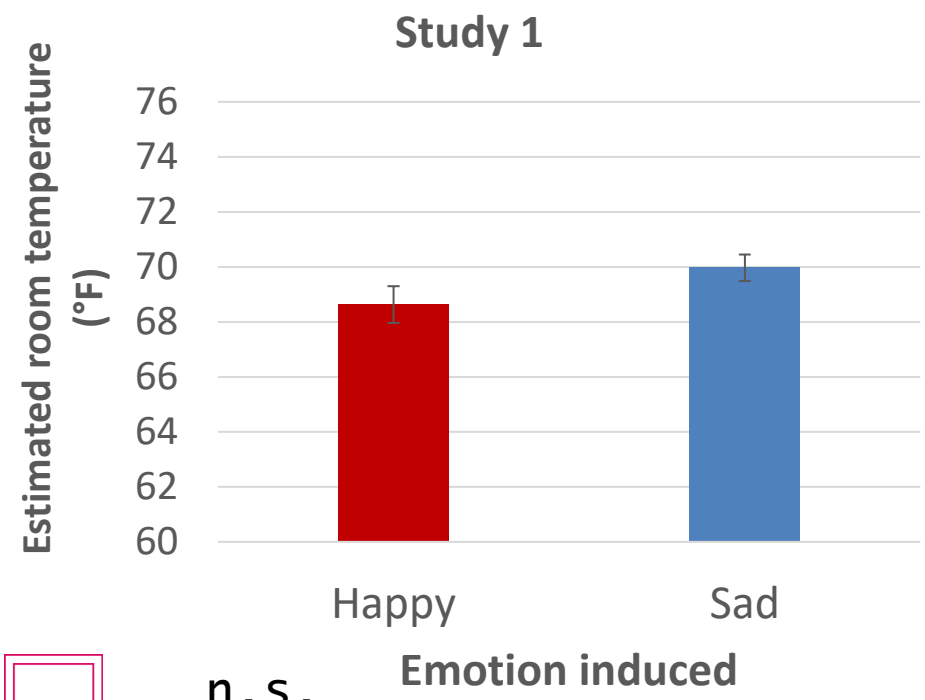
$t(287) = -0.15,\ p = .880$

$t(195) = -2.02,\ p = .045$

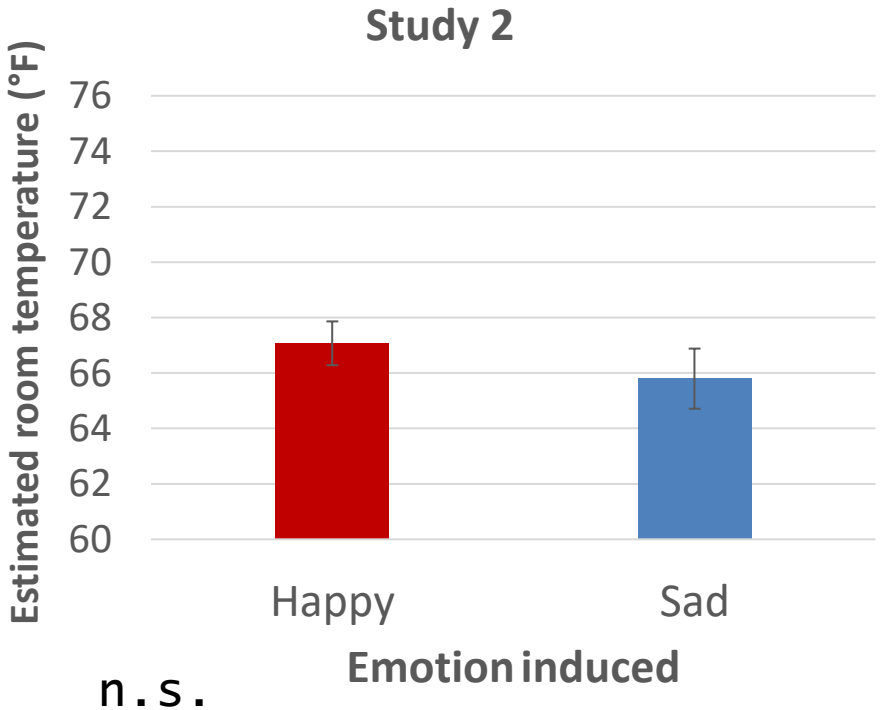
Q3: Room temperature

Item: Please guess the temperature at your current location (in degrees Fahrenheit).

Hypothesis: ***There is no difference in estimation of room temperature following recall of happy or sad life event.***



n.s.



n.s.

Summary

- *Participants feel warmer after recall of happy life event than sad life event.*
  - *SUPPORTED*
- *Participants feel more thermally comfortable after recall of happy life event than sad life event.*
  - *DEPENDS on question wording*
- *There is no difference in estimation of room temperature following recall of happy or sad life event.*
  - *SUPPORTED*

Implications & future research

- Implications:
  - Emotions to be considered in studies of thermal comfort.
  - Methodological issues around how to ask about thermal comfort.
- Future research
  - New comfort survey?!
  - What does room temperature express vs. comfort?
  - Replication in thermally controlled environment.

Thank you!

Questions?

Manipulation check

- Worked!
  Those who recalled happy event were much happier and less sad!

Correlations

- Correlation between feeling of happiness and current feeling (cold – hot) r = . 252 p < .001
  - Those who feel happier, feel warmer
- Correlation between feeling of sadness and current feeling (hot-cold) = -0.260, p < 0.001
  - Those who feel more sad, feel colder