

# Age differences in affective responses to experimental sessions in the EEG-laboratory?

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Altersunterschiede in neuronaler Funktion: Einfluss von Alltagsaktivitäten auf neue Gedächtnisspuren (AnFAnG)

## Introduction and Methods

### Research Question

In studies comparing groups of young vs. older adults, often only the older adults are unfamiliar with the testing context and the types of computerized cognitive tasks. Additionally, in memory experiments, older adults may subjectively experience social-evaluative threat.

➤ Do healthy older adults show a unique affective reaction to an EEG experiment including memory tests?

### Participants (1st wave of the AnFAnG-study at Trier University)

- 30 young adults ( $M=24.73$ )
- 54 healthy older adults ( $M=70.2$ )

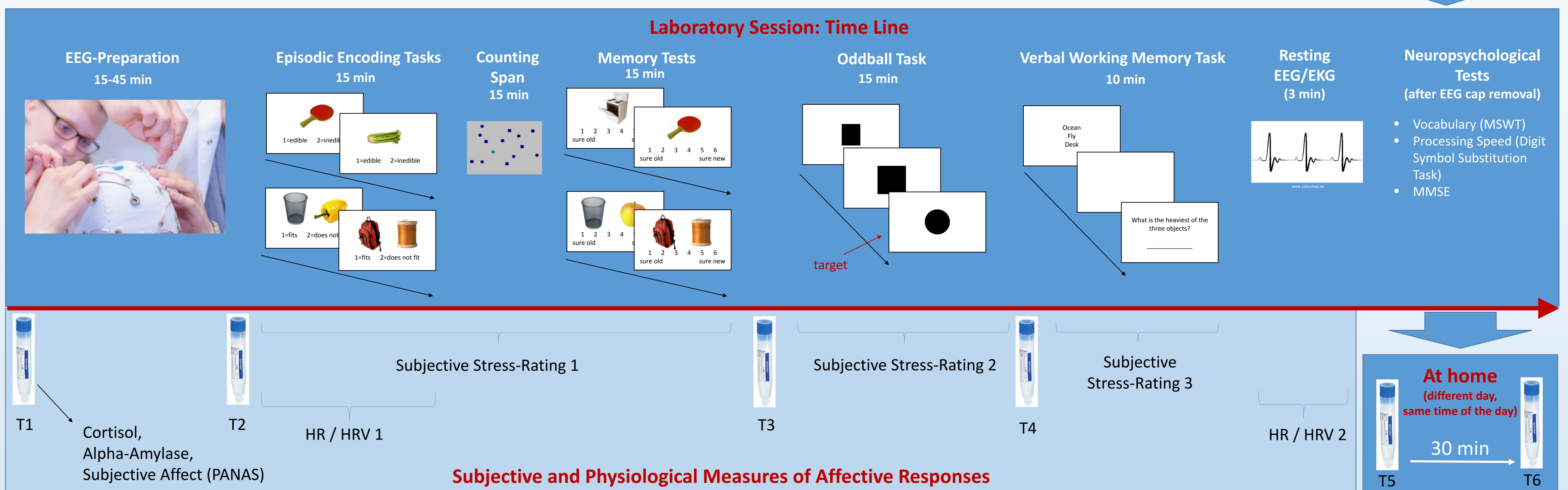
### Measures of affective reactivity

- Self-rated subjective task-related stress (0-100)
- Self-rated positive and negative affect (PANAS; 6 time points: T1-T6)
- Saliva cortisol (measure of HPA-Axis activity; 6 time points: T1-T6)
- Saliva alpha amylase (measure of SNS-activation; 6 time points: T1-T6)
- Heart rate (HR); heart rate variability (HRV; analyzed for 2 time windows so far)

### Procedure AnFAnG-Study (1st of 2 waves)

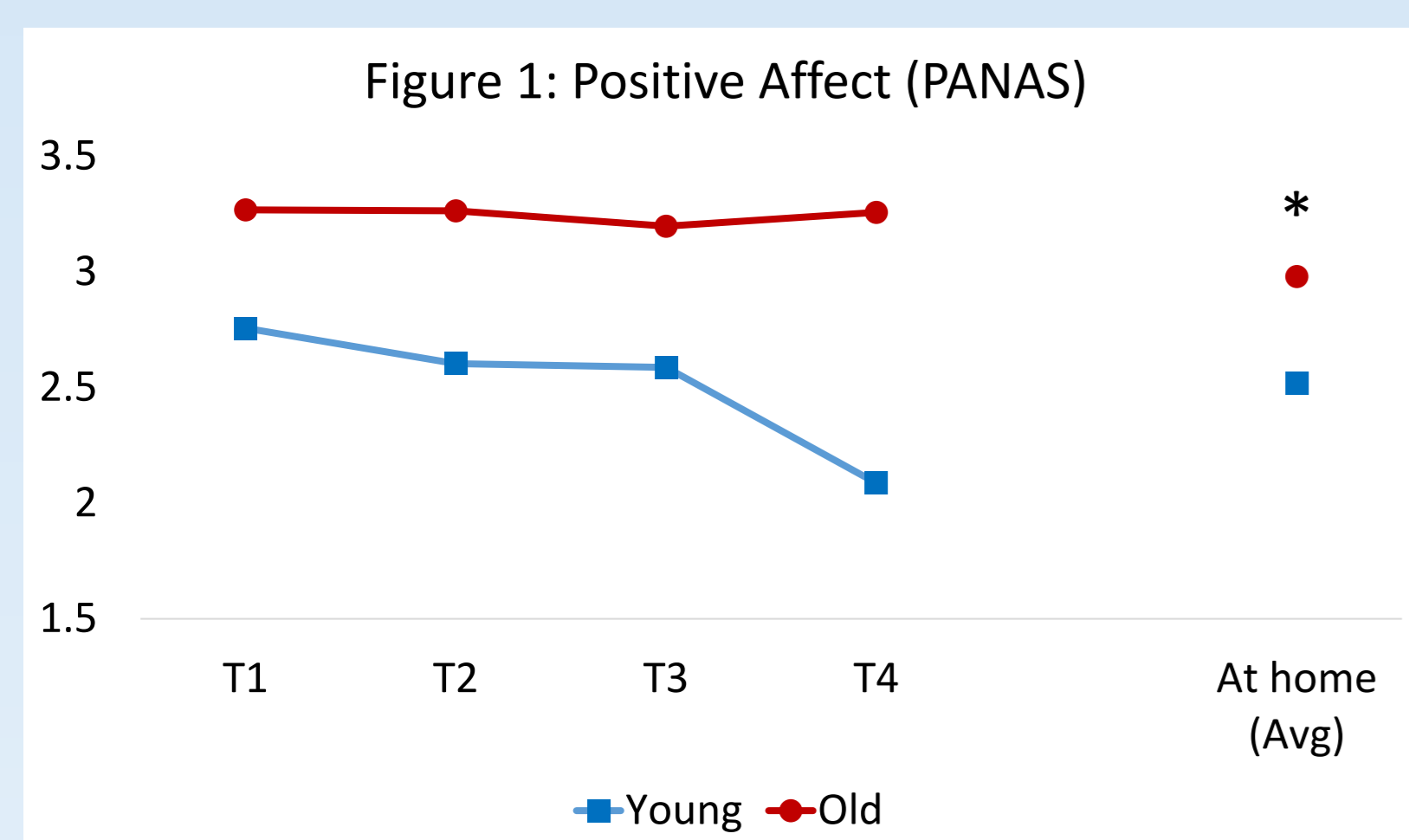
#### Before the Session

- Metacognition Questionnaire (Klusmann et al., 2010)
- Lifetime of Experiences Questionnaire (Valenzuela & Sachdev, 2007)
- Questionnaire about lifetime musical activity (self-designed)
- BDI-V

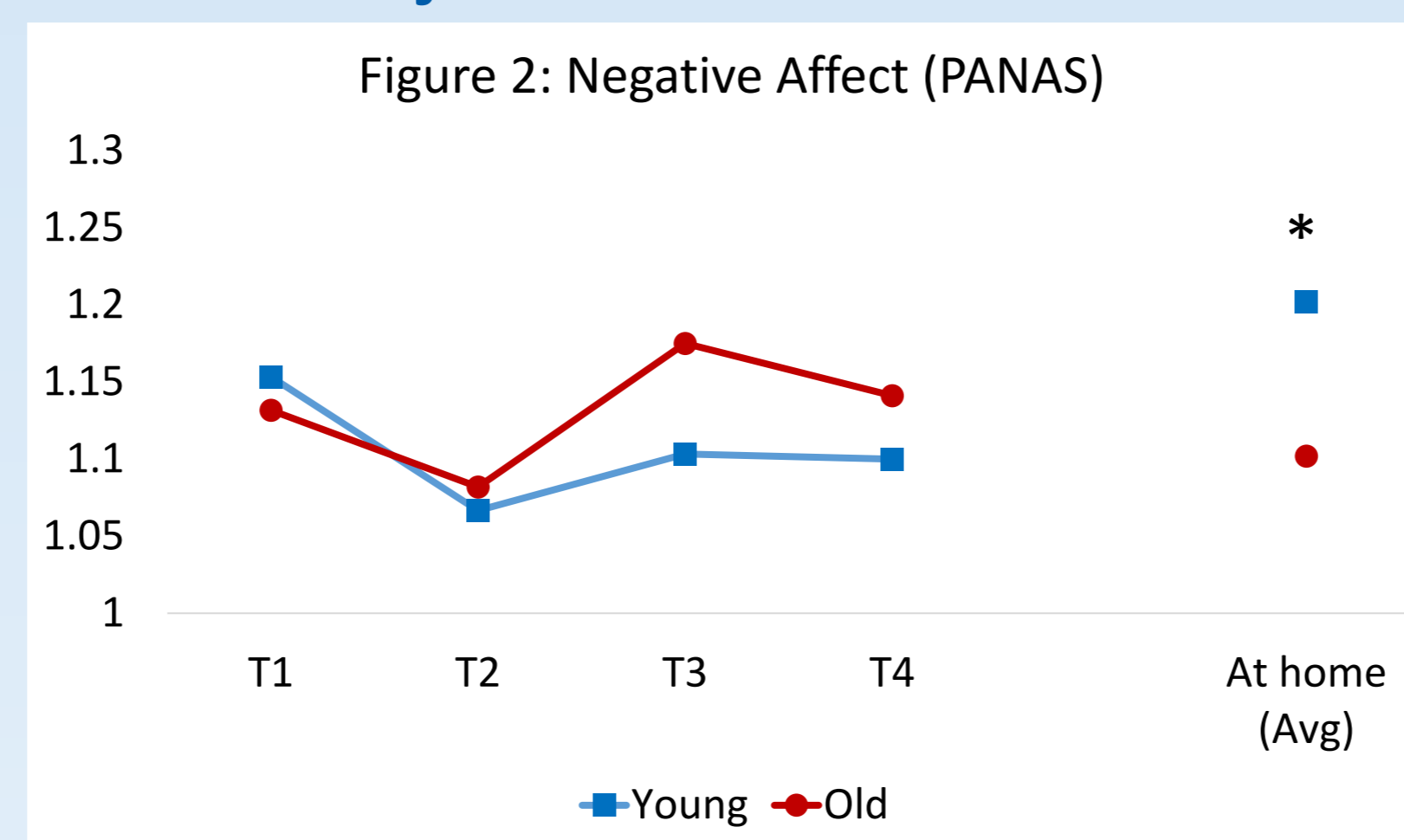


## Results

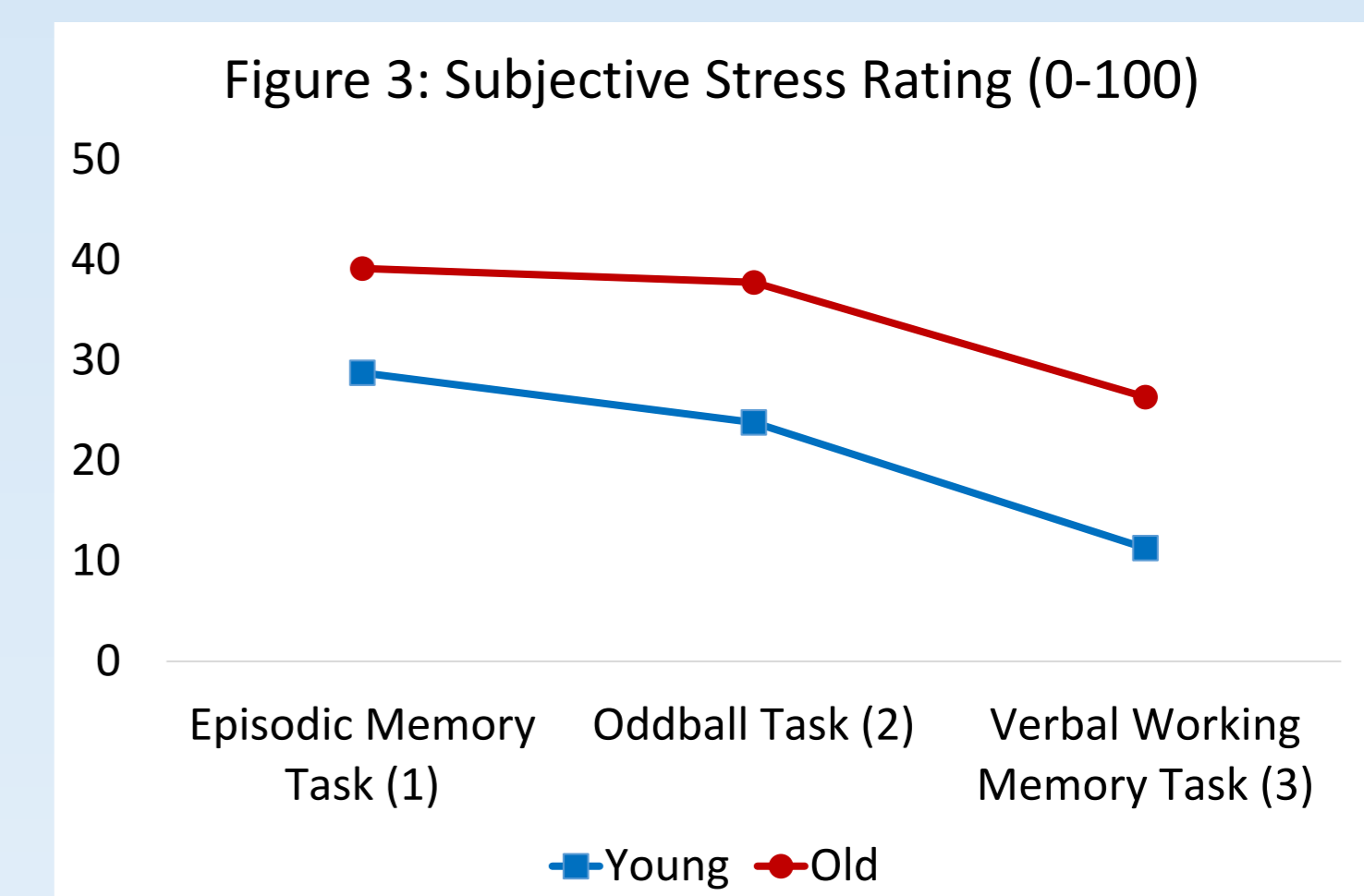
### 1. Subjective Affect and Stress Ratings



Age\*\*; Time Point (T1-T4)\*\*  
Timepoint (T1-T4) x Age Interaction\*\*

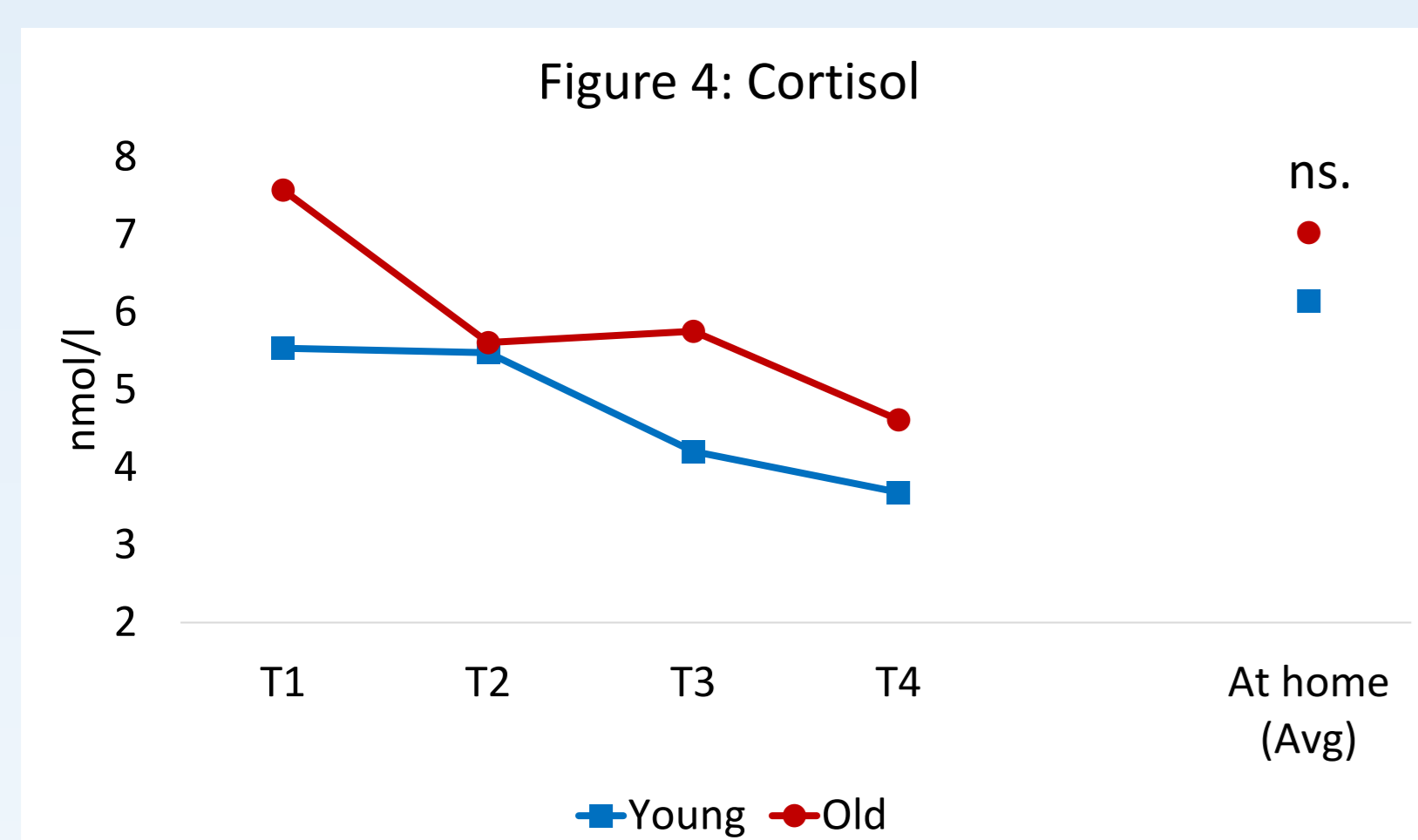


Time Point (T1-T4)\*  
No Effect for Age or Interaction

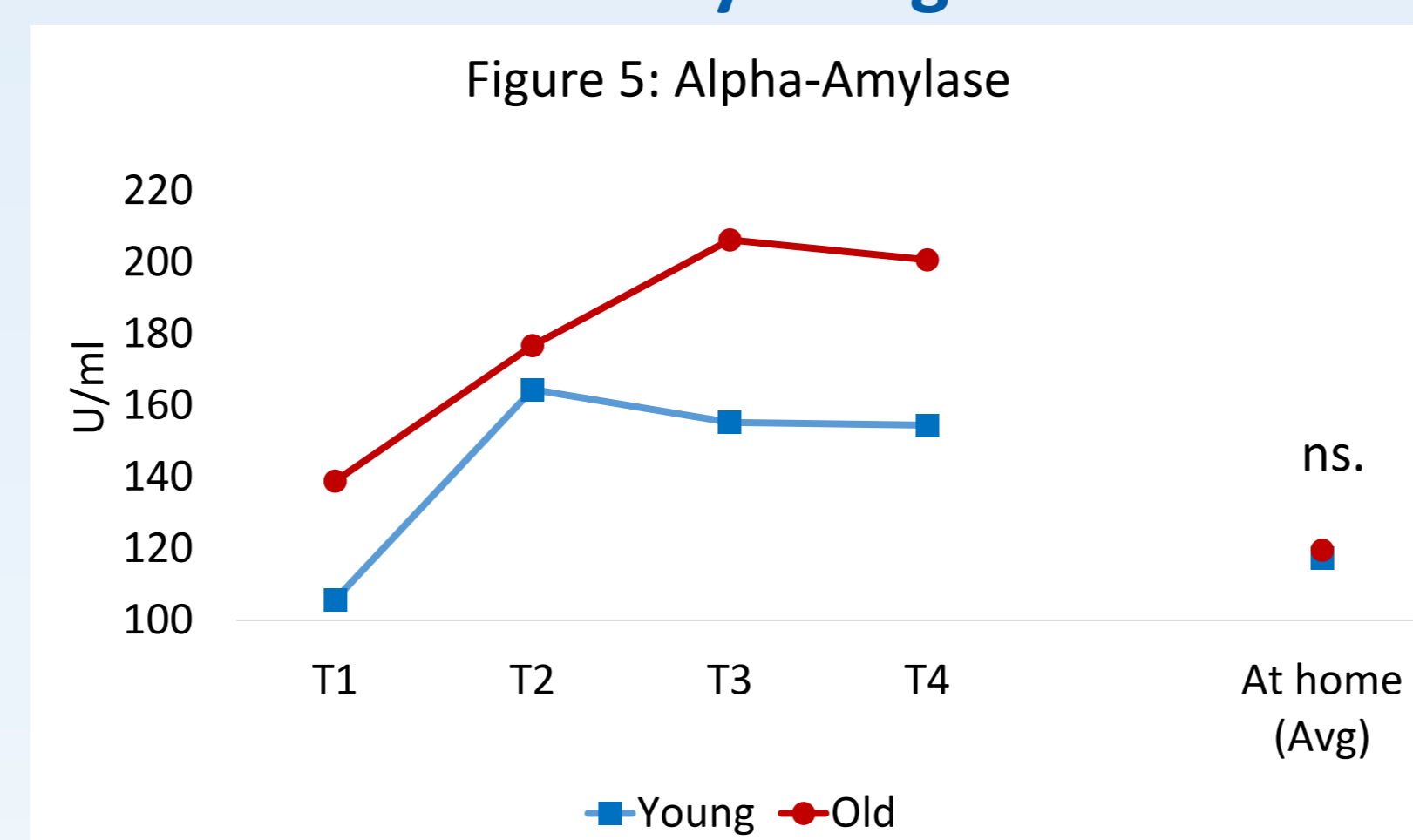


Age\*\*, Time Point\*\*  
No Interaction

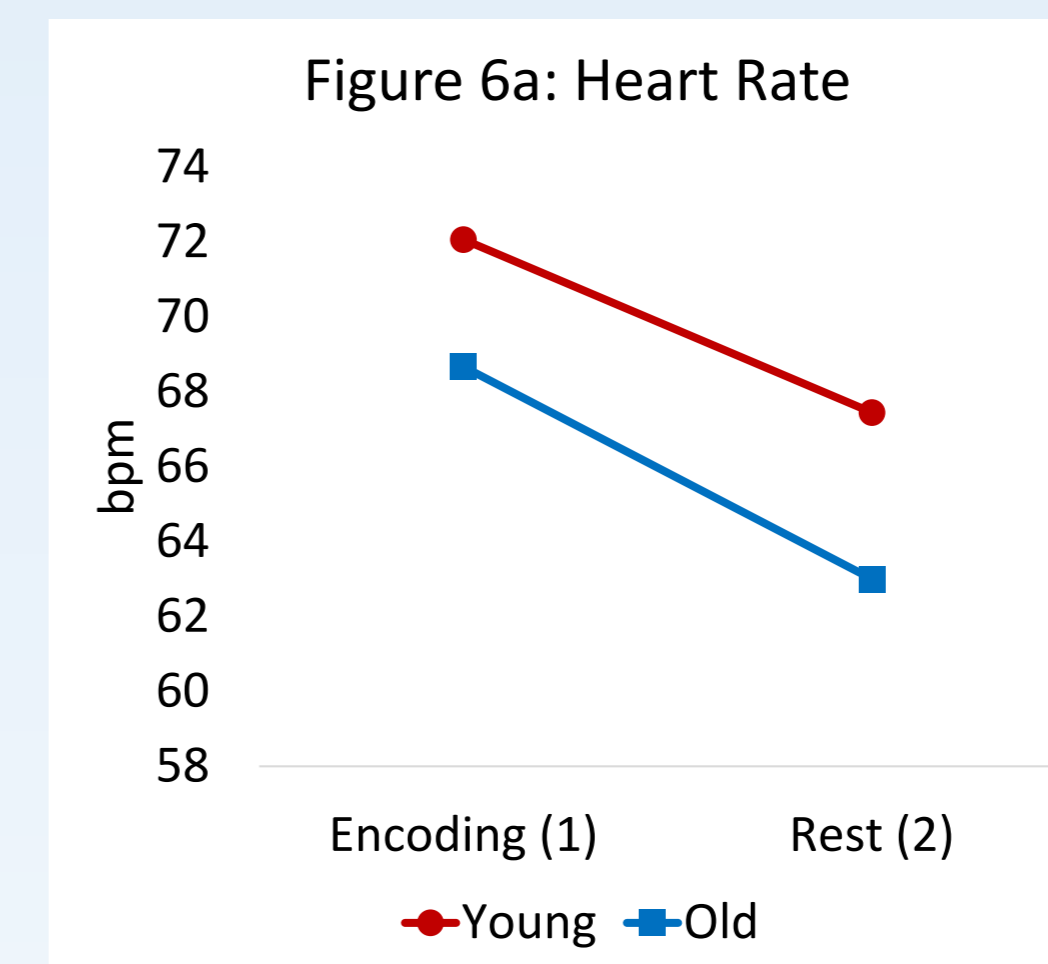
### 2. Physiological Measures



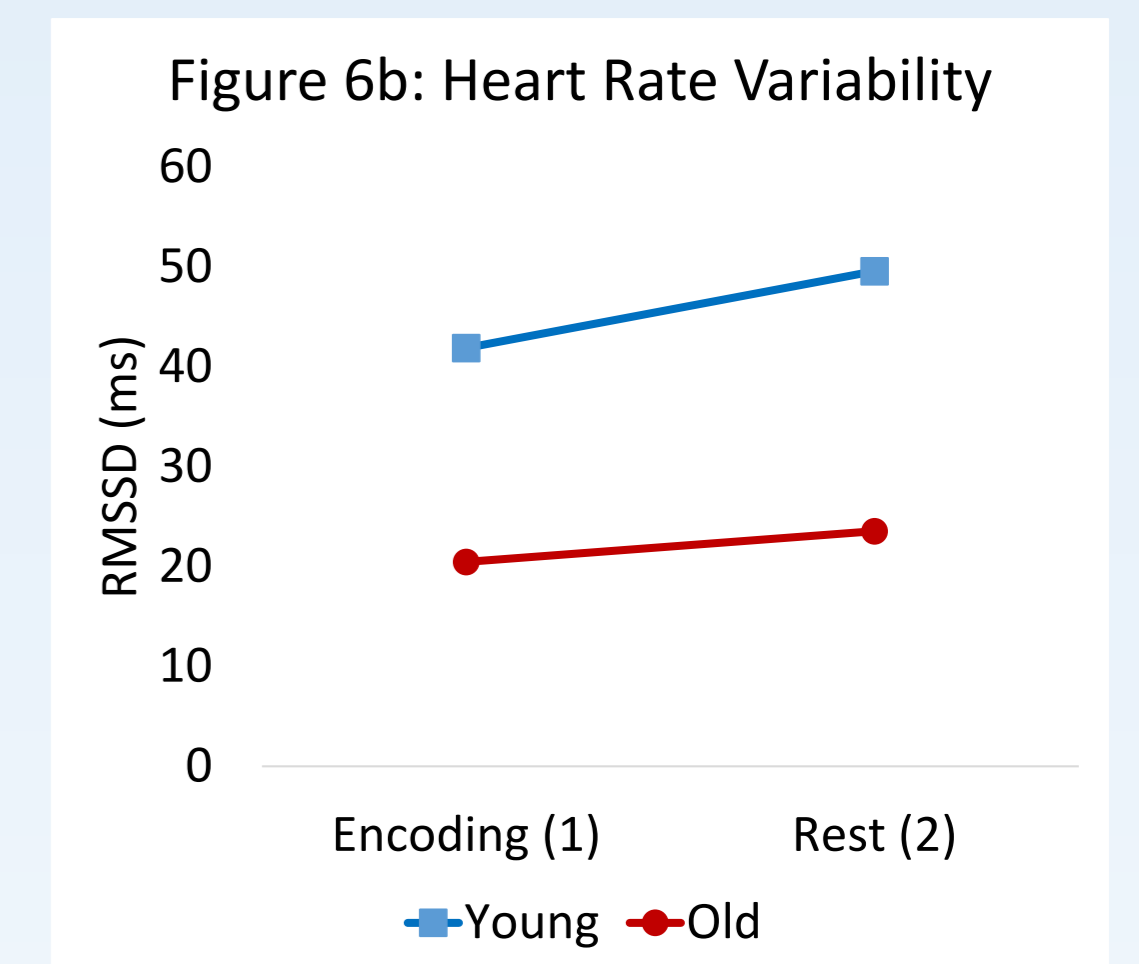
Time Point (T1-T4)\*\*  
Cubic Trend Timepoint (T1-T4) x Age Interaction\*\*



Time Point (T1-T4)\*\*  
Cubic Trend Timepoint (T1-T4) x Age Interaction\*\*



Time Point\*\*  
No Interaction or Effect of Age



Time Point\*\*, Age\*\*  
No Interaction

## Summary and Discussion

### Older adults...

- ...rated their stress level as higher than young adults (Figure 3).
- ...reported higher positive affect, which remained high throughout the session, whereas it decreased for the young adults (Figure 1).
- ...showed different trajectories of saliva cortisol and amylase concentrations throughout the session (Figures 4 & 5).
  - This pattern remained the same when only participants with afternoon sessions were considered!

- Older adults differ from young adults in their affective response to (neurocognitive) laboratory studies on learning and memory.
- Whether these patterns are due to the laboratory context or the tasks themselves cannot be determined with certainty.
- However, differences in trajectories were most pronounced between T2 and T3 (Figures 4 & 5), i.e. before vs. after the memory task.
- It appears likely that these are task-specific reactions rather than reactions to the EEG-laboratory context.

### References and Funding Information

Klusmann, V., Evers, A., Schwarzer, R., & Heuser, I. (2011). A brief questionnaire on metacognition: psychometric properties. *Aging & mental health, 15*(8), 1052-1062.

Valenzuela, M. J., & Sachdev, P. (2007). Assessment of complex mental activity across the lifespan: development of the Lifetime of Experiences Questionnaire (LEQ). *Psychological medicine, 37*(7), 1015-1025.