

Aging and emotion regulation: An ERP study

Sandra J. E. Langeslag & Jan W. van Strien
Erasmus University Rotterdam



Introduction

- Emotion regulation would improve with aging [1]
- Emotion regulation = use of behavioral or cognitive strategies to generate new emotions or alter current emotions [2]
- The Late Positive Potential (LPP) is emotion-sensitive and is modulated by emotion regulation [3, 4, 5]
- Research question: Does emotion regulation improve with age?
- Hypothesis: Larger emotion regulation effects in the LPP in older than younger adults

Methods

- 19 younger (18-26 yrs) and 20 older (60-77 yrs) participants
- 64-channel EEG registration (Biosemi)
- Neutral, unpleasant, and pleasant pictures (IAPS)
- View, increase feelings, and decrease feelings instructions
- 7 conditions:

view-neutral	increase-unpleasant
view-unpleasant	increase-pleasant
view-pleasant	decrease-unpleasant
	decrease-pleasant
- Same design as [3, 4], for trial overview, see Fig. 1

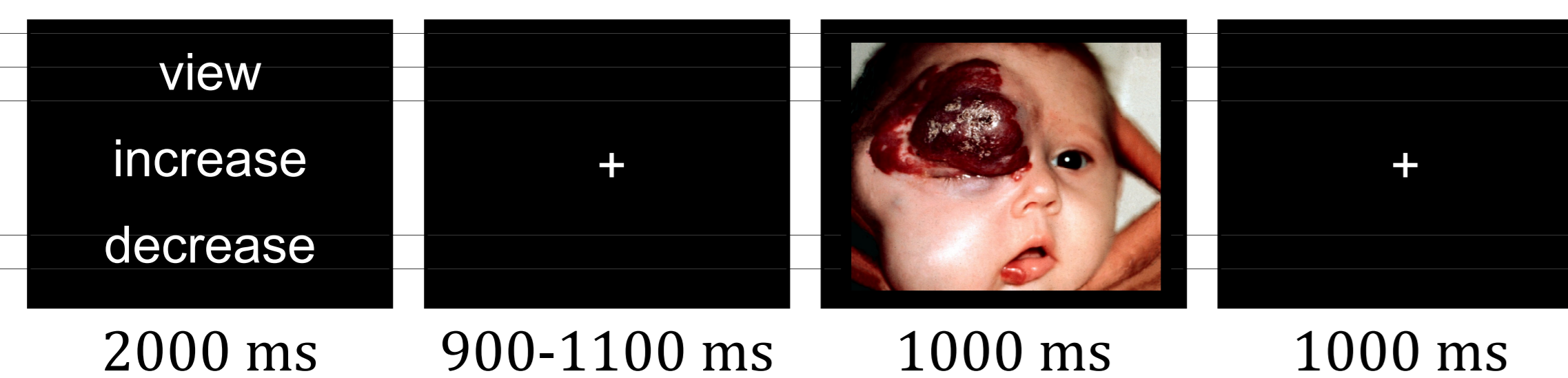


Fig. 1 Trial overview. First, an instruction word ('view', 'increase', or 'decrease', depending on the block) was presented to remind participants of their task, followed by a fixation cross. Then a picture was shown for one second, again followed by a fixation cross.

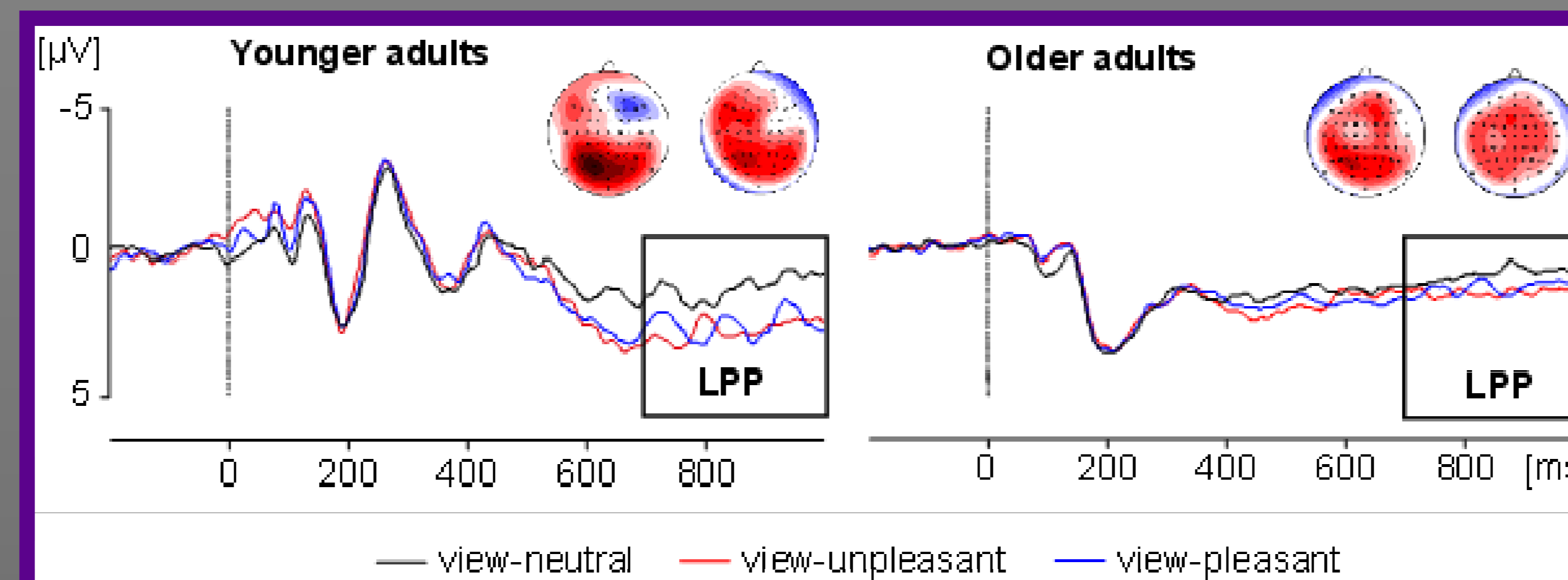


Fig. 2 ERP waveforms at the medial posterior electrode cluster, showing the more positive LPP (700-1000 ms) for emotional compared to neutral pictures in the view condition. The voltage scalp topographies depict unpleasant - neutral (left) and pleasant - neutral (right), showing the posterior distribution of the valence effects.

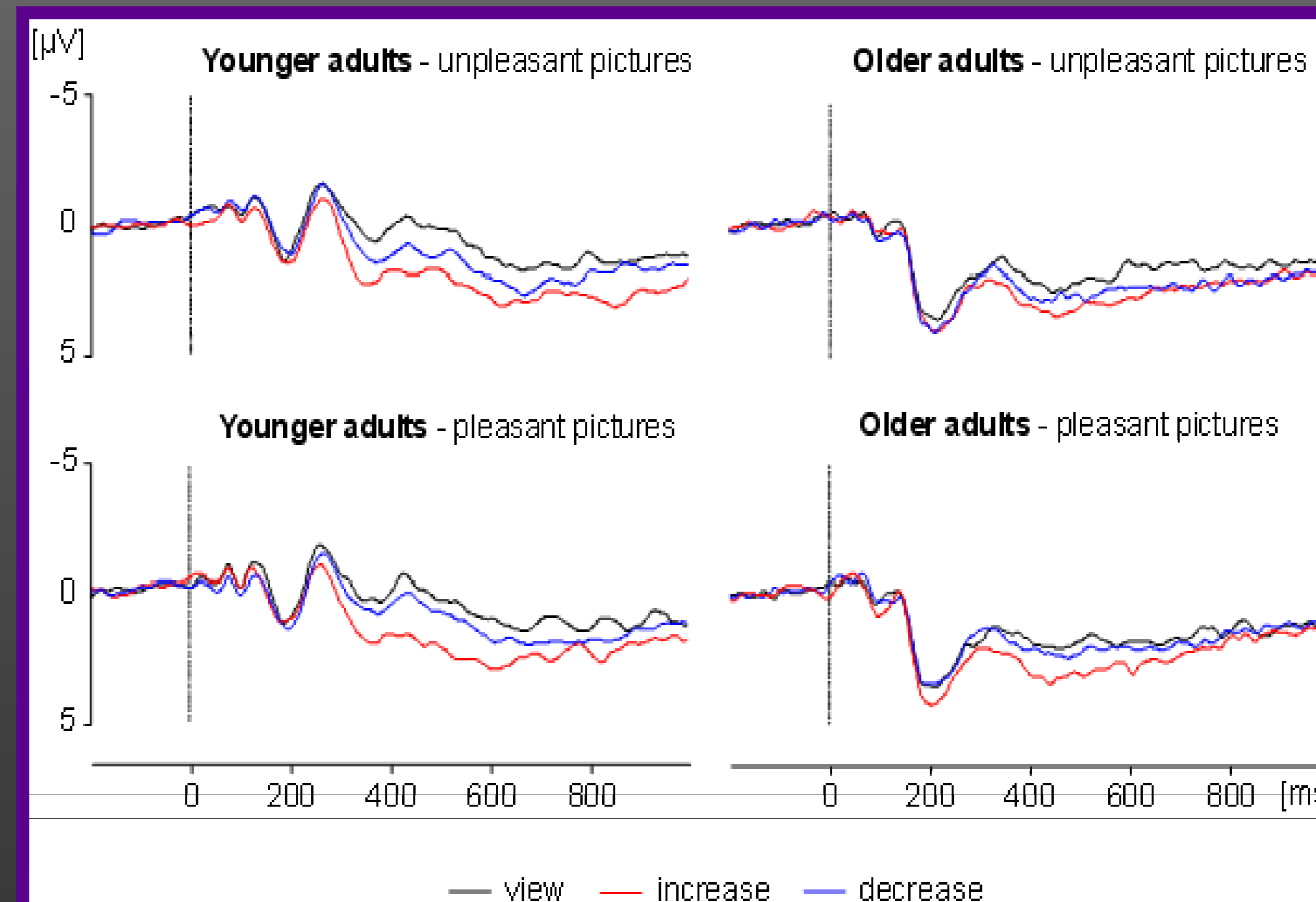


Fig. 3 ERP waveforms at the medial posterior electrode cluster, showing the more positive LPP for increase than view and decrease instructions (400-1000 ms) and the more positive LPP for decrease than view instruction (400-700 ms)

Results

- More positive LPP (700-1000 ms) for emotional than neutral pictures in view condition, see Fig. 2
- More positive LPP (700-1000 ms) for unpleasant than pleasant pictures in all instruction conditions
- More positive LPP (400-1000 ms) for increase than view and decrease instructions, see Fig. 3
- More positive LPP (400-700 ms) for decrease than view instruction, see Fig. 3
- No age differences in valence or instruction effects

Discussion

- Typical valence effects in ERP [3, 4, 5]
- LPP enhancement by increasing feelings [5]
- Generally no effect of decreasing feelings
- No age differences in emotion regulation effects
- Thus, our data do not support the notion that emotion regulation improves with aging
- Age differences in spontaneous utilisation of emotion regulation remain to be investigated

References

- [1] Mather & Carstensen (2005). *Trends in Cognitive Sciences*, 9, 496-502.
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- [4] Moser et al. (2006). *Psychophysiology*, 43, 292-296.
- [5] Moser et al. (2009). *Psychophysiology*, 46, 17-27.

Correspondence to Sandra Langeslag
✉ langeslag@fsw.eur.nl ☎ +31 (0)10 – 4082663