Introduction

• Conflict paradigms might induce negative emotions and emotional arousal
  According to Botvinick [1], stimuli requiring cognitive effort are coded as aversive events.

• Here we tested whether conflict processing in the Simon task elicits physiological arousal (as measured with pupil dilation)
  Previous work has already shown conflict-driven pupil dilation in the Stroop task and the flanker task [e.g. 2-3]. However Schacht et al. [4] failed to find conflict-driven pupil dilation in the Simon task, perhaps due to luminance changes. We aimed to test this prediction.

• Sequential effects in pupil dilation were also investigated
  Given that conflict-induced affective states might drive behavioral adaptation in cognitive control [5-6], we also tested whether pupil dilation predicts behavioral adaptations.

Results I: Incompatible trials increase pupil dilation

Results II: Sequential analyses show that pupil dilation reflects conflict, not control / effort

Results III: Pupil dilation (PD) predicts subsequent RT speeding

Conclusions

• Conflict-driven pupil dilation can be observed in the Simon task; it seems independent of luminance changes
  Following conflict-monitoring logic, sequential analyses showed that pupil dilation reflects conflict processing, not control allocation, but cf. [7]

• Regression analyses showed that PD predicts RT speed rather than RT interference, thus pupil dilation reflects more than one process at the same time

Methods

• Simon task + eye tracking
  N = 24
  3 color-schemes (block-wise)
  x 200 trials (50% incongruent, 50% congruent)
  E-Prime + Tobii T120 eyetracker
  Custom-made macros in Brain Vision Analyzer
  http://www.leidenuniv.nl/personal/steenbergenhvan1/links.htm

References