Eye-Fixation Related Potentials evidence for incongruent object processing during scene exploration

Hélène Devillez, Randall C. O’Reilly, Tim Curran
Department of Psychology and Neuroscience, University of Colorado Boulder

OBJECTIVES

- Eye-movements
  - Incongruent objects fixated more often and longer than congruent objects (Kamienkowski, Weeks & Henderson 2009; Henderson & Henderson 2008)
- Electroencephalography (EEG)
  - Incongruent objects elicited a stronger centro-frontal N300–N400
  - Early congruency effect, dominant on the left hemisphere electrodes

METHODS

- Stimuli
  - Experiment 1: objects were photoshopped in scenes
  - Experiment 2: pictures of stage scenes were taken

PRE-PROCESSING

- Eye-movement artifacts limitation
  - Overlay of potentials related to consecutive fixations
  - Eye movement parameters have been shown to influence EFRP (Underwood et al., 2010)

ANALYSIS

- Fixations of Interest (FOI)
  - Region Of Interest (ROI): congruent incongruent or new object

CONCLUSIONS

- Incongruent objects were more fixated and for a longer duration than congruent objects.
- Replication of previous eye movement results.
- Experiment 1: differences also present between congruent and control objects.
- Fixation Related Potentials
  - Eye-Fixation Related Potentials evidence for incongruent object processing during scene exploration.