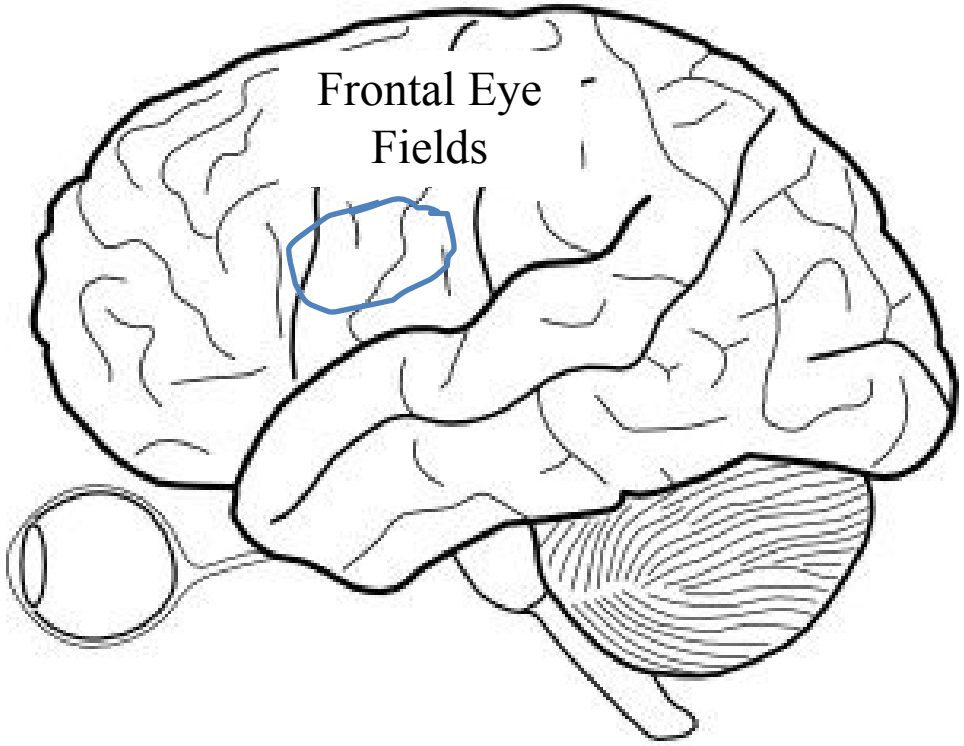
Rapid Decision Making in Humans

Lucine Oganesian
Smith Lab

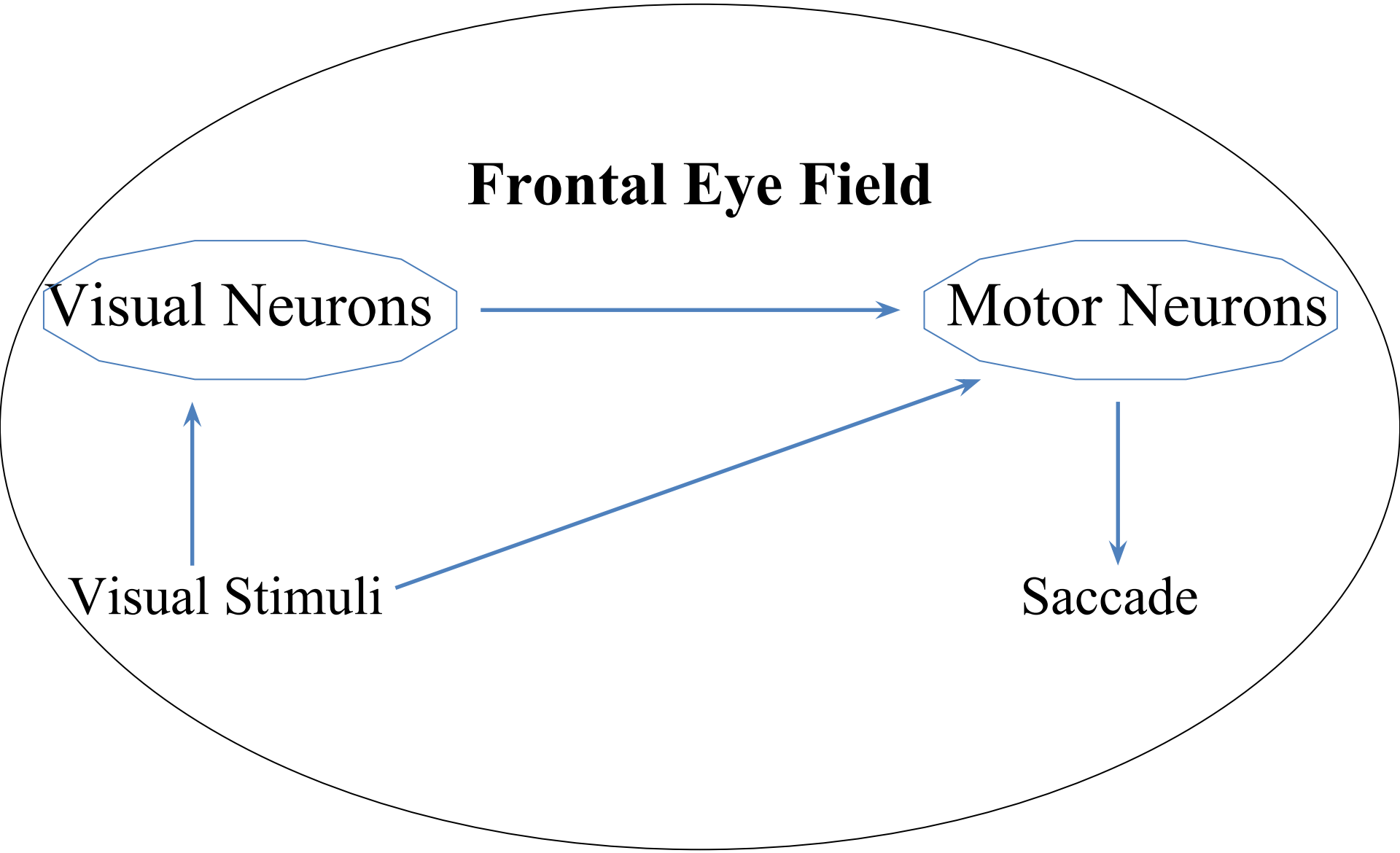
- **Introduction**
- Background and task
- Results from human psychophysics experiment
- Conclusion and future direction

Frontal eye fields (FEF) play role in visual perception and eye movements



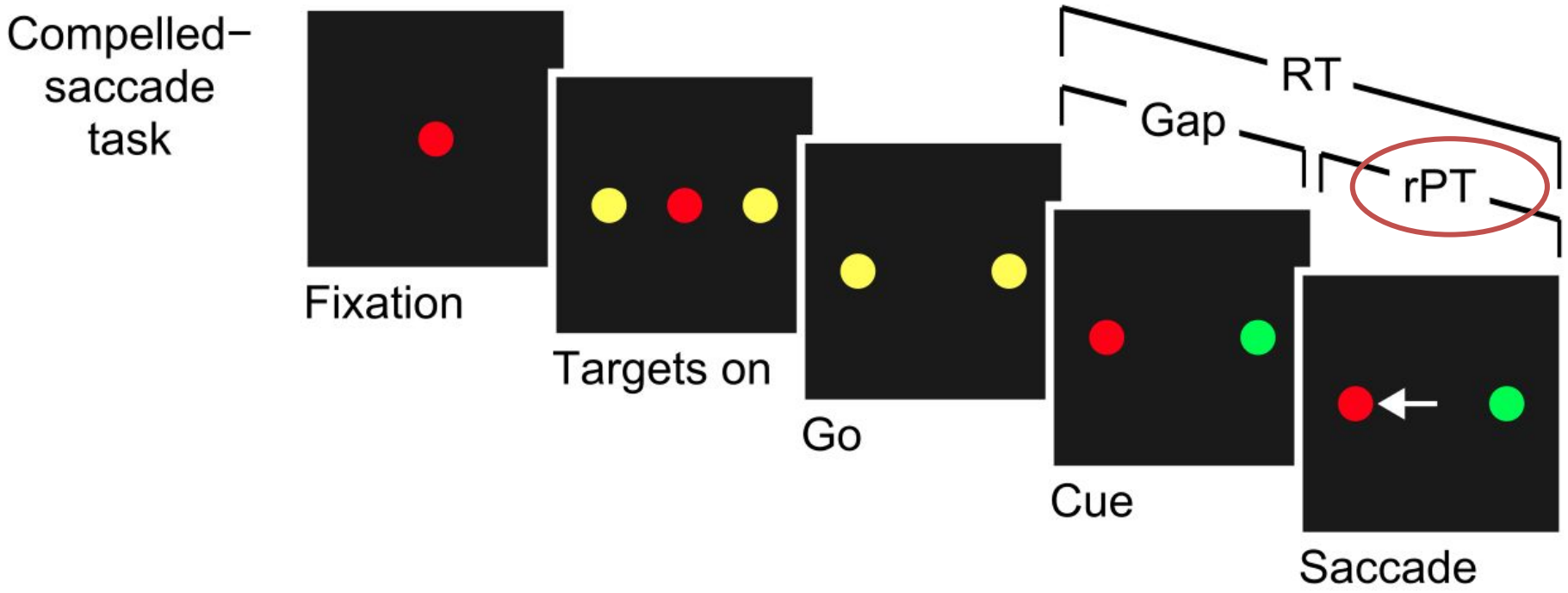
http://www.polyvore.com/cgi/img-thing?.
out=jpg&size=l&tid=33184508

Perceptual modulation in motor responses (in FEF)



- Introduction
- **Background and task**
- Results from human psychophysics experiment
- Conclusion and future

Presenting target information at variable times after movement is initiated



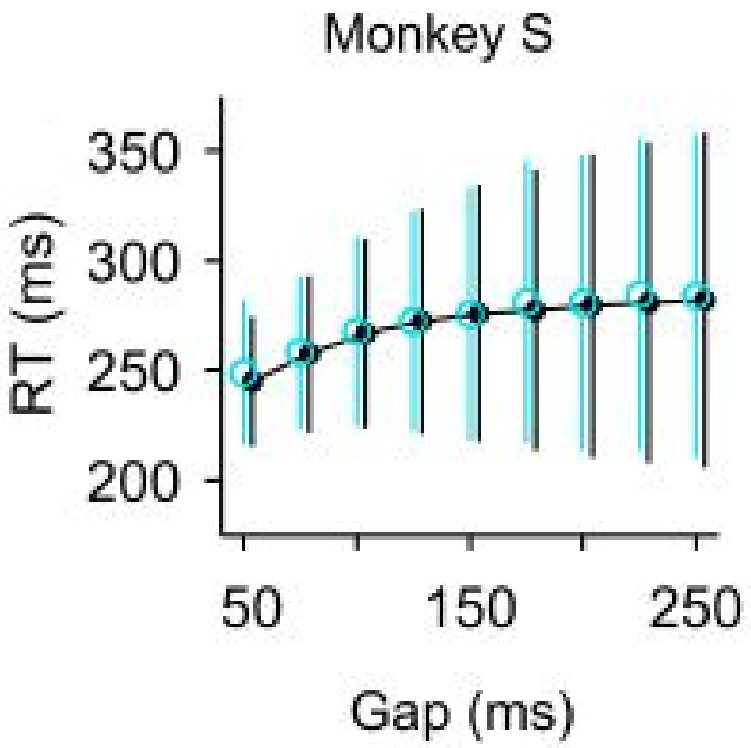
Raw
Processing
Time

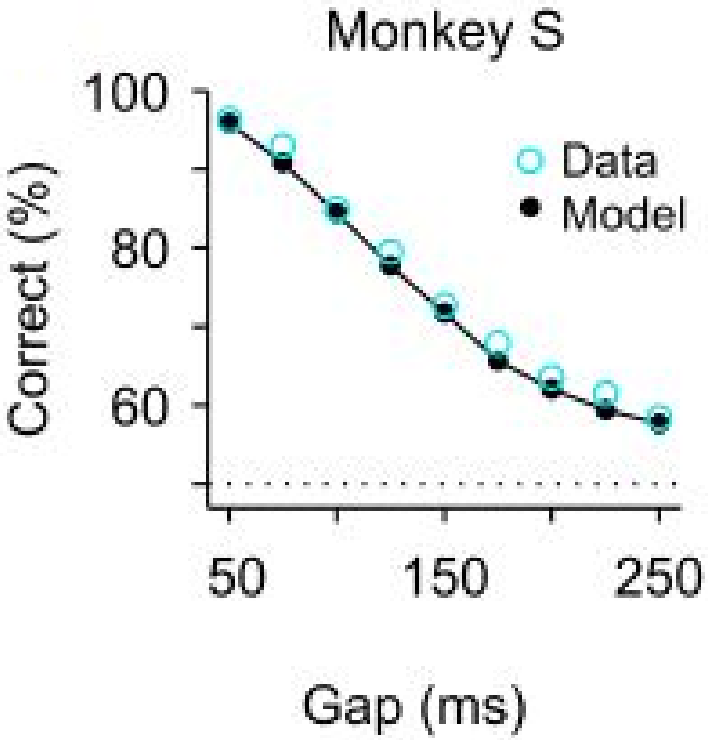
rPT = RT - Gap

Response
Time

M. Gabriela Costello, Dantong Zhu, Emilio Salinas, and Terrence R. Stanford (2013)

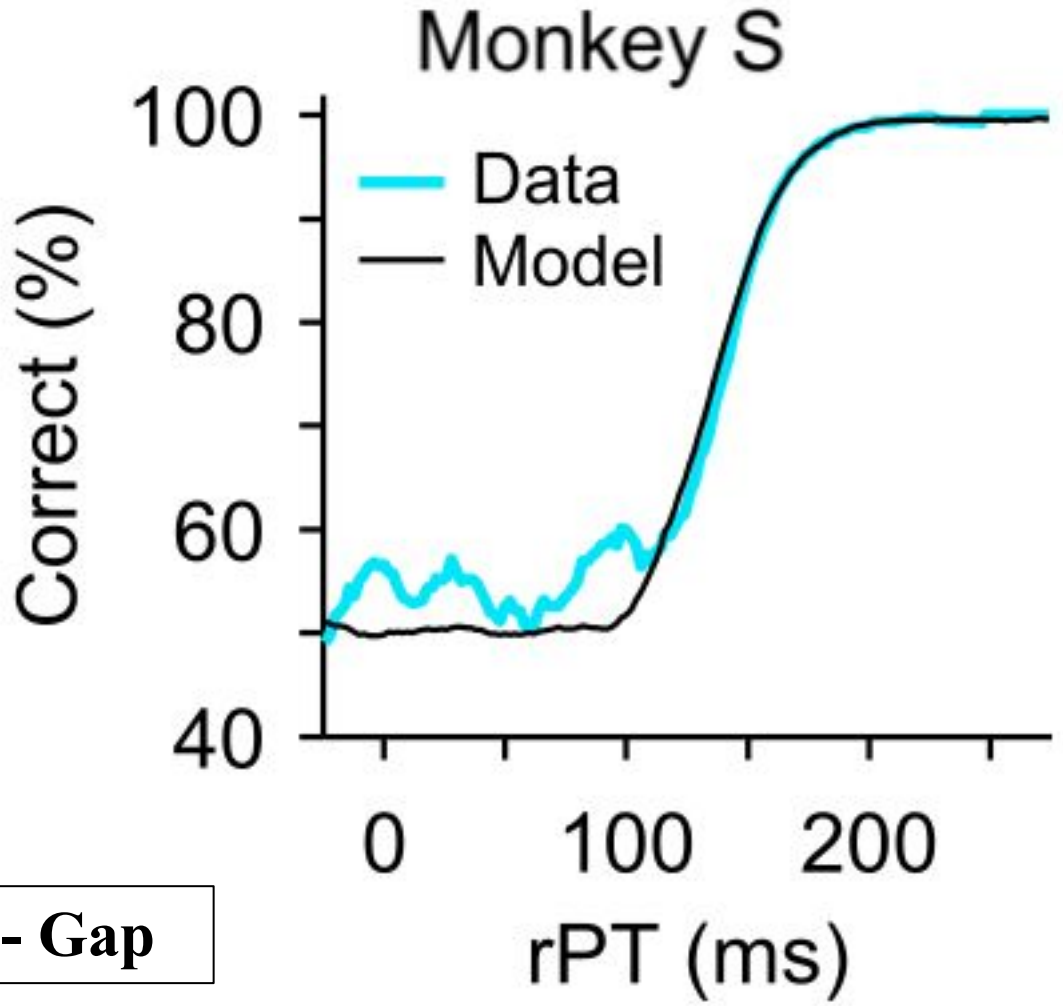
Percent correct decreases with increasing gap time, while response times remain consistent





M. Gabriela Costello, Dantong Zhu, Emilio Salinas, and Terrence R. Stanford (2013)

Longer raw processing times associated with higher percentage correct

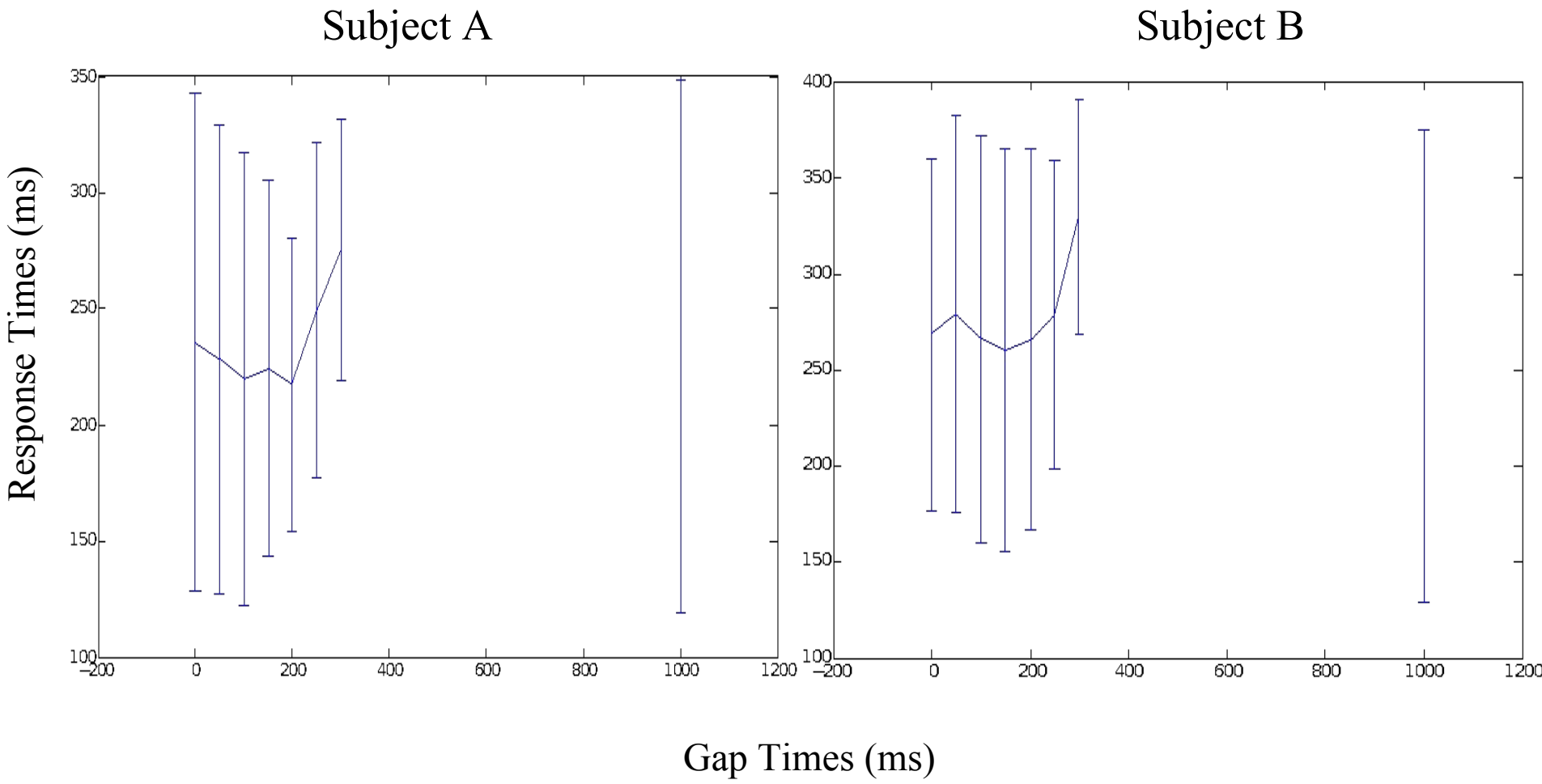


rPT = RT - Gap

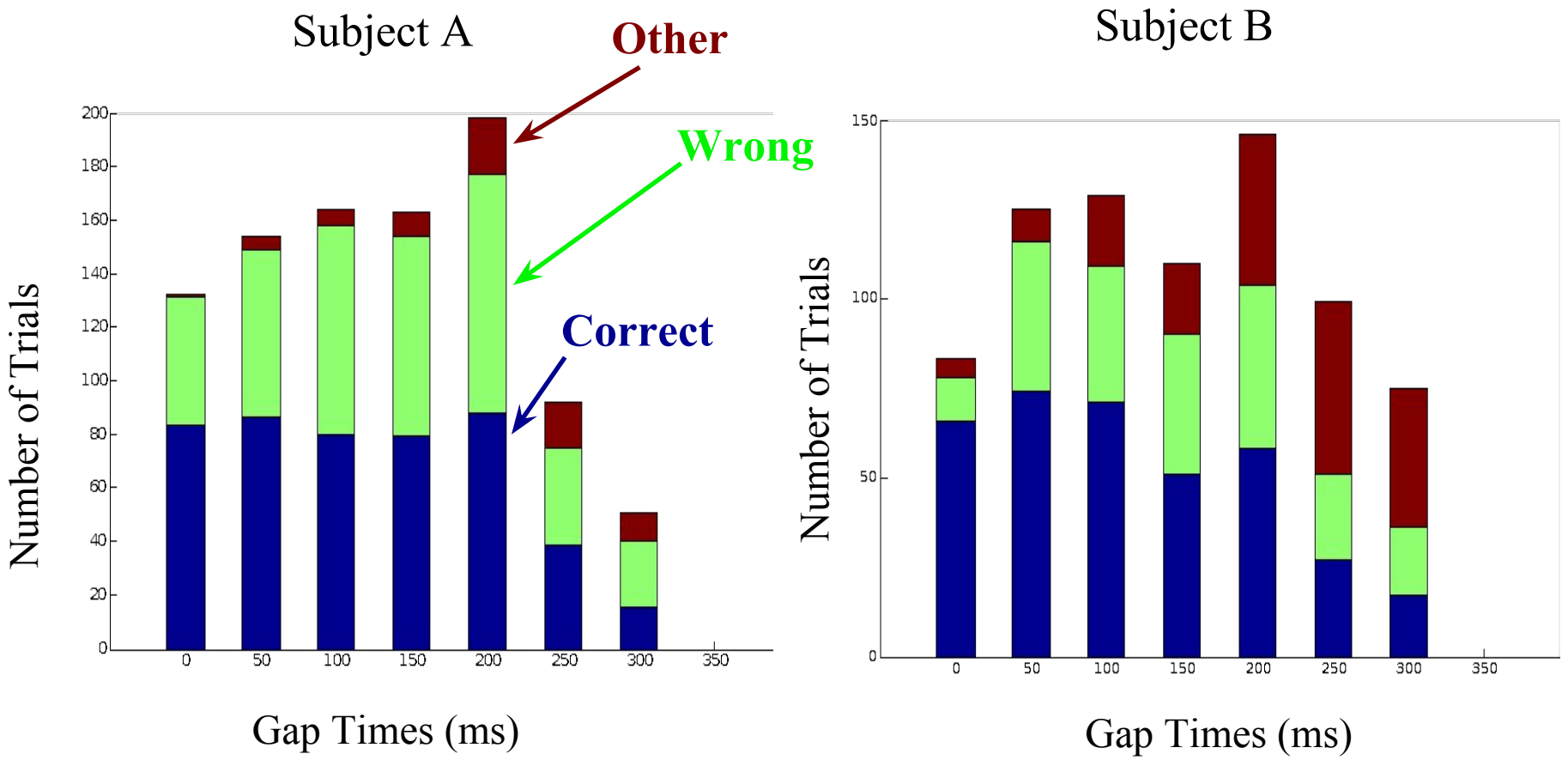
M. Gabriela Costello, Dantong Zhu, Emilio Salinas, and Terrence R. Stanford (2013)

- Introduction
- Background and task
- **Results from human psychophysics experiment**
- Conclusion and future direction

Response times not dependent on gap times



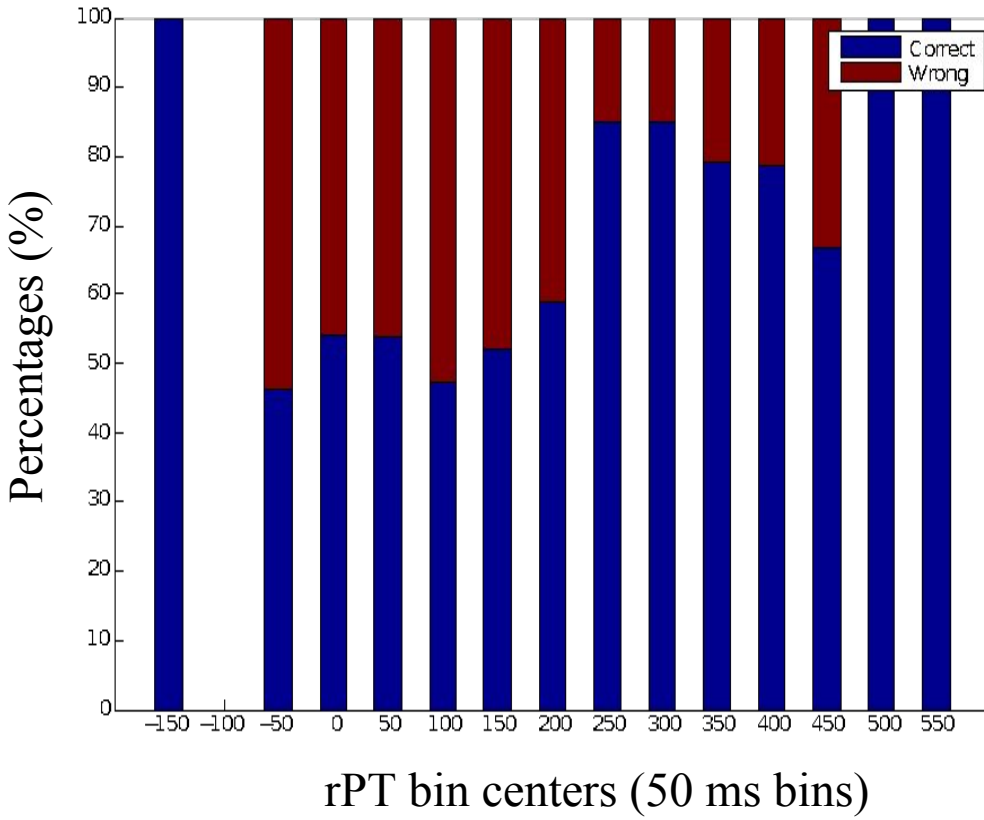
Proportion of correct trials decreases with larger gap times



Correct trials associated with longer raw processing times

Correct Trials

Incorrect Trials



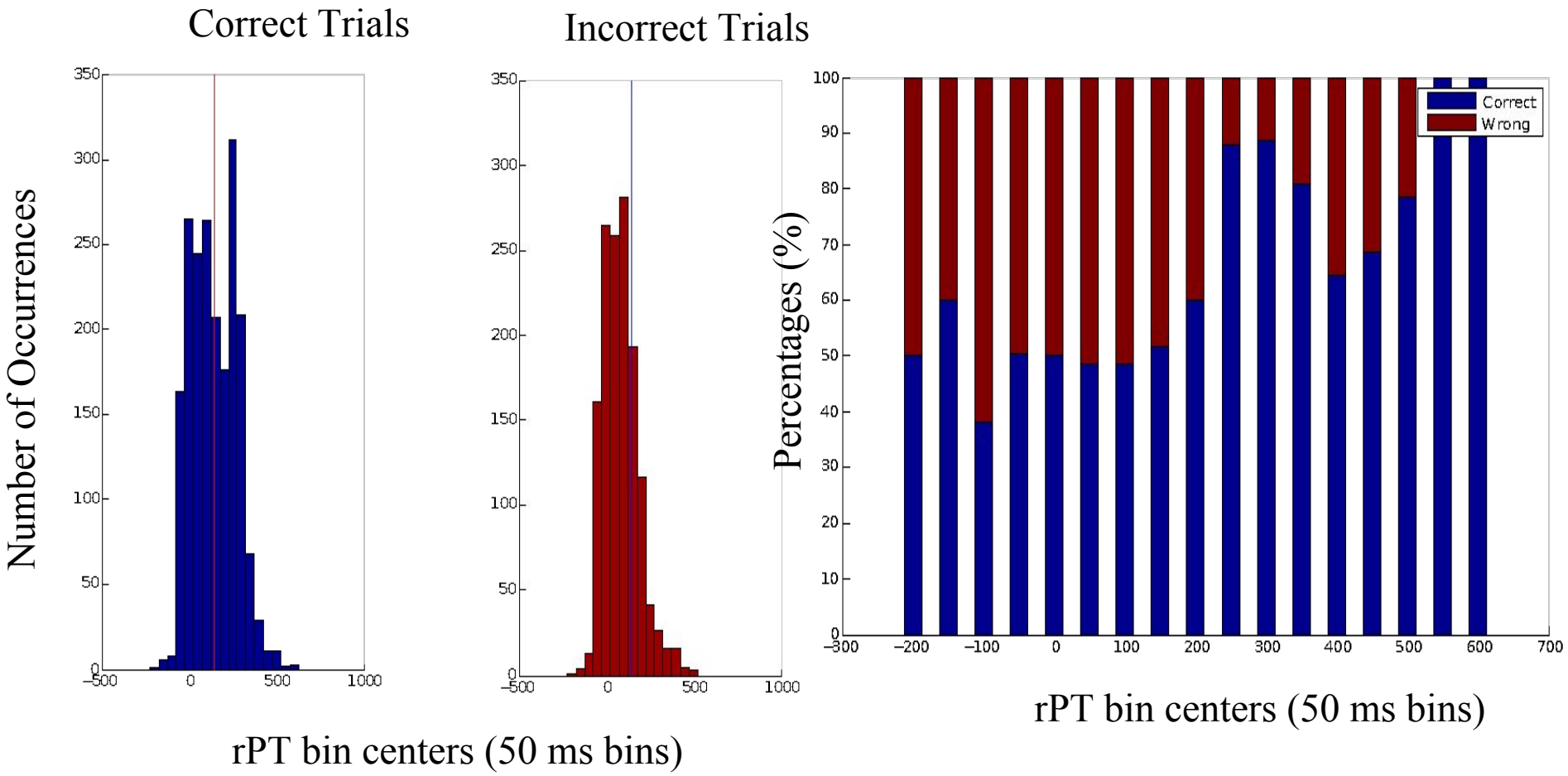
Number of Occurrences

rPT bin centers (50 ms bins)

rPT = RT - Gap

Subject B

Pooled across all subjects, correct trials appear to tend towards longer rPT values.



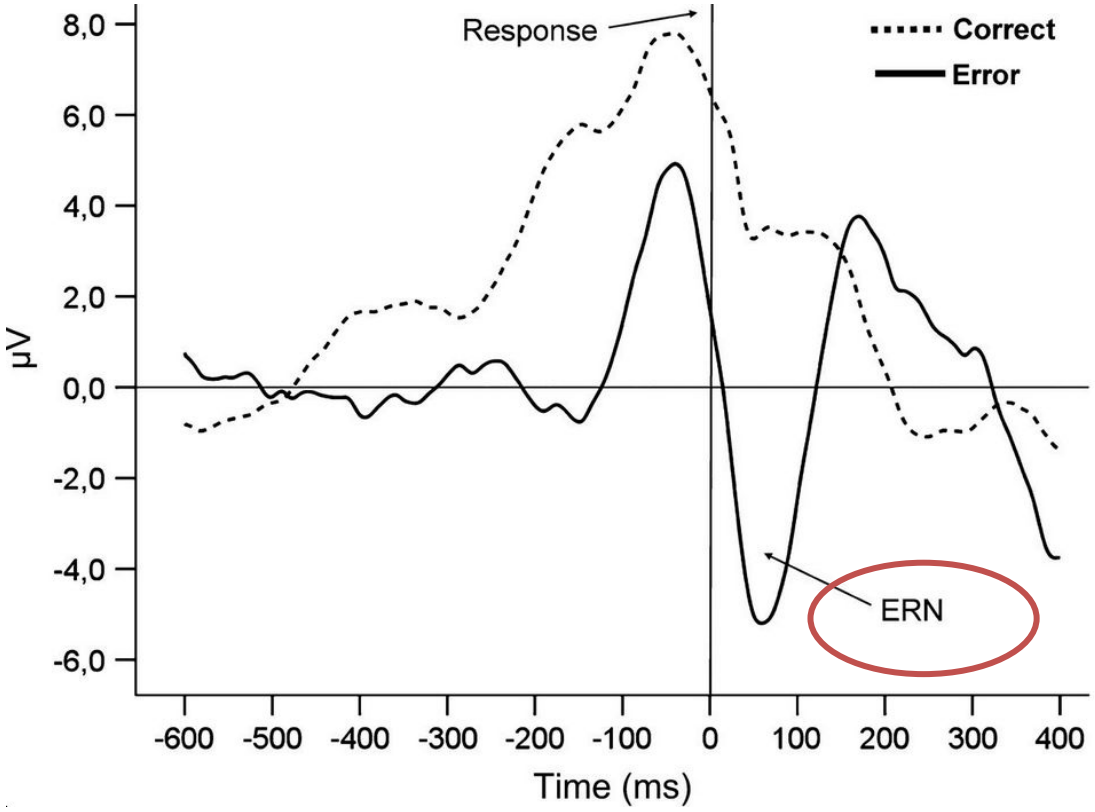
- Introduction
- Background and task
- Results from human psychophysics experiment
- **Conclusion and future direction**

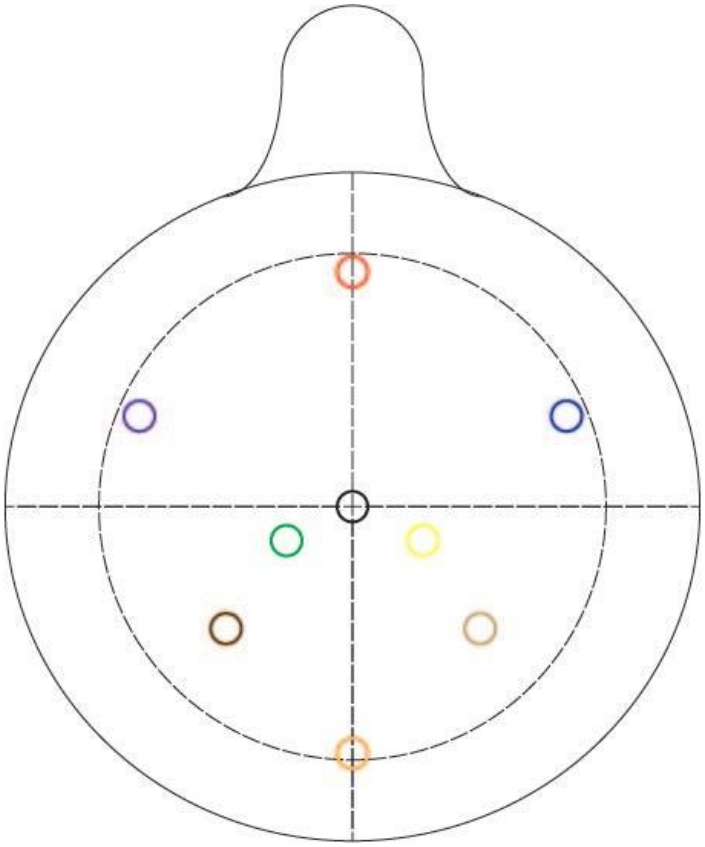
Next steps

- Preliminary results appear to be consistent with Stanford's experiment
- Looking at perceptual modification in patients with Parkinson's and ADHD

Looking at Event Related Potentials (ERPs) from EEG recordings for perceptual error elements

Error Related Negativity





Westlye, Walhovd, Bjørnerud, Due-Tønnessen, Fjell (2009)

Acknowledgements

CNBC/CMU & University of Pittsburgh

Sanjeev Khanna, Dr. Adam Snyder, Dr. Aaron Cecala, Dr. Matt Smith