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# Development of a Combined TMS/Eye-Tracking Study for Executive Process

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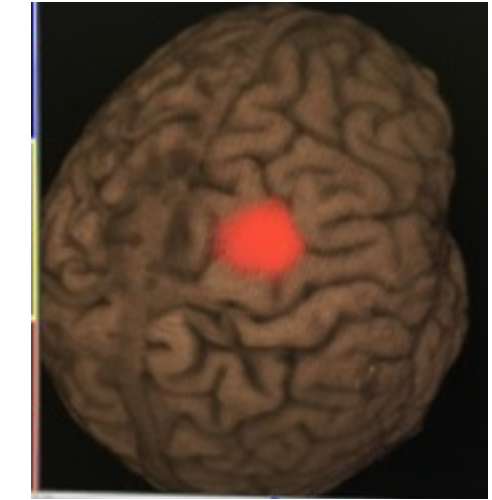
2017

# The executive control processes are independent functions distributed among prefrontal networks

Suppression of frontal eye field (FEF) responsible for antisaccades should:

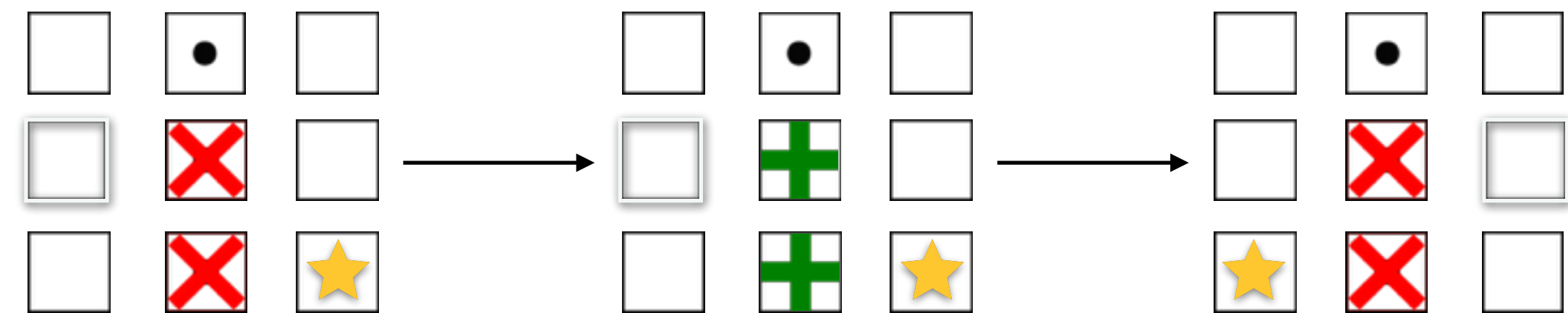
✓ increase reaction time for antisaccades

✓ not affect the execution of task switch between pro-saccades and anti-saccades



## Task:

Saccades and antisaccades with and without switching



## Methods:

- offline TMS over interesting area - FEF
- offline TMS over control area - Vertex
- no stimulation

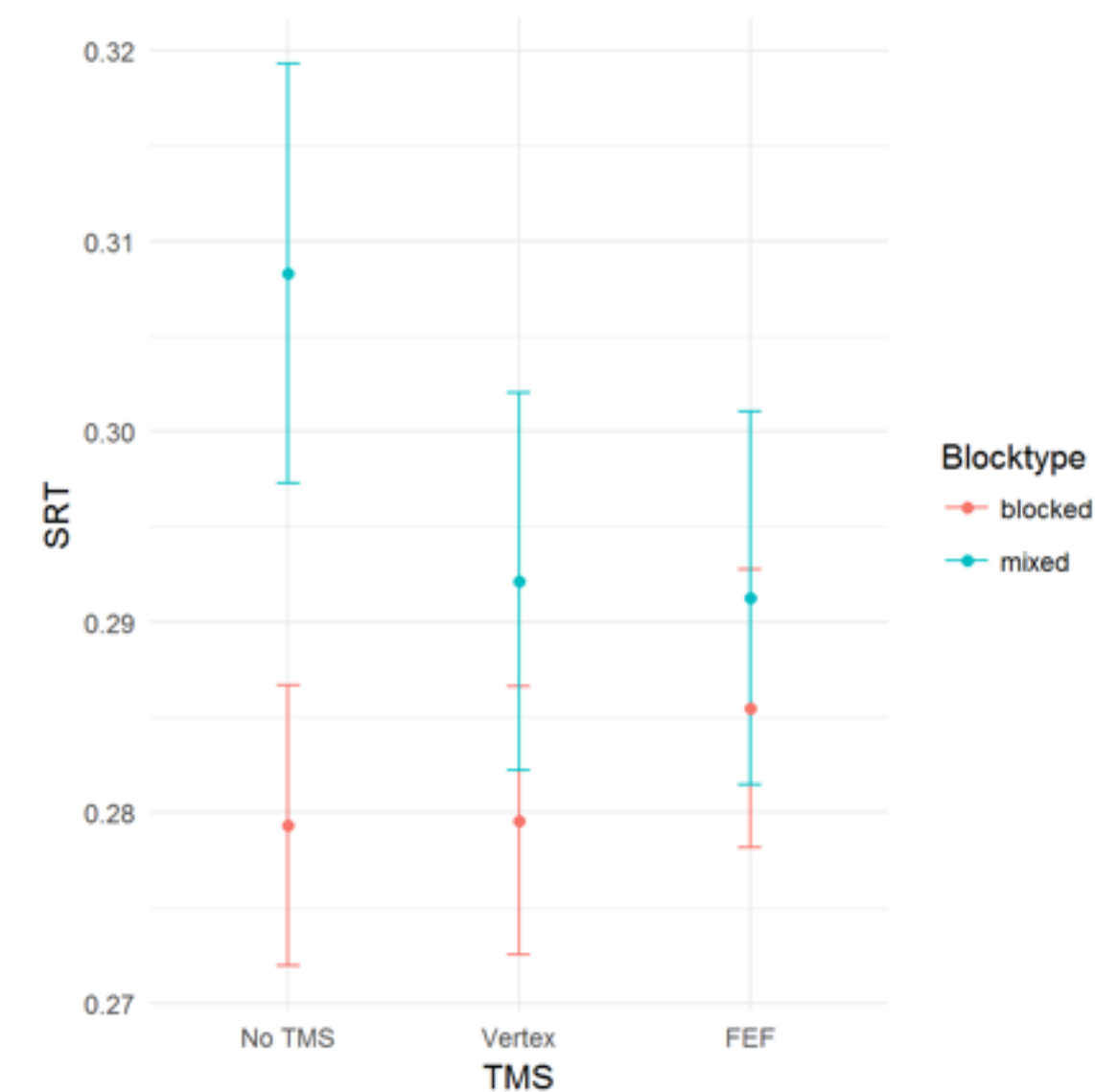
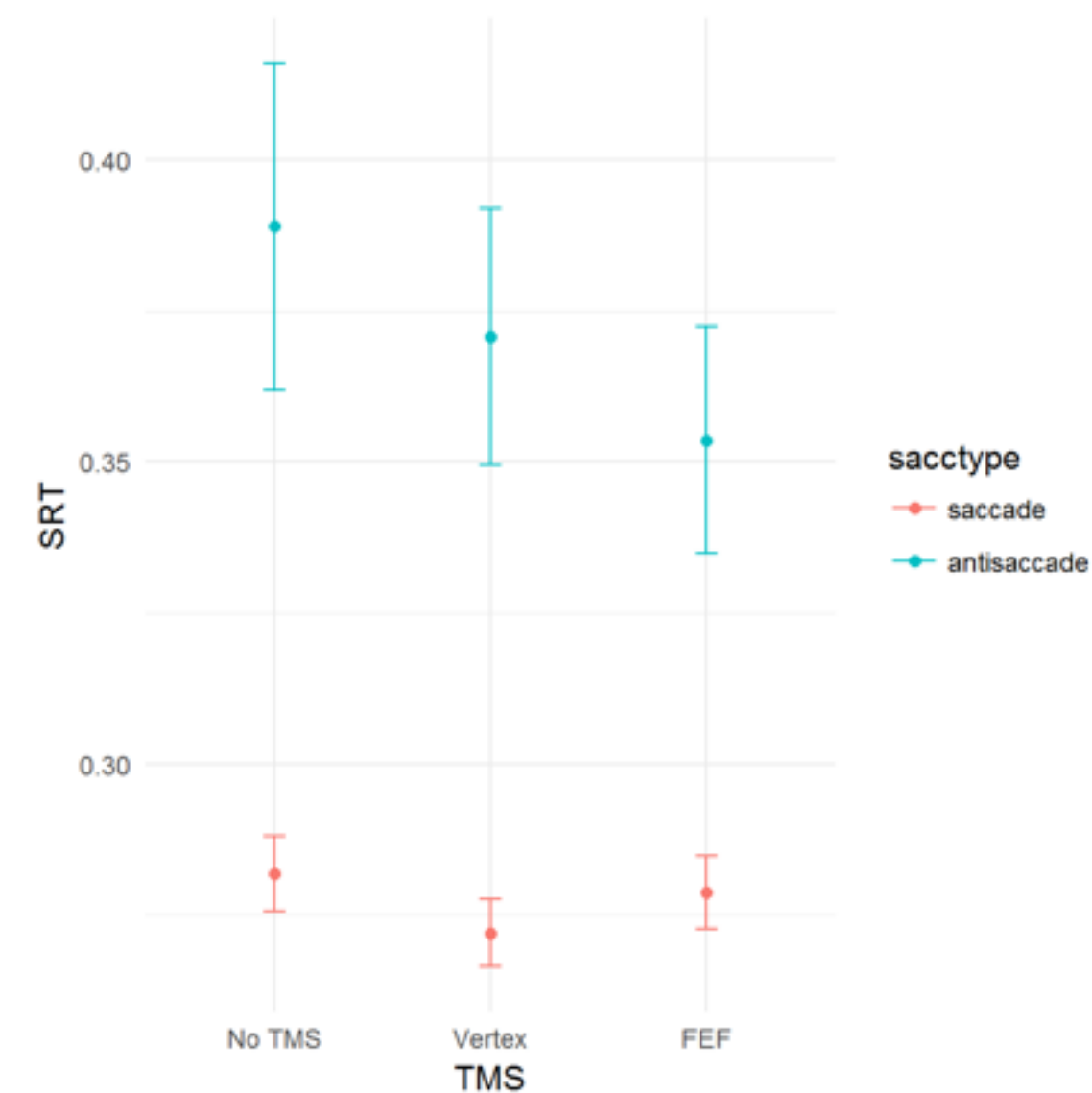
Recording RT and errors with Eyelink 1000+

200 trials each day:

- 100 switching trials
- 100 non-switching trials:
  - ▶ 50 saccades
  - ▶ 50 antisaccades

# Inhibition of FEF area interferes with cognitive control but not the way we predicted

- ➔ Antisaccades do not differ much in RT and error rates across TMS conditions and baseline condition.
- ➔ Task-switching shows significant differences. RT for antisaccades in both TMS conditions are much faster compared to no-TMS condition.



We see increase in RT for antisaccades but only in switching trials.  
Number of correct antisaccades is times less than correct saccades.  
No speed-accuracy trade-off. Error rates are the same across all conditions.