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Authors

Nrusimha, Ananya

Farnsworth, Ian

Chen, Linda

et al.

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Accuracy in Different Emotional States in Emotional Go No-Go Task with TD and ADHD

Ananya Nrusimha BA¹, Ian Farnsworth BS¹, Linda Chen BS¹, Catherine Fassbender PhD², Prerona Mukherjee PhD¹, Julie Schweitzer PhD¹

UC DAVIS
M.I.N.D. INSTITUTE

1. Department of Psychiatry and Behavioral Sciences, MIND Institute, UC Davis, CA, 2. Department of Psychology, Dublin City University

Introduction

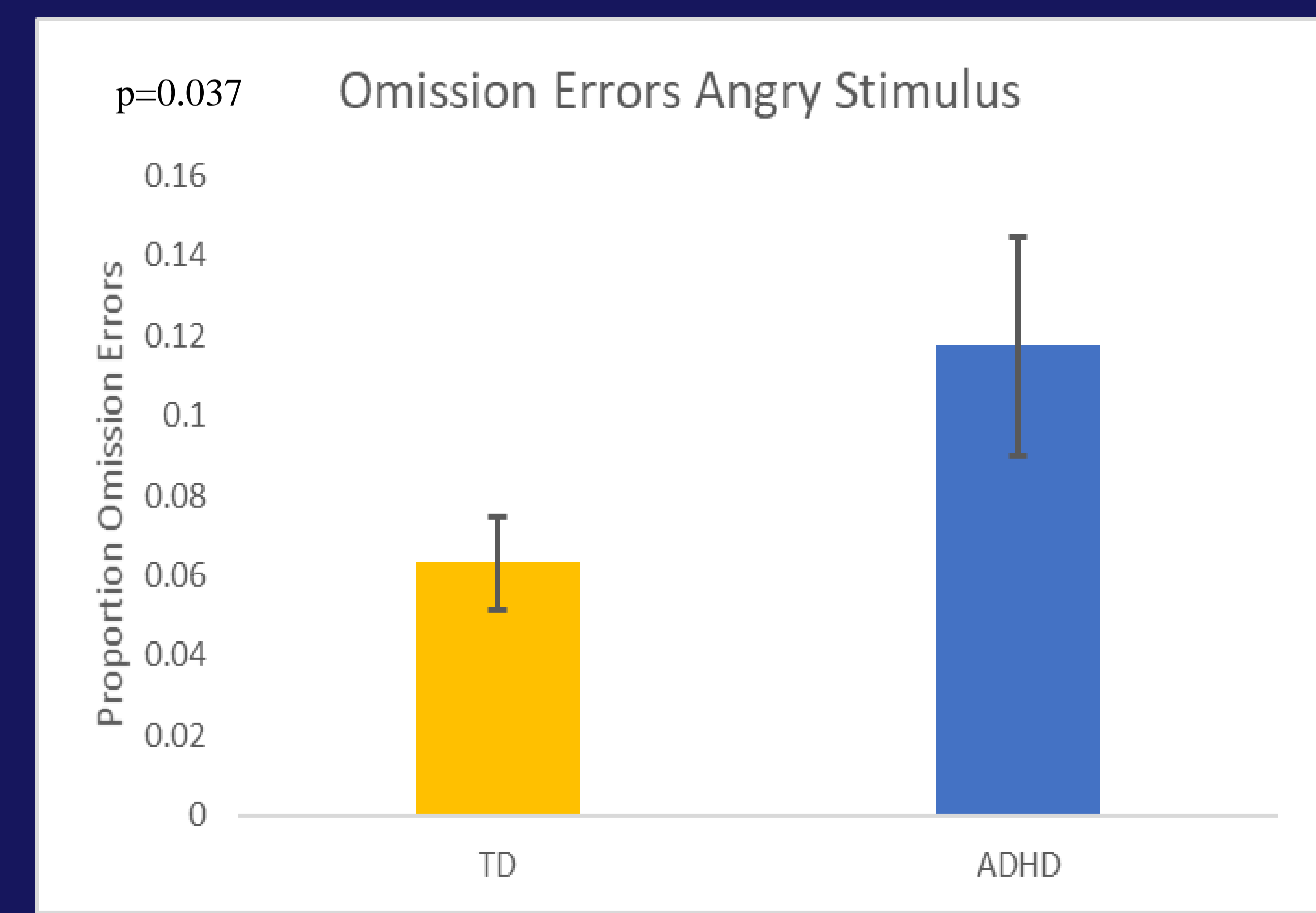
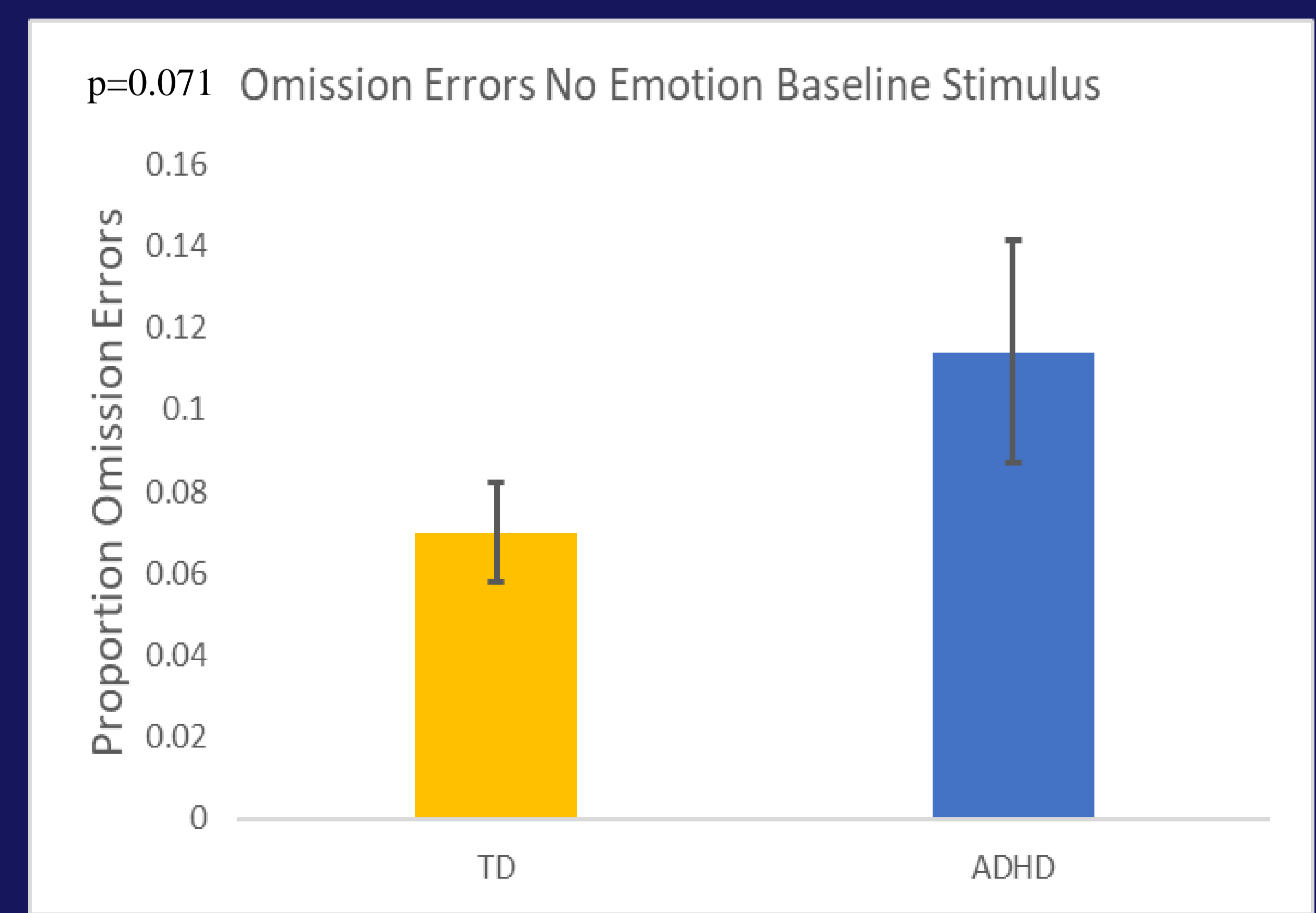
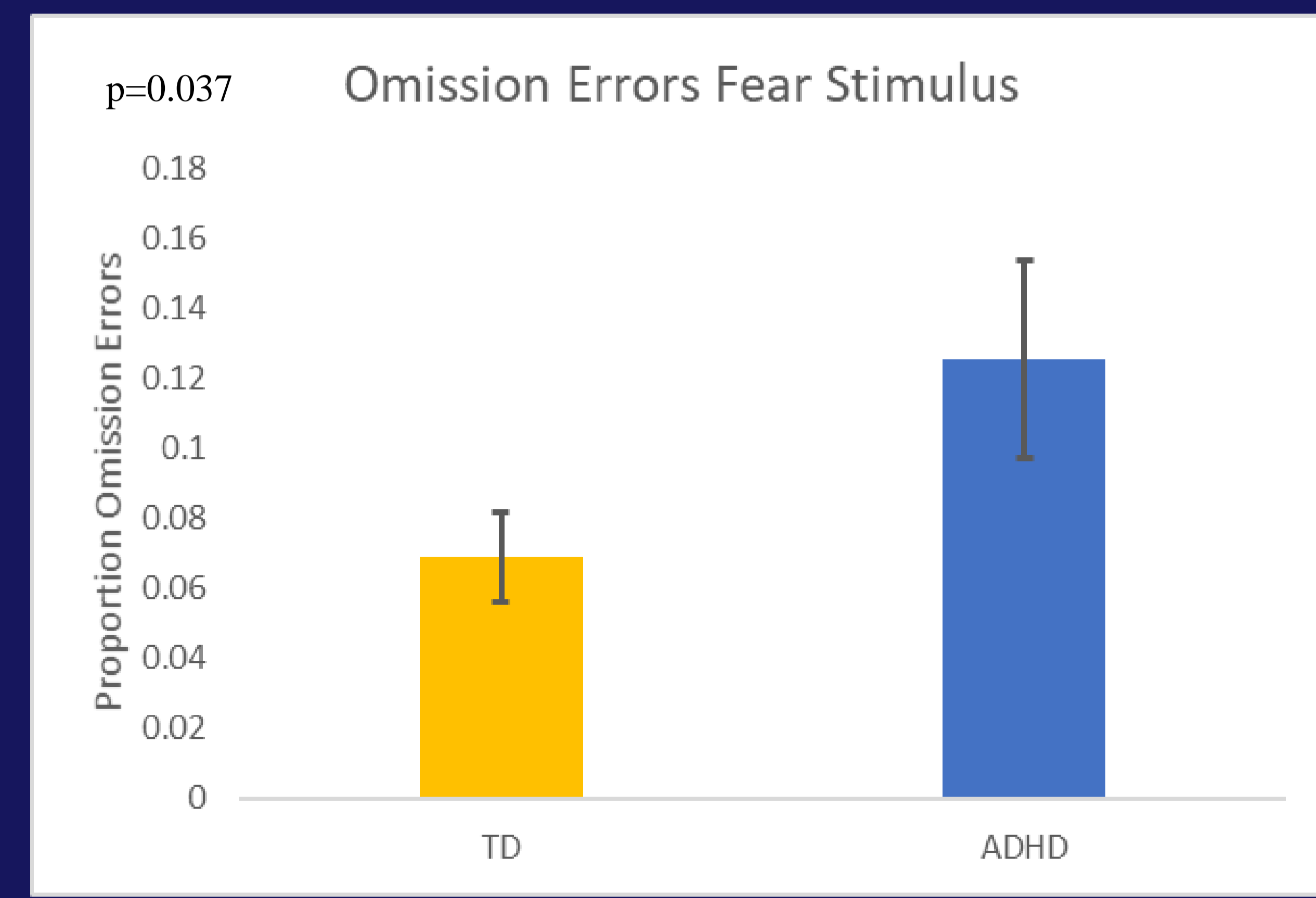
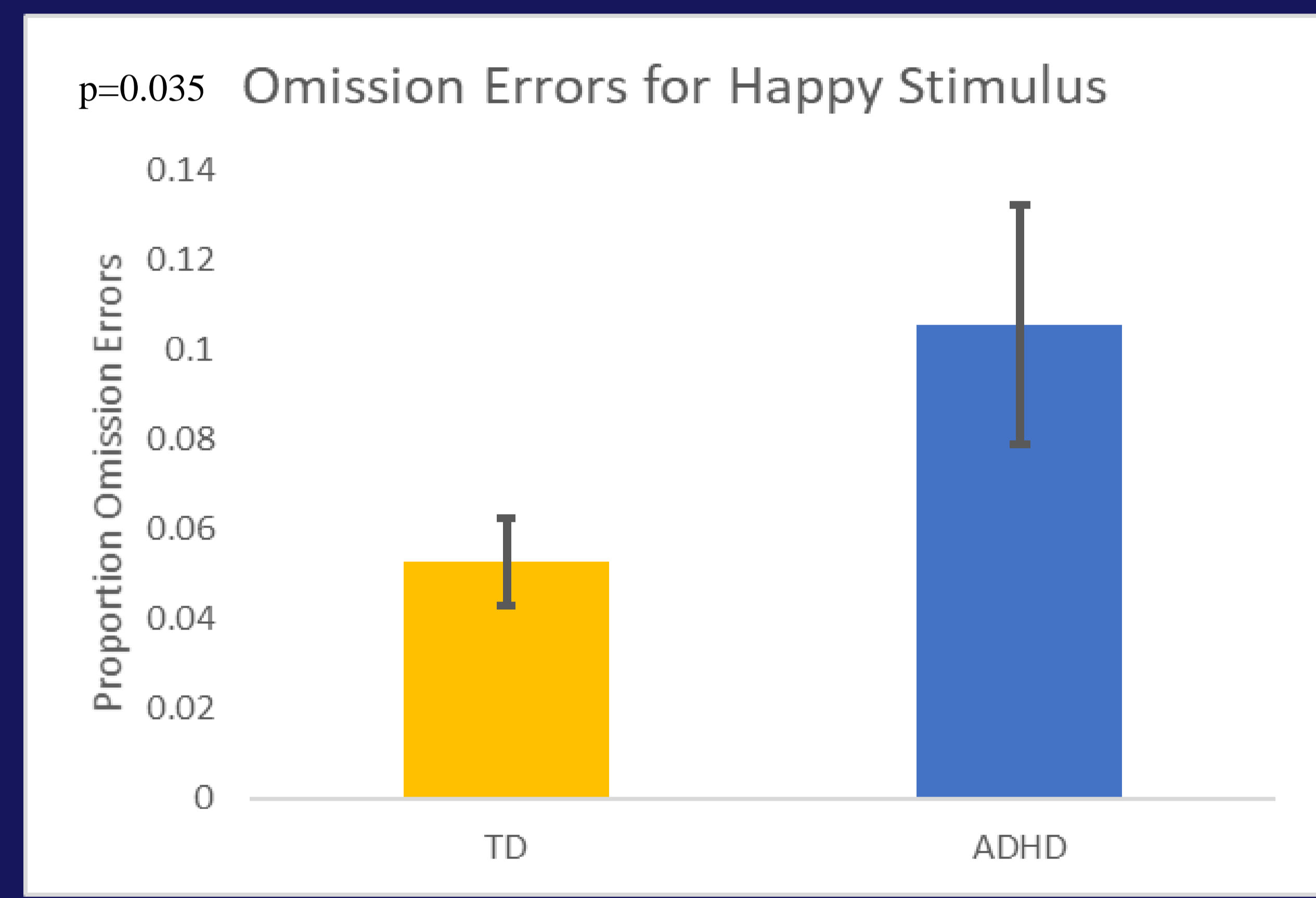
- People with ADHD experience emotional regulation deficits,¹ associated with greater functional impairment²
- We used an Emotional Go/No-Go Task (EGNG), a modified Go/No-Go paradigm with emotional faces (happy, fear, anger) used as distractors to compare the effect of emotion regulation on response inhibition in ADHD compared to a matched typically developing (TD) group³
- Previous work in ADHD-EGNG performance found that both ADHD and TD groups make significantly more omission errors (failing to respond during a go trial) when viewing fearful stimuli compared to neutral stimuli and that ADHD participants make significantly fewer commission errors (inappropriately responding during a no-go trial) when viewing fearful stimuli compared to neutral stimuli⁴
- However, previous work only looked at one or two types of emotional stimuli alongside a neutral stimuli. The present work compares ADHD and TD performance on an EGNG paradigm incorporating three emotions (happy, fear, & anger) alongside non-emotional baseline stimuli to determine if participants with ADHD experience differential emotional regulation when exposed to different types of positive and negative emotional stimuli
- We hypothesized ADHD participants would commit more omission and commission errors than TD participants especially on negative emotional stimuli

Methods

- Participants: 47 adolescents and young adults (AYA) with ADHD (mean age=23.49, 55.3% male, 72.3% white, 27.7% Hispanic); 51 typically developing (TD) controls (mean age=23.34, 56.9% male, 78.4% white, 17.6% Hispanic) drawn from the ongoing longitudinal Mapping Impulsivity's Neurodevelopmental Trajectory (MINT) study
- Participants completed the EGNG task while in an fMRI scanner.
- Two sample t-tests for unequal variance were used to analyze differences between TD and ADHD performance

Main Finding

ADHD participants made significantly more omission errors with negative (angry, fearful) and positive (happy) emotional stimuli compared to TD participants.



Conclusions

- Although omission errors were also elevated to non-emotional baseline stimuli no significant differences were found. No significant differences were observed in commission errors in any condition
- This suggests that the emotional dysregulation experienced by people with ADHD may be present across a variety of negative as well as positive emotional stimuli, as opposed to targeting specific emotions. However, the difference between the ADHD and TD groups in omission errors in the absence of a difference in commission errors perhaps suggests a problem with attentional engagement in the face of emotional stimuli rather than inhibitory control per se.
- Further work on this project will examine the relation between these emotional regulation deficits and resilience to psychopathology as well as neural correlates of these emotional regulation deficits
- This work highlights the need for interventions improving recognition of emotional states in others in ADHD. Further work will assess for evidence of neural differences in ADHD and if impaired recognition of emotional states is associated with and emotional regulation deficits in ADHD

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