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## Introduction

- Executive function (EF) is a collection of mental tools needed to regulate one's thoughts and actions. Three commonly studied sub-domains are inhibition, updating, and switching (Engelhardt et al., 2019; Friedman & Miyake, 2017; Karr et al., 2018).
- Early EF abilities have been shown to provide a protective effect against later mental distress in the face of adverse childhood experiences (e.g., Tsai et al., 2020).
- The COVID-19 pandemic is a global stress-inducing context for children and adolescents.
- The **goal** of this study was to assess whether pre-pandemic EF, or its growth over time, predicted COVID-era social, cognitive, and emotional experience.
- It has **hypothesized** that better COVID-19 functioning would be predicted by:
  - Better pre-pandemic EF abilities;
  - Higher pre-pandemic EF growth.

## Methods

### Participants

- Austin area community sample started in 2016
- 79 participants had at least one diagnosis (ADHD = 67)
- 69 females, 75 males, 3 non-binary, and 2 preferred not to say
- Two COVID-19 Timepoints
  - May to July of 2020 (n = 134).  
Mean age = 15.2, range = 9.45-22.1 years
  - January to March of 2021 (n = 106)  
Mean age = 15.7, range = 10.1-21.7 years

### Pre-Pandemic Executive Function Measures

(Engelhardt et al., 2015; Engelhardt et al., 2019)

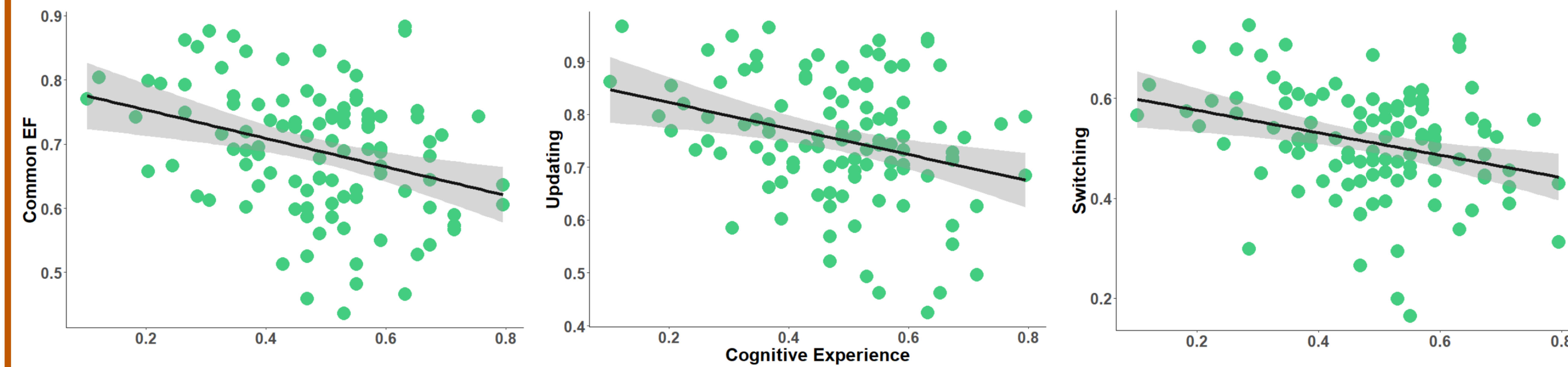
- Performance was assessed as accuracy. Common EF corresponded to a composed score of the three domains.

EF Domain	Tasks	Example
Inhibition	Stop Signal and Animal Stroop	
Updating	N-Back, Digital Span, and Symmetry Span	
Switching	Cognitive Flexibility, Local-Global, and Connections	

### COVID-19 Adolescent Symptom and Psychological Experience Questionnaire (CASPE) (Ladouceur, 2020)

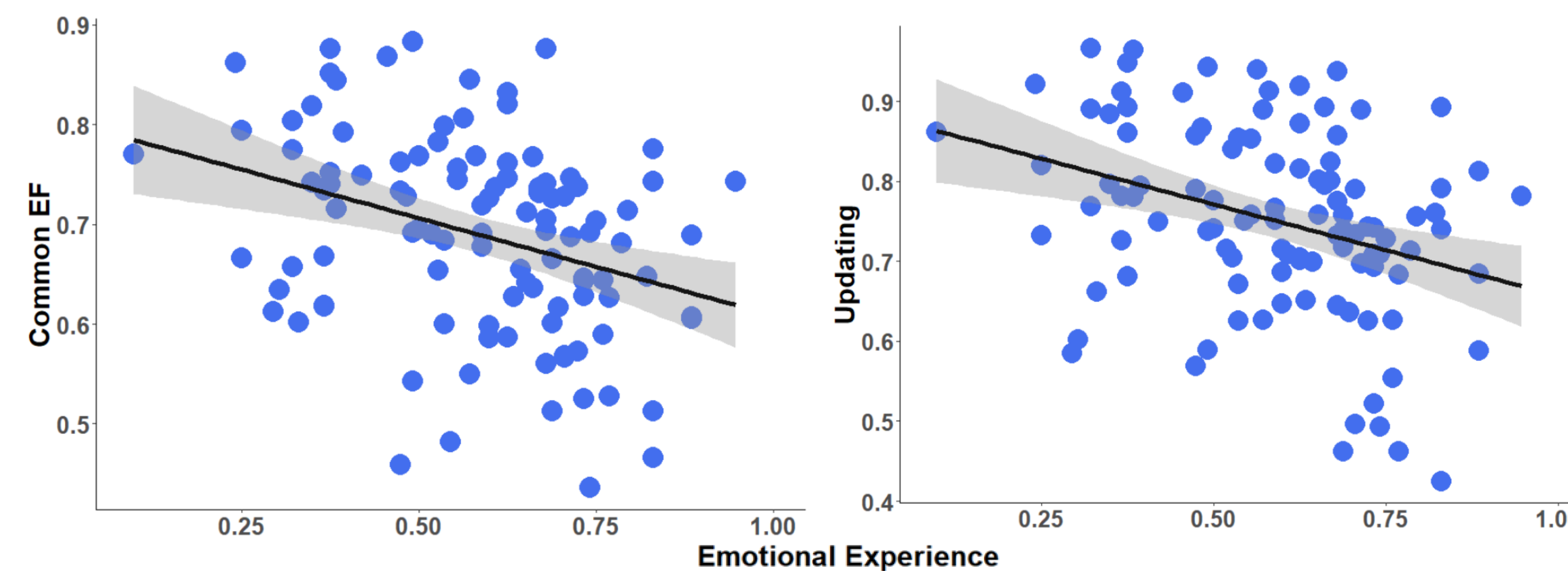
- Higher score referred to more positive experience.
- Variables: Social, Cognitive, and Emotional Experience

## Better EF abilities predicted worse mid-pandemic cognitive experience



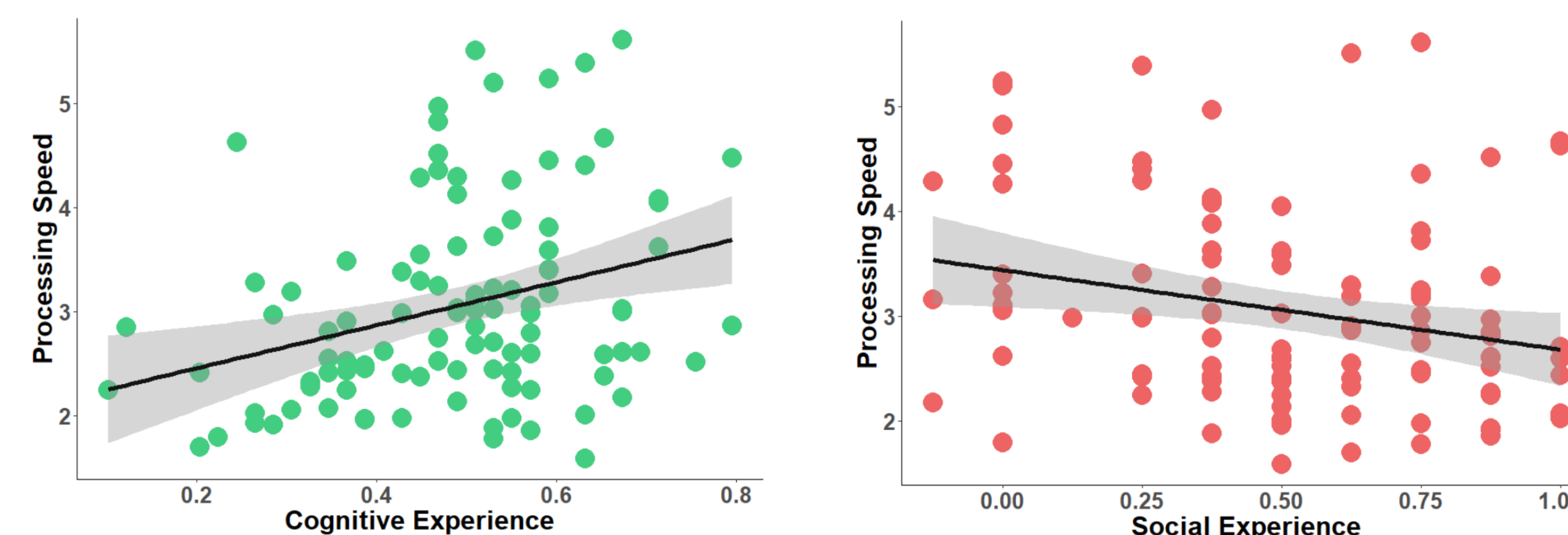
Multiple linear regressions (corrected for multiple comparisons) indicated that better pre-pandemic common EF ( $\beta = -0.48, p = 0.022$ ), updating ( $\beta = -0.33, p = 0.013$ ), and switching ( $\beta = -0.41, p = 0.049$ ) predicted worse mid-pandemic cognitive experience, controlling for age. No results were seen in early-pandemic.

## Better EF abilities predicted worse mid-pandemic emotional experience



Linear regressions showed that better pre-pandemic updating ( $\beta = -0.39, p = 0.013$ ) predicted worse mid-pandemic emotional experience, while common EF marginally predicted it ( $\beta = -0.43, p = 0.055$ ), corrected for multiple comparisons and controlling for age. No results were seen with early-pandemic data.

## Faster processing speed predicted worse mid-pandemic cognitive experience, and better social functioning



Better pre-pandemic processing speed predicted worse cognitive ( $\beta = 0.046, p = 0.023$ ) and better social ( $\beta = -0.097, p = 0.023$ ) mid-pandemic functioning, corrected for multiple comparisons and controlling for age. No results were seen with early-pandemic data.

## Pre-pandemic EF growth over time did not predict early- and mid-pandemic response

## Summary & Conclusions

- These findings suggest that more mature pre-pandemic cognitive abilities could allow for greater youth stress-induced rumination and worry, leading to worse mid-pandemic emotional and cognitive functioning (Alloy & Abramson, 2007; Perica et al., in press).
- Executive function did not predict youth early-pandemic experience, suggesting more similar responses across EF abilities when COVID-19 started.
- Pre-pandemic EF growth did not predict early- and mid-pandemic experience, indicating that level of cognitive abilities were more important than their amount of change preceding COVID-19.
- Better processing speed predicted better social experience, suggesting a protective role.

## Future Directions

- Assess youth sleep behaviors before COVID-19 as predictor of pandemic-era functioning.
- Compare pre- and post-pandemic EF abilities.
- Explore the role of EF abilities in other stress-inducing situations.

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