

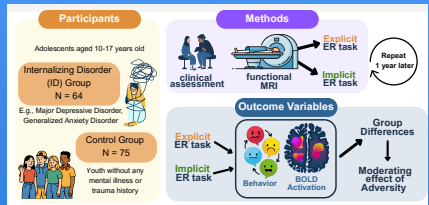
Differential adolescent neurodevelopment of emotion regulation across internalizing psychopathology and childhood adversity
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Background

- Psychiatric disorders amongst youth is a growing problem.
- Adolescence is the peak onset for many internalizing disorders.
- Growing evidence for differences between implicit and explicit emotion regulation.¹
 - **Implicit:** Automatic regulation of emotions, occurring without directed attention or intent.
 - **Explicit:** Effortful regulation of emotion, occurring with directed attention and intent.
- Most studies collapse down to "youth brain" rather than following developmental trajectory or use averages in certain age ranges.
- This study sought to elucidate development of implicit and explicit emotion regulation during youth and explore how IDs impact this process.



Methods

ER TASKS

- Implicit—Emotional N-Back task
- Explicit—Cognitive reappraisal Perspective task

ROIs

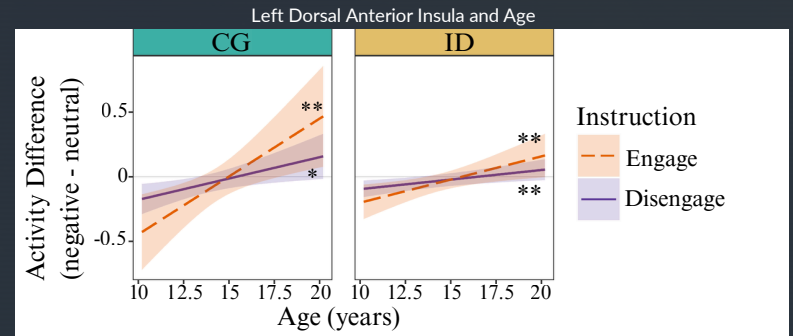
- Schaefer Atlas for cortical ROIs in frontal lobe
- Tian atlas for noncortical ROIs—amygdala and hippocampus
- 132 Total ROIs

Analysis

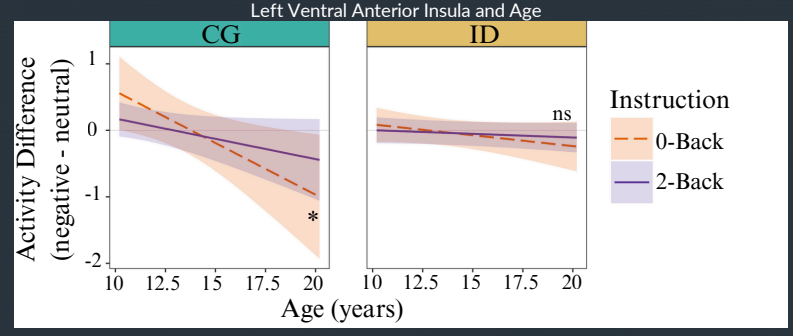
- Series of linear mixed-effects models predicting BOLD activation across ROIs
- Three-way interaction between group, age, and ER task

Internalizing Disorders disrupt developmental trajectory of emotion regulation in adolescence

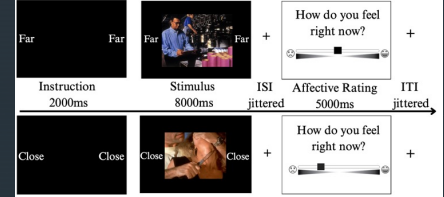
Explicit Emotion Regulation



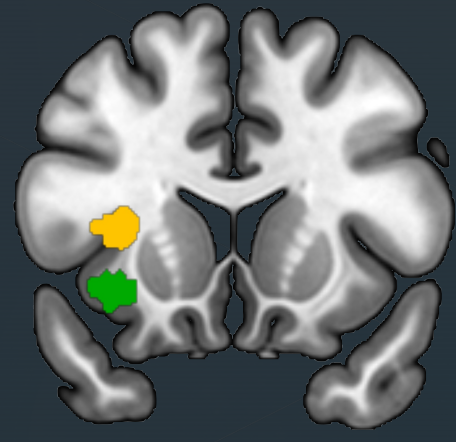
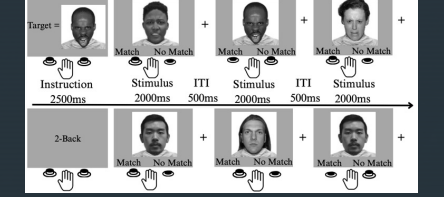
Implicit Emotion Regulation



Explicit Emotion Regulation Task



Implicit Emotion Regulation Task



Summary

- These findings support:
- Distinct developmental trajectories for implicit and explicit ER in the ventral and dorsal left anterior insula.
 - Valence discrimination as a transdiagnostic symptom of IDs.

Discussion

- Distinct Developmental Trajectories**
- Findings support evidence for related but distinct developmental process of implicit and explicit emotion regulation.
 - Also support growing evidence for a heterogeneous insular cortex

Valence Discrimination

- Findings fit into wider literature on valence discrimination, or the impaired differentiation between neutral and negative stimuli.
- Valence discrimination appears to be present in youth² and adults³ with IDs.
- TD youth exhibit increased Valence Discrimination with age
- ID youth exhibit no difference in Valence Discrimination with age

Clinical Relevance

- Ideal therapies may differ across adolescence
- Insula as a target for emotion dysregulation treatments

Sources

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2. Stuijzand, S., Creswell, C., Field, A. P., Pearcey, S., & Dodd, H. (2018). Research Review: Is anxiety associated with negative interpretations of ambiguity in children and adolescents? A systematic review and meta-analysis. *Journal of Child Psychology and Psychiatry*, 59(11), 1127-1142. <https://doi.org/10.1111/jcpp.12822>
3. Chen, J., Short, M., & Kemp, E. (2020). Interpretation bias in social anxiety: A systematic review and meta-analysis. *Journal of Affective Disorders*, 276, 1119-1130. <https://doi.org/10.1016/j.jad.2020.07.121>

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