Mapping Trajectories of Affective Development in Adolescence

Everett Mahaffy, M.Ed. & Nicole Giuliani, Ph.D.
Department of Special Education and Clinical Sciences, University of Oregon

Introduction

- Adolescence is characterized by rapid physical, neural, and social development (Guyer et al., 2016; Pfeifer & Allen, 2021)
- Emotion regulation (ER) development may follow a nonlinear trajectory during adolescence
  - Increase in maladaptive strategy use
  - Decrease in adaptive strategy use
- ER is linked to depression (Joorman & Stanton, 2016), rates of which spike in adolescence (Salk et al., 2017)
  - Higher rates for girls (Pfeifer & Allen, 2021)
- Other aspects of affective development have also demonstrated non-linear trajectories (Nook et al., 2018)

The proposed project aims to characterize trajectories of affective development in adolescent girls through a multi-modal assessment and longitudinal modeling

Parent Study Design

- Cohort-sequential design
- Adolescent girls age 10-13 at baseline (N_{T1}=174) participated in data collection at 3 time points over 3 years, each approximately 18 months apart

Measures

Affective Processes

- Emotion Regulation Questionnaire (ERQ)
  - Reappraisal use
  - Suppression use
- Positive and Negative Affect Schedule for Children (PANAS-C)
- Facial Action Coding Scheme (FACS)
  - Videos of participants (60s+) introducing themselves will be coded for positive/negative/neutral expressions using the FACS

Depression Symptoms

- Center for Epidemiological Studies-Depression Scale for Children (CES-DC)
- Kiddie Schedule for Affective Disorders and Schizophrenia for School Aged Children (6-18 Years) Present and Lifetime Version Interview (K-SADS-PL)

UNIVERSITY OF OREGON

insert qr code here

Funding for the parent study was provided by the National Institute of Mental Health (R01 MH107418).

Research Questions

1. What shape do trajectories of affective development take in adolescence?
2. Are dimensions of affective development predictive of later depression outcomes in adolescents?

Hypotheses

1. Dimensions of affective development will follow quadratic trajectories
   - *Positive* quadratic term for reappraisal, positive affect, and positive facial expressions
   - *Negative* quadratic term for suppression, negative affect, and negative/neutral facial expressions
2. Dimensions of affective development will be associated with depression outcomes
   - Reappraisal, positive affect, and positive facial expressions will be *negatively* associated
   - Suppression, negative affect, and negative/neutral facial expressions will be *positively* associated

Anticipated Results

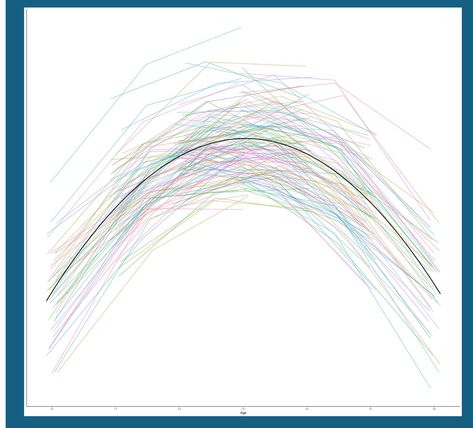

Fig 2. Inverse U-shaped growth for suppression, negative affect, and negative/neutral facial expressions

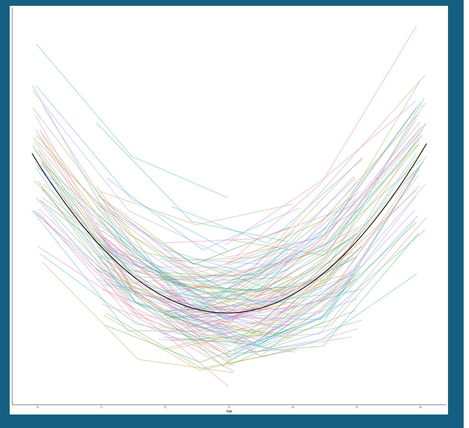

Fig 3. U-shaped growth for reappraisal, positive affect, and positive facial expressions

The anticipated results above were simulated using the lavaan package in R. A quadratic model was specified to visualize hypothesized nonlinear trajectories.

Planned Analyses

- Latent growth curve modeling (LGCM) will be used to characterize the shape of development for each dimensions of affective development
- Parallel process LGCM will be used to model emergence of depression symptoms alongside affective development

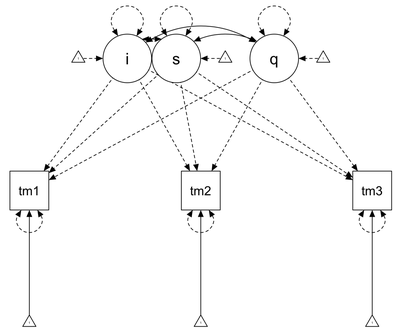

Fig 4. Hypothesized structural equation model of affective development

Discussion

Potential Implications

- Findings have potential to clarify the nature of trajectories of affective development across adolescence
- Results will inform the development of interventions by helping to ascertain optimal intervention timing

Limitations

- Measurement of ER is limited to self-report and only two strategies
- Future research should integrate additional methods such as ecological momentary assessment and psychophysiological measures

References & Acknowledgments

Guyer, A. E., Silk, J. S., & Nelson, E. E. (2016). The neurobiology of the emotional adolescent: From the inside out. *Neuroscience & Biobehavioral Reviews*, 70, 74–85.

Joormann, J., & Stanton, C. H. (2016). Examining emotion regulation in depression: A review and future directions. *Behaviour Research and Therapy*, 86, 35–49.

McCormick, E. M., Byrne, M. L., Flournoy, J. C., Mills, K. L., & Pfeifer, J. H. (2023). The Hitchhiker's guide to longitudinal models: A primer on model selection for repeated-measures methods. *Developmental Cognitive Neuroscience, 63*, 101281.

Nook, E. C., Sasse, S. F., Lambert, H. K., McLaughlin, K. A., & Somerville, L. H. (2018). The Nonlinear Development of Emotion Differentiation: Granular Emotional Experience Is Low in Adolescence. *Psychological Science*, *29*(8), 1346–1357.

Pfeifer, J. H., & Allen, N. B. (2021). Puberty initiates cascading relationships between neurodevelopmental, social, and internalizing processes across adolescence. *Biological Psychiatry*, *89*(2), 99–108.

Salk, R. H., Hyde, J. S., & Abramson, L. Y. (2017). Gender differences in depression in representative national samples: Meta-analyses of diagnoses and symptoms. *Psychological Bulletin*, *143*(8), 783–822.

The Change Lab (n.d.). Tutorials: Growth Modeling. Stanford University. https://thechangelab.stanford.edu/tutorials/growth-modeling/

Thank you to Dr. Jennifer Pfeifer, Dr. Michelle Byrne, Dr. Geovanna Rodriguez, Dr. Sara Schmitt, and Dr. Ethan McCormick.