

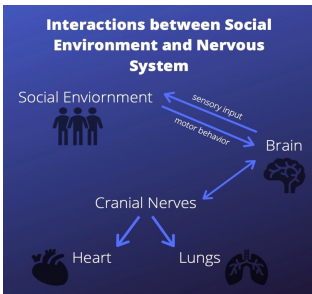


Parasympathetic Nervous System Functioning in Adolescents with Anxiety Disorders

Maggie Modico, Selin Zeytinoglu, Nathan Fox
Child Development Lab, University of Maryland, College Park

Introduction

- According to the DSM-5, anxiety disorders share features of excessive fear and related behavioral disturbances.
- Given the prevalence of anxiety during adolescence, it is important to understand biomarkers that may be associated with anxiety during this time.
- Research on the role of autonomic regulation in the development of psychopathology has shown relations between respiratory sinus arrhythmia (RSA) and anxiety.
 - RSA is a measure of heart rate variability.
- RSA serves as an indicator of adaptability, where low levels of RSA demonstrate less flexible responding.
- Thus, we hypothesized that participants in anxiety diagnosed groups will have lower RSA values at baseline and will have lower task RSA.



Participants

- 92 15-year-olds were assessed.
- 33 participants were diagnosed with at least one anxiety disorder. 59 participants had no diagnosis of mental disorders.

Methods

- *Electrocardiogram (EKG) signals were recorded during each task and RSA was computed using MindWare HRV software.*
- *Participants were given a KSADS assessment by a mental health clinician.*

Baseline

Task: Participants would sit still with their feet flat on the floor, look at a spot on the wall and not speak for 5 minutes.

Get to Know You

Task: Unstructured social interaction, where an age and sex matched unfamiliar peer was placed in the room with the participant and left alone for 5 minutes.

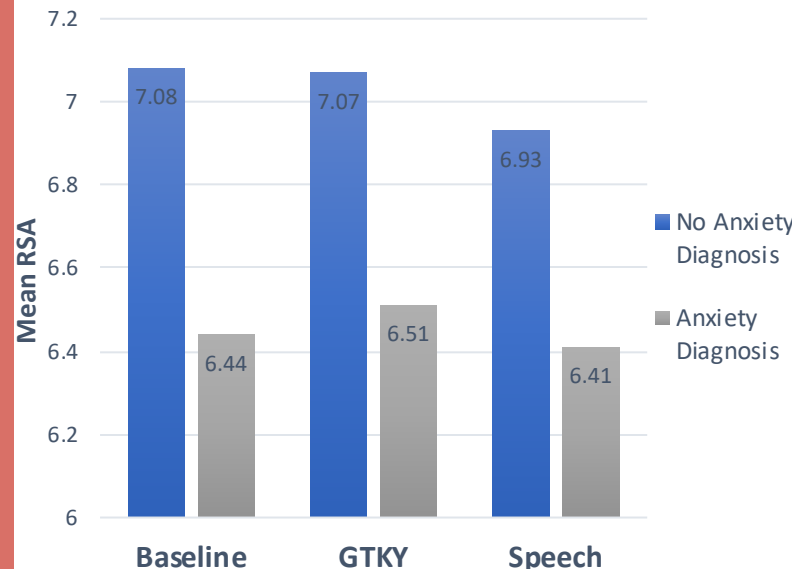
Speech Task

Task: Participant was required to give a 5-minute speech to both the unfamiliar peer and the experimenter. They only had 3-minutes to prepare this speech.

Results & Findings

- Independent t-tests were used to compare the RSA values.
- *The participants with an anxiety disorder vs the participants with no clinical diagnosis demonstrated significantly lower baseline RSA, $t = 2.97, p = .004$.*
- *RSA during GTKY was also significantly lower, $t = 2.83, p = .006$, for participants with an anxiety disorder.*
- *Speech task RSA was also different across groups, $t = 2.62, p = .01$, with participants with anxiety disorders showing lower RSA.*

Results



Discussion

- Our results showed that individuals diagnosed with anxiety have lower RSA across both baseline and social tasks than those without anxiety.
- One explanation for these results is that there is a physiological difference in adolescents with anxiety.
- Also, the lab may be perceived as a stressful situation for those in the anxiety group, which makes their baseline RSA go down.
- The role of RSA in anxiety should be examined as it may serve as a biomarker used for treatment and intervention.
- Future studies should look at group differences in sympathetic nervous system functioning.

Acknowledgements

This research was conducted by the Child Development Lab, at the University of Maryland, College Park. We are grateful to the participating families for their time and to the students and staff at the Child Development Lab.

This poster was presented at the University of Maryland Virtual Undergraduate Research Day on April 27th, 2020. For more information, please contact Maggie Modico at mmodico24@gmail.com.