

Investigating the Relationship Between Behavioral Inhibition and Responses to Emotional Stimuli in Infancy: an ERP Study

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Background:

- **BI** is a stable temperamental trait wherein people are **hypervigilant/fearful of novelty**
- Early correlate of anxiety (40% diagnosed)
- Shared brain regions associated with anxiety and behavioral inhibition including error monitoring, hyperactive amygdala, ventral attention network, disengagement networks
- utilizing **ERP** to understand responses to emotion in nonverbal populations → adult ERP components

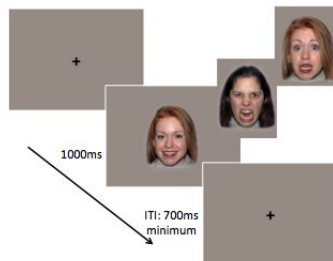
Hypotheses and Aims:

- Question: do BI children have a different reaction to fear or negative emotional faces?
- Stronger N290 response to fearful faces will correlate with greater BI**
- Better understanding of infant ERP components and the ‘average’ response to different stimuli (P400 and Nc included)

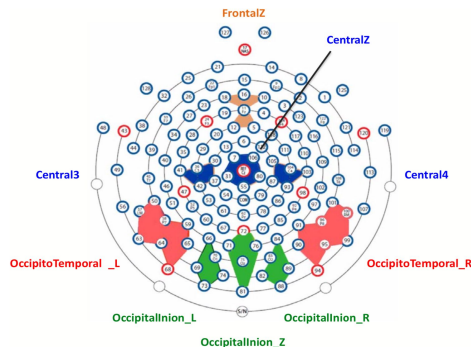
Data and Methods:

- Emotion Project dataset → 51 subjects
- ERP sampling in infancy and BI at age 3

Infant ERP Task



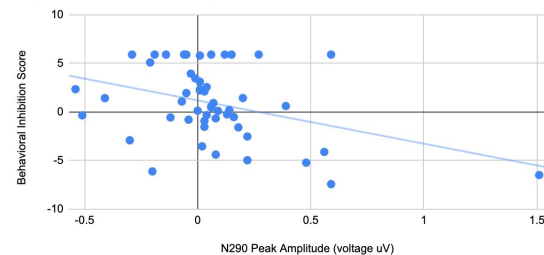
Total of 150 trials: 50 x 3 emotional conditions (happy, angry, fearful)
Static images of females (5 different models)



Key Results:

Behavioral Inhibition Composite Score by N290 Peak Amplitude for Fearful Faces

Right Occipital ROI, Fear vs. Happy Normalized Difference



Discussion and Future Directions:

- **Role of outliers in the data; negative correlation of N290 amplitude and BI**
- results showed peak amplitudes to fear and angry on average → infant bias toward fear versus novelty
- Limitations of ERP w/r/t subcortical structures
- Data indicates adults with anxiety have difficulty disengaging from negative stimuli
- How will these children continue to develop? Will any be diagnosed with anxiety?