

A Novel Methodological Approach of Studying Heart Rate Variability during Still Face Paradigm in Infants of ENRICH Prospective Birth Cohort Study.

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Introduction: Prevalence of Fetal Alcohol Spectrum Disorders (FASD) among school age children in the U.S. might be as high as 1-5%. Diagnosis of FASD is often delayed as higher-order cognitive deficits manifest later. The inability to regulate autonomic activity during social interactions is believed to contribute to social and emotional dysregulation in children. Heart rate variability (HRV) consists of changes in the time intervals between consecutive heartbeats called interbeat intervals. It is regulated by Autonomic Nervous System through synergistic activity of the sympathetic and parasympathetic branches. Still Face Paradigm (SFP) is used as an experimental social stressor paradigm to assess mother-infant interaction, infant self-regulation and emotional dysregulation. Autonomic dysregulation is a risk factor for future dysregulation of stress reactivity. Self-regulation is one of the key behavioral deficits in children diagnosed with FASD. HRV can be a strong predictor of Self-regulation.

Objective: Our goal was to evaluate changes in HRV in response to SFP as a social stressor.

Methods: Participants were 86 mother-infant dyads, recruited prenatally and completed the HRV data collection along with SFP when infants were 6 /9 months of age. EKG and respiratory recordings were collected during five 2-minute SFP episodes (three play and two Still face episodes) preceded by one baseline episode for one minute. Based on prospective repeated assessment of maternal alcohol use in pregnancy the infants were divided into two groups: 1) healthy control and 2) prenatal alcohol exposed. The time and frequency domain indices of HRV were calculated from continuous EKG recordings from each infant group.

Results/Conclusion: To date we have successfully collected 74 infant's HRV data. First two episodes of SFP had greater success rate of HRV collection. Significant differences in HRV among SFP episodes were identified. HRV may be used as a specific marker for Self-regulation in infants.