



PRENATAL MATERNAL CHRONIC CORTISOL CONCENTRATIONS AND THE SYMPATHETIC AND PARASYMPATHETIC NERVOUS SYSTEM ACTIVATION AS PREDICTORS OF NEWBORN NEUROBEHAVIOR

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Stress exposure in the early years of life is a public health concern (Provencal & Binder, 2015). More specifically, previous research has emphasized the importance of understanding the impact of stress exposure on an infant (Suurland, van der Heijden, Smalling, & Huijbregts, 2017). However, there is limited research linking *in utero* stress exposure to newborn neurobehavior. We examined whether newborn neurobehavior was associated with prenatal maternal physiological signs of stress. Pregnant women ($N=162$) during their third trimester were invited to the child adaptation and neurodevelopment (CAN) laboratory to acquire hair cortisol concentrations, baseline heart rate (HR), baseline respiratory sinus arrhythmia (RSA), and baseline electrodermal activity (EDA) parameters: skin conductance response (SCR) and skin conductance levels (SCL). Newborns between twenty-four hours and two months of age were assessed using the NICU Network Neurobehavioral Scale (NNNS) which measures the dimensions of attention and arousal. The NNNS was conducted on newborns of mothers who had participated in the prenatal portion of the study. We conducted correlations and ordinary least squares regression analyses. Maternal hair cortisol levels were not significantly associated with newborn attention ($r= -.026, p=.77$) and arousal ($r= -.077, p= .382$). Baseline HR was not significantly associated with attention ($r= .012, p=.879$) and arousal ($r= -.002, p=.979$). Baseline RSA was also not significantly associated with attention ($r= -.106, p=.192$) and arousal ($r= .071, p= .381$). Lastly, baseline SCR and SCL were not significantly associated to newborn attention ($r=-.094, p=.247$; $r=-.013, p=.874$) and arousal ($r=-.077, p=.342$; $r=-.12, p=.138$), respectively. These results suggest that maternal psychophysiology at baseline may not be a risk factor in postnatal neurobehavioral development. The notion that stress reactivity, or how we respond to stress, affects postnatal infant well-being regardless of baseline parameters is confirmed in this study.

References

- Provencal, N., & Binder, E. B. (2015). The effects of early life stress on the epigenome: From the womb to adulthood and even before. *Experimental Neurology*, 268, 10-20.
- Suurland, J., van der Heijden, K., Smaling, H., & Huijbregts, S. (2017). Infant autonomic nervous system response and recovery: Associations with maternal risk status and infant emotional regulation. *Developmental and Psychopathology*, 29(3), 759-773.