

Differences in the temperament dimensions of reactivity and regulation are related to distinct physiological profiles and have been used to identify those children who are at risk for psychopathology. These same temperament dimensions are related differentially to poor sleep in infants. Although previous research examining sleep and emotion regulation supports a link between these constructs, no studies have examined sleep, temperament, and the physiology of infants under mildly stressful events. As infants develop, the two most common sleep disturbances parents describe are sleep onset difficulties and signaled night awakenings. These problems are believed to be conceptually distinct, to have different developmental timetables, and to be associated with different physiological and temperament profiles. This report examines data from thirty-four 9-month old infants who were studied during a follow-up visit as part of a larger longitudinal study of the transition to parenting. Mothers completed the Infant Behavior Questionnaire-Revised (IBQ-R) and items reflecting the infant's regular sleep patterns were used to identify infants with sleep difficulties (Sleep Difficulties Index-included night waking and sleep onset items). Infants were then grouped according to type of sleep difficulties (night waking difficulties only - NW, sleep onset difficulties only - SO, both night waking and sleep onset difficulties - COMBINED, and no difficulties). Both mother and infant physiological measures were recorded during a 14-minute home observation that included six epochs: resting baseline, familiar and unfamiliar toy play, a mildly stressful separation and reunion, followed by a recovery period. Heart period data, which were then converted to heart rate (hr), were recorded using the Mini-Logger 2000 data acquisition system. Mothers were primigravida, predominantly Caucasian (76%), mean age = 32.6 years, educated (88% > college degree), and all were married. Approximately half of the infants had no regular sleep difficulties (n = 18); 24% (n = 8) had SO, 6% (n = 2) had NW, and 18% (n = 6) were identified as COMBINED. Because the small sample precluded examining the groups separately, we collapsed the NW infants into the COMBINED group for further analysis. The Sleep Difficulties Index (higher scores reflecting greater difficulty) was positively correlated with the Activity Level subscale ($r=.36$, $p=.04$) on the IBQ-R and negatively correlated with the Low Intensity Pleasure ($r=-.42$, $p=.02$) and Soothability ($r=-.45$, $p<.01$) subscales. Analyses of the physiological variables by sleep difficulty type showed that the COMBINED group's hr was consistently higher across epochs (especially during familiar toy play) and demonstrated a sharper decline to baseline levels as assessed during the recovery epoch compared to the other groups (see figure). In contrast, the SO infants tended to have a lower hr in the beginning but demonstrated a higher hr during the reunion and recovery epochs. However, these differences did not reach significance in repeated measures ANOVA, which may be due to the small sample size. These preliminary data provide a starting point to better understand this age as a developmental shift in both sleep and emotion regulation and to examine the role autonomic functioning may have in both types of regulation.

Physiological changes by type of sleep difficulty in 9-month-old infants during a home observation

