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0184

TOO JITTERY TO SLEEP? TEMPORAL ASSOCIATIONS OF ACTIGRAPHIC SLEEP AND CAFFEINE IN ADOLESCENTS

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Introduction: The majority of adolescents report consuming a caffeinated beverage on a typical day, which has been linked to poor sleep health in cross-sectional studies. However, it is unknown whether poor sleep predicts caffeine consumption, and/or whether caffeine consumption predicts poor sleep, particularly when sleep is measured objectively. The current study examined within- and between-person associations of actigraphic sleep dimensions with caffeinated beverage consumption in adolescents.

Methods: Data were collected from a micro-longitudinal substudy of the age 15 wave of the Fragile Families and Child Wellbeing Study (n=589). Adolescents wore a wrist-actigraphy device and completed daily surveys for approximately one week (mean=5.6 days). Daily surveys assessed sleep quality and caffeinated beverage consumption (0=no caffeine, 1=any caffeine). Separate mixed models assessed whether actigraphy-measured sleep duration, timing, maintenance efficiency, and subjective quality predicted next-day caffeinated beverage consumption within and between adolescents. Variability of sleep duration and timing (SD), sleep regularity index, and social jetlag were tested as additional between-person predictors. Lagged models tested whether daily caffeinated beverage consumption predicted sleep that night (n=458; mean=5.2 days).

Results: Between-person results showed that adolescents who had more variable actigraphic sleep duration (OR=1.21, p=.042) and sleep midpoint (OR=1.27, p=.045) had greater odds of consuming caffeinated beverages compared to others. Within-person results showed that on days when adolescents consumed ≥ 1 caffeinated beverage, they had later sleep onset by (b \pm SEM) 17 \pm 6 mins (p=.003) that night and later wake time by 19 \pm 7 mins (p=.011) the next morning, compared to days when they did not consume caffeine. Sleep duration, timing, maintenance efficiency, and subjective quality did not predict next-day caffeinated beverage consumption (all p>.10).

Conclusion: Greater variability in sleep duration and timing and later sleep timing are risk factors for poor emotional and cardiometabolic health. Curbing caffeinated beverage consumption may aid in the maintenance of regular sleep schedules and advance sleep timing in adolescents, potentially improving physical and psychological health.

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0185

N2 SLEEP SPINDLE ACTIVITY IS ASSOCIATED WITH BETTER NEXT-DAY EMOTION REGULATION IN HEALTHY CHILDREN

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Introduction: Children's day-to-day mental health is dependent on adequate quantity and quality of sleep, but far less is known

about the microstructural sleep features that support emotional functioning in children. NREM sleep spindles (rhythmic EEG oscillations between 10 and 15 Hz) are closely linked with intellectual abilities and cognitive processing, and have also been shown to relate to children's emotional behavior, both concurrently and longitudinally. For example, socially-anxious youth showed reduction in sleep spindle activity compared to healthy controls, which correlated negatively with subjective reports of arousal in response to negative images (Wilhelm et al., 2017). In younger children, greater NREM 2 spindle density was associated with greater prosocial behavior concurrently and fewer behavioral and social problems one year later (Mikoteit et al., 2012; 2013). However, studies in pediatric samples are limited overall and haven't examined spindles in relation to objective measures of emotion regulation.

Methods: We examined relationships between spindle activity during NREM stage 2 (N2) and next-day subjective and objective emotional responses among N=26 healthy children, 7-11 years old. Children completed a full-night of at-home PSG monitoring (10hr sleep opportunity) followed by two in-lab tasks. In task 1, children rated arousal/reactivity in response to negative images from the International Affective Pictures System (IAPS). In task 2, respiratory sinus arrhythmia (RSA) was measured while children were directed to suppress all facial expressions of emotion (i.e., regulate emotional responses to negative content) while watching negatively-valenced movie clips. All analyses controlled for total sleep time on PSG night and RSA analyses controlled for a resting baseline period.

Results: Greater C3 spindle count (r = .51, p < .05) and density (r = .53, p < .05) were significantly associated with less child-reported arousal towards negative images. Greater F3 peak spindle frequency was positively associated with higher RSA during negative movies (r = .54, p < .05), suggesting better regulatory control of emotional responses to correspond with greater spindle peak frequency.

Conclusion: Together with previous data, our findings suggest that sleep spindle activity may partially reflect children's capacity to regulate emotional responses in relation to stressful situations, thereby potentially reducing risk of mental health problems.

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0186

POST-BIRTH FEEDING EXPERIENCES ARE ASSOCIATED WITH ACTIGRAPHY-ASSESSED SLEEP PATTERNS AMONG NEWBORNS

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Introduction: Exclusively breastfed (EBF) newborns wake more often at night than partially breastfed, or exclusively formula fed (EFF) newborns. Contextual factors during the first weeks of life related to these associations are understudied. We examined relationships among post-birth experiences, objectively-estimated sleep-wake patterns, and feeding practices through three weeks post-delivery.

Methods: English or Spanish speaking mothers (n=20) and their full-term (≥ 37 wk), singleton infants were recruited from Phoenix, Arizona. Mothers were 32.7 \pm 5.1y, 30.0% identified as Hispanic, 20.0% with < high school degree, and 15.0% were enrolled in the federal Women, Infants, and Children program. Infants were born normal weight (2500-4000g) and without major complications. At three weeks post-delivery, infants wore a Micro Motionlogger (Ambulatory Monitoring Inc.) on their left ankle for five 24hr periods at three weeks of age. Mothers completed an accompanying