

0241

N3 SLOW WAVE DURATION CORRELATES WITH NEXT-DAY SAVORING BEHAVIOR IN PRE-PUBERTAL CHILDREN

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Introduction: Recent meta-analysis (Tomaso et al., 2020) indicates sleep loss to have more profound adverse effects on positive than negative emotion, and experimental studies in adults suggest disruption of slow wave sleep (SWS) in particular mediates these effects (Finan et al., 2015; 2017). In pre-pubertal children, greater SWS has been shown to protect against next day negative affect (Palmer & Alfano, 2017) as well as the development of depression years later (Silk et al., 2007); however specific emotion-based mechanisms underlying these effects have rarely been explored. Pre-pubertal years especially represent a critical developmental window for probing these relationships due to dramatic decreases in SWS that occur during pubertal transition (Carskadon & Dement, 2011).

Methods: We detected slow waves (0.5 – 4 Hz) during N3 sleep using an automated algorithm among N=18 pre-pubertal children (7-11 years) during a night of normal sleep in relation to next-day savoring; a positive emotion regulation strategy that includes using thoughts and actions to increase the intensity, duration, and appreciation of positive experiences and emotions. Healthy children without any psychiatric disorders completed a night of at-home PSG monitoring (10 hr sleep opportunity). The next morning at 11:00, children returned to the clinic for an in-lab emotional assessment. Before and during the assessment, children were told/reminded that they would be given a piece of chocolate to enjoy at the end of the assessment. After children consumed the chocolate, they were asked several questions about how much they ‘savored’ the experience. All analyses controlled for total sleep time on the PSG night and there were no differences in SWA based on gender.

Results: Results indicated that the average duration of detected N3 SWs (F3/F4) correlated significantly with the extent to which children enjoyed the chocolate overall ($r = .50$, $p < .05$), felt they did a good job enjoying the chocolate while eating it ($r = .44-.49$, $p < .05$) and looked forward to eating the chocolate during the assessment ($r = .46-.50$, $p < .05$).

Conclusion: Although preliminary, these novel findings suggest that greater intensity of SWS may have a modulatory effect on subsequent emotional responses to positive experiences/events, which could be protective for longer term affective health.

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0242

INTRAINDIVIDUAL VARIABILITY IN SLEEP DURATION BLUNTS RESPONSE TO ACADEMIC STRESSORS

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Introduction: Cross-sectional studies indicate that greater intra-individual variability (IIV) in sleep is correlated with poorer cognitive-emotional outcomes. Yet, the causal direction of these relationships is unclear. Therefore, we conducted an experimental study to compare cognitive and stress outcomes following random assignment to normal sleep, sleep restriction, and irregular/IIV sleep conditions.

Methods: Ninety college students (mean age=19.16, SD=0.98; 77.78% female) completed an Organic Chemistry virtual lecture during session 1. Then, for the next five days, participants were randomly assigned to the following conditions: normal sleep (8h in bed every night), sleep restriction (6h in bed every night), or IIV sleep (nightly oscillation between 6.5h and 9.5h in bed, with mean of 8h/night). Adherence was confirmed using actigraphy. On the sixth day (session 2), participants took a test on the Organic Chemistry lecture (retention measure) and then completed a new lecture and test (acquisition measure). Participants reported their stress levels across the lectures and tests.

Results: ANCOVA tests showed that sleep condition did not affect retention ($F=0.50$, $p=.611$) or acquisition of Organic Chemistry knowledge ($F=1.33$, $p=.275$; adjusted for Grade Point Average). Interestingly, participants in the IIV condition reported lower stress levels throughout session 2 than students in the normal sleep condition, adjusting for baseline stress levels ($p=.025$). Furthermore, when collapsing across conditions, correlation analyses confirmed that greater IIV in TST predicted lower stress throughout session 2, after adjusting for mean TST and baseline stress level ($r=-.33$, $p=.014$). This “blunted” stress response following nightly sleep fluctuations was in contrast to the heightened stress levels that were associated with shorter mean TST ($r=-.22$, $p=.051$).

Conclusion: Brief sleep variability and mild sleep restriction had minimal impact on laboratory measures of STEM knowledge retention and acquisition. However, greater sleep IIV blunted reactivity to academic stressors, which may reflect altered hypothalamic–pituitary–adrenal axis functions and have implications for student metacognition and course persistence. Future research should investigate the chronic effect of maintaining irregular sleep patterns and whether improving regularity of sleep across longer time intervals promotes cognitive and emotional functioning.

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0243

RELATIONSHIPS BETWEEN PRE-PANDEMIC TRAUMA AND STRESS WITH SLEEP DURING THE COVID-19 PANDEMIC IN YOUNG ADULTS

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Introduction: Young adults, particularly those with histories of interpersonal trauma or stress, are more likely to experience to adverse psychosocial outcomes (e.g., depression) during the COVID-19 pandemic, compared to those without these histories. However, few studies have examined sleep and most rely on retrospectively-reported pre-pandemic experiences. We tested whether pre-pandemic trauma and stress were prospectively related to worse ecological momentary assessment (EMA)-reported sleep during the pandemic.

Methods: The sample includes 114 regular drinkers aged 21-30 years from two ongoing studies of alcohol use and sleep who completed a shared assessment battery and a 10-17-day EMA protocol before and during the pandemic (conducted July-November 2020; M=13.9 months after baseline). Participants reported past-month perceived stress (10-item Perceived Stress Scale) and interpersonal traumas (e.g., abuse, conflict), via scores on the “Current Partner” and “Personal” (persons other than spouse/partner) subscales of the Difficult Life Circumstances Scale. The EMA protocol measured daily sleep (total sleep time [TST]; sleep