Methods: 37 boys and 59 girls aged 12–16 years (mean=13.29; SD=1.1) with no medical or psychiatric disorders were divided into three groups based on their Insomnia Severity Index score: No insomnia ISI <7; Sub-threshold insomnia 8< ISI <15; Insomnia ISI> 15. Insomnia was measured using the ISI. Everyday executive functioning was measured using the Behavior Rating Inventory of Executive Function (BRIEF). Sleep was measured using Actigraphy (AW-64 series; Mini-Mitter, Sunriver, OR, USA) and sleep logs. The parents of each participant provided information regarding his/her demographic and health status.

Results: Adolescents in the Insomnia group had higher scores on the BRIEF's Metacognition Index (F(2, 94)=3.1, p<0.05) and Global Executive Composite (F(2, 94)=3.6, p<0.05) and marginally shorter actigraphic sleep duration compared to the other groups ((F(2, 94)=2.5, p<0.09]). Negative correlations were found between actigraphic sleep duration and scores on the BRIEF's Behavioral Regulation Index, Metacognition Index, and Global Executive Composite [r(81)= -0.35 p<.001 r(81)= -0.49 p<.001 r(81)= -0.42 p<.001, respectively] and between sleep efficiency and the Metacognition Index [r(81)= -0.23 p<.05].

Conclusion: ConclusionInsomnia in adolescents is associated with poor EFs.LimitationThe cross-sectional nature of the study means that the association between insomnia and EFs could be bidirectional.

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0108

THE EFFECT OF REWARD MOTIVATION ON PLACEKEEPING PERFORMANCE AFTER SLEEP DEPRIVATION

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Introduction: Sleep deprivation impairs some higher-order cognitive processes, but this impairment may reflect changes in motivation as well as changes in the cognitive capacity to perform the task, which has implications for intervention strategies. Here, we asked whether reward motivation could offset the effects of sleep deprivation on placekeeping, a higher-order cognitive process that is prevalent in performance of everyday tasks. To conduct this study under pandemic conditions, we developed a method for online data collection that promises to facilitate sleep-deprivation research more generally, by allowing for larger and more diverse samples to be collected at lower cost compared to in-person methods.

Methods: In the evening, participants joined a Zoom meeting and completed the Psychomotor Vigilance Task (PVT) and a placekeeping task (UNRAVEL). Afterwards, participants were randomly assigned to remain in the meeting and stay awake (Deprivation) or leave the meeting and sleep (Rested). Deprivation participants were monitored remotely overnight by two research assistants. Rested participants left the meeting at 00:00 and returned at 08:30. At 08:30, all participants completed the PVT and UNRAVEL again. Some participants had the opportunity to earn a monetary reward based on their morning UNRAVEL performance (Motivated) and some did not (Nonmotivated). We analyzed morning performance with a 2 (Sleep: Rested, Deprivation) x 2 (Reward: Motivated, Nonmotivated) design using evening performance as a covariate.

Results: Preliminary results from 206 participants show Deprivation participants had more placekeeping errors and lapses in the PVT than Rested participants. Motivated participants made fewer placekeeping errors after task interruption than Nonmotivated participants. The Sleep and Reward factors did not interact.

Conclusion: These results suggest that motivational interventions can mitigate some effects of sleep deprivation on complex task performance. However, reward motivation affected Rested and Deprivation performance similarly rather than compensating for any effects specific to sleep deprivation. This pattern does not rule out an effect of sleep deprivation on motivation, but does suggest that a different approach will be necessary to isolate this effect.

0109

WORKING MEMORY ACROSS SLEEP AND THE MENSTRUAL CYCLE IN YOUNG AND MIDLIFE WOMEN

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Introduction: The menses phase of a woman's menstrual cycle, compared to other phases, is more likely to be associated with poorer sleep quality and alterations in cognitive performance, specifically impaired working memory. However, the relationship among these factors has been poorly investigated, and how age impacts these relationships is currently unknown. The present study examines the effect of menstrual cycle phase and sleep on working memory performance in young and midlife women.

Methods: Fifty-five young and midlife women (n = 29, 18 – 35 years; n = 26, 45 – 56 years) completed four remote assessments at different phases of their menstrual cycle: menses, late-follicular, mid-luteal, and late-luteal, defined based on days of menses and ovulation. On each visit, participants completed the operation span (OSPAN) working memory task in the evening and were re-tested for sleep-related performance change in the morning. In addition, participants wore an Oura ring, a multi-sensor wearable sleep tracker, throughout the night. Mixed linear regression, correlation models, and paired t-tests were used to determine the relationship between menstrual phase, sleep, and OSPAN outcomes in both groups.

Results: In midlife women only, OSPAN performance improvement significantly changed across menstrual cycle phases (p < .05). The greatest post-sleep improvement in OSPAN performance was detected during the mid-luteal and late-follicular phases of the cycle, while lower performance gains were detected during menses and late-luteal phases. Post-hoc paired t-tests confirmed that post-sleep performance was significantly worst during menses compared to each of the other phases (p < .05). Additionally, during the mid-luteal phase, time spent in deep sleep positively correlated with post-sleep performance in midlife women (r = .55, p < .05). No significant effects were detected in young women.

Conclusion: These findings suggest a complex interaction between sleep, menstrual cycle phase, and cognitive performance in midlife women. Our data suggest that deep sleep may mediate post-sleep performance during specific cycle phases. Reasons why these results are not evident in younger women are yet to be determined.