pre-sleep, caudate and putamen activity was not significantly different post-sleep (evening-morning %change=-0.02±0.04,p=0.5). Greater evening hippocampal activity was associated with greater change in maze completion times across sleep (rho=0.54, p=0.04).
Conclusion: In young healthy adults, a night of uninterrupted sleep supports redistribution of hippocampal contribution toward spatial navigation. Greater initial pre-sleep hippocampal contribution was associated with improved recall of spatial navigational memory after a night of sleep.
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0115

DISCREPANCIES BETWEEN ACTUAL AND IDEAL BEDTIME ARE ASSOCIATED WITH COGNITIVE PERFORMANCE

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Introduction: Experimental studies have shown that acute sleep-circadian misalignment can lead to cognitive deficits. Additionally, chronic jetlag among pilots and long-term exposure to shiftwork are associated with worse cognitive performance. This study investigated whether small daily discrepancies in actual versus perceived ideal bedtime are associated with cognitive performance.
Methods: A subset of Wisconsin Sleep Cohort study participants (N=750; 58% male; mean[range] age 59 [38-78] years) participated in a neurocognitive test battery, provided a 6-night sleep diary, and completed questionnaires at the same study visit. The neurocognitive assessment included the Controlled Oral Word Association Test, Trails Making Test Part B, Grooved Pegboard Test, Auditory Verbal Learning Test, Digit Cancellation, and Symbol Digit Modalities Test. Weekday bedtimes from the sleep diary were averaged to represent "actual" bedtime. "Ideal" bedtime was represented by the answer to the question from the Horne-Ostberg Morningness-Eveningness Questionnaire: If you were free of any schedule and could go to bed at any time you wanted, what time would that be? Bedtime mismatch was represented as (ideal bedtime – actual bedtime). Cognitive performance was regressed on bedtime mismatch (separate models for each cognitive test) in linear regression models, adjusting for age, sex, BMI, sedative and stimulant use, average total sleep time, actual bedtime, smoking, caffeine consumption, and education level.
Results: There was a significant association between bedtime mismatch and performance on both the Grooved Pegboard (p=0.02) and Symbol Digit Modalities (p=0.02) tests, and a borderline significant association (p=0.09) with performance on the Oral Word test. On average, participants that had actual bedtimes that were later than ideal bedtimes demonstrated worse cognitive performance, while actual bedtimes that were earlier than ideal bedtimes were associated with better performance. No associations were found for the other 3 cognitive tests.
Conclusion: Going to bed at a time that is later than perceived ideal bedtime may be associated with cognitive deficits, even after accounting for actual bedtime and total sleep time.
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0116

SLOW OSCILLATIONS PROMOTE LONG RANGE EFFECTIVE COMMUNICATION: THE KEY FOR MEMORY CONSOLIDATION IN A BROKEN DOWN NETWORK

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Introduction: The relation between slow oscillations (SOs, <1Hz) during non-rapid eye movement (NREM) sleep and systems-level memory consolidation is one of the most robust findings in cognitive neuroscience. However, NREM is a brain state seemingly unfavorable to systems consolidation because a hallmark characteristic of this state is a breakdown in connectivity and reduction in synaptic plasticity with increasing depth of sleep. Our study addresses this apparent paradox and how SOs orchestrate neural communication.
Methods: We employed generalized partial directed coherence to estimate directional causal information flow between EEG channels across the electrode manifold during SO and non-SO periods. We examined the magnitude of causal information flow over the phase of SOs and found two peaks of flow preceding and following the trough of the SO. We categorized source-sink pairs of flows into three groups based on distance between source and sink of information flow. All the peak flows in each group were averaged and we tested relation between averaged magnitude of the flow and overnight episodic memory improvement using correlation test.
Results: The results reveal that NREM generally (non-SO periods) and during the SO trough show dampened neural communication. Causal communication during non-rapid eye movement sleep peaks during specific phases of the SO (before and after SO trough), but only across long distances. Correlation test results showed that episodic memory improvement was predicted by peaks of information flow with longest distances between sinks and sources, and not by any other phase of the SO or non-SO period.
Conclusion: This work introduces a non-invasive approach to examine information processing during sleep, a behavioral stage whose function, until now, has been understood only at a delay. The findings represent a conceptual leap in understanding how slow oscillations unlock memory consolidation in a broken down network which is by promoting long range effective communication. This research will promote further investigations of understanding how brain oscillations alone and in nested rhythms promote network communication, as well as to investigate how these properties vary and predict patterns of deficits in clinical populations and aging humans.
Support (If Any):

0117

TWO-YEAR MEMORY CHANGE IS ASSOCIATED WITH SLEEP DISORDERS IN A SURVEY OF OLDER ADULTS

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Introduction: Insufficient sleep and sleep disorders have been previously associated with worse cognitive outcomes, such as worse memory performance. This analysis aims to assess the relationship between diagnosed sleep disorder and memory change over a period of two years.
Methods: N=17,156 older adults residing in the United States were assessed using the Health and Retirement Survey (Core) in 2018, with additional variables obtained in the previous wave (2016 on the same participants). Those who reported no sleep disorder in either wave were categorized as "no sleep disorder," and they were compared to