correlated with later eating onset (r=0.67, p<0.001), offset (r=0.58, p<0.001), caloric midpoint (r=0.56, p<0.01), and greater eating offset irregularity (r=0.53, p<0.01). Later M10 correlated with later eating offset (r=0.40, p<0.05).

Conclusion: Preliminary findings indicate that eating timing and RAR are moderately correlated in free-living adults. Earlier eating timing, increased eating regularity, and longer daily eating duration may represent behavioral targets for improving circadian rhythms and subsequent cardiometabolic outcomes.

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0004

SLEEP, TEAM AND SOCIAL PROCESSES, AND HEALTH, PERFORMANCE, AND SAFETY IN NAVAL OPERATIONAL ENVIRONMENTS

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Introduction: Sleep disruption and teamwork are inherent features of 24/7 operational environments, yet little is known about how sleep and team/social processes interact to affect crew readiness and endurance.

Methods: We analyzed data of 3,434 active duty US sailors (80% male) from the Afloat Safety Climate Assessment Survey. Using structural equation modeling, we specified latent factors of Sleep Health (typical hours of sleep per day and sleep disturbances in shipboard environment); crew team and social factors of Team Transition Processes, Team Action Processes, Team Interpersonal Processes, Unit Cohesion, Psychological Safety, and Social Support; and operational outcome risks of Physical Health (no. days in previous 30 with physical illness or injury), Mental Health (no. days with stress, depression, or emotional problems), Performance (frequency of fatigue-induced functional impairments on duty), and Safety (individual and crew noncompliance, and rate of observed near misses).

Results: Higher Sleep Health reduced impairments in Physical Health, Mental Health, Performance, and Safety (standardized βs = −0.096 to −0.542, ps < 0.0001, CFI/TLI > 0.980, RMSEA = 0.033). Higher Sleep Health improved Team Transition, Action, and Interpersonal Processes, Unit Cohesion, Psychological Safety, and Social Support (βs = 0.178 to 0.380, ps < 0.0001, CFI/TLI > 0.982, RMSEA = 0.029). Social Support reduced risks to Physical Health, Mental Health, and Performance; Team Interpersonal Processes reduced Metal Health risk; Psychological Safety reduced Performance and Safety risks; Unit Cohesion reduced Safety risk (βs = −0.053 to −0.709, ps < 0.05, CFI/TLI > 0.979, RMSEA = 0.027). Mediation models indicated good Sleep Health enhances Social Support's beneficial impact on Physical Health, Mental Health, and Performance; Psychological Safety's impact on Performance and Safety; Team Interpersonal Processes' impact on Physical Health; and Unit Cohesion's impact on Safety (indirect effect βs = −0.032 to −0.127, ps < 0.0001, CFI/TLI > 0.967, RMSEAs < 0.051).

Conclusion: Sleep health improves team/social functioning, which serves an additive protective function and enhancement to crew operational health, performance, and safety. Future work should closely examine these interrelationships to identify mechanisms as targets for policy and procedures to help optimize crew readiness and endurance.

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0005

BIDIRECTIONAL ASSOCIATIONS OF SLEEP AND ALCOHOL USE WITHIN AND BETWEEN REGULARLY DRINKING YOUNG ADULTS

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Introduction: Young adults can be resistant to drinking interventions, but improving other health behaviors, such as sleep, may indirectly reduce hazardous drinking. Evidence linking sleep to next-day drinking among regular drinkers could support sleep interventions as an indirect pathway to alcohol misuse reduction. We investigate this connection in the natural environments of 222 regularly drinking young adults.

Methods: Regularly drinking young adults (21-29 years; 63% women) wore an alcohol monitor across six days that continuously measured transdermal alcohol concentration (TAC). Participants completed daily smartphone-based surveys reporting the previous night number of drinks and sleep. Predictors were disaggregated into within- and between-person variables. Sleep variables were used to predict next-day alcohol use, and alcohol use variables were used to predict subsequent sleep. Multilevel Poisson and linear models with random intercepts for each outcome were adjusted for weekends, sex, weight, and prior night sleep/drinking.

Results: Between-person results showed that participants who tended to go to bed later had on average 24% more drinks (p<0.01) and achieved 26% higher peak TAC (p<0.02) the next day. Every hour of sleep duration the prior night was associated with a 14% decrease in the number of next-day drinks (p<0.03). Conversely, participants who drank more went to bed on average 12-19 minutes later (p<0.01) and slept 5 fewer minutes (p<0.01). Within-person results showed that on nights when participants drank more than usual they went to bed 8-13 minutes later (p<0.01), slept 2-4 fewer minutes (p<0.03), and had worse sleep quality (p<0.01).

Conclusion: Young adults who went to bed earlier and slept longer on average tended to use alcohol less the next day, and using less alcohol tended to improve subsequent sleep within young adults. Taken together, these results suggest that better sleep health may improve drinking behaviors and intoxication dynamics, which may have implications for interventions targeting sleep as a mechanism to reduce heavy drinking.

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0006

AN AT-HOME EVALUATION OF A LIGHT INTERVENTION TO MITIGATE SLEEP INERTIA SYMPTOMS

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Introduction: Sleep inertia symptoms typically occur after waking from nocturnal sleep. Under laboratory settings, light exposure upon waking has been shown to improve alertness, mood, and

vigilant attention. We investigated whether a field-deployable light-emitting device would help to improve alertness and working memory in a real-world setting.

Methods: Thirty-five participants (18 female; 26.4 ± 6.0 y) completed an at-home, within-subject, randomized crossover study. Participants wore actiwatches during their normal sleep-wake schedule for five nights ahead of the adaptation and experimental nights. On the experimental night, participants performed baseline testing before their self-selected bedtime. Forty-five minutes after bedtime, participants received a phone call and were instructed to perform test bouts while wearing light-emitting glasses with the light either on (light condition) or off (control). A 3-minute descending subtraction task (DST) and the Karolinska Sleepiness Scale (KSS) were performed at +7, +17, +27, and +37 minutes after the call. Participants were then instructed to go back to sleep and were called 45 minutes after lights out to repeat the test bouts in the opposite condition. A series of mixed-effects models were performed with fixed effects of condition, test bout, and their interaction, and a random effect of participant. Condition order, sex, and baseline were included as covariates.

Results: There was a significant effect of test bout for DST total responses ($\chi2$ [3] = 17.42; p < .001) and total correct ($\chi2$ [3] = 21.29; p < .001) with improved performance at +27 and +37 minutes compared to +7 minutes. Sex was a significant predictor for KSS ($F_{1,30}$ = 10.26; p = .003), with females (8.20 ± 0.23) rating higher sleepiness than males (7.10 ± 0.25). There were no other significant effects for DST or KSS outcomes (p > .05).

Conclusion: These results suggest that the intervention was not able to improve working memory or alertness under naturalistic at-home settings. Further analysis is needed to determine whether these results are applicable to other cognitive performance domains.

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0007

TEMPORAL ASSOCIATIONS BETWEEN ACTIGRAPHY-MEASURED DAYTIME MOVEMENT BEHAVIORS AND DAYTIME SLEEP IN EARLY CHILDHOOD

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Introduction: Although napping in early childhood is associated with some cognitive and behavioral outcomes, less is known about relations with physical health measures. Lower levels of sedentary behavior and higher levels of physical activity have been beneficially associated with sleep measures in adults. Studies exploring sleep and daytime movement behaviors (sedentary time and physical activity) in young children have had inconsistent results and primarily focused on overnight sleep. The purpose of this micro-longitudinal analysis was to determine if: 1) daytime movement behaviors predicted the likelihood of napping the next day, 2) daytime movement behaviors predicted next-day nap duration, and 3) the occurrence of a nap predicted next-day movement behaviors.

Methods: In 240 children (age=50.8±9.8 months, 49.2% female) sedentary time (% of wake time), total physical activity (counts/min), and nap duration (min) were derived from wrist-based actigraphy (mean = 9.7 days), and occurrence of a nap was recorded daily. Multilevel logistic and linear models with lagged effects were used to examine temporal within-person relations between wake behaviors and nap sleep, and adjusted for night's sleep duration

of nights between days of interest (min), age (months), sex (male or female), and socioeconomic status (index). Preliminary models included interactions with nap habituality (rarely, sometimes, or frequent).

Results: Occurrence of a nap was not associated with next-day wake behaviors and previous-day wake behaviors did not predict nap duration. However, on days children napped, they were less sedentary (B=-2.09, p<0.001) and more active (B=25.8, p<0.001) the following day. Nap habituality did not moderate these associations.

Conclusion: Bidirectional associations between nap sleep and daytime wake behaviors were not evident. While daytime movement behaviors were not predictive of nap sleep, napping was beneficially associated with subsequent-day movement behaviors in preschool children. Further studies could explore specific nap sleep metrics in samples with more diverse sleep health, as well as consider the reason for daytime napping.

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0008

UNIVERSITY-WIDE CHRONOTYPING SHOWS LATE-TYPE STUDENTS HAVE LOWER GRADES, SHORTER SLEEP, AND MORE ABSENTEEISM

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Introduction: A person's preferred timing of nocturnal sleep (chronotype) has important implications for cognitive performance. Students who prefer to sleep late may have a selective learning disadvantage for morning classes due to inadequate sleep and circadian desynchrony. We tested whether late-type students perform worse only for morning classes, and we investigated factors that may contribute to their poorer academic achievement.

Methods: Chronotype was determined objectively in 33,645 university students (early, n = 3,965; intermediate, n = 23,787; late, n = 5,893) by analysing the diurnal distribution of their logins on the university's Learning Management System (LMS). Linear mixed models were used to test for differences between chronotype groups in grade point average (n = 33,645), actigraphy-estimated sleep behaviour (n = 261), and class attendance estimated using Wi-Fi connection data (n = 17,356).

Results: Late-type students had lower grades than their peers for courses held at all different times of day, and during semesters when they had no morning classes. Actigraphy studies confirmed LMS-derived chronotype was associated with students' sleep patterns. Nocturnal sleep on school days was shortest in late-type students because they went to bed later than the other chronotype groups and woke up earlier compared with non-school days. Wi-Fi connection logs for classrooms revealed that late-type students had lower lecture attendance than their peers for both morning and afternoon classes.

Conclusion: Large university-archived datasets can be used to assess relationships between chronotype and academic performance. Late-type students had lower grades, shorter sleep, and were more likely to miss classes. Shifting classes later may improve sleep and circadian synchrony in late-type students. However, this probably will not eliminate the performance gap because they still had lower grades when they only had afternoon classes. Interventions that focus on improving students' well-being and learning strategies may be important for addressing the late-type academic disadvantage.

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