0105

SLEEP TIMING AND CONSISTENCY ARE ASSOCIATED WITH THE STANDARDISED TEST PERFORMANCE OF ICELANDIC ADOLESCENTS

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0**Introduction:** Sleep has been shown to affect cognitive function in laboratory studies; however, its association to the academic performance of adolescents has largely been demonstrated using self-reported measures. Studies with objective measures of both sleep and academic performance are limited. The aim of the present study was to determine whether the free-living sleep quantity, quality, and timing of 15-year-old adolescents measured with wrist actiography are associated with their scores on national standardised examinations as an objective measure of academic achievement.
Methods: We measured sleep with wrist actiography for 1 week in 253 (150 girls) Icelandic adolescents with a mean (SD) age of 15.9 (0.3) years. Multiple linear regression was used to assess associations between sleep parameters and combined standardised examination scores in mathematics, English, and Icelandic obtained from the Icelandic Directorate of Education.
Results: We found that students went to bed at 00:49 hours (± 51.8 min) and slept for a mean (SD) of 6.6 (0.7) hr/night, with a median (interquartile range) night-to-night variation in sleep duration of 1.2 (0.7) hr and an efficiency of 88.1 (5.3)%. Combined analyses adjusted for sex, demonstrated that both bedtime and night-tonight variability in total sleep time were negatively associated with the average score across all topics. Sex-specific associations did not indicate clear differences between boys and girls.
Conclusion: These findings suggest that, in addition to appropriate sleep duration, public health guidance should also highlight the importance of early and consistent sleep schedules to academic achievement for both boys and girls.
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0106

UNITIZATION IMPROVES MEMORY FOR ASSOCIATIONS DURING SLEEP DEPRIVATION

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0**Introduction:** Total sleep deprivation (TSD) impairs binding, i.e., the ability to form new associations. Unitization – when separate memory items are learned as a single unit (e.g., combining two words into a novel compound word) – reduces the need for binding. Unitization mitigates impaired memory for associations in amnesiacs, but whether it offsets binding problems from TSD is unknown.
Methods: N=23 healthy adults (ages 19-35, 8 women) participated in an ongoing, double-blind, 4-day/3-night in-laboratory study with a 10h baseline sleep opportunity, 38h TSD, and a 10h recovery sleep opportunity. During TSD, participants were randomized to four administrations of caffeine (200mg), modafinil (alternating between 200mg and 0mg), or placebo at 4h intervals beginning at 01:00. They completed a unitization task at 14:45 on day 2 (baseline, session 1), day 3 (TSD, session 2), and day 4 (recovery, session 3). The task began with a study phase where participants studied 60 pairs of words that were presented individually (e.g., "penny" and "tower") or as new, unitized words (e.g., "pennytower") (50% each). Afterward, in the test phase, participants indicated whether 60 presented pairs of individual words were old (presented together at study) or new (recombined into new pairs) (50% each).
Results: Repeated-measures ANOVA revealed significant effects of study pair type (individual or unitized), session (1–3), and their interaction ($p<0.05$). Performance did not differ by pair type in session 1 ($p=0.46$), and performance for pairs of individual words did not change across sessions ($p=0.34$). However, performance on unitized word pairs improved across sessions ($p=0.003$), and unitized word pairs were recognized better than individual word pairs in sessions 2 and 3 ($p<0.05$).
Conclusion: Across sessions, participants benefitted from practice on unitized word pairs, such that performance improved even during TSD. Although potentially partly attributable to drug condition (to which investigators are still blinded), no such practice effect was seen for word pairs studied individually. Whether this dissociation implies that unitization bypasses the need for binding and thus lessens the impact of TSD requires further investigation. Regardless, unitization may mitigate performance impairment from sleep loss in settings that require forming novel associations, such as eyewitness identifications.
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0107

EVERYDAY DAYTIME EXECUTIVE FUNCTIONS IN ADOLESCENTS WITH INSOMNIA

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Introduction: Current diagnostic criteria for insomnia require self-reported sleep difficulties along with a complaint of daytime impairment. Despite the high prevalence of insomnia in adolescents, its daytime correlates are not well characterized in this age group. Executive functions (EFs) are high-level cognitive processes that coordinate memory, attention and emotions, all of which are utilized in daily functioning. Sleep deprivation impairs performance on tasks requiring EFs.A number of studies have examined the associations between insomnia and EFs in adults, but there is a paucity of studies examining EFs in adolescents with insomnia. This limits the understanding of the nature of daytime functioning in adolescents with insomnia, and impedes efforts to examine the effectiveness of interventions aimed at alleviating the daytime impairment of adolescents with insomnia.Study Objectives: 1) To compare everyday executive functioning of otherwise healthy adolescents with insomnia and that of typically developing controls; and 2) To examine the associations between sleep and everyday EFs in otherwise healthy adolescents with insomnia.