

P048

Abstract Withdrawn

P049

SLEEP REGULARITY IS ASSOCIATED WITH STABILITY OF DAILY LIGHT EXPOSURE IN ADOLESCENTS DURING SCHOOL AND VACATION

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Study Objectives: Light is the main time cue for the human circadian system. Irregular sleep/wake patterns are associated with poor health outcomes, which could be mediated by irregular patterns of light exposure. The relationship between sleep and light regularity has not been directly explored. We investigated the relationship between sleep and light regularity in adolescents, across school-term and vacation, using novel metrics for measuring light regularity.

Methods: Daily sleep and light patterns were measured via wrist actigraphy in 104 adolescents (54% male, age $M \pm SD = 17.17 \pm 0.80$ years) over two weeks of school-term and a subsequent two-week vacation. The Sleep Regularity Index (SRI) was computed for each two-week block. Stability of daily light exposure was assessed using variation of mean daily light timing (MLiT), variation in daily photoperiod, and the Light Regularity Index. Associations between SRI and each light regularity metric were examined, and within-individual changes in metrics were examined between school and vacation.

Results: More regular sleep was significantly associated with more regular scores for each light variability metric, during school and vacation. Between school and vacation sleep regularity decreased and nuanced changes in light patterns were observed. Variability measured by the MLiT variable increased, whereas variability measured by the LRI and photoperiod variable decreased.

Conclusions: Adolescents with irregular sleep also have irregular patterns of light exposure. These findings suggest sleep regularity may be a useful proxy for variability in the main circadian time cue, meaning that irregular light exposure may carry implications for the developing adolescent circadian system.

P050

FAMILIAR LOCATIONS AND NEW LOCATIONS: SLEEP'S ROLE IN THE CONSOLIDATION OF SPATIAL NAVIGATION INFORMATION USING A NOVEL VIRTUAL MORRIS WATER MAZE TASK IN OLDER ADULTS WITH MILD COGNITIVE IMPAIRMENT

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Introduction: The ability to navigate oneself in space is one of the first functional impairments in Alzheimer's disease (AD). A 3D-computerised spatial navigation (SN) task was designed to delineate, for the first time in a sleep-dependent memory paradigm, egocentric and allocentric SN, the latter identified as one cognitive biomarker of AD. We examined group differences in SN memory and associations with sleep macroarchitecture.

Methods: Older adults with mild cognitive impairment (MCI, $n=32$) and controls ($n=25$) underwent overnight polysomnography and completed the SN task before and after sleep. Participants learnt the location of a target over 5 trials (familiar location; egocentric-dependent), then were instructed to find the target from a novel start location (allocentric-dependent). Memory % retention (MR) from both start locations were calculated by the XY coordinate of marked location to correct location of the target, pre- and post-sleep. Navigational strategies were coded using self-reported description of how participants' found the target. Associations between MR with REM and SWS % duration, and AHI in REM and NREM were examined using Spearman's correlations.

Results: Repeated-measures ANOVA showed Controls MR improved overnight whereas MCI performed worse ($F=7.46$, $p=.009$), with greatest differences on familiar start location MR ($p=.02$). Strategy as a covariate revealed a location by strategy interaction ($p=.01$). Novel location MR was associated with REM%, $\rho=.448$, ($p=.02$) in Controls, and REM-AHI, $\rho=.400$ ($p=.02$) in MCI.

Conclusion: Behavioural and self-reported results suggest disrupted SN strategies relative to environment in MCI. Future studies should examine SN in association with sleep-wake neurophysiology and neuronal integrity.

P051

SLEEP SPINDLES AND SWA DIFFERENTIALLY CORRELATE WITH OVERNIGHT EPISODIC AND VISUOSPATIAL MEMORY CONSOLIDATION IN OLDER ADULTS WITH AND WITHOUT MILD COGNITIVE IMPAIRMENT

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Introduction: Sleep microarchitecture disruption is a feature of ageing that is further altered in neurodegenerative disorders. Sleep-memory links in younger adults have been established, however mechanistic pathways of this uncoupling in ageing is poorly understood.

Method: Our sample consisted of $n=46$ mild cognitively impaired (MCI) older adults and $n=32$ cognitively-intact controls who underwent overnight polysomnography and episodic (Rey Auditory Verbal Learning test) and visuospatial (Rey-Osterrieth Complex Figure task) memory tasks that were administered before and after sleep. We examined group differences in overnight memory % retention and associations with NREM slow oscillations (SO, 0.25–1 Hz), delta power (0.5–4 Hz), N2 spindle events

(occurrence [11–16 Hz] and slow [11–13 Hz] and fast [13–16 Hz] spindle density p/min) and REM theta power (4.5–8 Hz).

Results: Repeated measures ANCOVA, controlling for age, indicated greater memory scores in Controls compared to MCI on the episodic task, $F=6.7$ ($p=.01$), and no group differences in the visuospatial task ($F=1.8$, $p=.17$). In Controls, greater delta power was associated with increased episodic memory retention ($r=.515$, $p=.006$). In the MCI group, episodic memory was associated with fast spindle density ($r=-.352$, $p=.04$), and visuospatial memory was also associated with fast spindle density ($r=-.385$, $p=.01$) and spindle occurrence ($r=-.479$, $p=.003$).

Conclusion: Sleep spindles appear to be negatively associated with memory retention, specifically in MCI. However, given the heterogeneity of MCI, further analysis of its cognitive subtypes is warranted. Comprehensive cognitive and neural pathophysiology profiling are required to better delineate the function of spindles in ageing.

P052

MENTAL HEALTH PREDICTORS FOR SHIFT WORK DISORDER IN PARAMEDICS DURING THEIR EARLY CAREER

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Introduction: Shift work disorder (SWD) involves excessive sleepiness and/or insomnia and is associated with poor health outcomes in those affected. This study assessed the prevalence of and risk factors for SWD during the first six-months of paramedics' careers. Furthermore, the study explored potential mediators in the relationship between mental health and SWD risk.

Methods: Recruit paramedics' ($n=101$) SWD risk (SWD-Screening Questionnaire) was assessed at baseline (i.e., before shift work) and at six-months after engaging in shift work as a graduate paramedic. Logistic regression models assessed whether baseline depression (Patient Health Questionnaire-9) and baseline anxiety (Generalised Anxiety Disorder Questionnaire-7) predicted a high risk for SWD at six-months. Lavaan path analysis was used to assess whether shift and sleep variables, created from participants' sleep and work diaries, mediated the relationship between mental health and SWD risk.

Results: After six-months of emergency work 21.5% of paramedics were high risk for SWD. Baseline depression predicted 1.28-times greater odds for SWD at six-months. Shift and sleep variables were not mediators in the relationship between baseline mental health and subsequent SWD risk. Baseline depression was independently associated with increased sleepiness levels following paramedics' major sleep periods across all work conditions (nightshift, workdays, and non-workdays) at six-months. Depression levels before shift work also predicted a greater perceived workload on nightshifts.

Conclusions: Depression symptoms before starting shift work are a modifiable risk factor for SWD. Moreover, the first six-months of paramedics' careers is a critical period for implementing

preventative measures for SWD, including interventions to decrease depression symptoms.

P053

MANAGEMENT OF INSOMNIA BY AUSTRALIAN PSYCHOLOGISTS

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Introduction: Insomnia is the most common sleep disorder, 10–30% of adults have regular difficulties falling and/or staying asleep that cause significant daytime impairments. General Practitioner (GP) clinical guidelines recommend Cognitive Behavioural Therapy for insomnia (CBTi) as the first-line treatment rather than medications. However, most GPs do not have the time or training to administer CBTi, and consequently, many patients are prescribed sedative-hypnotic medicines. Psychologists have training in CBT and may be well placed to deliver behavioural therapy for insomnia. However, the amount of sleep-specific training, and knowledge of CBTi among Australian psychologists remains unknown. Identifying key barriers and enablers in the management of insomnia within psychology provides a first step in engaging with psychologists about the delivery of evidence-based insomnia treatment.

Methods: This qualitative study used a pragmatic inductive approach. Semi-structured interviews were conducted with 26 Australian psychologists. Interviews included case study scenarios to provide an in-depth exploration of psychologists' knowledge and skills in the management of insomnia, and attitudes towards further training in CBTi. Interview transcripts were analysed using thematic analysis to identify themes.

Results: Preliminary themes identified in the data include; psychologists believe sleep is important for general well-being, insomnia is usually seen as secondary to other co-morbid disorders such as depression and anxiety that are the focus of treatment, most psychologists surveyed lack training and knowledge in CBTi.

Discussion: Most Australian psychologists are not well prepared to manage insomnia effectively with CBTi. Along with other primary health care professionals, psychologists need training in the management of insomnia.

P054

THE EFFECT OF HEAD UP BED-TILT (HUT) ON SLEEP DISORDERED BREATHING (SDB) IN PATIENTS WITH SUPINE DOMINANT SLEEP APNOEA (SDOSA): AN EXPLORATORY STUDY.

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SDB severity is reduced in SDOSA when posture changes from supine to lateral. Sleeping with a head up bed-tilt (HUT) is known to reduce SDB in some OSA patients. In this exploratory study, we tested whether HUT could be used to reduce SDB in SDOSA