independent variable of active epilepsy, TAND ceased to be a significant risk factor for positive PSQI (p=0.09, OR=1.85).

Conclusions: our results confirmed that SD are highly prevalent in adults with TSC, affecting almost half of individuals. Surprisingly, neuropsychiatric comorbidity did not appear to significantly impact the presence of a SD, that appeared to be mostly influenced by the presence of active epilepsy independently from the presence of nocturnal seizures. A bad sleep quality and sleep fragmentation is recognized as a possible triggering factor for seizures, therefore identifying and treating SD might have an impact in reducing the risk of frequent daily seizures.

Acknowledgements: we thank the Italian TSC Association for supporting us in performing this study.

SLEEPING WHILE AWAKE: SLEEP-LIKE SLOW WAVES IN WAKEFULNESS PREDICT MODULATIONS OF PERFORMANCE AND SUBJECTIVE EXPERIENCE

T. Andrillon [1,2], A. Burns [3], T. Mackay [3], J. Windt [2], N. Tsuchiya [3]. [1] *Paris Brain Institute, Paris, France;* [2] *Monash University, Centre for Consciousness and Contemplative Studies, Melbourne, Australia;* [3] *Monash University, Melbourne, Australia*

Introduction: Sleep and wakefulness are not mutually exclusive states and when individuals are prevented from sleeping for extended periods of time, a subset of brain regions can start displaying electroencephalographic (EEG) signatures of non-rapid eye-movement (NREM) sleep in the form of sleep-like slow waves. These sleep-like slow waves have been interpreted as a form of sleep intrusions within wakefulness. However, it is unclear if such slow waves are everyday life events, and whether they could impact behaviour in well-rested individuals. Here, we sought to characterise the occurrence of these slow waves in regular wakefulness, determine their link with vigilance and establish their effect on behaviour and subjective experience.

Materials and Methods: To understand the neural mechanisms underlying attentional lapses, we studied the behaviour, subjective experience and neural activity of 25 healthy well-rested participants performing a task requiring sustained attention (sustained attention to response task, SART). To quantify the modulations in participants' subjective experience and attentional focus, random interruptions prompted participants to indicate their mental states as task-focused, mind-wandering or mind-blanking. We recorded high-density electroencephalography and pupil diameter throughout the task to monitor vigilance and allow the detection of sleep-like slow waves.

Results: Spatially and temporally localized slow waves, a pattern of neural activity characteristic of the transition toward sleep, accompany behavioural markers of attentional lapses and preceded reports of mind wandering and mind blanking. The location of slow waves could distinguish between different types of attentional lapses: for example, between sluggish and impulsive behaviours, and between mind wandering and mind blanking.

Conclusions: Our results suggest attentional lapses share a common physiological origin: the emergence of local sleep-like activity within the awake brain.

SLEEP RESTRICTION IMPAIRS THE ABILITY TO INTEGRATE MULTIPLE PIECES OF INFORMATION INTO A DECISION

S. Drummond [1], J. Lim [1], J. Boardman [1], C. Anderson [1], D. Dickinson [2]. [1] *Monash University, Turner Institute for Brain and Mental Health, Clayton, Australia;* [2] *Appalachian State University, Economics, Boone, United States*

Introduction: Sleep deprivation impacts overall decision-making, though the impact on specific components of decision-making are less well studied, especially outside of total sleep deprivation. Here, we examine the effects of sleep restriction on the ability to integrate multiple pieces of information into a decision.

Materials and Methods: Healthy adults (n=41; age=27.9±6.0 years, 20F) lived in the sleep lab for 2 counterbalanced conditions: well-rested (WR: 9-hour sleep opportunity for 4 nights) and sleep restriction (SR: one 9-hour night, followed by three 3-hour nights). Following the last night of each condition, participants performed the decision task. Across 48 trials, participants first saw two containers, with different numbers of black and white balls. Eight balls were randomly drawn, with replacement, from one unknown container. Participants decided which container was used, based on the "odds" each container was used and draw results ("evidence"). Mathematical modelling determined the amount of weight given to odds/evidence. The "best" decisions integrate both pieces of information.

Results: When WR, participants utilised both pieces of information to make their decisions, though odds were given slightly more weight. During SR, the amount of weight given to the odds did not change, and the weight given to the evidence decreased significantly.

Conclusions: SR impaired the ability to integrate multiple pieces of information into a decision. Instead, participants focused on a single piece of easy-to-understand information and did not fully utilise a harder-to-understand piece of information. This has implications for complex applied environments where individuals have large amounts of information with which to make decisions.

Acknowledgements: Study funded by the Office of Naval Research Global

SNAPSHOTS OF THE SLEEPY BRAIN: HIGH-DENSITY EEG AND SUBJECTIVE SLEEPINESS UPON AWAKENING

A. Stephan [1], J. Cataldi [1], A. Singh Virk [1], F. Siclari [1]. [1] *CHUV UNIL, Lausanne, Switzerland*

Introduction: Why do we sometimes feel sleepy as we wake up? Why is it sometimes harder to get active in the morning? Sleep inertia has been suggested to be a consequence of a desynchronized awakening of brain regions, but little is known about the relationship between these local variations, the sleep stage from which one awakes and perceived sleepiness upon awakening.

Materials and Methods: In the present study, we investigated the awakening brain regional activity prior and upon awakening and the determinants of subjective sleepiness upon awakening (546 awakenings) in 20 healthy subjects who were recorded with high-density electroencephalography (EEG).

Results: Surprisingly, we found that subjective sleepiness was higher upon awakening from REM sleep as compared to NREM sleep, even when adjusting for time spent asleep before the awakening. Sleepiness at awakening correlated with subjective sleep depth before the awakening and was highest when subjects did not report conscious experiences. At the EEG level, we found that awakenings from both REM and NREM sleep were characterized by the persistence of 'sleep-like' low-frequency activity (delta and theta power) in posterior brain regions while only upon awakening from NREM it was associated to an increase of high-frequency activity above wake levels. Furthermore, subjective sleepiness negatively correlated with high-frequency activity and positively with low-frequency activity immediately after awakening. The effect of 'EEG activation' was not localized, but rather diffuse.

Conclusions: These results challenge the common assumption that subjective sleepiness is strongest upon awakening from 'deep' slow wave sleep. They also suggest that the awakening process displays distinctive regional activity patterns, with anterior and central brain regions 'waking up' before posterior regions. Finally, these results provide an objective correlate of subjective sleepiness.

Acknowledgements:*This work was supported by the Swiss National Science Foundation (Ambizione Grant PZ00P3_173955 to F.S.), the Divesa Foundation Switzerland (F.S.) and the Pierre-Mercier Foundation for Science (F.S.).*

TARGETED MEMORY REACTIVATION DURING REM SLEEP: IMPLICATIONS IN THE TREATMENT OF SOCIAL ANXIETY DISORDER

F. Borghese [1], P. Henckaerts [1], F. Guy [1], C. Mayo [1], S. Delplanque [2], S. Schwartz [1,2], L. Perogamvros [1,2,3,4]. [1] *University of Geneva, Department of Basic Neurosciences, Geneva, Switzerland;* [2] *University of Geneva, Swiss Center for Affective Sciences, Geneva, Switzerland;* [3] *Geneva University Hospitals, Department of Medicine, Geneva, Switzerland;* [4] *Geneva University Hospitals, Department of Psychiatry, Geneva, Switzerland*