monly studied during sleep, it is possible that individuals with insomnia not only exhibit greater responses to environmental stimuli at around sleep onset and/or during sleep, it is also possible they do not exhibit habituation. The present study evaluates habituation during sleep in individuals with insomnia and in good sleepers.
Methods: Archival data from an ERP study were used for the present analysis. Participants included 20 good sleepers (8M, age = 39.6 ± 9.6) and 20 medication free individuals suffering from insomnia. The latter group was comprised of 12 individuals with psychophysiological insomnia (5M, age = 44.5 ± 7.9) and eight individuals with paradoxical insomnia (3M, age = 41.7 ± 11.4). The protocol entailed the administration of auditory tones (both standard and deviant stimuli) at two second intervals for nearly 10 minute of trials per hour of sleep. The EEG responses within trains of consecutive standard tones (1 to 8th) were compared and ordinal averages for N1 and P2 were obtained. The amplitude of N1 and P2 ERP components respectively represent excitatory and inhibitory responses during early stage sensory processing.
Results: Repeated measures ANOVAs were conducted separately for each group by sleep stage (Early Stage 2, Late Stage 2, and REM sleep) for the peak values of N1 and P2. Significant amplitude differences ($p = .001$) were observed only for the good sleepers and neither of the two insomnia groups exhibited reduced amplitudes over time.
Conclusion: These results suggest (in contrast to good sleepers) that individuals with insomnia do not exhibit habituation during Stage 2 and REM sleep for auditory stimuli. Failure to habituate to auditory stimuli may be as, or more, contributory to sleep initiation and sleep maintenance problems than basal levels of "hyperarousal."
Support (If Any): CIHR (CB:86571).

0508

CORTICAL AROUSAL IS PRESENT IN ALERT INSOMNIACS BUT ABSENT IN SLEEPY INSOMNIACS WITHIN SHIFT WORK DISORDER: AN ERP STUDY

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Introduction: Consistent with research showing hyperarousal in insomnia, we previously demonstrated cortical arousal in the insomnia-only phenotype of Shift Work Disorder ("alert insomniacs," AI). Neurophysiologically, this cortical arousal is reflected by enlarged amplitude of the waking N1 ERP response. We now test whether cortical arousal is also present in night-workers with insomnia and excessive sleepiness ("sleepy insomniacs," SI).
Methods: 12 AI (37.1 ± 11.0 years, ESS = 7.3 ± 2; ISI = 14.6 ± 3.1), 11 SI (36.6 ± 9.4 years, ESS = 11.2 ± 3.5; ISI = 14.2 ± 4.8), and 12 controls (32.8 ± 6.9 years, ESS = 6.7 ± 3.1; ISI = 4.9 ± 3.2) participated in an ERP, overnight MSLT, and phase assessment study. Subjects with a history of insomnia or other sleep disorders prior to shift work were excluded. The N1 responses to frequency-deviant [FD], duration-deviant [DD], and standard [STD] auditory stimuli were measured at a latency of 90-120 ms. The N1 peaks corresponding to each type of stimulus were compared by ANOVA. All other measures were compared between groups by t-tests.
Results: In AI, the peak of N1 to each stimulus was significantly ($p < 0.01$) enlarged (-1.5 ± 0.3 μV [STD], -2.2 ± 0.9 μV [FD] and -1.9 ± 0.6 μV [DD]) over the frontal-central electrodes compared to SI (-0.9 ± 0.6 μV [STD], -1.2 ± 0.6 μV [FD], and -1.3 ± 0.6 μV [DD]) and to controls (-0.9 ± 0.5 μV [STD], -1.3 ± 0.7 μV [FD] and -1.1 ± 0.6 μV [DD]). N1 peaks were similar in SI and controls. MSLT was significantly ($p < 0.01$) lower in SI (3.1 ± 3.0) compared to AI (7.8 ± 5.1) and to controls (8.1 ± 3.4). DLMO was significantly ($p < 0.01$) later in controls (04:54 ± 3.7 h) than in both SWD groups: AI (22:45 ± 4.9 h) and SI (20:55 ± 4.6 h). ISI was correlated ($r = -.69$; $p = 0.01$) with N1 in AI group and was not correlated ($r = -.07$) in SI or controls.
Conclusion: Cortical arousal, reflected by enlarged N1 brain response, was observed in SWD patients with insomnia only, but not in the SI phenotype or in controls. This suggests that the "insomnia" in the SI phenotype is etiologically different from insomnia seen in the AI group.
Support (If Any): This study is supported by grant 1K01OH009996-03 from CDC/NIOSH.

0509

TIME MONITORING BEHAVIOR: FACTOR ANALYSIS AND RELATIONSHIP TO SLEEP MEDICATION USE

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Introduction: Insomnia is associated with time monitoring behavior, or "clock watching," and a desire for sleep medication. The present study assessed whether time monitoring behavior is associated with use of sleep medication.
Methods: Patients (n = 4,886) presenting for treatment at a sleep disorders center completed measures at intake including the 10-item Time Monitoring Behavior questionnaire (TMB-10), the Insomnia Severity Index (ISI), and reported the frequency of their use of medication for sleep. Patients were randomly assigned to one of three samples for subsequent analyses: exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and tests of mediation of the relationship between ISI and medication use. Significant mediation effects were tested for replication in the EFA and CFA samples.
Results: EFA revealed a three-factor solution for the TMB-10: Behavior, frustration during sleep initiation (SI-Frustration), and frustration during sleep maintenance (SM-Frustration). CFA showed good fit for the three-factor solution, $\chi2(37) = 1345.86$, $p < .0001$, CFI = .9346, NFI = .9329. Of the entire sample, 48.77% reported weekly or greater use of any medication (prescription or over-the-counter) for sleep, while 26.2% reported weekly or greater use of prescription sleep medication. There were significant partial mediation effects of the relationship between ISI and use of any medication for sleep by both SI-Frustration and SM-Frustration, all $p < 0.05$, which were replicated in both the EFA and CFA samples. Mediation by Behavior was not significant, and mediation of prescription medication use by SI-Frustration and SM-Frustration did not replicate reliably.
Conclusion: Although medication use is influenced by myriad factors, frustration associated with time monitoring behavior at both sleep initiation and during sleep maintenance reliably explains part of the relationship between insomnia and use of sleep medications. Future research should explore whether decreases in time monitoring behavior are associated with decreases in sleep medication use.
Support (If Any): Maimonides Sleep Arts and Sciences, and the Sleep & Human Health Institute.

0510

NIGHT TO NIGHT VARIABILITY AMONG OLDER ADULTS WITH INSOMNIA: ASSOCIATIONS WITH SLEEP QUALITY AND DIABETES RISK

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Introduction: Aging is associated with increased variability in many physiologic processes, including sleep wake behavior as well as increased prevalence of insomnia. The goal of this study was to test the

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