

psychological resilience, enabling them to better handle periods of extreme stress.

Participants and Methods: 8963 English-speaking adults (18-92 years old; 59.5% female) from across the U.S. completed an online, monthly cross-sectional (~1000 participants per month), battery of questions that included the Connor-Davidson Resilience Scale (CD-RISC), and a self-reported sleep and routine rating(s) between June 2020 and April 2021. We measured the level of an individual's routine by adding the self-reported survey scores of waking at the same time and maintaining a routine throughout the day. Both questions were scored 0-4 (Likert-style) for a score range of 0 to 8; higher scores indicated a higher adherence to a daily structure. Weeknight sleep (Sun-Thurs) was a self-reported average of the hours of sleep obtained over the past 4 weeks. A two-way ANCOVA was used to analyze the effects that routine had on subsequent psychological resilience scores while controlling for average sleep duration.

Results: A significant main effect routine on psychological resilience was found $F(8,8953) = 227$, $p < .00001$ after controlling for average reported weeknight sleep. An independent t-test was performed to determine the differences between those who fall above and below the average score ($M = 5.1$) for routine adherence. Individuals who were above average in adherence ($M = 71.1$, $SD = 15.5$) had significantly higher CD-RISC scores than individuals who did not ($M = 59.2$, $SD = 16.7$); $t(9166) = 35.1$, $p < 0.001$.

Conclusions: Individuals who maintained a more structured day throughout the pandemic were more likely to score higher on psychological resilience assessments than those who did not. Chronic stress is known to contribute to the development and exacerbation of many common psychiatric conditions like anxiety and depression. These results suggest that having a regular routine may have positive effects on an individual's ability to bounce back from stressful cognitive and psychological events. This relationship should be further investigated in clinical populations as a potential intervention or adjunctive treatment for common neuropsychiatric conditions.

Categories: Sleep and Sleep Disorders

Keyword 1: sleep disorders

Keyword 2: traumatic brain injury

Correspondence: Emmett J Suckow, SCAN Lab, University of Arizona.
ejsuckow@arizona.edu

71 Sleep Quality and Measures of Attention and Learning in Middle-Aged Adults

Jennifer L Thompson, Casey J Kneissler, Jacob D Tucker, Fayeza S Ahmed
University of Maine, Orono, ME, USA

Objective: Sleep has been shown to directly impact cognitive function throughout the lifespan; good quality sleep benefits and improves cognitive function, including processing speed and attention, while poor quality sleep can contribute to negative cognitive outcomes¹. In particular, attention, learning, and memory have been demonstrated to be sensitive to sleeping changes, including fragmentation and restriction². Subjective sleeping scales are utilized in both research and clinical practice, allowing sleep to be measured via self-report on various domains, including duration and factors that can contribute to sleep disruption and disturbances³. This study aims to examine the possible relation between subjective sleep quality and cognitive function among middle-aged adults to inform future research for early interventions of modifiable behaviors that can contribute to abnormal cognitive decline.

Participants and Methods: Data for this analysis is part of the preliminary results of an ongoing pilot study. 29 middle-aged (40-65 years, inclusive), cognitively unimpaired individuals were recruited from the community. Subjective sleep quality was measured with the Pittsburgh Sleep Quality Index (PSQI). Attention and memory were measured using the California Verbal Learning Test, Third Edition (CVLT-III).

Results: Multiple hierarchical regression analyses were conducted to evaluate if aspects of sleep quality were significantly correlated to complex attention and learning performance in this sample. First, correlation analyses showed significant relationships between PSQI Component 6 (Use of Sleeping Medication) and Trials 1 to 2 Learning Slope ($R^2 = -0.56$, $p = 0.002$) and CVLT-III Trials 1 through 5 Recall Discriminability ($R^2 = -0.42$, $p = 0.02$), each with significant regression analyses outcomes ($b = -$

0.42, $p = 0.04$ and $b = -0.46$, $p = 0.04$, respectively). There were other variables that were found to be significantly correlated; however, after adjusting for relevant demographic variables (age, education, sex), the hierarchical regression analyses revealed no association between the aforementioned variables.

Conclusions: While multiple aspects of sleep quality were expected to influence measures of attention and learning, only PSQI Component 6 was found to be statistically significantly associated with only two learning variables. Limitations of this study included a small sample size which was limited to cognitive and relatively physically healthy middle-aged adults. Further, sleep quality was measured with one subjective measure and no objective data was collected to support the hypotheses. Future analysis is needed to continue to explore the relation between subjective sleep quality and cognitive outcomes. As this is an ongoing study, we look forward to exploring this research question in more detail as the study progresses.

Categories: Sleep and Sleep Disorders

Keyword 1: sleep

Keyword 2: learning

Keyword 3: attention

Correspondence: Jennifer L Thompson, University of Maine, jennifer.l.thompson1@maine.edu

72 Somatization and Headaches in people with insomnia during the COVID-19 Pandemic: the benefit of exercise.

Kymberly Henderson-Arredondo, Samantha Jankowski, Emmett Suckow, Shivani Desai, Melissa Reich-Fuehrer, Lindsey Hildebrand, William D.S. Killgore
SCAN Lab, University of Arizona, Tucson, Az, USA

Objective: Stress is well known to increase the severity of somatization and insomnia. A recent major stressor that could have influenced the severity of these presentations was world-wide COVID-19 Pandemic. Somatization is the physical expression of stress and emotional distress that can manifest itself throughout various corporal domains and can be a comorbidity to insomnia. Headaches represent

some of the most common complaints associated with brain injuries and neurological disorders but are common in somatized disorders as well. In large survey study we examined whether exercise was associated with severity of somatization and headaches. We hypothesized that both healthy individuals and those with insomnia who exercised during the pandemic would report less severe somatic symptoms and headaches than those who did not.

Participants and Methods: A large survey was sent out to 4,073 individuals to measure their experience in numerous domains during the COVID-19 pandemic. This survey included a short symptom questionnaire used to measure somatization and the Insomnia Scale Index to measure insomnia. These questionnaires were administered along with a “yes or no” question on whether the participants exercised regularly in that period. A univariate ANOVA was performed to analyze the data to determine if exercise during the pandemic was beneficial in the reduction of somatic symptoms and headache severity. Furthermore, these tests were run to determine if the effect was greater on those with insomnia.

Results: The effect of insomnia and exercise on total somatic symptoms were significant at $F(1, 3445)=650.5$, $p<0.001$ and $F(1, 3445)=26.1$, $p<0.001$, respectively. For reported headache severity, there was a significant effect of exercise $F(1, 4073)=14.5$, $p<0.001$ and insomnia $F(1, 4073)=160.5$, $p<0.001$; therefore, those who exercised reported less severe headaches and those who suffered from insomnia reported more severe somatic symptoms. This meant that those who exercised reported less severe somatization and headaches than those who didn't and those with insomnia reported more severe somatization and headaches than healthy individuals. However, the interaction between exercise and insomnia on overall somatization severity was not significant at $F(1, 3445)=3.4$, $p=0.066$ nor for reported headache severity $F(1, 4073)=0.81$, $p=0.370$. Despite there not being a significant interaction, the benefit of exercise was slightly greater on healthy individuals than those with insomnia.

Conclusions: Those with insomnia reported more severe headaches and overall somatic symptoms than non-insomniacs regardless of whether they exercised or not. Exercise did make a difference on the reported severity of headaches and somatization in both groups; however, the benefit of exercise on headaches