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THE ROLE OF PARENTAL ABSENCE AND PARENTAL CONFLICT ON CHILD AND ADOLESCENT SLEEP

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Introduction: Parents are one of the most salient contexts for child development, and parental divorce and death are substantial stressors for children. Previous research suggests parental conflict is related to difficulties in attachment, emotion regulation, self-esteem, and academic performance in children. A growing body of research suggests parental conflict can negatively affect sleep duration, latency, sleepiness, and wake after sleep onset. There is limited evidence that some children who experience parental death report worse sleep. Our goal was to begin to investigate the impact of parental divorce and death on multiple sleep measures in a lifespan archival sample.
Methods: Data was refined from the Terman Life Cycle Study, which has followed 1,528 gifted Californian children since 1921. For this analysis, we utilized cross-sectional data from the 1921 assessment (max. N=1202; 44% female, M age=12y, range=6-21y). Participants or their parents reported whether parental death (N=123) or divorce (N=62) had occurred, as well as the child's usual hour of sleeping or waking, how long it took them to fall asleep, the quality of their sleep, and whether they had night terrors. In this preliminary analysis, we evaluate exposure to parental divorce and death on children's sleep descriptively.
Results: Parental divorce was associated with sleep quality (p=.01), but we mostly found no significant impact relations of parental divorce or death on children's sleep (ps=.21-.90). In this sample, 97% of children from intact families (N=1112) had good sleep quality compared to the 92% of children from families with divorced parents (N=62).
Conclusion: In this well-characterized archival longitudinal study of children followed since 1921, we found little evidence that parental divorce or death were related to sleep cross-sectionally. Multiple waves of sleep data are available, and we will evaluate associations longitudinally in follow-up analyses, as well as possible associations between time-limited effects (length of time since the event) or sensitive periods in terms of age. Our null results may be the result of cohort differences (the sample was born, on average, in 1910) or limited reporting on sleep by participants and their parents.
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SLEEP HYGIENE EDUCATION INTERVENTION: PSYCHOLOGICAL AND PHYSIOLOGICAL ASSOCIATIONS WITH SLEEP IN COLLEGE STUDENTS

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Introduction: College students tend to struggle with managing healthy sleep habits; these unhealthy behaviors can lead to poor sleep and impact their overall mental and physical health. More specifically, sleep is intimately connected to psychological and physiological factors such as anxiety, depression, and blood pressure. The focus of the current study was to examine habitual sleep habits in college students, provide a brief educational intervention, and investigate potential changes in psychological and physiological health.
Methods: Participants included 14 undergraduate students (6 men, average age M=20.64 years, SD=2.13) who wore wrist actigraphs to measure their typical sleep habits. After one week, participants completed questionnaires about sleep (Pittsburgh Sleep Quality Index, PSQI), sleepiness (Epworth Sleepiness Scale, ESS), fatigue (Multidimensional Assessment of Fatigue Scale, MAF), and psychological symptoms (i.e., depression, anxiety, and stress; Depression Anxiety Stress Scales, DASS-21). Blood pressure and heart rate were measured using a wrist device. Subjects participated in a short lecture about healthy sleep hygiene habits and the importance of sleep and then repeated the one-week observational study.
Results: Paired sample t-tests revealed a significant increase from baseline average sleep duration (M=5.83 hours) to post-intervention sleep duration (6.64 hours; t(13)=-2.532, p=.013). Sleep efficiency (actigraphy) and quality (PSQI) did not improve significantly. ESS scores decreased significantly (t(13)=3.76, p=.002 (pre M=9.29; post M=5.43) and MAF scores decreased significantly (t(13)=2.19, p=.047 (pre M=20.48; post M=15.60). No significant differences were found in depressive, anxiety, or stress symptoms when comparing DASS-21 scores pre- vs post-intervention. Baseline systolic blood pressure (M=114.88) significantly decreased compared to post-intervention recordings (M=108.21). Diastolic blood pressure and heart rate did not differ significantly.
Conclusion: The results of this study suggest that one educational lecture about sleep hygiene may be a start to improving sleep in college students. Even a 48-minute increase resulted in decreased sleepiness and fatigue. However, no improvements were found in sleep quality or efficiency. Although a slight improvement was found in systolic blood pressure, no other physiological or psychological benefits were noted. More research should be conducted on how to improve sleep habits in college students beyond an educational approach.
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THE ASSOCIATION BETWEEN SLEEP HEALTH AND MOOD IN SEDENTARY DESK WORKERS

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Introduction: Poor sleep, most commonly insufficient sleep duration or low sleep quality, has been linked with disruptions of mood. However, it is unclear how sleep health—more broadly, other multiple dimensions of sleep—is associated with mood. The purpose of this study was to investigate the associations between sleep health and mood in a sample of desk-working sedentary adults.
Methods: This cross-sectional study used baseline data from inactive adults with desk-based jobs (N=125, 49.6% female, 43.9±10.6 years) who enrolled in an ongoing clinical trial. Sleep was assessed using validated questionnaires and 7 nights of actigraphy. Collectively, these measures were utilized to assess six different sleep dimensions: regularity, satisfaction, alertness, timing, efficiency, duration. Each dimension was categorized as "good" or "poor". A sleep health score was calculated by summing the number of good dimensions (range: 0-6; higher is better).

Mood was assessed using Profile of Mood States (POMS); its 7 subscales (tension, anger, fatigue, depression, esteem-affect, vigor, confusion) were summed (with a constant of 100) to create a Total Mood Disturbance (TMD) score. Multiple linear regression models examined associations between sleep health and mood adjusting for age, gender, and whether pre- or post-COVID-19.

Results: The mean sleep health score was 4.7±1.1; the mean TMD score was 96.6±18.5. Better sleep health was associated with lesser TMD (β=-0.32, $p<0.001$) and better mood on each of the POMS subscales ($\beta \geq 0.18$, $p<0.05$), aside from esteem-related affect ($p=0.31$). Of the individual sleep dimensions, only satisfaction, alertness, and efficiency were associated with TMD ($\beta \geq 0.18$, $p<0.05$). Satisfaction was the only individual sleep dimension that was consistently associated with better mood on each subscale ($\beta \geq 0.17$). Alertness, efficiency, and duration were inconsistently associated with individual mood subscales. Regularity and timing were not associated with any mood subscales ($p \geq 0.267$ and $p \geq 0.073$, respectively).

Conclusion: Better sleep health was associated with less TMD. Satisfaction was the sleep dimension that consistently associated with each subscale of mood. The cross-sectional, observational design limits casual inference between sleep health and mood disturbance due to a lack of temporality and the potential for residual confounding.

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ASSOCIATION OF SLOW WAVE ACTIVITY AND ODDS RATIO PRODUCT WITH INTERNALIZING AND EXTERNALIZING PROBLEMS IN CHILDREN AND ADOLESCENTS

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Introduction: The association of metrics of sleep microstructure with internalizing and externalizing problems in youth has remained elusive. While one study found increased frontal slow wave activity (SWA) in depressed adolescents, there is lack of evidence for a relationship between dimensional measures of behavior and metrics of sleep depth/intensity. We examined the association between two measures of sleep depth/intensity, slow wave activity (SWA) and odds ratio product (ORP), with internalizing and externalizing problems in children and adolescents.

Methods: We calculated SWA and ORP during non-rapid eye movement (NREM) sleep at central, frontal and fronto-occipital derivations in 639 children (5-12y, median 9y) and 418 adolescents (12-23y, median 16y) from the Penn State Child Cohort via in-lab polysomnography. ORP provides a standardized measure of NREM sleep depth, while ORP-9 (average ORP in the 9-seconds following NREM arousals) provides a metric of arousability. SWA (0.4-4Hz) absolute power (μV2) was determined during NREM sleep. Internalizing and externalizing problems were assessed on Achenbach's Behavior Checklist by parent (subjects≤17y) or self-report (subjects≥18y). For each scale, T-scores with a mean of 50 and standard deviation of 10 were obtained following standardized scoring. Multivariable-adjusted linear regression models examined the association between SWA/ORP and clinical outcomes.

Results: At ages 5-12, fronto-occipital SWA was negatively associated with externalizing behaviors ($p=0.05$), while fronto-occipital and frontal ORP, and frontal ORP-9 were positively associated with internalizing symptoms (all $p<0.01$). At ages 12-23, central SWA was negatively associated with internalizing symptoms ($p=0.05$), while central ($p=0.05$) and frontal ($p=0.03$) ORP and central ORP-9 ($p=0.03$) were positively associated with externalizing behaviors.

Conclusion: Reductions in SWA in childhood or adolescence are associated with developmentally appropriate behavioral problems, as depression/anxiety are more prevalent in adolescence. In contrast to SWA, increased ORP (lighter sleep) and ORP-9 (greater arousability) are associated with more anxiety/depression in childhood, yet more externalizing behaviors in adolescence. These distinct associations, such as SWA with externalizing behaviors and ORP with internalizing symptoms during childhood, may reflect how SWA captures local/synaptic control, while ORP global/state control, of sleep depth, making both sleep EEG biomarkers important from a developmental standpoint.

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SLEEP HYGIENE INDEX: ASSOCIATIONS WITH SLEEP AND MENTAL HEALTH IN COLLEGE STUDENTS

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Introduction: Typically, college students practice unhealthy sleep hygiene behaviors, obtain too little sleep, and experience poor sleep quality. Sleep hygiene includes the routines or practices that prepare a person for the best possible night of sleep. Good sleep hygiene habits, like creating a sleep-friendly environment and making time for sleep, promote healthy duration and quality of sleep. Stress is also an important factor to consider during the college experience. Sleep and mental health are tightly connected, and stress can negatively impact the sleep and mental health of individuals. The focus of the current study was to examine habitual sleep habits in college students, in association with sleep quality and psychological health.

Methods: Participants included 51 undergraduate students (18 men, average age M=20.25 years, SD=1.78) who wore wrist actigraphs to measure their typical sleep habits for one week. After one week, participants completed questionnaires about sleep quality (Pittsburgh Sleep Quality Index, PSQI) and sleep hygiene practices (Sleep Hygiene Index, SHI). Higher scores on PSQI represent poorer quality; higher scores on SHI represent unhealthy sleep hygiene behaviors. Mental health symptoms were measured by the Depression, Anxiety, and Stress Scale (DASS-21).

Results: Overall sleep duration was 6.59 hours and sleep efficiency was 82.55% as measured by actigraphy. PSQI scores (M=6.86) demonstrated poor sleep quality and SHI scores (M= 24.80) indicated overall poor sleep hygiene practices. SHI scores predicted higher PSQI scores ($F(1, 50) = 18.05$, $p<.001$), but did not predict sleep duration or efficiency. Depression, anxiety, and stress scores on the DASS predicted poorer sleep hygiene ($F(1, 50) = 18.05$, $p<.001$; $F(1, 50) = 5.82$, $p=.020$; $F(1, 50) = 13.42$, $p<.001$; respectively).

Conclusion: As expected, college students' sleep was short in duration, poor in efficiency, and poor in quality. Additionally, poor sleep hygiene practices predicted poorer sleep quality. Interestingly, scores that indicated worse depression, anxiety, and stress predicted poorer sleep hygiene practices, suggesting that mental health may contribute to healthy sleep practices. More research is needed to understand the complex relationship between mental health, sleep, and healthy sleep practices

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