INVESTIGATING THE ROLE OF EXCESSIVE DAYTIME SLEEPINESS IN NEGATIVE EMOTION BIAS IN HIGHER EDUCATION STUDENTS

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Introduction: A review article by Tempesta et al (2018) Identifies a clear link between sleep and emotional phenomena such as emotional reactivity, emotional memory formation, empathic behaviour, fear conditioning, threat generalisation and extinction memory. This study investigates the relationship between excessive daytime sleepiness, emotional reactivity, and a bias towards negative visual stimuli within a higher education population. This study aims to investigate the role of sleepiness on emotional recognition.
Materials and Methods: Data from 93 participants was collected. Participants were aged between 18 and 59 and enrolled within higher education institutions across the United Kingdom . There was a total of, 77 Cisgender Female, 15 Cisgender male, and 1 non-binary participant. The average age of participants was 25.
Participants were given three self-report daytime sleepiness scales: the Epworth Sleepiness Scale (ESS; Johns, 1991), Stanford Sleepiness Scale (SSS; Shahid et al, 2011), and the Pittsburgh Sleep Quality Index (Smyth, 1999).
The OASIS image set (Kurdi, 2017) was chosen as the visual stimuli to be presented as these images are free to use online, are non-specific, and are high quality standardized images. In the presentation block of the study 180 random images were chosen, within these images 60 were positive ($M_{valence} = 6.0$; $SD_{valence} = .215$; $M_{arousal}, = 5.03$; $SD_{arousal} =.512$), 60 images were neutral ($M_{valence} = 4.34$; $SD_{valence} = .207$; $M_{arousal} = 2.59$; $SD_{arousal} =.770$) and the final 60 images were negative ($M_{valence} = 2.52$; $SD_{valence} = .523$; $M_{arousal} = 4.01$; $SD_{arousal} =.460$).
Participants were asked to fill in the ESS, SSS, PSQI in a random order. After this, Participants were shown the 180 OASIS images, one image at a time. Participants were asked to make a decision as to whether these images were positive neutral or negative using the 'k' 'l' or 'j' keys.
Results: Overall, the regression model was significant $F(4, 88) = 4.76$, $p < .002$, $R2 = .178$, with 18% of the variance in accuracy of emotion recognition being explained by ESS, SSS, Global PSQI and Sleep duration.
Conclusions: These results suggest that sleep parameters significantly impact emotional recognition within a higher education sample. Nevertheless, further research is required to investigate how sleepiness impacts higher level components of emotional intelligence, such as emotional understanding. The results of this study suggest that hypersomnolence is detrimental to emotional recognition, however it is not certain whether their understanding of visual stimuli is impacted.
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IS OPTIMAL ALWAYS OPTIMAL? CHRONOTYPE, TIME-OF-DAY, AND CHILDREN'S COGNITIVE PERFORMANCE IN REMOTE NEUROPSYCHOLOGICAL ASSESSMENT

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Introduction: Chronotype and time-of-day are important variables to consider in multiple dimensions of human functioning, including cognitive performance. However, chronotype in children has received little attention in comparison to adolescents and adults, possibly due to the a priori simplistic supposition that children are essentially oriented towards morningness. We investigated potential interactive effects of chronotype and time-of-day on children's cognitive performance (i.e., memory, language, and executive functions), hypothesizing that it may differ when comparing optimal vs. suboptimal times-of-day.
Materials and Methods: Seventy-six morning-type (M-Type; $n = 37$) or evening-type (E-Type; $n = 39$) children (48.7% girls; 51.3% boys; 7 to 10 years old; M age = 8.05; SD age = .51), identified through the Children ChronoType Questionnaire, from the 3rd and 4th grades of elementary school completed two remote neuropsychological assessment sessions. These two 30-minute evaluations were conducted via videoconference, either on the first or last hour of the school day (9:00 vs. 16:00, according to Portuguese school schedules), depending on a randomized allocation. The protocol included remote-friendly adapted versions of neuropsychological tests targeting memory, language, and attention/executive domains.
Results: The results showed a statistically significant moderate interactive/asynchrony effect between chronotype and time-of-day on a Rapid Alternating Stimulus task [$F(1,72) = 5.78$, $p = .019$, $\eta\rho2 = .07$]. If tested at their suboptimal time-of-day (i.e., morning for E-types, afternoon for M-types), M- and E-type children were faster when compared to an optimal time-of-day (i.e., morning for M-types, afternoon for E-types). There was also a nearly statistically significant small interactive/synchrony effect between chronotype and time-of-day on a Stories Memory Long-term Retrieval task [$F(1,72) = 3.79$, $p = .055$, $\eta\rho2 = .05$]. If tested at their optimal time-of-day, M- and E-type children retrieve more story components when compared to a suboptimal time-of-day. There was also a main effect of chronotype on a Backward Digit Span task, with E-type children performing better than M-type children [$F(1,72) = 5.98$, $p = .017$, $\eta\rho2 = .08$]. Additionally, there was a main effect of time-of-day on an Alternating Verbal Fluency task, with both M- and E-type children performing better in the morning when compared to the afternoon session [$F(1,72) = 8.85$, $p = .004$, $\eta\rho2 = .11$].
Conclusions: Chronotype and time-of-day, individually or in interaction, appear to be relevant variables in primary school children's cognitive performance, namely verbal memory retrieval, working memory, processing speed, and verbal fluency. Children tested in their suboptimal time-of-day can sometimes perform better than in their optimal time-of-day depending on the cognitive area considered (i.e., more automatic processing). We are pursuing further studies to help to disentangle which cognitive processes are more susceptible to synchrony or asynchrony effects and which ones are more resistant to chronotype and/or time-of-day effects.
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K-COMPLEXES MODULATE THE PROCESSING OF RELEVANT SENSORY INFORMATION DURING NREM SLEEP

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Introduction: In as much as the sleeping brain responds differently to auditory stimuli of distinct characteristics, the role of such differential responses is not fully understood. K-complexes represent the most prominent brain response to sensory perturbations during non-rapid eye movement (NREM) sleep. Latest research proposes that K-complexes reflect both sleep protecting as well as arousal inducing processes. We sought to investigate the role of the evoked K-complex to different auditory stimuli, in order to disentangle the function of brain responses to external stimuli during NREM sleep, whether they reflect inhibition and sleep protection or rather sensory processing.
Materials and Methods: We recruited 17 healthy humans (14 females) to sleep for a full night (~8h) in the laboratory while acquiring polysomnography data using high-density electroencephalography (EEG). During the night, we presented subjects with their own names as well as