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A Closer Look at the Sleep/Wake Habits and Dark Triad Traits

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Abstract: In this study, we sought to explore the association between sleep/wake habits and the Dark Triad (DT) traits. The sample consisted of 637 university students who filled out the measures of the Dark Triad, sleep quality, daytime sleepiness, and sleep timing. There was a positive relationship between the Dark Triad composite and eveningness, and a negative relationship between the DT and circadian distinctness was observed. Psychopathy appeared as the most sleep-related DT trait, and narcissism appeared as the least sleep-related one. Psychopathy and Machiavellianism predicted bedtime prior to free days stronger than the other sleep variables. This study suggests that both sleep timing and sleep stability are influenced by higher DT traits. As sleep disturbances go along with some other comorbid mental problems, looking for the possible underlying factors such as biological markers or psychological traits is warranted.

Keywords: Dark Triad; sleep; sleep timing; sleep quality; sleep habits

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1. Introduction

The Dark Triad (DT) is a constellation of three aversive psychological traits: Machiavellianism (the ability to manipulate others to reach power), psychopathy (the tendency to behave in an antisocial way and to lack empathy), and narcissism (an inflated sense of self and a huge need for admiration) [1]. Although psychopathy and narcissism are considered as personality disorders in the DSM-5-TR [2], what is employed here are rather subclinical traits which are present across a wider range of communities. It is assumed that narcissism is linked with feelings of entitlement, grandiosity, superiority, and dominance, which are found to be socially aversive by others [3]. Psychopathy is characterized by impulsivity and thrill-seeking accompanied with low empathy for others [4]. Machiavellianism, although it has never been seen as a mental health diagnosis, exhibits tendencies toward being cynical, unprincipled, and manipulative [5]. The DT is considered as a group of these socially callous characteristics linked with a bunch of undesired accompanying traits. The overlapping of the members of the DT has recently been supported, and it is hypothesized that "antagonism" might be the core of DT-related traits [6]. The Composite DT was earlier associated with bullying behavior [7], a higher tendency to engage in animal cruelty [8], an increased propensity to lie [9], substance use [10], a poorer quality of life [11], emotional dysregulation [12], and increased sleep disturbances [13].

Sleep is a vital function by which the body regains the energy for activity and serves as an essential element to both physical and mental health. A plethora of studies have evidenced the link between personality traits and emotional stability and the quality of sleep. For instance, one study [14] investigated the association between sleep disturbances, the Big Five, and emotional intelligence. It revealed that higher grades of emotional intelligence and conscientiousness were associated with fewer sleep complaints, and those who graded high in terms of neuroticism and openness to experience reported greater sleep complaints and insomnia symptoms. A longitudinal study [15] found out that lower scores for neuroticism and higher scores for extraversion and conscientiousness were related to better sleep quality at baseline and over time. Another study [16] reported a significant positive

relationship between impulsivity and poor sleep in an inpatient sample. Some other studies also reported that eveningness and shorter sleep duration (in a mixed-gender sample), along with later sleep timing (in an only female sample), were related to less restricted sociosexuality [17,18], and DT traits appear to be stronger in those with higher sociosexuality [19]. Some facets of the DT traits have been reported to be linked with emotional dysregulation. For instance, the exploitation/entitlement facet of narcissism was associated with impulse control difficulties and access-to-emotion regulation strategies [20,21]. In addition, spitefulness, as the callous aspect of psychopathy and Machiavellianism, seemed to be positively related to some facets of emotional dysregulation [21]. Assessing the link between DT traits and emotional dysregulations with two different measures of the DT also revealed positive correlations for all DT members with difficulties in terms of emotional regulation, as assessed by both measures of the Dark Triad [22]. Among people with higher grades of DT, having problems with emotional regulation might also trigger sleep problems. In an attempt to find the underlying potential mediators in the relationship between sleep and emotional regulation, psychopathy emerged as the only mediator that was associated with greater emotional dysregulation, and an inability to regulate emotions subsequently eventuates in worsened sleep quality [22]. As emphasized by [23], there is a reciprocal relationship between sleep and emotional regulation. On one hand, sleep deprivation can make people more vulnerable to stressful situations; on the other hand, emotional dysregulations and an inability to cope with stress can put us at a greater risk for mental problems. Therefore, understanding the risk factors of disturbed sleep can help us to cope more effectively with sleep complaints.

There are only a few inconclusive studies that specifically explored the relationship between sleep/wake variables and the DT. An early study [24] demonstrated a positive relationship between the tendency to have later bed/wake times (i.e., eveningness) and the composite of the DT. Aptly, [11] found an association between the DT and low bedtime cortisol and reduced sleep. Another study [13] reported a positive link between the DT and higher sleep disturbances. In the following year, [25] yielded a positive correlation between the DT and poor sleep quality. Accordingly, the symptoms of insomnia and lower sleep quality were positively associated with psychopathy and Machiavellianism but not with narcissism [25–27]. Contrary to the above-mentioned research, a recent study [28] on a male-only forensic psychiatric inpatient population did not observe any relationship between the DT and sleep quality.

To the best of our knowledge, all of the above-mentioned studies dealing with the relationship between sleep and the DT focused on connecting the DT to an overall sleep outcome (e.g., sleep disturbance, objective and subjective sleep quality, or sleep deprivation). However, before calculating the overall sleep quality, it seems necessary to check which sleep/wake routines result in poor or satisfying sleep quality. Routines such as sleep and wake times on free days and weekdays will form one's subjective image of how well one has slept and if he/she finds it satisfactory. None of the studies above tried to further investigate the sleep/wake habits, daytime sleepiness, or sleep/wake timing stability of those who graded high on the DT. The reasons for this can only be speculated upon, but it might be because of an outcome-oriented approach neglecting the process itself. Consequently, in this study, we aim to examine the bed/wake time, alertness, and sleep timing stability of individuals with variable levels of DT traits in order to uncover the association between the DT and sleep measures. Since the previous works have focused on the relationship between DT traits and overall sleep outcomes, it is of high interest for us to explore the potential links between DT traits and sleep behavior manifested in sleep/wake timing and its stability, along with daytime sleepiness as a new overall sleep outcome, besides replicating the findings for previously used variables such as subjective sleep quality. Thus, our approach in this piece of work is quite exploratory. In the first step, we will try to disclose the potential relationships, and then we will seek to predict sleep behavior variables using DT traits.

2. Materials and Methods

2.1. Sample

The sample consisted of 637 university students who voluntarily took part in this study through an online advertisement. The study took place between 2020 and 2021 via the University of Tuebingen's mail and snowball procedures. Out of these, 184 subjects (28.9%) were men and 445 (69.9%) were women. The estimated mean and SD of age was 24.82 $\pm$ 5.27. We used convenient sampling, and the anonymity of the subjects was preserved.

Statistical Analyses

In this work, we used Pearson's bivariate correlation analyses, and then, using a bunch of linear regression analyses, we sought to understand the strengths of DT traits in order to predict several sleep behavior variables in this research.

2.2. Measures

2.2.1. Short Dark Triad (SD3)

SD3 [29] is a 27-item questionnaire aiming at assessing the three components of DT: narcissism, psychopathy, and Machiavellianism. Each subscale consists of nine items, coded from 1 to 5 on a Likert scale. The total sum ranges from 27 to 135, with higher scores showing higher degrees of the specific trait. The validity and reliability of the questionnaire was provided earlier by Jones and Paulhus [29]. In the present study, the Cronbach's alphas were as follows: Machiavellianism (0.76), narcissism (0.69), and psychopathy (0.70). We used the German version provided by [30].

2.2.2. Sleep/Wake Variables

To assess sleep/wake timing, we used items of the Munich ChronoType Questionnaire MCTQ [31]. The MCTQ is a 17-item questionnaire assessing work schedule, workday sleep schedule, free day sleep schedule, and the self-assessment of chronotype. It is one of the most-used measures of sleep/wake timing worldwide. In this study, we used only the items related to bedtime and wake time on working as well as free days. The MCTQ is reported to be a valid and reliable test [31].

2.2.3. Sleep Timing Questionnaire (STQ)

The STQ [32] was initially developed to estimate individuals' sleep schedules. Special interest is given to the variability of the sleep–wake patterns, i.e., the variability of, e.g., bedtimes or rise times, suggesting that a large variability is related to an irregular sleep–wake pattern, as well to an irregular lifestyle. The test–retest reliability was reported to be in a range of 0.71 to 0.83, and the validity was successfully evidenced using actigraphy. In this study, we employed only four items dealing with sleep and wake-up timing stability during working and free days. The greater scores showed greater sleep/wake-up timing instability.

2.2.4. Pittsburgh Sleep Quality Index (PSQI)

In order to assess the subjective sleep quality and sleep disturbances, we used only two subscales of the PSQI [33]. The PSQI measures sleep quality through sleep disturbances in the past month and consists of the following subscales: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. In this study, higher scores show higher subjective sleep quality and higher sleep disturbances. Cronbach's α for the sleep disturbances subscale in this study was equal to 0.68. In this study, we used the German version prepared by [34].

2.2.5. Pediatric Daytime Sleepiness Scale (PDSS)

Since our sample included university students, we also employed the PDSS [35] to check how alert or tired they were during their university courses regarding their variation

in DT traits. The PDSS exhibited good consistency during the time (Cronbach's $\alpha = 0.74$; 35). In this study, α was equal to 0.80.

3. Results

The mean and SD of the items of the MCTQ were as follows: bedtime prior to free days (00:21 ± 1:31 h), bedtime on workdays (23:11 ± 1:12 h), wake time on free days (9:16 ± 1:34 h), and wake time on workdays (7:23 ± 1:06 h).

In the next step, we calculated the correlations between the DT traits and sleep variables. There was a positive relationship between the Dark Triad composite and eveningness (r = 0.15), and a negative relationship between the DT and circadian distinctness (r = −0.15) was observed.

Regarding Machiavellianism, some significant positive relationships emerged with pediatric daytime sleepiness, later bedtimes and wake times on working and free days, and more frequent sleep disturbances. Machiavellianism showed a negative relationship with circadian distinctness (r = −0.08)

Psychopathy appeared to be positively correlated with sleep and wake-up time instability, later bedtimes and wake times on working and free days, and more frequent experiences of sleep disturbances and eveningness (r = 0.19). On the other side, psychopathy was negatively linked with morningness (r = −0.14)

Narcissism was only negatively associated with pediatric daytime sleepiness and circadian distinctness (r = −0.19); none of the DT traits were correlated with subjective sleep quality. The results are depicted in Table 1.

Table 1. The relationship between Dark Triad traits and sleep variables.

	M	N	P
Subjective sleep quality	−0.01	0.06	−0.05
p	0.70	0.13	0.19
Sleep timing instability	0.02	0.01	0.18 **
p	0.58	0.78	<0.01
Wake-up timing instability	0.05	0.02	0.13 **
p	0.21	0.52	<0.01
Pediatric daytime sleepiness	0.09 *	–0.08 *	0.14 **
p	0.03	0.03	<0.01
Bedtime prior to free days	0.13 **	0.02	0.20 **
p	<0.01	0.60	<0.01
Bedtime on workdays	0.10 *	0.02	0.17 **
p	0.01	0.53	<0.01
Wake-up time on free days	0.14 **	–0.02	0.18 **
p	<0.01	0.63	<0.01
Wake-up time on workdays	0.08 *	0.00	0.11 **
p	0.04	0.84	<0.01
Sleep disturbances	0.11 **	0.03	0.10 *
p	0.04	0.84	<0.01

Abbreviations: M: Machiavellianism, P: psychopathy, and N: narcissism. * $p < 0.05$; ** indicates $p < 0.01$.

Later, we ran a series of regression analyses to see to what extent the DT traits together might predict the linked sleep variables. Except for pediatric daytime sleepiness, narcissism was removed from the analysis for being unrelated to sleep variables. Machiavellianism and psychopathy together predicted 3.8% of the variance of bedtime prior to free days followed by wake-up time on free days (3.4%), bedtime on working days (2.5%), sleep disturbances (1.2%), and wake-up time on weekdays (1.1%). Additionally, narcissism, with the other two DT traits, predicted 3.6% of the shared variance of pediatric daytime sleepiness. The results are presented in Table 2.

Table 2. Regression analysis of DT traits on sleep-related variables.

	Pediatric Daytime Sleepiness			Bedtime Prior to Free Days		Bedtime on Workdays		Wake Time on Free Days		Wake Time on Workdays		Sleep Disturbances	
	M	**P**	**N**	**M**	**P**	**M**	**P**	**M**	**P**	**M**	**P**	**M**	**P**
β	0.051	0.166	−0.154	0.043	0.181	0.036	0.150	0.072	0.149	00.43	0.092	0.077	0.065
p	0.249	<0.001	<0.001	0.332	<0.001	0.422	0.001	0.117	0.001	0.0328	0.038	0.085	0.142
R^2 adjusted	0.036			0.038		0.025		0.034		0.011		0.012	
p	<0.001			<0.001		<0.001		<0.001		0.013		0.009	

Abbreviations: M: Machiavellianism, P: psychopathy, and N: narcissism.

4. Discussion

DT traits are socially aversive characteristics which are normally associated with negative psychological outcomes. It was earlier evidenced that those who grade higher on DT traits suffer more frequently from sleep disturbances. In this study, we sought to recruit a more generous set of sleep variables to further understand individuals' overall sleep conditions and their sleep/wake habits and to estimate to what extent the DT could predict sleep timing and quality. To the best of our knowledge, this is the first study to examine the DT and its association with sleep behavior on the basis of such a granular dataset in more than 600 individuals.

In that matter, bivariate correlations revealed that psychopathy acted as the most related DT trait and proved to be associated with both later sleep/wake timing and poorer sleep quality. However, none of the DT traits were associated with subjective sleep quality, as studied by a single-item subscale of the PSQI asking subjects to rate their overall sleep quality during the past month. Due to the relationships between DT traits and sleep problems, this seems surprising. It could well be that those individuals might not be able to judge their own sleep quality adequately or they are intentionally simulating in order to create a better look. It may also be due to the inadequacy of single-item measurements to function accurately among these individuals. A study [27] demonstrated a positive relationship between Machiavellianism and secondary psychopathy and a negative relationship between narcissism and subjective sleep quality. Therefore, research on this issue should be continued.

Psychopathy emerged as the one DT trait with greater correlation coefficients with sleep variables. In general, psychopaths are assumed to be more evening-oriented [24,27,36], even when adjusting for age, sex, anxiety, and depression [37]. Although being a night person is beneficial for the psychopaths' "cheater strategy" [24], it also has some strong connections with negative mood, personality, and sleep disorders (see [38] for a review).

Our data did not demonstrate that narcissism is a relevant trait with regard to sleeping behavior. This result was in line with the wider body of literature indicating no consistent proof for a relevant link between narcissism and chronotype [24,36], insomnia [27], sleep disturbances [13], and sleep quality [28]. In contrast, a positive association between narcissism and poor sleep quality was reported in two different studies [25,27]. Since overall conflicting data has been published concerning narcissism and sleeping behavior, dedicated research is warranted and should focus on including detailed questionnaires to assess the link between the facets of narcissism and sleep variables separately instead of considering it as an overall trait.

The regression analyses performed revealed that both psychopathy and Machiavellianism anticipate the largest amount of the shared variance of bedtime prior to free days compared to the other sleep variables examined. This finding has two important implications. First, individuals with a strong DT trait—more specifically, those with an inclination toward psychopathy and Machiavellianism—tend to show an increased proclivity toward staying up late in the night when they are free the next day. Interestingly, narcissism is not associated with this specific behavior. Second, this might equip them with better cognitive functioning at night, accelerating a protean social style [39].

5. Conclusions

In general, this study shed light on some previously unassessed sleep habits of individuals regarding their DT traits. Similar to previous studies, we could detect sleep complaints particularly associated with two DT traits: Machiavellianism and psychopathy. This study provided us with some extra information on the sleep/wake habits of individuals rather than just focusing on their overall sleep quality. As sleep disturbances go along with some other comorbid mental problems, early detections and interventions to improve both sleep planning and quality seem essential. More in-depth research on the impact of DT traits on sleeping behavior is warranted.

6. Limitations of the Study

Our main limitation was the lack of exact data on sleep/wake variables needed to calculate important variables such as sleep duration, the midpoint of sleep, social jetlag, and so on. Future studies are highly encouraged to apply the whole measure of the MCTQ or biological assessments such as actigraphy to have a robust and wider image of the sleep/wake habits of those who grade high in terms of DT traits. In this study, regarding the number of variables, some of which are not mentioned in this study, and the overall items length, we were not able to perform the entirety of some sleep questionnaires.

We also encourage future studies to consider the facets of DT traits separately and seek to discover possible associations between the facets of each DT trait and overall sleep outcomes as well as actual sleep/wake behaviors, as the introduction suggested that different facets of DT traits might be responsible for emotional dysregulations rather than the overall trait alone. Additionally, regarding the findings in this paper, future research should use broad personality traits such as the Big Five as control variables when assessing the relationship between the DT and sleep variables.

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