As cold as a fish? Relationships between the Dark Triad personality traits and affective experience during the day: A day reconstruction study

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Abstract

The Dark Triad of personality is a cluster of three socially aversive personality traits: Machiavellianism, narcissism and psychopathy. These traits are associated with a selfish, aggressive and exploitative interpersonal strategy. The objective of the current study was to establish relationships between the Dark Triad traits (and their dimensions) and momentary affect. Machiavellianism, grandiose narcissism, vulnerable narcissism and the dimensions of the Triarchic model of psychopathy (namely, boldness, meanness and disinhibition) were examined. We used the Day Reconstruction Method, which is based on reconstructing affective states experienced during the previous day. The final sample consisted of 270 university students providing affective ratings of 3047 diary episodes. Analyses using multilevel modelling showed that only boldness had a positive association with positive affective states and affect balance, and a negative association with negative affective states. Grandiose narcissism and its sub-dimensions had no relationship with momentary affect. The other dark traits were related to negative momentary affect and/or inversely related to positive momentary affect and affect balance. As a whole, our results empirically demonstrated distinctiveness of the Dark Triad traits in their relationship to everyday affective states. These findings are not congruent with the notion that people with the Dark Triad traits, who have a dispositional tendency to manipulate and exploit others, are generally cold and invulnerable to negative feelings. The associations between the Dark Triad and momentary affect were discussed in the contexts of evolutionary and positive psychology, in relation to the role and adaptive value of positive and negative emotions experienced by individuals higher in Machiavellianism, narcissism and psychopathy.

Introduction

In recent decades, there has been an increasing number of studies showing that personality matters because it has important consequences for individuals and enables prediction of many life outcomes [1,2]. According to an evolutionary conceptualization, inherited personality
traits are visible as behavioral tendencies and have environment-contingent fitness consequences [3]. Evolutionary researchers have found associations between fitness and general personality traits [4,5]. Various studies have demonstrated that even extreme values of personality traits can be adaptive in certain environmental contexts [3]. It has been shown that some personality syndromes that are often interpreted as disorders can improve fitness due to behavioral strategies that accompany them [6,7]. Such personalities are currently extensively investigated as the so-called the Dark Triad of personality [8].

The Dark Triad is a set of dispositions fostering the use of exploitative resource acquisition strategies [9], which enables the expropriation of other people’s resources using deception, manipulation, intimidation or coercion [10]. Research showed that the Dark Triad traits can increase fitness by reinforcing an exploitative, short-term mating (preferring many casual sex partners) [11,12] and, more generally, a fast life strategy (focused on getting immediate rewards and gratifications) [13]. However, persons with dark personalities can also incur some undesirable consequences of their strategy, such as mate defection [14], instability of interpersonal relationships [15], lower sexual satisfaction [16], different health problems [17], or receiving punishments for being identified as a cheater [18]. The potential individual costs of the Dark Triad behavioral strategy were also observable as lower subjective well-being declared by respondents [19,20]. In the current study, we aimed at exploring this issue by investigating daily emotional experience (which is also regarded as a key indicator of subjective well-being) in the context of individual differences in Machiavellianism, narcissism and psychopathy. The obtained relationships will be also interpreted in terms of evolutionary functions of emotions.

The adaptive functions of emotions rests on facilitating decisions of the allocation of behavioral effort through signaling the actual position of an individual (taking into account the state of environment and the condition of the organism) [21]. The role of emotions is to prepare an individual to respond optimally in situations that contain threats (negative emotions) or opportunities (positive emotions) [22]. Negative emotions seem particularly important because they “are defenses that help us to deal with situations that decrease fitness” [22] (p. 284). The particular emotional states may be treated as more specific programs that help individuals to cope with particular problems. In the current study, we concentrated on an analysis of the frequency and intensity of emotional states experienced in everyday life, categorized as positive or negative. It can be expected that some emotional tendencies (e.g., more frequent experiencing of negative affect, also observable as a trait negative affectivity or lower subjective well-being) [17,19,20], usually interpreted by psychologists as costs paid by individuals with the Dark Triad, can be also viewed as adaptive in light of an evolutionary theory.

The Dark Triad of personality–Machiavellianism, narcissism and psychopathy–is a cluster of three socially aversive personality traits [8]. The Dark Triad personalities share some common features, such as disagreeableness, low empathy, selfishness, duplicity, competitiveness and manipulativeness [9]. For many years, dark traits have been viewed as maladaptive by clinical and social psychologists. However, the terms “adaptive” and “maladaptive” have different meanings in psychology (promoting or diminishing health and well-being) than they do in evolutionary biology (enhancing or reducing fitness) [23]. Therefore, “biologically adaptive traits may or may not be socially desirable or conducive to health and well-being” [23] (p. 262). Recent research has often taken an evolutionary framework perspective when studying dark personalities [11,13–15,24]. This approach makes it possible to consider the Dark Triad behaviors in terms of potential advantages and discuss their adaptive values in different areas of functioning, including emotional experience in everyday life. Interest in this latter area has, to date, been limited, as highlighted in meta-analyses [25]. While some research has focused on dark personalities’ limited empathy [26–30] and emotional intelligence [31–35] or difficulties in emotion regulation [36–39], less attention has been paid to the broader examination of the
Dark Triad and affective states in daily life. Addressing this gap, the present study explores associations between Machiavellianism, narcissism and psychopathy and momentary affective states.

The Dark Triad traits are often investigated as three unidimensional constructs. However, a growing number of studies analyze different types/dimensions of narcissism and/or dimensions of psychopathy [40–43]. The dimensional approach is particularly advantageous when affect is of interest because the variants of narcissism and psychopathy show opposing relationships with emotionality [44–49]. Such an approach was used in the present study.

Machiavellianism is a trait defined by manipulative and exploitative interpersonal style. According to Christie and Geis [50], “cool syndrome” (coldness and detached affect, being cool and rational in social situations) is a central feature of Machiavellianism. “High Machs” are described as cynical and misanthropic, with a general tendency to emotional coldness, which can help them to manipulate and exploit others. They “show less emotionality and have fewer affective reactions than other people do towards situations, others, the self, and moral issues” [51] (p. 396). However, positive correlations between Machiavellianism and neuroticism, emotional instability and susceptibility to stress [52] suggest that Machiavellian coldness may partly be “in the eye of the beholder.” Research shows that Machiavellianism is associated with alexithymia [53], difficulties in expressing emotional states [39] and is inversely related to emotional well-being [17].

Narcissism, when treated as a trait, is connected with self-love, self-absorption, a sense of superiority, and attention seeking. Research suggests that there are two variants or dimensions of narcissism: grandiose and vulnerable [44]. Grandiose narcissism is characterized by egocentrism, grandiosity, entitlement, aggression and dominance. Grandiose narcissism is also connected with extraversion, emotional resilience, self-confidence and higher declared well-being. Cross-sectional research has demonstrated a positive relationship between grandiose narcissism and positive affectivity [45,54] and a negative relationship with depression and neuroticism [55,56]. Vulnerable narcissism, on the other hand, is related to self-absorption, defensiveness, introversion, a tendency to hold unrealistic expectations, and having a fragile self-confidence. Vulnerable narcissism has been associated with neuroticism [57,45], negative affectivity [45,46], depressive and anxious temperament [58], and negatively associated with positive affectivity [45,46].

The most recent three-dimensional conceptualizations of narcissism claim that narcissism has a more complex structure [59–61]. These models supplement narcissistic grandiosity and vulnerability with the third dimension to capture their common components. In the Narcissism Spectrum Model [62], the following dimensions of narcissism are distinguished: entitled self-importance, which is the main characteristics of narcissism, and the two nearly orthogonal factors—narcissistic grandiosity and narcissistic vulnerability. In turn, the Trifurcated Model of Narcissism [63,64] proposes such dimensions as agentic extraversion, narcissistic neuroticism and self-centered antagonism (the “core” of narcissism). Despite the differences in the names of components of narcissism, the integrative models of narcissism seem congruent [64]. Both models have received empirical support [61,65,66].

In the present study, the Narcissistic Personality Inventory (NPI-13) [67,68,64] total score was used to assess grandiose narcissism and the Hypersensitive Narcissism Scale (HSNS) [57] was applied to measure vulnerable narcissism. Both questionnaires can be considered valid measures of narcissistic grandiosity and vulnerability, respectively [59,69]. Additionally, the scores on the sub-scales of the NPI allow distinguishing more antagonistic element of grandiosity (Exploitativeness/ Entitlement).

Finally, psychopathy is connected with many serious dysfunctions. The main features of psychopathy are high levels of callous and unemotional traits (e.g., lack of empathy, emotional
detachment, shallow affect, incapacity for love). Research suggests that psychopathy may be a heterogeneous construct, with two or three variants [70]. Primary psychopaths have a limited ability to feel some emotions, such as fear, anxiety or guilt, that may be visible as lower negative affect; they also show higher levels of extraversion, which is in line with positive relation of primary psychopathy with positive affectivity [47–49,71]. However, other studies reported no relationship between primary psychopathy and positive affectivity and a positive association of primary psychopathy with negative affectivity [49].

The secondary variant of psychopathy is associated with impulsivity, depression, higher emotional distress, negative affect and lower positive affect [71,47,49]. The important difference between these two variants of psychopathy is in their affective deficits and anxiety/neuroticism: primary psychopaths are deficient in emotionality and have low anxiety, while secondary psychopaths have fewer affective deficits and higher anxiety [49] (p. 529). These opposing relationships of primary and secondary psychopathy with emotionality can make correlations between emotionality and overall psychopathy non-significant [72].

The triarchic model of psychopathy [73–75] is the most current attempt to resolve the issue of multidimensionality. It includes three interrelated but distinct phenotypic constructs: meanness, boldness and disinhibition. Given the differences between them, it is useful to analyze them separately [75] (p. 360). Disinhibition is related to impulsiveness, impaired affect regulation, negative emotionality, hostility, mistrust and aggression. Meanness is defined by low empathy, callousness, excitement seeking, predatory exploitativeness, destructiveness and problems with maintaining close relationships. Boldness is connected with low anxiety, emotional resilience, interpersonal effectiveness, assertiveness and reflects more “positive” features of psychopathy. Thus, the triarchic model includes both adaptive and maladaptive aspects of psychopathy, which is especially important when sub-clinical groups are investigated. This model was used in the present study.

The aim of the current study was to establish relationships between the Dark Triad traits and momentary affective states in order to facilitate a clearer understanding of the specificity of daily affective experiences in people with dark personalities. Affect defined as “the conscious subjective aspect of emotions” [76] (p. 839) is typically measured by self-reports. Adopting a dimensional approach to affect [77–79], our study focused on the two basic affect dimensions: “positive affect” (i.e., experiencing pleasant emotions) and “negative affect” (i.e., experiencing unpleasant emotions), which can be assessed either as a state or as a trait [78]. These dimensions of emotional experience are congruent with those used in a number of evolutionary studies considering the adaptive functions of emotions [22]. The dimensions of affect can be measured using multi-item methods [80,81]. However, when subjects are asked to fill in questionnaires repeatedly (e.g., in diary or day reconstruction studies), short lists of emotional words or pictures [82,83,84] or one-item measures [85,86] can be more appropriate [87]. For this reason, we decided to use a short list of emotional words in our study.

In the current study, we followed the suggestion of Sleep, Lynam, Hyatt and Miller [88] (p. 947) that zero-order approaches should be prioritized when studying the Dark Triad constructs. Our main focus was on the bivariate relationships between affect and the Dark Triad traits: does momentary affect vary as a function of the particular Dark Triad traits? In order to examine this, we formulated the following hypotheses. First, both the results of cross-sectional studies and some features of the construct (e.g., negative world views and a negative cynical attitude toward people, which may be a source of distress) suggest that Machiavellianism would be positively associated with momentary negative affect (NA) and negatively associated with momentary positive affect (PA; Hypothesis 1). Second, we put forward a hypothesis on a positive association of grandiose narcissism with momentary PA and a negative association with momentary NA (Hypothesis 2). However, we postulate that vulnerable narcissism will be
positively related to momentary NA and negatively related to momentary PA (Hypothesis 3). Finally, taking into account the fact that meanness and disinhibition are related to primary and secondary psychopathy [75], and boldness is related to grandiose narcissism [73,89], and considering the results of recent research on triarchic psychopathy dimensions [90–92], we hypothesize that: boldness will be positively related to momentary PA and negatively related to momentary NA (Hypothesis 4); disinhibition will be negatively related to momentary PA and positively related to momentary NA (Hypothesis 5), and meanness will be negatively related to momentary NA (Hypothesis 6).

Materials and methods
Participants and procedure
A group of 286 university students (109 males, age $M = 21.3, SD = 1.8$) was recruited through advertisements on campuses and on social media from a large university in Poland. Inclusion criteria included age (18 years and above) and consent to participate. Sixteen persons (5.6%) had incomplete questionnaires and were excluded from the analysis. Thus, the final sample consisted of 270 persons (104 males, 38.5%).

The study was voluntary and without compensation. Participants did not provide any personal data and a coding system for the questionnaires was used. Additionally, they returned the questionnaires in sealed envelopes. They were also assured that there are no wrong answers and that all their opinions are important. Participants were informed that the study was designed to explore the relationship between personality and daily emotions. No written consent was obtained because all the participants were volunteers. Oral consent to participate was obtained prior to participation. The current study received approval from the Ethics Committee of the Faculty of Pedagogy and Psychology, University of Silesia in Katowice.

For this study, the participants were split into groups of 10–15 persons, and sessions were run in university lecture rooms. They were provided with oral and written instructions. Each group was accompanied by two experimenters. The survey lasted 70–90 minutes and was divided into two parts with a break in between. In part 1, the participants provided socio-demographic data and filled out measures of the Dark Triad traits. In part 2, they completed a day reconstruction questionnaire.

The day reconstruction method. The Day Reconstruction Method (DRM), developed by Kahneman, Krueger, Schkade, Schwartz and Stone [93] as an alternative to the Experience Sampling Method (ESM) [94], is an experiential measure of affect. Participants are asked to divide their previous day into distinct episodes, list all the episodes, describe their features (e.g., what he or she was doing), report the time that each episode began and ended and evaluate affective states that they experienced during each episode. This technique can reduce memory and aggregation biases and it is easier and less time-consuming for a participant than the ESM (as only a single session is required). The stability and validity of measures of affect assessed by the DRM were confirmed in previous research [95–98].

To avoid respondents’ concentration on more salient or memorable events, the DRM proposes two separate phases of the survey. In the first phase, participants are asked to remember and describe in detail what they did yesterday. The aim of this phase is to reconstruct a previous day as thoroughly as possible. All events (“episodes”) should be described. Episodes are discrete activities, such as eating a breakfast, commuting to work or school, writing a report, or socializing with friends [93]. Participants are aware that they are preparing this “diary” for themselves i.e., they will not have to show it to anyone. After preparing a diary the second phase begins (i.e., participants answer the questions about affective states that have been experienced by them during each episode described earlier in diaries).
The questionnaire used in the current study was similar to that proposed by Kahneman et al. [93,99]. In section one, the participants were asked to construct a diary listing all activities/episodes they engaged in throughout the previous day, and to write down the beginning and the end of each episode. In section two, the subjects were requested to answer a series of questions for each episode, including (1) when the episode began and ended, (2) what they were doing (making a choice from 15 options), (3) who they were with (eight options), and how they felt in this situation (six affect dimensions). The subjects described, on average, 11.3 episodes ($SD = 3.4$, $Me = 12$, range 3–18), which gave 3047 measurements.

**Measures**

**Momentary affect.** A list of adjectives was used to assess emotional states experienced during the day.

The adjectives were selected from the circumplex models of affect [100–103] that organize affective states in a two-dimensional circular structure. The two dimensions (pleasantness and arousal) form four quadrants of affect. As pleasantness (positivity) was of interest in the present study, three "positive" affect words (i.e., pleasant affective states: ’happy’, ’enthusiastic’, ’relaxed’) and three negative affect words (i.e., unpleasant affective states: ’annoyed’, ’afraid’, ’depressed’) were selected. Among these adjectives, two adjectives (’relaxed’, ’depressed’) are located in the low-activation quadrants of the model whereas the remaining adjectives are located in the high-activation quadrants. The negative affect words are related to three basic emotional states (anger, sadness and fear) that are recognized by the vast majority of theories of emotions. Short lists of adjectives describing emotions were previously used in many studies to measure affect [82,104–106]. The participants described their affective states (e.g., “I felt happy in that situation”) using a 7-point scale (1 = “not at all”, 7 = “extremely”).

Dimensional approach to investigating emotions was used in the current study, thus, the two indexes (for positive and negative affect) were calculated. The principal-components factor analysis was conducted in order to check whether the relationships between positive affective states and negative affective states were strong enough and whether separate negative and positive affect indexes can be calculated. A similar approach was previously used in other studies that adapted the dimensional approach to emotions [107–109]. The analysis identified two factors with eigenvalues greater than 1 that explained 76% of the momentary affect variance. Factor loadings after Varimax rotation reveal that all the positive affect items loaded strongly on the first factor (> .76) and all the negative affect items loaded strongly on the second factor (> .62). The scores on the items ’happy’, ’enthusiastic’ and ’relaxed’ were averaged to form a momentary positive affect (PA) index ($\alpha = .87$), whereas the average of ratings on ’annoyed’, ’depressed’, and ’afraid’ created a momentary negative affect (NA) index ($\alpha = .77$). The affect balance (“net affect”) score was calculated by subtracting momentary NA form momentary PA for each assessment [110]. The score can vary from –6 (lowest affect balance) to 6 (highest affect balance).

**The Dark Triad measures.** A Polish version of the Mach IV [50,111] was used to measure Machiavellianism (20 items; 1 = “fully disagree,” 7 = “fully agree”; $\alpha = 0.74$). A Polish validated version of the Narcissistic Personality Inventory (NPI-13) [67,112] was used to assess grandiose narcissism (13 items; 1 = “fully disagree,” 7 = “fully agree”; $\alpha = 0.64$). The NPI-13 consists of three sub-scales: Leadership/Authority (LA; 4 items, $\alpha = 0.6$), Grandiose Exhibitionism (GE; 5 items, $\alpha = 0.7$), and Entitlement/Exploitativeness (EE; 4 items, $\alpha = 0.2$). The results regarding Exploitation/Entitlement were not interpreted because of very low reliability of this sub-scale. Vulnerable narcissism was assessed with a Polish version of the Hypersensitive Narcissism Scale [57,113] (HSNS; 10 items; 1 = “strongly disagree,” 5 = “strongly agree”; $\alpha = 0.57$).
Triarchic psychopathy was measured with the TriPM-41 [114] (41 items; 0 = “false,” 3 = “true”; boldness 15 items, \( \alpha = 0.79 \); meanness 10 items, \( \alpha = 0.83 \); disinhibition 16 items, \( \alpha = 0.76 \)), a shortened Polish validated version of the Triarchic Psychopathy Measure (TriPM) [74]. The TriPM-41 has good psychometric properties and was previously used in several studies [16,41].

**Statistical analyses**

The data from the current study have a multilevel structure and were analyzed with a series of multilevel random coefficient models [115]. We examined relationships between momentary affect and the Dark Triad traits within an aggregationist model where "observations are nested within persons, and relationships between these means (intercepts from level 1) are examined at level 2" [116] (p. 805). According to Nezlek [116], such analyses are more accurate than ordinary least squares analyses because they use a procedure of ‘precision weighting’ (the intercepts are weighted at level 2 by the number of observations and the consistency of responses). All of the variables were standardized to enable a comparison of coefficients, which can be interpreted as standardized regression coefficients in ordinary least squares analyses [117] (p. 781). The HLM-7 program [118] and the restricted maximum likelihood method of estimation were used. Fixed effects with robust standard errors were estimated. All the coefficients were modelled as random. The models were adjusted for participant sex.

We first analyzed whether participants differed in their average levels of reported momentary affect. Afterwards, a series of analyses was conducted to establish the bivariate associations between each Dark Triad trait and momentary affect. Next, models with all level-2 predictors were analyzed to assess the potential importance of the Dark Triad traits as predictors of momentary affect. We also evaluated the strength of relationships between affective states and dark traits (pseudo R-square) [116] (p. 798). The Benjamini and Hochberg [119] false discovery rate procedure was used to adjust for multiple testing. This method controls the probability that a true null hypothesis is rejected. A false discovery rate (FDR) of 5% was applied.

The IBM SPSS software (version 25) was used to compute descriptive statistics, internal consistency, correlation and factor analyses.

**Results**

**Preliminary analyses**

Descriptive statistics for study variables and correlations between variables are given in Table 1. Bonferroni correction for multiple testing was applied to these results (six the DT traits correlated with three affect measures, \( 6 \times 3 = 18 \), 0.05/18 = 0.0028), resulting in a significance threshold of 0.0028. Correlations between the Dark Triad traits and the particular emotional states are shown in S1 Table. In the beginning, a series of unconditional random intercept models (without predictors at any level) with momentary positive affect (PA), momentary negative affect (NA) and affect balance as outcome variables was performed (within-person: \( y_{ij} = \beta_0j + r_{ij} \), between-person: \( \beta_0j = \gamma_00 + u_{0j} \)). The results demonstrated that for momentary PA (intra-class correlation coefficient, ICC = 0.34), momentary NA (ICC = 0.44) and affect balance (ICC = 0.31) a significant part of their variance was at the within-person level (range 56–69%). Thus, the application of multilevel analysis was supported.

**Dark traits as predictors of momentary affect.** A series of multilevel analyses was conducted to assess bivariate relationships between the Dark Triad traits and momentary affect with the number of the episode (a level-1 predictor) as a control variable (within-person: \( y_{ij} = \beta_{0j} + \beta_{ij} \) (EPISODE) + \( r_{ij} \)) and each Dark Triad trait as a level-2 predictor (between-person: \( \beta_{0ij} \)
\[ y_{ij} = \gamma_{00} + \gamma_{01} \text{(Trait)} + u_{0j} + \beta_{1j} = \gamma_{10} + u_{1j} \]. The number of the episode was chosen as a control variable because past research using the DRM showed that time of a day is an important predictor of positive and negative affect: across the day, positive affect increases and negative affect decreases \([120,121]\). Table 2 contains a summary of the analyses for momentary PA, momentary NA and affect balance.

Contrary to the expectations, there was no association between grandiose narcissism (and its facets) and momentary affect (Hypothesis 2) and meanness was not related to momentary NA (Hypothesis 6), but it emerged as a negative predictor of momentary PA. Disinhibition positively predicted momentary NA, which was in line with Hypothesis 5. However, it had no relationship with momentary PA, which was inconsistent with Hypothesis 5. The remaining dark traits were associated with both momentary PA and momentary NA, which provided support for Hypotheses 1, 3 and 4. The analyses for Machiavellianism and vulnerable narcissism showed similar results: as predicted, both traits were positive predictors of momentary NA and negative predictors of momentary PA. In turn, the associations of boldness with affect

### Table 1. Descriptive statistics and correlations between study variables.

| Variables                  | M    | SD   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   |
|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 Momentary positive affect| 4.63 | 1.54 | -    |      |      |      |      |      |      |      |      |      |      |
| 2 Momentary negative affect| 1.86 | 1.18 | -.36 | -    |      |      |      |      |      |      |      |      |      |
| 3 Affect balance           | 2.78 | 2.38 | .86  | -.79 | -    |      |      |      |      |      |      |      |      |
| 4 Grandiose narcissism     | 4.69 | 2.60 | .05  | .03  | .02  | -    |      |      |      |      |      |      |      |
| 5 Leadership/Authority     | 1.43 | 1.24 | .07  | .00  | .04  | .68  | -    |      |      |      |      |      |      |
| 6 Grandiose Exhibitionism  | 1.85 | 1.60 | .11  | .00  | .07  | .75  | .20  | -    |      |      |      |      |      |
| 7 Exploitiveness/Entitlement| 1.42 | 1.02 | -.11 | .08  | -.12 | .55  | .20  | .09  | -    |      |      |      |      |
| 8 Vulnerable narcissism    | 2.97 | 0.52 | -.18 | .33  | -.30 | .12  | .04  | .01  | .25  | -    |      |      |      |
| 9 Machiavellianism          | 3.87 | 0.65 | -.21 | .30  | -.30 | .21  | .06  | .08  | .33  | .44  | -    |      |      |
| 10 Boldness                | 1.68 | 0.47 | .18  | -.20 | .23  | .49  | .49  | .31  | .18  | -.23 | .01  | -    |      |
| 11 Meanness                | 0.88 | 0.40 | -.07 | .28  | -.20 | .27  | .13  | .23  | .16  | .32  | .26  | .03  | .13  |
| 12 Disinhibition           | 0.76 | 0.40 | -    |      |      |      |      |      |      |      |      |      |      |

The momentary variables were aggregated before the analysis. Pearson’s correlation coefficient was used. \(N = 270\) persons, \(n = 3047\) measurements.

\(p < 0.0028\) (two-tailed).

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### Table 2. Multilevel estimates predicting momentary affect from the Dark Triad traits.

|                        | Momentary positive affect | Momentary negative affect | Affect balance |
|------------------------|---------------------------|---------------------------|---------------|
|                        | \(\beta\) | 95% CI | \(t\) | \(p\) | \(\beta\) | 95% CI | \(t\) | \(p\) | \(\beta\) | 95% CI | \(t\) | \(p\) |
| Machiavellianism       | -0.13 | -0.21, -0.05 | 3.36 | <0.001 | 0.20 | 0.12, 0.28 | 5.0 | <0.001 | -0.19 | -0.27, -0.11 | 5.18 | <0.001 |
| Grandiose narcissism   | 0.03 | -0.05, 0.11 | 0.81 | 0.36 | -0.03 | -0.03, 0.09 | 0.87 | 0.38 | 0.005 | -0.06, 0.06 | 0.15 | 0.88 |
| Leadership/Authority   | 0.04 | 0.00, 0.08 | 1.11 | 0.27 | 0.01 | -0.03, 0.05 | 0.27 | 0.79 | 0.02 | -0.02, 0.06 | 0.62 | 0.54 |
| Grandiose Exhibitionism| 0.07 | 0.03, 0.011 | 1.72 | 0.086 | 0.01 | -0.03, 0.05 | 0.17 | 0.87 | 0.04 | 0.00, 0.08 | 1.03 | 0.31 |
| Exploitiveness/Entitlement | -0.07 | -0.011, -0.03 | -1.66 | 0.097 | -0.06 | -0.1, -0.02 | 1.35 | 0.18 | -0.07 | -0.11, -0.03 | -1.86 | 0.06 |
| Vulnerable narcissism  | -0.11 | -0.19, -0.03 | 2.72 | 0.007 | 0.21 | 0.15, 0.27 | 6.36 | <0.001 | -0.18 | -0.26, -0.1 | 5.13 | <0.001 |
| Disinhibition          | -0.04 | -0.12, 0.04 | 1.0 | 0.32 | 0.18 | 0.1, 0.26 | 4.94 | <0.001 | -0.12 | -0.2, -0.04 | 3.23 | 0.001 |
| Meanness               | -0.13 | -0.21, -0.05 | 3.58 | <0.001 | 0.02 | -0.06, 0.1 | 0.59 | 0.55 | -0.10 | -0.18, -0.02 | 2.53 | 0.01 |
| Boldness               | 0.10 | 0.02, 0.18 | 2.81 | 0.005 | -0.10 | -0.18, -0.04 | 3.13 | 0.002 | 0.12 | 0.18, 0.06 | 3.38 | <0.001 |

All the variables were standardized. All the coefficients remained significant after controlling for multiple testing. CI = confidence interval.

\(p < 0.018\) (two-tailed).

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were in the opposite direction: positive for momentary PA and negative for momentary NA. Affect balance was predicted by vulnerable narcissism, Machiavellianism, disinhibition and meanness (negatively) and by boldness (positively). All the above relationships remained significant after controlling for multiple testing by applying the Benjamini-Hochberg correction. The models accounted for 3–5% of the variance in momentary PA, 3–12% of the variance in momentary NA and 4–8% of the variance in affect balance.

Next, the multivariate models with all level-2 predictors were tested to assess the incremental predictive value of the particular Dark Triad traits as predictors of momentary affect, controlling for their shared variance. Again, the number of the episode was a level-1 predictor and all the Dark Triad traits were introduced as level-2 predictors (Table 3). When momentary PA was used as an outcome variable, boldness emerged as a positive predictor (but it lost significance after controlling for multiple testing) and meanness was a significant negative predictor. Machiavellianism, disinhibition and vulnerable narcissism were positively associated with momentary NA, while boldness was negatively associated with momentary NA. However, boldness lost significance after controlling for multiple testing. Finally, when affect balance was introduced as a dependent variable, boldness turned out to be a positive predictor while Machiavellianism emerged as a negative predictor. The overall models accounted for 8% of the variance in momentary PA, 21% of the variance in momentary NA and 16% of the variance in affect balance. Subsequently, the above analyses were rerun with scores on sub-scales of the NPI used instead of overall NPI scores (S2 Table). The facets of grandiose narcissism were not significant predictors of momentary affect.

**Being alone or with people and the relationship between grandiose narcissism and momentary affect.** Grandiose narcissism and its facets were not related to momentary affect in the current study. To better understand this result, we performed an additional analysis adding a contextual level-1 variable (ALONE) that determined whether a participant was alone in the assessed situation. Results of past research demonstrated a positive relationship between social activity (i.e., presence of other people) and positive affective states [122]. However, other people are especially important to grandiose narcissists; their presence (or absence) might influence their affective states more compared to non-narcissistic individuals. For example, their narcissistic needs may be fully satisfied only when someone can admire them. Past research showed that narcissistic admiration is negatively related to the preference to be alone [123]. In our analysis ALONE was a dichotomous variable coded -1 for the answer “I was

| Table 3. Multilevel models predicting momentary affect from the Dark Triad traits. |
|--------------------------------------|--------------------------------------|--------------------------------------|
|                                     | Momentary positive affect | Momentary negative affect | Affect balance |
|                                     | β 95% CI t p               | β 95% CI t p               | β 95% CI t p               |
| **Within-person predictor**          | Episode | 0.15* 0.11, 0.19 7.2 <0.001 | -0.08* -0.12, -0.04 -3.8 <0.001 | 0.14* 0.10, 0.17 5.9 <0.001 |
| **Between-person predictors**        | Machiavellianism | -0.08 -0.16, -0.00 -1.9 0.06 | 0.14* 0.07, 0.21 3.3 <0.001 | -0.13* -0.21, -0.05 -3.1 0.002 |
|                                     | Grandiose narcissism | 0.03 -0.05, 0.11 0.55 | 0.01 -0.09, 0.09 0.2 0.84 | 0.01 -0.05, 0.07 0.3 0.76 |
|                                     | Vulnerable narcissism | -0.04 -0.13, 0.06 -0.79 0.43 | 0.11* 0.3, 0.19 2.7 0.008 | -0.08 -0.16, -0.00 -1.9 0.06 |
|                                     | Disinhibition | -0.01 -0.09, 0.07 -0.12 0.9 | 0.14* 0.07, 0.21 3.3 <0.001 | -0.06 -0.14, 0.02 -1.7 0.08 |
|                                     | Meanness | -0.10* -0.18, -0.02 -2.61 0.01 | -0.07 -0.15, 0.01 -1.8 0.07 | -0.03 -0.11, 0.05 -0.80 0.43 |
|                                     | Boldness | 0.09 0.01, 0.17 2.17 0.031 | -0.09 -0.17, -0.01 -2.0 0.048 | 0.10* 0.02, 0.18 2.56 0.01 |

All the variables were standardized. Bold indicates significant values after controlling for multiple testing. CI = confidence interval. * p < 0.018 (two-tailed).
alone” and 1 for the answer “I was with someone else.” First, EPISODE and ALONE were introduced as level-1 predictors of momentary PA \( \text{mPA}_{ij} = \beta_0j + \beta_1j \times (\text{ALONE}_{ij}) + r_{ij} \). ALONE \((\beta = 0.15, p < 0.001)\) and EPISODE \((\beta = 0.15, p < 0.001)\) emerged as significant predictors of momentary PA: positive affect was higher when participants were with others and it increased during the day. Second, grandiose narcissism was added to the slope equation for ALONE to test for between-level interaction \((\beta_{ij} = \gamma_{10} + \gamma_{11} \times (\text{GN}_j) + u_{ij})\). The interaction between grandiose narcissism and ALONE was significant \((\beta = 0.04, p = 0.03)\). A coefficient was positive, which means that the ALONE effect on momentary PA was larger when grandiose narcissism was higher. Thus, grandiose narcissism acted as a moderator variable for the relationship between momentary PA and ALONE. However, this relationship lost significance after controlling for multiple testing. Third, the facets of grandiose narcissism were added to the slope equation for ALONE to test for between-level interaction \((\beta_{ij} = \gamma_{10} + \gamma_{11} \times (\text{GN-LA}_j) + \gamma_{11} \times (\text{GN-GE}_j) + \gamma_{11} \times (\text{GN-EE}_j) + u_{ij})\). The interaction between Grandiose Exhibitionism and ALONE was significant \((\beta = 0.04, p = 0.025)\), but it lost significance after controlling for multiple testing. A coefficient was positive: the ALONE effect on momentary PA was larger when Grandiose Exhibitionism was higher. The interactions between Leadership/Authority and ALONE \((\beta = 0.01, p = 0.65)\) and between Exploitativeness/Entitlement and ALONE \((\beta = -0.01, p = 0.76)\) were not significant. Thus, only one of the facets of grandiose narcissism acted as a moderator variable for the relationship between momentary PA and ALONE.

The moderation analysis was not performed for momentary NA because the relationship between ALONE and momentary NA did not reach significance \((\beta = -0.03, SE = 0.02, p = 0.09)\).

**Discussion**

The aim of the present study was to examine relationships between affective states in everyday life and dark personality traits. The associations between momentary affect and the Dark Triad were investigated using the DRM, a well-validated instrument for the measurement of daily life experience. This method enables assessing affective states within natural situations during a chosen day of one’s life. In the current study, it was assumed that narcissism and psychopathy were multidimensional constructs. The results provide evidence about the relationships of the Dark Triad with momentary affect, supporting the majority of the predictions.

According to the results, dark traits or their dimensions showed specific associations with momentary affect: momentary PA was positively related to boldness and negatively related to vulnerable narcissism, meanness and Machiavellianism; momentary NA was positively related to vulnerable narcissism, disinhibition and Machiavellianism, and also inversely related to boldness. Affect balance showed associations with boldness (positive) and with vulnerable narcissism, Machiavellianism, disinhibition and meanness (negative). These and other results of the present study are discussed below separately for Machiavellianism, narcissism and psychopathy using evolutionary theory and adaptationist approach to emotions.

**Machiavellianism**

When formulating the hypothesis on the association of Machiavellianism with momentary affect, we pointed out the inconsistency between the “cool syndrome” (traditionally considered a main feature of high Machs’ emotionality; \([50]\)) and the results of many studies that revealed the positive correlations of Machiavellianism with neuroticism \([e.g., 52]\). In the current study, we obtained the predicted positive associations between Machiavellianism and momentary NA, and the negative associations of Machiavellianism with momentary PA and affect balance.
These results did not support the conviction about “cold” and “smart” Machiavellians who can control successfully their emotions and “get what they want” from other people (see [50]).

In fact, in the description of the Machiavellian personality made in a classic work by Christie and Geis [50], there seems to be a discrepancy between the above features of high Machs and their very pessimistic view of the world where people are susceptible to manipulation, but they are also cunning and constantly lurking for someone’s mistake or a moment of inattention to achieve their goals at his or her expense. Such a worldview may create constant pressure on Machiavellians who (in their opinion) have to continuously defend themselves against other people. Because the Mach IV scale (in which at least 1/3 of items concerns views on people in general, e.g., “Most people are basically good and kind,” inversely scored) is still used as a measure of Machiavellianism, these negative beliefs are crucial to the assessment although the descriptions of the construct sometimes emphasize only manipulation, not views. On the other hand, one should not be surprised that the inhabitants of the Machiavellian, “dog-eat-dog” world tended to feel more negative and less positive emotions in everyday life, which appeared in our study. According to an evolutionary approach to emotions, “negative emotions motivate the organism to avoid misfortune by escaping, attacking, or preventing harm or by repairing damage” [124] (p. 132), so these emotions seem useful for Machiavellians, constantly surrounded by “enemies.” At the same time, such a tendency may be characterized as lower emotional well-being, which is in line with the results of many studies [e.g., 19,20].

Several current studies have provided arguments supporting the assumption about some kind of emotional vulnerability of people higher in Machiavellianism. In a study by Szijjarto & Bereczkei [39], Machiavellianism was connected with difficulties to express and understand one’s own emotions, but also with emotional instability and ability to experience strong emotions. Inability to express feelings can favor a manipulator. It is due to the fact that it is more difficult for others to catch them. However, it may also cause some costs for a Machiavellian. For instance, this inability can be an obstacle to communication in different situations (not only in close relationships). The recent study [125] has demonstrated the unexpected results, contradictory to the idea of “cold” Machiavellians: Machiavellianism positively predicted break-up distress in romantic relationships. Findings of some other studies may be reinterpreted when the assumed Machiavellian “vulnerability” is taken into account. For example, high Machs tended to engage in cheating only when the risk of being caught is small [126], which can be an effect of high levels of negative emotions experienced. The relationship between Machiavellianism and anxiety sensitivity to social concerns (concern of being rejected by others; [127]) may be partly a result of a Machiavellian view of social life and fear of retaliation. Jonason et al. [17] hypothesized that long-term strategizing (e.g., a delay of gratifications) may be an additional source of stress for Machiavellians, which can be associated with poor health outcomes. The negative relationship between Machiavellianism and various psychological and physical health indicators [17,128,129] is also in line with our hypothesis of Machiavellian vulnerability. In general, negative emotions (conceptualized as defensive mechanisms) can protect Machiavellian individuals from danger and increase their individual fitness. At the same time, this may generate considerable costs for persons higher in Machiavellianism in terms of health and emotional well-being.

**Narcissism**

Grandiose narcissism is connected with traits that can promote experiencing positive emotions, such as high self-esteem, extraversion and low neuroticism [46]. However, in our study this dimension of narcissism showed no relationships with momentary affect. Also none of the facets of grandiose narcissism was a significant predictor of affect.
In the present study participants were asked to state whether they were alone or with others in a given situation. Starting from the assumption that being with other people, who can give attention, respect, or admiration, may be more rewarding for the participants with higher grandiose narcissism than for those with lower grandiose narcissism (see [123]), we tested the prediction that grandiose narcissism may serve as a moderator of the association between positive affect and the type of social situation (alone vs. with others). The results provided some support for this prediction: Grandiose Exhibitionism, which is good indicator of narcissistic grandiosity [112], was responsible for this moderation.

The specificity of grandiose narcissism is that narcissistic individuals prefer other people’s company because they constantly seek attention and admiration of others in order to maintain their grandiose self-views [130]. Grandiose narcissists can benefit from experiencing positive affective states in the presence of others because it can help them to avoid catching signals of criticism, a lack of acceptance, or other potential sources of ego threats and enhance the effectiveness of self-presentation (see [131]). Positive affect may help narcissists maintain positive illusions about their own attractiveness, which “may compel narcissists to indiscriminately pursue short-term mating strategy beyond their realistic prospects” [132] (p. 213). Positive emotions shared by individuals build friendship, alliances and family bonds [133]. Moreover, persons who express more positive emotions are rated more positively and people generally prefer interacting with those who have a good mood [134]. Thus, it seems that a tendency to feel more positive emotions while with others can be adaptive for individuals higher in narcissism and increase the effectiveness of the narcissistic strategy.

There has been an unresolved discussion in psychology on whether grandiose narcissism should be treated as an adaptive or maladaptive trait. Our results do not support any conclusions regarding this issue. However, the lack of a main effect of grandiose narcissism (and its sub-dimensions) on momentary PA and momentary NA and a moderating effect of grandiose narcissism (and Grandiose Exhibitionism) on the relationship between being alone or with others and momentary PA encourage us to consider other possible contextual moderators, such as types of situation, communication or interpersonal relationships.

Vulnerable narcissism is defined by such features as neuroticism, anxiety and a tendency to feel high negative affect and low positive affect, and these relationships were replicated in many cross-sectional studies [e.g., 46]. The results of our study provided support to the idea that these tendencies are also observed in everyday life. When considered alone, vulnerable narcissism was relatively the strongest predictor of momentary NA. Additionally, unfavorable affect balance was observed. Since affect is regarded as an important component of subjective well-being, this pattern of relationships prompted the conclusion that this type of a narcissist may pay the highest personal costs related to the emotional aspect of well-being out of all dark personalities due to the emotional vulnerability. On the other hand, narcissistic behavioral strategy is based on exploitation of others; however, vulnerable narcissism is associated with experiencing difficulties in establishing and maintaining interpersonal relationships [135]. Thus, some of these negative emotional states can result in inhibiting the unrealistic aspirations and demands in the name of security (e.g., to prevent the loss of a partner), which can be viewed as adaptive.

Psychopathy

The triarchic model of psychopathy [73], which was adopted in the current study, proposes boldness (“fearless dominance”.) defined as more “positive” phenotypic expression of fearless temperament, as a dimension of psychopathy. According to the findings of the present study, boldness was the only component of psychopathy (and the only dark trait) that turned out to
be positively related to momentary PA and affect balance and negatively related to momentary NA. In other words, only boldness exhibited a pattern of relationships with momentary affect that can be considered psychologically beneficial for a “bold” individual, and that can also be interpreted in terms of higher subjective well-being. The possible biologically adaptive value of positive emotions is also important. Positive emotional states communicate that an individual is safe, healthy, full of energy, so he or she is able to take more risks and make good use of to gain valuable resources. This finding is consistent with earlier studies that demonstrated similar relationships between boldness and a trait positive/negative affect, resiliency \[92,89\], and well-being \[90\]. Although boldness is also considered to be connected with diminished psychological and emotional responsiveness \[91\], our study did not confirm this in relation to positive affective states.

According to our results, disinhibition was associated with momentary NA and negatively with affect balance, so it predicted more negative affective states and unfavorable affect balance. However, momentary PA was not related to disinhibition. The relationship between disinhibition and momentary NA was relatively strong and remained significant after controlling for all the Dark Triad traits. Disinhibition embodies this type of psychopathy that is not related to blunted emotional reactivity \[91\] but is associated with poor emotional control and irresponsible and impulsive behavior \[e.g., 136\]. This can lead to situations resulting in distress and negative feelings. However, even persistent negative emotional states can be understood as “an adaptive response to unfavorable circumstances” \([137]\ p. 100\). Thus, taking into account evolutionary functions of emotions, these negative emotional states experienced by disinhibited individuals could prevent them from too risky behavior, which can be beneficial for them (i.e., improve their fitness).

Contrary to the predictions, meanness was not associated with momentary NA. The prediction about negative association between meanness and momentary NA was made based on the characteristics of meanness as callous-unemotional aspect of psychopathy and taking into account the results of previous studies on relationships between this dimension and trait negative affectivity. Meanness as a “callous-unemotional” dimension of psychopathy was connected with deficits in experiencing fear and some other negative emotions \[e.g., 138\]. However, the findings of other studies on triarchic psychopathy showed different patterns of correlations between meanness and some characteristics associated with negative affectivity. For example, in a study by Brislin et al. \[139\] no relationship was obtained between trait negative affect and meanness in an incarcerated group, and in a community group this relationship was positive. In a recent meta-analysis \[89\], despite the fact that triarchic meanness was strongly associated with other models of psychopathy and relevant criteria, it was also positively related to neuroticism, Negative Affectivity as measured by the Personality Inventory for the DSM-5, and internalizing symptoms (anxiety and depression). Additionally, the findings regarding internalizing symptoms turned out highly overlapping for meanness and disinhibition \[89\]. These meta-analytic findings allow believing that the lack of negative associations between meanness and momentary NA in the current study may be partly the effect of the specificity of measurement of the triarchic meanness. It is also possible that the levels of participants’ meanness were not large enough to demonstrate the expected effects in our group or that the indicators of momentary NA used in the current study were not optimal in the case of meanness as correlations between this psychopathy dimension and particular negative emotional states may be different (e.g., negative for fear and positive for anger).

Meanness turned out to be a negative predictor of momentary PA, which was not anticipated, and remained significant when the Dark Triad traits were considered together. Deficits in experiencing positive emotions are rather not assigned to psychopathy, but some studies showed deficient processing of positive emotional stimuli \[138\]. The negative relationship
between meanness and PA may be also associated with the above-mentioned overlap between triarchic meanness and disinhibition. Overall, our results are in line with the idea that meanness can be connected with poverty of emotional experience, however, our evidence is weak.

A different way to interpret the differences regarding emotions is to analyze more basic personality elements that are behind the particular dark traits and their dimensions [140]. The traits which are shared by all the DT constructs constitute the so-called “dark core” [141,142] that includes Honesty-Humility, disagreeableness [8,143–145], callousness [146], and antagonism [141]. These common features, in themselves, cannot be responsible for differences in emotions. Nevertheless, both the behavior components and other traits may be specific for particular dark personalities. For example, disinhibition, vulnerable narcissism and, to a lesser degree, Machiavellianism are associated with higher neuroticism and introversion [45,52,73], which promotes experiencing negative emotions. Conversely, boldness and grandiose narcissism are related to extraversion, agency, social dominance and high self-esteem [68,73], which can promote positive emotions on different ways [147,148]. However, in the current study, it was the case only for boldness.

Conclusions and limitations

In summary, we investigated the relationships between the Dark Triad and momentary affective states utilizing an ecologically valid method. Our findings contribute to the literature by clarifying how the Dark Triad traits are related to everyday emotional experience. Different patterns of relationships of momentary PA, momentary NA and affect balance with the dark personality constructs were obtained. The two dimensions of narcissism demonstrated different relationships with daily affectivity and the same was true for the three dimensions of psychopathy and Machiavellianism. The Dark Triad traits explained together a noticeable part of momentary NA variance (21%), but their associations with PA were weaker.

On the basis of our results, only boldness was associated with positive affective states, which seems beneficial to an individual. The participants with higher levels of vulnerable narcissism, disinhibition and Machiavellianism were predisposed to more negative and less positive affect and their affect balance may be seen as unfavorable to them in a given situation. These results can be interpreted in the framework of evolutionary psychology. We speculate that the differences in momentary affect obtained in the current study reflect different behavioral strategies used in daily life by individuals. A tendency to feel negative emotions that was observed in Machiavellian and disinhibited persons and vulnerable narcissists may be conducive to achieving their goals by increasing caution and mistrust in dealing with others, which may reduce the risk of being disclosed and protect against risking too much. In turn, the positive emotions of bold individuals can make it easier to take risks when the situation is favorable whereas the positive emotions of grandiose narcissists (experienced in the presence of others) can make it easier to gain attention, acceptance or admiration.

The current study was the first that investigated everyday affective states in relation to narcissism, Machiavellianism and psychopathy simultaneously. The results confirmed the existence of different patterns of relationships between the Dark Triad traits and momentary affect. The significant overlap between the Dark Triad traits, found in numerous research studies, triggers a discussion whether there is a need of considering all these traits. It is especially important in the case of Machiavellianism and psychopathy because of the “dark dyad” hypothesis [20,149,150] that emphasizes the importance of the similarity between these constructs and their separateness from narcissism. Our results do not support this hypothesis and the idea that Machiavellianism and psychopathy measure the same construct (see [151]) because of the lack of similarity between Machiavellianism and the dimensions of triarchic
psychopathy with reference to momentary affect. The relationships of Machiavellianism with momentary affect were congruent with the results for vulnerable narcissism rather than those for psychopathy dimensions. In reference to triarchic psychopathy, the current findings provided support for theory and previous research, confirming the distinctiveness of the three dimensions of psychopathy and the specificity of boldness (as a “positive” psychopathic trait) in the domain of affective functioning. Taken as a whole, the current findings seem to support the appropriateness of multidimensional approach to investigating psychopathy and narcissism as elements of the Dark Triad as a way to deal with the excessive overlap of Machiavellianism and unidimensional psychopathy.

The present study has several limitations. Firstly, it relies on data from a convenience sample of university students, which limits the generalization of the results. Secondly, all data were obtained from self-report, which has some disadvantages. Personality constructs are commonly measured using self-report questionnaires [152]. To minimize common method biases we applied several techniques recommended by Podsakoff, MacKenzie, Lee and Podsakoff [153]. Well-established and valid questionnaires were chosen to reduce statement ambiguity. Each questionnaire was placed separately with a separate instruction. Participants’ anonymity was preserved in the data collection process, which could reduce social desirability bias. However, multi-method assessment could be valuable for future studies and self-report data should be complemented by informant ratings or behavioral observation [154]. Thirdly, to minimize participants’ burden and increase the accuracy of completing the “diary,” only a few emotional words have been used to assess momentary affect. Future studies should address this issue by using a larger and more representative set of emotional words. Moreover, a dimensional perspective on emotional experience, which was adopted in our study, is only one of the possible perspectives. From an evolutionary point of view, emotions can be understood as solutions to specific ecological problems. Therefore, it would be recommended for future studies to examine relationships between the Dark Triad traits and the particular emotional states using the categorical approach to emotions [155,156]. Fourthly, the relatively low reliability coefficients (Cronbach’s alphas) were obtained for the HSNS and NPI, which can reduce statistical power. Nevertheless, in the current study, the relationships between vulnerable narcissism (HSNS) and affect were significant and consistent with the predictions. Generally, the HSNS is regarded as a well-established and valid measure of narcissistic vulnerability. However, it cannot be excluded that lower reliability of the NPI could attenuate the relationships between the NPI and affect. Fifthly, despite the fact that the DRM was developed to reduce memory biases, it cannot be excluded that such biases could occur and influence the result of the current study [157].

To summarize, in this study relationships between the Dark Triad traits and daily emotional experience were investigated. In general, dark traits (except boldness) were not related to momentary positive affect, but most of them were associated with higher levels of momentary negative affect. In particular, persons higher in Machiavellianism, vulnerable narcissism and disinhibition share a tendency to experience more negative affect during a day. This tendency may lower their subjective well-being, but it can also be interpreted as a defense mechanism protecting them from taking (too) risky actions and decisions.

Supporting information
S1 Table. Correlations between the Dark Triad traits and particular emotions. (DOCX)
S2 Table. Multilevel estimates predicting momentary affect from Machiavellianism, vulnerable narcissism, triarchic psychopathy and the facets of grandiose narcissism.

(DOCX)

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Conceptualization: Irena Pilch.
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Formal analysis: Irena Pilch.
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Methodology: Irena Pilch.
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References

1. Ozer DJ, Benet-Martinez V. Personality and the prediction of consequential outcomes. Annu Rev Psychol. 2006; 57: 401–421. https://doi.org/10.1146/annurev.psych.57.102904.190127 PMID: 16318601
2. Nettle D. The evolution of personality variation in humans and other animals. Am Psychol. 2006; 20: 622–631.
3. Penke L, Denissen JJ, Miller GF. The evolutionary genetics of personality. Eur J Pers. 2007; 21: 549–587.
4. Jokela M, Alvergne A, Lummaa V. Reproductive behavior and personality traits of the Five Factor Model. Eur J Pers. 2011; 25: 143–148.
5. Glenn AL, Kurzban R, Raine A. Evolutionary theory and psychopathy. Pers Individ Dif. 2012; 52: 606–610.
6. Buss DM, Duntley JD. Adaptations for exploitation. Group Dyn. 2008; 12: 53–62.
7. Jonason PK, Buss DM. Avoiding entangling commitments: Tactics for implementing a short-term mating strategy. Pers Individ Dif. 2012; 52: 606–610.
8. Holtzman NS, Strube MJ. Above and beyond short-term mating, long-term mating is uniquely tied to human personality. Evol Psychol. 2013; 11: 1101–1129. PMID: 24342881
9. Jonason PK, Webster GD, Schmitt DP, Li NP, Czarna AZ. Quick and dirty: Some psychosocial costs associated with the Dark Triad personality traits. Rev Gen Psychol. 2012; 16: 192–199.
10. Jonason PK, Li NP, Buss DM. The Dark Triad of personality and daily affect: A day reconstruction study. PLOS ONE | https://doi.org/10.1371/journal.pone.0229625 February 25, 2020 16 / 22
17. Jonason PK, Baughman HM, Carter GL, Parker P. Dorian Gray without his portrait: Psychological, social, and physical health costs associated with the Dark Triad. Pers Individ Dif. 2015; 78: 5–13.

18. Jonason PK, Webster GD. A protean approach to social influence: Dark Triad personalities and social influence tactics. Pers Individ Dif. 2012; 52: 521–526.

19. Pilch I. Machiavelizm a oceny jakości życia. In: Bańka A, editor. Psychologia jakości życia. Poznań: Stowarzyszenie Psychologii i Architektury; 2005. pp. 165–178. Polish.

20. Egan V, Chan S, Shorter GW. The Dark Triad, happiness and subjective well-being. Pers Individ Dif. 2014; 67: 17–22.

21. Nettle D, Bateson M. The evolutionary origins of mood and its disorders. Curr Biol. 2012; 22: R712–R721. https://doi.org/10.1016/j.cub.2012.06.020 PMID: 22975002

22. Nesse RM. Evolutionary explanations of emotions. Hum Nat. 1990; 1: 261–289. https://doi.org/10.1007/BF02739886 PMID: 24222085

23. Del Giudice M. An evolutionary life history framework for psychopathology. Psychol Inq. 2014; 25: 261–300.

24. Figueredo AJ, Giaddens PR, Sisco MM, Patch EA, Jones DN. The unholy trinity: The Dark Triad, sexual coercion, and Brunswik-symmetry. Evol Psychol. 2015; 13: 435–454. PMID: 26054294

25. Vize CE, Lynam DR, Collison KL, Miller JD. Differences among dark triad components: A meta-analytic investigation. Personal Disord. 2018; 9: 101–111. https://doi.org/10.1037/per0000222 PMID: 27736106

26. Jonason PK, Krause L. The emotional deficits associated with the Dark Triad traits: Cognitive empathy, affective empathy, and alexithymia. Pers Individ Dif. 2013; 55: 532–537.

27. Wai M, Tilipoulos N. The affective and cognitive empathic nature of the dark triad of personality. Pers Individ Dif. 2012; 52: 794–799.

28. Jonason PK, Lyons M, Bellith EJ, Ross R. Different routes to limited empathy in the sexes: Examining the links between the Dark Triad and empathy. Pers Individ Dif. 2013; 54: 572–576.

29. Jonason PK, Kroll CH. A multidimensional view of the relationship between empathy and the dark triad. J Individ Differ. 2015; 36: 150–156.

30. Łowicki P, Zajenkowski M. No empathy for people nor for God: The relationship between the Dark Triad, religiosity and empathy. Pers Individ Dif. 2017; 115: 169–173.

31. Pilch I. Machiavellianism, emotional intelligence and social competence: Are Machiavellians interpersonally skilled?. Pol Psychol Bull. 2008; 39: 158–164.

32. Petrides KV, Vernon PA, Schermer JA, Veselka L. Trait emotional intelligence and the dark triad traits of personality. Twin Res Hum Genet. 2011; 14: 35–41. https://doi.org/10.1375/twin.14.1.35 PMID: 21314254

33. Nagler UK, Reiter KJ, Furtner MR, Rauthmann JF. Is there a “dark intelligence”? Emotional intelligence is used by dark personalities to emotionally manipulate others. Pers Individ Dif. 2014; 65: 47–52.

34. Jauk E, Freudenthaler HH, Neubauer AC. The dark triad and trait versus ability emotional intelligence. J Individ Differ. 2016; 37: 112–118.

35. Austin EJ, Farrelly D, Black C, Moore H. Emotional intelligence, Machiavellianism and emotional manipulation: Does EI have a dark side?. Pers Individ Dif., 2007; 43: 179–189.

36. Zeigler-Hill V, Vonk J. Dark personality features and emotion dysregulation. J Soc Clin Psychol. 2015; 34: 692–704.

37. Cheshure A, Zeigler-Hill V, Saulis D, Vrabel JK, Lehtman MJ. (2020). Narcissism and emotion dysregulation: Narcissistic admiration and narcissistic rivalry have divergent associations with emotion regulation difficulties. Pers Individ Dif. 2020; 154, https://doi.org/10.1016/j.paid.2019.109679

38. Donahue JJ, McClure KS, Moon SM. The relationship between emotion regulation difficulties and psychopathic personality characteristics. Personal Disord. 2014; 5: 186. https://doi.org/10.1037/per0000025 PMID: 24341861

39. Szijjarto L, Berczkei T. The Machiavellians’“Cool Syndrome”: They experience intensive feelings but have difficulties in expressing their emotions. Curr Psychol. 2015; 34: 363–375.

40. Austin EJ, Saklofske DH, Smith M, Tohver G. Associations of the managing the emotions of others (MEOS) scale with personality, the Dark Triad and trait EI. Pers Individ Dif. 2014; 65: 8–13.

41. Pilch I, Gómk-Durose ME. Do we need “dark” traits to explain materialism? The incremental validity of the Dark Triad over the HEXACO domains in predicting materialistic orientation. Pers Individ Dif. 2016; 102: 102–106.
42. Tran US, Bertl B, Kossmeier M, Pietschnig J, Stieger S, Voracek M. “I’ll teach you differences”: Taxometric analysis of the Dark Triad, trait sadism, and the Dark Core of personality. Pers Individ Dif. 2018; 126: 19–24.

43. Douglas H, Bore M, Munro, D. Distinguishing the dark triad: Evidence from the five-factor model and the Hogan development survey. Psychology. 2012; 3: 237–242.

44. Miller JD, Campbell WK. Comparing clinical and social personality conceptualizations of narcissism. J Pers. 2008; 76: 449–476. https://doi.org/10.1111/j.1467-6494.2008.00492.x PMID: 18399956

45. Miller JD, Dir A, Gentile B, Wilson L, Pryor LR, Campbell WK. Searching for a vulnerable dark triad: Comparing factor 2 psychopathy, vulnerable narcissism, and borderline personality disorder. J Pers. 2010; 78, 1529–1564. https://doi.org/10.1111/j.1467-6494.2010.00660.x PMID: 20663024

46. Miller JD, Hoffman BJ, Gaughan ET, Gentile B, Maples J, Campbell KW. Grandiose and vulnerable narcissism: A nomological network analysis. J Pers. 2010; 78, 1529–1564 https://doi.org/10.1111/j.1467-6494.2010.00660.x PMID: 20663024

47. Hicks BM, Patrick CJ. Psychopathy and negative emotionality: Analyses of suppressor effects reveal distinct relation with emotional distress, fearfulness, and anger-hostility. J Abnorm Psychol. 2006; 115, 276–287. https://doi.org/10.1037/0021-843X.115.2.276 PMID: 16737392

48. Del Gaizo AL, Falkenbach D. Primary and secondary psychopathic-trait and their relationship to perception and experience of emotion. Pers Individ Dif. 2008; 45: 206–212.

49. Skeem JL, Poythress N, Edens JF, Lilienfeld SO, Cale EM. Psychopathic personality or personalities? Exploring potential variants of psychopathy and their implications for risk assessment. Aggress Violent Behav. 2003; 8: 513–546.

50. Christie R, Geis F, editors. Studies in Machiavellianism. New York: Academic Press; 1970.

51. Rauthmann JF, Will T. Proposing a multidimensional Machiavellianism conceptualization. Soc Behav Pers. 2011; 39: 391–403.

52. Jakobwitz S, Egan V. The dark triad and normal personality traits. Pers Individ Dif. 2006; 40: 331–339.

53. Wastell C, Booth A. Machiavellianism: An alexithymic perspective. J Soc Clin Psychol. 2003; 22: 730–744.

54. Żemojtel-Piotrowska M, Clinton A, Piotrowski J. Agentic and communal narcissism and subjective well-being: are narcissistic individuals unhappy? Current Issues in Personality Psychology. 2014; 2: 10–16.

55. Sedikides C, Rudich EA, Gregg AP, Kumashiro M, Rusbult C. Are normal narcissists psychologically healthy?: self-esteem matters. J Pers Soc Psychol. 2004; 87: 400–416. https://doi.org/10.1037/0022-3514.87.3.400 PMID: 15382988

56. Ruiz JM, Smith TW, Rhodewalt F. Distinguishing narcissism and hostility: Similarities and differences in interpersonal circumplex and five-factor correlates. J Pers Assess. 2001; 76, 537–555. https://doi.org/10.1207/S15327752JPA7603_12 PMID: 11499463

57. Hendin HM, Cheek JM. Assessing hypersensitive narcissism: A reexamination of Murray’s narcissism scale. J Res Pers. 1997; 31: 588–599.

58. Tritt SM, Ryder AG, Ring AJ, Pincus AL. Pathological narcissism and the depressive temperament. J Affect Disord. 2010; 122: 280–284. https://doi.org/10.1016/j.jad.2009.09.006 PMID: 19800143

59. Rogoza R, Żemojtel-Piotrowska M, Campbell WK. Measurement of narcissism: From classical applications to modern approaches. Studia Psychologica: Theoria et Praxis. 2019; 18: 27–48.

60. Ackerman RA, Donnellan MB, Wright AG. Current conceptualizations of narcissism. Curr Opin Psychiatr. 2019; 32: 32–37.

61. Rogoza R, Cicciuch J, Strus W, Baran T. Seeking a common framework for research on narcissism: An attempt to integrate the different faces of narcissism within the Circumplex of Personality Meta-traits. Eur J Pers. 2019; 33: 437–455.

62. Krizan Z, Herlache A. The narcissism spectrum model: A synthetic view of narcissistic personality. Pers Soc Psychol Bull. 2018; 22: 3–31.

63. Miller JD, Lynam DR, Hyatt CS, Campbell WK. Controversies in narcissism. Annu Rev Clin Psychol. 2017; 13: 291–315. https://doi.org/10.1146/annurev-clinpsy-032816-045244 PMID: 28301765

64. Crowe ML, Lynam DR, Campbell WK, Miller JD. Exploring the structure of narcissism: Toward an integrated solution. J Pers. 2019; 87: 1151–1169. https://doi.org/10.1111/jop.12464 PMID: 30742713

65. Kaufman SB, Weiss B, Miller JD, Campbell WK. (2018). Clinical correlates of vulnerable and grandiose narcissism: a personality perspective. J Pers Disord. 1-S10.

66. Jauk E, Weigle E, Lehmann K, Benedek M, Neubauer AC. The relationship between grandiose and vulnerable (hypersensitive) narcissism. Front. Psychol. 2017; 8: 1600. https://doi.org/10.3389/fpsyg.2017.01600 PMID: 28955268
67. Gentile B, Miller JD, Hoffman BJ, Reidy DE, Zeichner A, Campbell WK. A test of two brief measures of grandiose narcissism: The Narcissistic Personality Inventory--13 and the Narcissistic Personality Inventory--16. Psychol Assess. 2013; 25: 1120–1136. https://doi.org/10.1037/a0033192 PMID: 23815119

68. Miller JD, Gaughan ET, Pryor LR, Kamen C, Campbell WK. Is research using the narcissistic personality inventory relevant for understanding narcissistic personality disorder?. J Res Pers. 2009; 43: 482–488.

69. Miller JD, Price J, Campbell WK. Is the Narcissistic Personality Inventory still relevant? A test of independent grandiosity and entitlement scales in the assessment of narcissism. Assessment. 2012; 19: 8–13. https://doi.org/10.1177/1073191111429390 PMID: 22156716

70. Poythress NG, Skeem JL. Disaggregating psychopathy: Where and how to look for variants. In: Patrick CJ, editor. Handbook of psychopathy. New York: Guilford Press; 2006. pp. 172–192.

71. Verona E, Patrick CJ. Joiner TE. Psychopathy, antisocial personality, and suicide risk. J Abnorm Psychol. 2001; 110: 462–470. https://doi.org/10.1037//0021-843x.110.3.462 PMID: 11502089

72. Love AB, Holder MD. Psychopathy and subjective well-being. Pers Individ Dif. 2014; 66: 112–117.

73. Patrick CJ, Fowles DC, Krueger RF. Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. Dev Psychopathol. 2009; 21: 913–938. https://doi.org/10.1017/S0954579409000492 PMID: 19583890

74. Patrick CJ. Operationalizing the triarchic conceptualization of psychopathy: Preliminary description of brief scales for assessment of boldness, meanness, and disinhibition. Unpublished test manual. Tallahassee, FL: Florida State University; 2010. Available form: https://patrickcnslab.psy.fsu.edu

75. Drislane LE, Patrick CJ, Arsal G. Clarifying the content coverage of differing psychopathy inventories through reference to the Triarchic Psychopathy Measure. Psychol Assess. 2014; 26: 350–362. https://doi.org/10.1037/a0035152 PMID: 24320762

76. Cacioppo JT, Gardner WL, Berntson GG. The affect system has parallel and integrative processing components: Form follows function. J Pers Soc Psychol. 1999; 76: 839–855.

77. Watson D, Tellegen A. Toward a consensual structure of mood. Psychol Bull. 1985; 98: 219–235. https://doi.org/10.1037//0033-2909.98.2.219 PMID: 3901060

78. Watson D. Positive affectivity: The disposition to experience pleasurable emotional states. In: Snyder CR, Lopez SJ, editors. Handbook of positive psychology. Oxford University Press; 2002. pp. 106–119.

79. Watson D, Clark LA. Self-versus peer ratings of specific emotional traits: Evidence of convergent and discriminant validity. J Pers Soc Psychol. 1991; 60: 927–940.

80. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. J Pers Soc Psychol. 1988; 54: 1063–1070. https://doi.org/10.1037//0022-3514.54.6.1063 PMID: 3397965

81. Kammann R, Flett R. Affectometer 2: A scale to measure current level of general happiness. Aust J Psychol. 1983; 35: 259–265.

82. Miret M, Caballeró FF, Mathur A, Naidoo N, Kowal P, Ayuso-Mateos JL, et al. Validation of a measure of subjective well-being: an abbreviated version of the day reconstruction method. PLoS One, 2012; 7: e43887. https://doi.org/10.1371/journal.pone.0043887 PMID: 22962801

83. Wilhelm P, Schoebi D. Assessing mood in daily life. Eur J Psychol Assess. 2007; 23: 258–267.

84. Bradley MM, Lang PJ. Measuring emotion: the self-assessment manikin and the semantic differential. J Behav Ther Exp Psychiatry. 1994; 25: 49–59. https://doi.org/10.1016/0005-7916(94)90063-9 PMID: 7962581

85. Russell JA, Weiss A, Mendelsohn GA. Affect grid: A single-item scale of pleasure and arousal. J Pers Soc Psychol. 1989; 57: 493–502.

86. Lishner DA, Cooter AB, Zald DH. Addressing measurement limitations in affective rating scales: Development of an empirical valence scale. Cogn Emot. 2008; 22: 180–192.

87. Scollon CN, Kim-Prieto C, Diener E. Experience Sampling: Promises and Pitfalls, Strengths and Weaknesses. J Happiness Stud. 2003; 4: 5–34.

88. Sleep CE, Lynam DR, Hyatt CS, Miller JD. Perils of partialing redux: The case of the Dark Triad. J Abnorm Psychol. 2017; 126: 939–950. https://doi.org/10.1037/abn0000278 PMID: 29106279

89. Sleep CE, Weiss B, Lynam DR, Miller JD. An examination of the Triarchic Model of psychopathy’s nomological network: A meta-analytic review. Clin Psychol Rev. 2019; 71: 1–26. https://doi.org/10.1016/j.cpr.2019.04.005 PMID: 31078055
Blagov PS, Patrick CJ, Oost KM, Goodman JA, Pugh AT. Triarchic psychopathy measure: Validity in relation to normal-range traits, personality pathology, and psychological adjustment. J Pers Disord. 2016; 30: 71–81.

Ellis JD, Schroder HS, Patrick CJ, Moser JS. Emotional reactivity and regulation in individuals with psychopathic traits: Evidence for a disconnect between neurophysiology and self-report. Psychophysiology. 2017; 54: 1574–1585. https://doi.org/10.1111/psyp.12903 PMID: 28580638

Dotterer HL, Waller R, Cope LM, Hicks BM, Nigg JT, Zucker RA, et al. Concurrent and developmental correlates of psychopathic traits using a triarchic psychopathy model approach. J Abnorm Psychol. 2017; 126: 859–876. https://doi.org/10.1037/abn0000302 PMID: 29106272

Kahne man D, Krueger AB, Schikade DA, Schwarz N, Stone AA. A survey method for characterizing daily life experience: the day reconstruction method. Science. 2004; 306: 1776–1780. https://doi.org/10.1126/science.1103572 PMID: 15576620

Csikszentmihalyi M, Larson R. Validity and reliability of the Experience-Sampling Method. J Nerv Ment Dis. 1987; 5: 526–536.

Dockrey S, Grant N, Stone AA, Kahne man D, Wardle J, Steptoe A. A Comparison of Affect Ratings Obtained with Ecological Momentary Assessment and the Day Reconstruction Method. Soc Indic Res. 2010; 99: 269–283. https://doi.org/10.1007/s11205-010-9578-7 PMID: 21133228

Krueger AB, Schikade DA. The Reliability of Subjective Well-Being Measures. J Public Econ. 2008; 92: 1833–1845. https://doi.org/10.1016/j.jpubecon.2007.12.015 PMID: 19649136

Hudson NW, Anusic I, Lucas RE, Donnellan MB. Comparing the Reliability and Validity of Global Self-Report Measures of Subjective Well-Being With Experiential Day Reconstruction Measures. Assessment. 2020; 27: 102–116. https://doi.org/10.1177/107319117744660 PMID: 29254354

Bylsma LM, Taylor-Clift A, Rottenberg J. Emotional reactivity to daily events in major and minor depression. J Abnorm Psychol. 2011; 120: 155–167. https://doi.org/10.1037/a0021662 PMID: 21319928

Kahneman D, Krueger AB, Schkade DA, Schwarz N, Stone AA. The Day Reconstruction Method (DRM): Instrument documentation. Science. 2004. Available from: http://www.sciencemag.org/cgi/content/full/306/5702/1776/DC1

Russell JA. A circumplex model of affect. J Pers Soc Psychol. 1980; 39: 1161–1178.

Russell JA, Carroll JM. On the bipolarity of positive and negative affect. Psychol Bull. 1999; 125: 3–30. https://doi.org/10.1037/0033-2909.125.1.3 PMID: 9990843

Russell JA, Feldman Barrett L. Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. J Pers Soc Psychol. 1999; 76: 805–819. https://doi.org/10.1037//0022-3514.76.5.805 PMID: 10353204

Yik MS, Russell JA, Barrett LF. Structure of self-reported current affect: Integration and beyond. J Pers Soc Psychol. 1999; 77: 600–619.

Benyamini Y, Idler EL, Leventhal H, Leventhal EA. Positive affect and function as influences on self-assessments of health: Expanding our view beyond illness and disability. J Gerontol B Psychol Sci Soc Sci. 2000; 55: P107–P116. https://doi.org/10.1093/geronb/55.2.p107 PMID: 10794189

Leventhal EA, Hansell S, Diefenbach M, Leventhal H, Glass DC. Negative affect and self-report of physical symptoms: Two longitudinal studies of older adults. Health Psychology, 1996; 15: 193–199. https://doi.org/10.1037//0278-6133.15.3.193 PMID: 8698033

Mackie DM, Deves T, Smith ER. Intergroup emotions: explaining offensive action tendencies in an intergroup context. J Pers Soc Psychol. 2000; 79: 692–616. PMID: 11045741

Claes N, Vlaeyen JW, Lauwerier E, Meulders M, Crombez G. Goal conflict in chronic pain: Day reconstruction method. PeerJ. 2018; 6: e5272. https://doi.org/10.7717/peerj.5272 PMID: 30128176

Mata J, Thompson RJ, Jaeggi SM, Buschkuehl M, Jonides J, Gotlib IH. (2012). Walk on the bright side: physical activity and affect in major depressive disorder. J Abnorm Psychol. 2012; 121, 297–308. https://doi.org/10.1037/a0023533 PMID: 21553939

Macatee RJ, Okey SA, Albanese BJ, Schmidt NB, Cougle JR. Distress intolerance as a moderator of motivated action to reduce anxiety and negative cognitive distortions among cannabis users: An ERP study. Addict Biol. 2019; 24: 717–729. https://doi.org/10.1111/adb.12622 PMID: 29737034

Diener E, Seligman ME. Very happy people. Psychol Sci. 2002; 13: 81–84. https://doi.org/10.1111/1467-9280.00415 PMID: 11894851

Pilch I. Osobowość makiawelisty i jego relacje z ludźmi. Katowice: Wydawnictwo Uniwersytetu Śląskiego; 2008. Polish.
112. Żemojt-Piotrowska M, Piotrowski J, Rogoza R, Baran T, Hitokoto H, Maltby J. Cross-cultural invariance of NPI-13: Entitlement as culturally specific, leadership and grandiosity as culturally universal. Int J Psychol. 2018; 54, 439–447. https://doi.org/10.1002/ijop.12487 PMID: 29658135
113. Czarna AZ, Dufner M, Clifton AD. The effects of vulnerable and grandiose narcissism on liking-based and disliking-based centrality in social networks. J Res Pers. 2014; 50: 42–45.
114. Pilch I, Saneczka E, Hyla M, Atlas K. Polska adaptacja skali TriPM do badania psychopatii w ujęciu triarchicznym. Psychologia Społeczna. 2016; 10: 435–454. Polish.
115. Bryk AS, Raudenbush SW. Hierarchical linear models. Newbury Park, CA: Sage Publications; 1992.
116. Nezlek JB. A multilevel framework for understanding relationships among traits, states, situations and behaviours. Eur J Pers. 2007; 21: 789–810.
117. Nezlek JB. Multilevel random coefficient analyses of event-and interval-contingent data in social and personality psychology research. Pers Soc Psychol Bull. 2001; 27: 771–785.
118. Raudenbush SW, Bryk AS, Cheong YF, Congdon R, du Toit M. HLM7: Hierarchical linear and nonlinear modeling. Lincolnwood, IL: Scientific Software International; 2011.
119. Benjamini Y, Hochberg Y. Controlling the false discovery rate: a practical and powerful approach to multiple testing. J R Stat Soc B Stat Methodol. 1995; 57: 289–300.
120. Stone AA, Schwartz JE, Schkade D, Schwartz N, Krueger A, Kahneman D. A population approach to the study of emotion: diurnal rhythms of a working day examined with the Day Reconstruction Method. Emotion. 2006; 6: 139–149. https://doi.org/10.1037/1528-3542.6.1.139 PMID: 16637757
121. Daly M, Delaney L, Doran PP, MacLachlan M. The role of awakening cortisol and psychological distress in diurnal variations in affect: A day reconstruction study. Emotion. 2011; 11: 524–532. https://doi.org/10.1037/a0022590 PMID: 21517159
122. Clark LA, Watson D. Mood and the mundane: Relations between daily life events and self-reported mood. J Pers Soc Psychol. 1988; 54: 296–308. https://doi.org/10.1037//0022-3514.54.2.296 PMID: 3346815
123. Fatfouta R. To be alone or not to be alone? Facets of narcissism and preference for solitude. Pers Individ Dif. 2017; 114: 1–4.
124. Nesse RM, Ellsworth PC. Evolution, emotions, and emotional disorders. Am Psychol. 2009; 64: 129–139. https://doi.org/10.1037/a0013503 PMID: 19203145
125. Moroz S, Chen S, Daljeet KN, Campbell L. The Dark Triad and break-up distress. Pers Individ Dif. 2018; 132: 52–59.
126. Jones DN, Paulhus DL. Machiavellianism. In: Leary MR, Hoyle RH, editors. Handbook of Individual Differences in Social Behavior. New York: Guilford; 2009. pp. 93–108.
127. Birkás B, Láng A, Martín L, Kállai J. Disturbing concerns for dark personalities: anxiety sensitivity and the Dark Triad. International Journal of Advances in Psychology, 2016; 5: 1–5.
128. Hudek-Knežević J, Kardum I, Mehić N. Dark triad traits and health outcomes: An exploratory study. Psychological Topics. 2016; 25: 129–156.
129. Zuckerman MO'Loughlin RE. Narcissism and well-being: A longitudinal perspective. Eur J Psychol. 2009; 39: 957–972.
130. Holtzman NS, Strube MJ. The intertwined evolution of narcissism and short-term mating: An emerging hypothesis. In: Campbell WK, Miller JD, editors. The handbook of narcissism and narcissistic personality disorder: Theoretical approaches, empirical findings, and treatments. Hoboken, NJ: John Wiley & Sons Inc; 2011. pp. 210–220.
131. Fredrickson BL. What good are positive emotions?. Rev Gen Psychol. 1998; 2: 300–319. https://doi.org/10.1037/1089-2680.2.3.300 PMID: 21850154
132. Lyubomirsky S, King L, Diener E. The benefits of frequent positive affect: Does happiness lead to success? Psychol Bull. 2005; 131: 803–855. https://doi.org/10.1037/0033-2909.131.6.803 PMID: 16351529
133. Dickinson K, Pincus AL. Interpersonal analysis of grandiose and vulnerable narcissism. J Pers Disord. 2003; 17: 188–207. https://doi.org/10.1521/pedi.17.3.188.22146 PMID: 12893099
134. Poy R, Segarra P, Esteller À, López R, Moltó J. FFM description of the triarchic conceptualization of psychopathy in men and women. Psychol Assess. 2014; 26: 69–76. https://doi.org/10.1037/a0034642 PMID: 24099318
137. Nettle D. An evolutionary model of low mood states. J Theor Biol. 2009; 257: 100–103. https://doi.org/10.1016/j.jtbi.2008.10.033 PMID: 19068220

138. Marsh AA, Finger EC, Scheckter JC, Jurkowitz IT, Reid ME, Blair RJR. Adolescents with psychopathic traits report reductions in physiological responses to fear. J Child Psychol Psychiatry. 2011; 52: 834–841. https://doi.org/10.1111/j.1469-7610.2010.02353.x PMID: 21155775

139. Breslin SJ, Drislane LE, Smith ST, Edens JF, Patrick CJ. Development and validation of triarchic psychopathy scales from the Multidimensional Personality Questionnaire. Psychol Assess. 2015; 27: 838–851. https://doi.org/10.1037/pas0000087 PMID: 25642934

140. Watts AL, Waldman ID, Smith SF, Poore HE, Lilienfeld SO. The nature and correlates of the dark triad: The answers depend on the questions. J Abnorm Psychol. 2017; 126: 951–968. https://doi.org/10.1037/abn0000296 PMID: 29106280

141. Jones DN, Figueredo AJ. The core of darkness: Uncovering the heart of the Dark Triad. Eur J Pers. 2013; 27: 521–531.

142. Bertl B, Pietschnig J, Tran US, Steiger S, Voracek M. More or less than the sum of its parts? Mapping the Dark Triad of personality onto a single Dark Core. Pers Individ Dif. 2017; 114: 140–144.

143. Book A, Visser BA, Volk AA. Unpacking "evil": Claiming the core of the Dark Triad. Pers Individ Dif. 2015; 73: 29–38.

144. Lee K, Ashton MC. Psychopathy, Machiavellianism, and narcissism in the Five-Factor Model and the HEXACO model of personality structure. Pers Individ Dif. 2005; 38: 1571–1582.

145. Lee K, Ashton MC. The dark triad, the big five, and the HEXACO model. Pers Individ Dif. 2014; 67: 2–5.

146. Jones DN, Paulhus DL. Differentiating the Dark Triad within the Interpersonal Circumplex. Horowitz LM, Strack S, editors. Handbook of interpersonal psychology: Theory, research, assessment, and therapeutic interventions. New York: Wiley; 2010. pp. 249–268.

147. Steel P, Schmidt J, Shultz J. Refining the relationship between personality and subjective well-being. Psychol Bull. 2008; 134: 138–161. https://doi.org/10.1037/0033-2909.134.1.138 PMID: 18193998

148. Margolis S, Lyubomirsky S. Experimental manipulation of extraverted and introverted behavior and its effects on well-being. Journal of Experimental Psychology: General. 2019, Advance online publication. https://doi.org/10.1037/xge0000668

149. Rogoza R, Cieciuch J. Structural investigation of the Short Dark Triad questionnaire in Polish population. Curr Psychol. 2019; 38: 756–763.

150. Rogoza R, Cieciuch J. Dark Triad traits and their structure: An empirical approach. Curr Psychol. 2018: 1–16.

151. Miller JD, Hyatt CS, Maples-Keller JL, Carter NT, Lynam DR. Psychopathy and Machiavellianism: A distinction without a difference? J Pers. 2017; 85: 439–453. https://doi.org/10.1111/jopy.12251 PMID: 26971566

152. Paulhus DL, Vazire S. The self-report method. In: Robins RW, Fraley RC, Krueger RF, editors. Handbook of research methods in personality psychology. New York: Guilford; 2007. pp. 224–239.

153. Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: A critical review of the literature and recommended remedies. J Appl Psychol. 2003; 88: 879–903. https://doi.org/10.1037/0021-9010.88.5.879 PMID: 14516251

154. Baumeister RF, Vohs KD, Funder DC. Psychology as the science of reports and figure movements: Whatever happened to actual behavior? Perspect Psychol Sci. 2007; 2: 396–403. https://doi.org/10.1111/j.1745-6916.2007.00051.x PMID: 26151975

155. Plutchik RA. A general psychoevolutionary theory of emotion. In: Plutchik R, Kellerman H, editors. Theories of emotion. New York: Academic Press; 1980. pp. 3–33.

156. Ekman P. Are there basic emotions? Psychol Rev. 1992; 99: 550–553. https://doi.org/10.1037/0033-295x.99.3.550 PMID: 1344638

157. Neubauer AB, Scott SB, Slivinski MJ, Smyth JM. How was your day? Convergence of aggregated momentary and retrospective end-of-day affect ratings across the adult life span. J Pers Soc Psychol. In press. https://doi.org/10.1037/pspp00000248 PMID: 31070397