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Creatures of the night: Chronotypes and the Dark Triad traits

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ABSTRACT

In this study ($N = 263$) we provide a basic test of a niche-specialization hypothesis of the Dark Triad (i.e., narcissism, psychopathy, and Machiavellianism). We propose that in order to best enact a "cheater strategy" those high on the Dark Triad traits should have optimal cognitive performance and, thus, have a night-time chronotype. Such a disposition will take advantage of the low light, the limited monitoring, and the lessened cognitive processing of morning-type people. The Dark Triad composite was correlated with an eveningness disposition. This link worked through links with the "darker" aspects of the Dark Triad (i.e., Machiavellianism, secondary psychopathy, and exploitive narcissism); correlations that were invariant across the sexes. While we replicated sex differences in the Dark Triad, we failed to replicate sex differences in chronotype, suggesting eveningness may not be a sexually selected trait as some have argued but is a trait under natural selective pressures to enable effective exploitations of conspecifics by both sexes.

1. Introduction

A fundamental individual difference in biology (see Rosbash & Hall, 1989) is the distinction between nocturnality (i.e., activity during the night) and diurnality (i.e., activity during the day). This distinction is accompanied by a number of specialized adaptations. For instance, chimpanzees (*Pan troglodytes*) and spider monkeys (genus *Ateles*) have evolved for diurnality (Campbell, Fuentes, MacKinnon, Panger, & Bearder, 2007). Both have evolved specialized psychological systems like color-vision to forage for ripe fruits. In contrast, nocturnal animals like tarsiers (genus *Tarsius*) and cats (genus *Felidae*) have specialized adaptations for finding food at night. Tarsiers, for example, have evolved eyes that are so large they do not fit within their eye-sockets (Fleagle, 1999), and cats have reflective lenses (i.e., *Tapetum lucidum*) to amplify ambient light at night (Ollivier et al., 2004). Like vision, personality traits may represent specialized adaptations for carving up the multidimensional human niche (Figueredo et al., 2006; Jonason, Webster, Schmitt, Li, & Crysel, 2012). In this study we correlate individual differences in chronotypes (i.e., tendency to be a night-owl or an early-riser) and the Dark Triad traits (i.e., narcissism, psychopathy, and Machiavellianism).

"Chronotype" is an individual difference that reflects people's propensity to go to sleep early or late in the evening and to wake up early or late. At one end of the spectrum are early risers who exhibit optimal cognitive functioning earlier in the day than those on the opposite end of the spectrum who exhibit their optimal cognitive performance later in the day (Horne, Brass, & Pettitt, 1980; Horne & Östberg, 1976; Roberts & Kyllonen, 1999; Tankova, Adan, & Buela-Casal, 1994). Some have argued that diurnality is the ancestral state for human beings given our most recent common ancestors (i.e., Great Apes) who share this tendency (Kanazawa & Perina, 2009; Piffer, 2010) but this idea fails to take into account that nocturnality is the ancestral state for the most likely common primate ancestor; a small, nocturnal shrew-like animal (Fleagle, 1999) and, thus, nocturnality could be argued as the ancestral condition just as easily.[1] We would contend that humans have retained the ability for both, with diurnality being the more recent (i.e., derived) adaptation but the potential for nocturnality still lingering in our genes (i.e., primitive). With this flexibility, some humans may find it adaptive to occupy this under exploited niche for their adaptive goals. We contend the Dark Triad traits may represent a specialized adaptation for night-time living.

There is considerable empirical evidence to believe the Dark Triad are linked to such a disposition. First, both the Dark Triad traits (Vernon, Villani, Vickers, & Harris, 2008) and chronotype (Hur, 2007; Hur, Bouchard, & Lykken, 1998; Klei et al., 2005) are heritable. Second, an evening chronotype has been linked to increased mating success in the short-term context (Gunawardane,

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[1] This highlights the pernicious problem in evolutionary psychology of (1) generating hypothetical scenarios or "just-so stories" and (2) a problem with reasoning by homology given the problem of pinning down the appropriate ancestor to focus on.

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Piffer, & Custance, 2011; Piffer, 2010; Randler et al., 2012), as well as to impulsivity, risk-taking, sensation-seeking (Adan, Natale, Caci, & Prat, 2010; Caci, Robert, & Boyer, 2004; Digdon & Howell, 2008; Killgore, 2007; Russo, Leone, Penolazzi, & Natale, 2012), extraversion (Diaz-Morales, 2007; Matthews, 1988; Randler et al., 2012; but see Tonetti, Fabrri, & Natale, 2009), and limited conscientiousness and agreeableness (Randler, 2008; Tsaousis, 2010). Furthermore, an evening chronotype is more common in those with individualistic predispositions over collectivistic, other-orientated ones (Vollmer & Randler, 2012). All of these have been linked to the Dark Triad (Jonason, Koenig, & Tost, 2010; Jonason, Li, & Teicher, 2010; Jonason, Li, Webster, & Schmitt, 2009; Jonason & McCain, 2012; Jonason & Tost, 2010; Jonason, Valentine, Li, & Harbeson, 2011; Jonason & Webster, 2010; Jones & Paulhus, 2011; Lee & Ashton, 2005; Paulhus & Williams, 2002).

However, there are also good theoretical reasons to believe the Dark Triad might be associated with a specialization to a night-time chronotype. There is likely a co-evolutionary arms race between cheaters and those who wish to detect and punish them (Cosmides & Tooby, 1992; Cummins, 1999). The Dark Triad traits may represent specialized adaptations to avoid cheater detection (Jonason & Webster, 2012). The Dark Triad traits are characterized by entitlement, superiority, dominance (i.e., narcissism), glib social charm, manipulativeness (i.e., Machiavellianism), callous social attitudes, impulsivity, and interpersonal antagonism (i.e., psychopathy). One manner by which these traits might be adaptive is by predisposing individuals to exploit the night-time niche. With fewer people awake, the lessened light, and the diminished cognitive processing of those with morning disposition, enacting a "cheater strategy" (Jonason & Webster, 2012; Mealey, 1995) might be easier at night; all of which diminishing detection risks. Indeed, most crimes (Laubichler & Ruby, 1986; Stroebel et al., 2010) and most sexual activity peaks at night (Reinberg & Lagoguey, 1978), suggesting just such a link. Therefore, we predict the Dark Triad will be linked to a tendency to being a "night-owl".

The Dark Triad traits are not monolithic. Although Machiavellianism (as measured by the MACH IV; Christie & Geis, 1970) appears to be one-dimensional (Hunter, Gerbing, & Boster, 1982), both narcissism (as measured with the NPI; Raskin & Terry, 1988) and psychopathy (as measured with the SRP III; Paulhus, Neumann, & Hare, in press) are multidimensional (Ackerman et al., 2011; Falkenbach, Poythress, Falki, & Manchak, 2007; Hicks, Markon, Patrick, Krueger, & Newman, 2004; Raskin & Terry, 1988). We expect the "darker" aspects of these traits to be the primary berth of any links between the Dark Triad and chronotype. We expect secondary or hostile/reactive psychopathy (see Falkenbach et al., 2007; Hicks et al., 2004) to be related to an evening orientation, as it is associated with social manipulation, deviance, aggressive, impulsivity, and neuroticism. Similarly, we expect the entitlement/exploitativeness aspect of the three dimensional model of the Narcissistic Personality Inventory (Ackerman et al., 2011) to be linked to an evening chronotype more than the other aspects (e.g., leadership/authority; grandiose exhibitionism).

In this study we provide a simple test of the niche-specialization hypothesis for the Dark Triad. That is, in order to be adaptive, the traits should facilitate the active exploitation of specialized niches (Jonason & Schmitt, 2012; Jonason et al., 2011). One such niche might be night-time, providing for diminished detection risk for those predisposed to be "bad".

2. Method

2.1. Participants and procedure

Two hundred and sixty-three volunteers (74 males; $M = 24.72$, $SD = 8.71$) participated in an online study advertised to students in a university in northwest England ($n = 55$), on an on-line psychology participation website ($n = 147$), and via e-mail and social media advertising ($n = 61$).[2] The front page of the survey provided information on the nature of the study, as well as relevant ethical issues. Participants exited the survey via a page that included the researchers' contact details and a full debrief.

2.2. Measures

Narcissism was assessed with the widely used 40-item Narcissistic Personality Inventory (Raskin & Terry, 1988). Participants chose one of two statements for each item, one reflecting narcissistic attitude (e.g., "I have a natural talent for influencing people"), whereas the other did not (e.g., "I am not good at influencing people"). The narcissistic choices were averaged to create an index of leadership/authority (Cronbach's $\alpha = .78$), grandiose exhibitionism ($\alpha = .79$), and entitlement/exploitativeness ($\alpha = .57$), and overall narcissism ($\alpha = .87$).

The 64-item Self-Report Psychopathy Scale-III (Paulhus et al., in press)[3] was used to assess subclinical psychopathy. Participants rated how much they agreed (1 = *strongly disagree*; 5 = *strongly agree*) with statements such as: "I enjoy driving at high speeds" and "I think I could beat a lie detector." The items were averaged to create indices of secondary ($\alpha = .90$) and primary ($\alpha = .77$), along with overall psychopathy ($\alpha = .91$).

Machiavellianism was measured with the 20-item MACH-IV (Christie & Geis, 1970), where participants were asked how much they agreed (1 = *strongly disagree*; 7 = *strongly agree*) with statements such as: "It is hard to get ahead without cutting corners here and there" and "People suffering from incurable diseases should have the choice of being put painlessly to death." The items were summed to create a Machiavellianism index ($\alpha = .75$).

All of the Dark Triad instruments were significantly, positively correlated with each other. Machiavellianism was associated with psychopathy ($r(263) = .61$, $p < .01$) and narcissism ($r(263) = .38$, $p < .01$) and psychopathy and narcissism were linked ($r(263) = .52$, $p < .01$). In a principal components analysis, the three Dark Triad traits loaded on a single factor that explained 67.10% of the variance in the traits (Eigen = 2.01). Therefore, we created a composite Dark Triad measure by averaging standardised scores for the three instruments ($\alpha = .73$).

Chronotypes were measured with the 19-item Morningness–Eveningness Questionnaire (Horne & Östberg, 1976), asking participants about their sleep timing and schedules with questions such as: "If you got into bed at 11 PM, how tired would you be? (0 = *not at all tired*; 5 = *very tired*) and "During the first half hour after you wake up in the morning, how do you feel? (1 = *very tired*; 4 = *very refreshed*). Higher scores indicate a morning type, and low scores a more evening type orientation. The items were summed to form an index of chronotype ($\alpha = .81$, $M = 46.70$; $SD = 9.68$).

3. Results

We investigated the relationship between chronotype and the Dark Triad in a series of zero-order correlations (see Table 1). The composite Dark Triad score ($r(261) = -.16$, $p < .01$), total psychopathy ($r(261) = -.14$, $p < .01$), secondary psychopathy ($r(261) = -.14$, $p < .01$), Machiavellianism ($r(263) = -.14$, $p < .01$), and the entitlement/exploitativeness facet of the NPI ($r(261) = -.20$,

[2] No differences were detected across sample type and, thus, results are collapsed across that distinction.

[3] Although still in press, this scale has repeatedly been used in Dark Triad research despite its status (e.g., Jonason, Li, Webster, & Schmitt, 2009; Jonason, Lyons, Bethell, & Ross, 2013; Jones & Paulhus, 2011; Lee & Ashton, 2005; McDonald, Donnellan, & Navarrete, 2011; Paulhus & Williams, 2002; Vernon et al., 2008).