



## Short Communication

The reproductive costs and benefits associated with the Dark Triad traits in women<sup>☆</sup>Peter K. Jonason<sup>a,\*</sup>, Ashley N. Lavertu<sup>b</sup><sup>a</sup> Western Sydney University, Australia<sup>b</sup> Indian River Medical Center, United States

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## ABSTRACT

We examined ( $N = 201$ ) the sexual health costs and benefits of being high on psychopathy, narcissism, and Machiavellianism in women. The Dark Triad traits were associated with more sexual health disorders, more miscarriages, and pain associated with sexual health. However, narcissism was also associated with a smaller, more attractive waist-to-hip ratio and all the Dark Triad traits were associated with a shorter monthly cycle. Results, while tentative, are discussed within a Life History Theory framework.

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In the last ten years the Dark Triad traits (e.g., narcissism, psychopathy, and Machiavellianism) have become a popular topic in personality psychology. In part, this is because of its integration into a Life History Theory framework (Jonason, Koenig, & Tost, 2010). As applied to psychology, this theory suggests that personality traits might reflect biases in the trade-offs men and women make in their lives resulting in sex differences with men being more likely to make temporally proximal choices (i.e., *fast*) than women are (Rushton, 1985). In this study, we take a life history perspective to understand the health factors related to the Dark Triad traits in women, thereby answering a recent call for new models of how personality and health are linked (Friedman & Kern, 2014).

The Dark Triad traits are characterized by entitlement, superiority, dominance (i.e., narcissism), glib social charm, manipulateness (i.e., Machiavellianism), callous social attitudes, impulsivity, and interpersonal antagonism (i.e., psychopathy). Men are better characterized by these traits than women are, which may be the result of risk asymmetries (Jonason, Li, Webster, & Schmitt, 2009). However, thus far, this asymmetry has been assumed to be the cause of the sex differences but not tested given the focus of research on male-specific benefits (Carter, Campbell, & Muncer, 2014). That is, it is unclear what the

reproductive costs and potential benefits of these traits might be for women. In this study, we examine the Dark Triad traits and individual differences in waist-to-hip ratio (i.e., benefit), monthly cycle length (i.e., benefit), number of miscarriages (i.e., cost), number of reproductive health problems (i.e., cost), and pain experienced in relation to sexual health (i.e., cost) in women.

Life history models of the Dark Triad traits (Jonason et al., 2010) assume that women engage in a slower approach than men do because ancestral women have recurrently paid higher reproductive costs for doing so. However, research has not tested this assumption and, instead has focused on documenting the potential advantages men experience (Jonason et al., 2009). Therefore, we examine the correlations between these traits and reproductive costs. That is, if (1) the traits tap a *fast* life history strategy, (2) men pay fewer costs for engaging in such a strategy than women do, and (3) the costs/benefits imposed on people for engaging in such a strategy have reproductive implications, we expect the Dark Triad traits to be associated with more reproductive health costs in women.

Despite these costs, as in all things in life, there are trade-offs required between present benefits and future costs. While engaging in the sexual risk-taking that may characterize the Dark Triad traits, women may accrue various benefits like finding better partners, acquiring resources, psychosocial benefits (Greiling & Buss, 2000) and, of course, more offspring. In order to enable the social strategies linked to each of the traits, each has its own, unique system of tactics of social influence (Jonason & Webster, 2012). Given the centrality of physical attractiveness, especially body attractiveness, in short-term mating choice

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(Buss & Schmitt, 1993) and the centrality of caring about physical attractiveness in narcissism but not psychopathy or Machiavellianism (Jonason & Luévano, 2013), we might predict that women high in narcissism will attempt to improve their short-term mating attractiveness by maintaining a small and more attractive ( $<0.70$ ) waist-to-hip ratio (Singh & Young, 1995). Indeed, when working out, women fixate on their lower bodies more than men do (Jonason, 2007) and narcissism is associated with disordered eating and lower self-reported Body Mass Index (Zerach, 2014). More generally, if the Dark Triad traits are associated with an accelerated mating strategy (Jonason et al., 2009) and such acceleration can have physiological and psychological implications (Ellis, 2004), the Dark Triad traits may have an accelerated (i.e., shorter) monthly cycle to enable faster reproduction to offset mortality threats over the lifetime (Jonason, Baughman, Carter, & Parker, 2015). That is, reproductive cycle may be calibrated onto individual life history strategy as evidenced in the rate to which women can conceive.

In this study, we adopt an adaptationist framework to examine the reproductive costs and benefits associated with the Dark Triad traits. First, we examine the relationships between the Dark Triad traits and potential reproductive health costs. Second, we examine the relationships between the Dark Triad traits and potential reproductive health benefits. Such work is called for as most work on the Dark Triad traits is relatively androcentric.

## 1. Method

### 1.1. Participants and procedure

Female volunteers ( $N = 201$ ), 58 of whom had children, predominantly (64%) from North America (33% Australian; 3% other), who were mostly attracted to members of the opposite sex (67%), of European ancestry (80%; 10% African; 3% Asian; 7% other), and in a committed relationship/married (64%; 46% single), aged between 18 and 87 ( $M = 32.35$ ,  $SD = 12.17$ ) were contacted through social media sites (e.g., Reddit, Facebook) to complete a larger project about personality, women's health, and social attitudes. Participants were informed of the nature of the study, completed a number of self-report measures, and were debriefed. Racial/Ethnic background was grossly unbalanced in cell sizes, so was omitted in analyses. Results were robust to differences in geographic location, having children, and relationship status.

### 1.2. Measures

We measured reproductive costs/benefits in five ways. First, we gathered self-report data on the waist-to-hip ratio (WHR). Participants were asked what the circumference for each was and we divided the two values assuming they used the same metric for both. Participants were provided with pictorial descriptions to act as instructions.

Second, we also assessed a count of female reproductive health problems by providing participants with a list of 40 potential disorders (e.g., I suffer from vaginal dryness, I have been diagnosed with vulvar cancer) and then asking them (yes/no) whether they had ever had the disorder.<sup>1</sup> We summed the total number of problems to get a count within our samples' lifetime and added that two a 41st question that allowed participants to provide a count of any we may have missed in our list ( $Range = 0-4$ ).

Third, we assessed experience with pain related to reproductive health in an ad hoc way. Participants were provided with a list of nine potential sources of pain they may have experienced (e.g., Pain in the abdomen during ovulation, Physical pain during intercourse). Participants reported the amount of pain they had experienced (1 = *not at all*; 5 = *very much*).

Fourth, we asked participants to report the estimated, average length of their menstrual cycles. We provided participants with a guide that most cycle lengths are about 25–35 days long.<sup>2</sup> We excluded participants who were on hormonal contraceptives, confused menstrual cycle with ovulatory window, and post-menopausal women from analyses leaving just 141 participants for analyses. When participants provided a range, we used the median value.

Fifth, we asked participants the number of miscarriages (defined as the loss of a child before full-term that was not an abortion-by-choice) they have had in their lifetime. Unsurprisingly given the sensitive nature of the question some participants did not answer this question. Only 122 participants answered this question.<sup>3</sup>

The 27-item Short Dark Triad questionnaire (Jones & Paulhus, 2014) was used to assess the Dark Triad traits. Participants indicated how much they agreed (1 = *strongly disagree*; 5 = *strongly agree*) with items such as "It's not wise to tell your secrets" (i.e., Machiavellianism), "People see me as a natural leader" (i.e., narcissism), and "Payback needs to be quick and nasty" (i.e., psychopathy). Items were averaged for the corresponding measures of Machiavellianism ( $\alpha = 0.74$ ), narcissism ( $\alpha = 0.74$ ), and psychopathy ( $\alpha = 0.73$ ).<sup>4</sup>

## 2. Results

Table 1 summarizes the results from the analysis and contains descriptive statistics for the study variables. We relaxed our  $p$ -value ( $p < 0.10$ ) because (1) participants opted out of some questions or were excluded reducing our power, (2) this is initial, exploratory work, and (3) we had sufficient theoretical justification for our hypotheses, but (4) we expect only weak associations given the complicated nature of the relationship between health and personality. Narcissism and psychopathy were correlated with the number of sexual health disorders experienced one's lifetime. All three traits were associated with more pain and miscarriages and a shorter monthly cycle length. Narcissism was negatively correlated with a smaller waist-to-hip ratio which should make them more physically attractive for short-term mating. Despite the heavily imbalanced sample sizes across sexual orientation, we explored these correlations independently in each group. We found no effects in homosexual women ( $n \approx 10$ ). In heterosexual women ( $n \approx 130$ ), narcissism ( $r = 0.15$ ,  $p < 0.09$ ) and psychopathy ( $r = 0.20$ ,  $p < 0.05$ ) were associated with the count of sexual health disorders, Machiavellianism ( $r = 0.20$ ,  $p < 0.10$ ) and psychopathy ( $r = 0.27$ ,  $p < 0.05$ ) were associated with number of miscarriages, and narcissism was associated with a shorter cycle length ( $r = -0.20$ ,  $p < 0.10$ ). In women attracted to members of both sexes ( $n \approx 30$ ), Machiavellianism was associated with pain ( $r = 0.62$ ,  $p < 0.01$ ), waist-to-hip ratio ( $r = 0.58$ ,  $p < 0.01$ ), and cycle length ( $r = -0.50$ ,  $p < 0.01$ ) and narcissism was associated with cycle length ( $r = -0.58$ ,  $p < 0.01$ ). Participant's age was associated with more reproductive health problems ( $r(184) = 0.14$ ,  $p < 0.10$ ), less pain associated with reproductive health problems ( $r(168) = -0.32$ ,  $p < 0.05$ ), more miscarriages ( $r(119) = 0.16$ ,  $p < 0.10$ ), and a shorter cycle ( $r(139) = -0.16$ ,  $p < 0.10$ ), the Dark Triad traits were not and, thus, unsurprisingly, partialing of age effects created only minor changes in the reported associations, thus we omit such results here.

<sup>2</sup> The specific wording was as follows: How many days long are your menstrual cycles? (for most women, the range is between 25 and 35 days) Keep in mind this is the number of days from the start of one menstrual period to the start of the next menstrual period and NOT the length of your menstrual bleeding.

<sup>3</sup> Some of the indicators of reproductive health were correlated. Cycle length was correlated with experience of pain ( $r(138) = -0.28$ ,  $p < 0.05$ ). The count of disorders was correlated with experience of pain ( $r(138) = 0.27$ ,  $p < 0.05$ ). Number of miscarriages was correlated with count of disorders ( $r(138) = 0.48$ ,  $p < 0.01$ ).

<sup>4</sup> Machiavellianism was correlated with narcissism ( $r(198) = 0.30$ ,  $p < 0.01$ ) and psychopathy ( $r(198) = 0.49$ ,  $p < 0.01$ ) and psychopathy was correlated with narcissism ( $r(198) = 0.33$ ,  $p < 0.01$ ). These traits were uncorrelated with participant's age.

<sup>1</sup> A full list of these items is available upon request.

**Table 1**  
Descriptive statistics and correlations between the Dark Triad traits and reproductive health in women.

	M (SD)	Machiavellianism	Narcissism	Psychopathy
Number of disorders	3.31 (2.90) <sup>a</sup>	0.04	0.14*	0.18*
Amount of pain	2.82 (1.61) <sup>a</sup>	0.28**	0.21**	0.28**
Number of miscarriages	0.33 (0.77) <sup>a</sup>	0.14*	0.15*	0.20*
Cycle length	29.40 (7.16)	−0.25**	−0.20*	−0.15*
Waist-to-hip ratio	0.86 (0.15) <sup>a</sup>	0.15*	−0.19**	−0.07
	M (SD)	2.77 (0.53)	2.91 (0.57)	2.07 (0.54)

\*  $p < 0.10$ .

\*\*  $p < 0.05$ .

<sup>a</sup> Reflects values > 0 for disorders and miscarriages, 1 for pain, and 0.70 for WHR.

### 3. Discussion

In this study, we examined a fundamental assumption in work on the Dark Triad traits from a life history perspective. It is clear that men are more inclined towards being narcissistic, psychopathic, and Machiavellian than women are (Jonason et al., 2009), but what is less clear is why. Most arguments center around these traits and their related life history strategy having a better payout ratio in men than in women (Jonason et al., 2010) but few have attempted to test whether women (1) do actually pay more reproductive cost when characterized by the Dark Triad as opposed to not and (2) if there are female-specific benefits for those women characterized by these traits (Carter et al., 2014). We have attempted to do so in this study.

We documented three costs associated with being high on the Dark Triad traits for women that may have acted as selective pressures reducing them in women but not men (effects that varied little across the age of the participant). Women high in narcissism and psychopathy reported more lifetime sexual health problems and all three of the traits were associated with more pain associated with their sexual health and more miscarriages. This may be evidence of the often alluded to greater costs associated with engaging in casual sex that have been linked to the Dark Triad traits. However, it appears to also be the case that the Dark Triad traits may provide some benefits as they may prepare women for an accelerated mating strategy (Ellis, 2004) through (1) enhancing their short-term mating specific mate value by enacting tactics geared towards reducing their waist-to-hip ratio (Singh & Young, 1995) and may increase the speed of conception, ostensibly to offset the greater mortality risks associated with the Dark Triad traits (Jonason et al., 2015). All three of the Dark Triad traits were associated with a shorter monthly cycle and narcissism was associated with a smaller waist-to-hip ratio. The unexpected and positive association between Machiavellianism and waist-to-hip ratio may reflect the fact that this trait appears to not be linked to overt mating motivations (Adams, Luévano, & Jonason, 2014), and thus, a diminished motivation to maintain a svelte physical appearance.

Despite the novelty and theoretical rigor of our study, it has some limitations. We (1) had a WEIRD (i.e., Western, Educated, Industrialized, Rich, and Democratic; see Henrich, Heine, & Norenzayan, 2010) sample, (2) relied on brief self-report measures throughout, and (3) suffered from some lack of responding in our more sensitive questions which reduced our power leading us to relax traditional  $p$ -values. Future work would benefit in addressing these limitations with more direct sampling methods (e.g., in-person), but we feel our study provides novel and somewhat compelling results that test essential hypotheses in relation to the way the Dark Triad traits fit within a life history framework and, also, provides an advance on how personality traits are related to reproductive health in women (Friedman & Kern, 2014).

In conclusion, we speculate that the Dark Triad traits (or at least the latent dispositions the measures tap) may have been and are subject to antagonistic co-evolutionary processes where the fitness optimum for the sexes is different. While most research has detailed the various benefits for men, it has assumed higher costs and fewer benefits for women. In this study, we have tested this assumption, showing there are fitness costs and benefits associated with the Dark Triad traits in women. While limited and initial, we have revealed that the Dark Triad traits may impose sexual health problems on women, while simultaneously enabling an accelerated mating strategy.

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