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Cheater, Cheater, Pumpkin Eater: The Dark Triad, Attitudes towards Doping, and Cheating
Behavior among Athletes

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1 Abstract

2 We examined the relationships between the Dark Triad personality traits (Machiavellianism,
3 narcissism, and psychopathy), attitudes towards doping, and cheating behavior among
4 athletes. One-hundred and sixty-four athletes completed a questionnaire that assessed the
5 Dark Triad and their attitudes towards doping. Following this, athletes completed a matrix
6 solving task within a specific time limit. Participants were told they would receive a financial
7 reward for the total number matrices they could solve, but only 13 of the 20 matrices were
8 solvable. This provided the incentive and an opportunity for the athletes to cheat. All three
9 Dark Triad personality traits correlated positively with attitudes towards doping and cheating
10 behavior. In regression analyses, psychopathy emerged as a significant positive predictor of
11 attitudes towards doping, and narcissism emerged as a significant positive predictor of
12 cheating behavior. Attitudes towards doping correlated positively with cheating behavior.
13 The Dark Triad appears to be important in relation to both attitudes towards doping and
14 cheating behavior among athletes. In addition, our findings illustrate that favorable attitudes
15 towards doping were linked with actual cheating among athletes. National Anti-Doping
16 Organizations, sports federations, and coaches could assess athletes' Dark Triad scores and
17 attitudes towards doping in order to identify who may be more likely to cheat.

18 *Keywords:* Machiavellianism; Narcissism; Performance Enhancing Drugs; Personality;
19 Psychopathy

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2 Behavior among Athletes

3 The intentional use of banned performance enhancing drugs (PEDs) or methods,
4 referred to as doping, represents a form of cheating in sport (Kavussanu, 2019). A recent
5 study found that up to 57.1% of elite athletes reported doping (Ulrich et al., 2018), which is
6 much higher than 1-2% of athletes who are typically caught committing an anti-doping rule
7 violation on a yearly basis (World Anti-Doping Agency; WADA, 2018). It is important to
8 understand the factors that predict why some athletes take PEDs, in order to reduce the
9 prevalence of doping.

10 Researchers with an interest in doping have examined factors that may explain why
11 athletes knowingly cheat by taking PEDs. These included controlling coach behaviors, the
12 use of nutritional supplements, and the engagement in health harming behaviors (Nicholls,
13 Cope, et al. 2017; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). Of the possible factors,
14 research suggests that athletes' attitudes towards doping may be particularly important. For
15 example, a meta-analysis by Ntoumanis et al. (2014) found that favorable attitudes towards
16 doping are one of the strongest predictors of doping behaviors. Therefore, understanding
17 more about the factors that underpin attitudes towards doping is important.

18 **The Dark Triad and Attitudes Towards Doping**

19 Personality has been theoretically and empirically linked to attitudes towards doping
20 (Donovan, Eggar, Kapernick, & Mendoza, 2002; Nicholls, Madigan, Backhouse, & Levy,
21 2017). In their Sport Drug Control Model (SDCM), Donovan et al. (2002) purported that
22 personality was one of six factors that shaped attitudes towards doping., Nicholls et al.
23 (2017b) were among the first scholars to examine the relationship between personality and
24 doping attitudes. They examined the relationship between Dark Triad constellation of
25 personality and attitudes towards doping. The Dark Triad contains three related, but distinct

1 personality traits (Machiavellianism, narcissism, and psychopathy). Machiavellianism is
2 characterized by individuals manipulating others and being both corrupt and immoral.
3 Narcissistic people have an over inflated view of the self, vanity, and a strong sense of self-
4 entitlement. Finally, individuals who score highly on psychopathy tend to have little empathy
5 and are anti-social (Paulhus & Williams, 2002). Nicholls, Madigan, et al. (2017) reported that
6 Machiavellianism, narcissism, and psychopathy all correlated positively with favorable
7 attitudes towards doping. Further, a linear combination of all three traits explained 29% of
8 the variance in attitudes towards doping, although narcissism was not a significant predictor.
9 These findings require replication and the model requires testing among other athletes. In
10 addition, because research on the Dark Triad in sport is in its infancy, there is little
11 understanding about what other immoral/unacceptable behaviors it may predict among
12 athletes. It seems logical to presume that a similar relationship may exist between the Dark
13 Triad and cheating behaviors (Kavussanu, 2019).

14 **The Dark Triad and Cheating Behavior**

15 There are some inconsistent findings regarding the association between the Dark Triad
16 and cheating behaviors. Williams, Nathanson, and Paulhus (2010) explored the relationship
17 between the Dark Triad and scholastic cheating. Although these authors reported that
18 Machiavellianism, narcissism, and psychopathy were associated with self-reported cheating,
19 only psychopathy remained a significant predictor after controlling for the other traits. In
20 another study, Roeser et al. (2016) explored the relationship between the Dark Triad and
21 scores on a number matrix-task. In this task, participants could make more money by
22 cheating and, thus, reporting that they solved some matrix-tasks that were unsolvable. In
23 partial agreement with Williams et al. (2010), psychopathy predicted cheating on the number-
24 matrix task, although Machiavellianism and narcissism did not.

25 Recent research adds to the complexity of these relationships. For example, Jones and

1 Paulhus (2017) found that Machiavellianism, narcissism, and psychopathy all predicted
2 cheating when participants thought there was little chance of being caught. However, when
3 there was a chance of punishment, only those who scored high on psychopathy cheated.
4 Further, in high-risk situations individuals who scored high on Machiavellianism and were
5 ego depleted (i.e., undergoing a taxing task that disables resources used for strategic thinking)
6 exhibited cheating behaviors.

7 Although the findings regarding the relationship between the Dark Triad and cheating
8 are somewhat equivocal, it appears that psychopathy is the strongest predictor of cheating,
9 but both Machiavellianism and narcissism may predict cheating in certain circumstances.
10 None of the aforementioned studies that examined the relationship between the Dark Triad
11 and cheating among athletes. This is important because winning in sport is associated with
12 self-gain (e.g., praise from coaches, family or teammates, prestige, monetary gains, and even
13 adulation), and the Dark Triad personality traits have been positively associated with self-
14 gain (Jonason, Lyons, Baughman, & Vernon, 2014).

15 **Attitudes Towards Doping and Cheating Behavior**

16 Cheating may also be important in regard to transgressional behaviors in a sporting
17 context, such as doping (Kavussanu, 2019). This is because intentional doping represents a
18 form of cheating (WADA, 2018). Thus, athletes who are predisposed to cheat may be at a
19 greater risk of doping, because taking PEDs is a cheating behavior (Kavussanu, 2019;
20 WADA, 2018). Surprisingly, scholars have not examined how cheating may be associated
21 with doping prevalence, nor constructs that are associated with doping prevalence, such as
22 attitudes towards doping (Ntoumanis et al., 2014).

23 **The Present Study**

24 In summary, the present study had three aims. First, to re-examine the relationship
25 between the Dark Triad and attitudes towards doping (Nicholls, Madigan, et al., 2017),

1 second, to examine whether the Dark Triad predicts cheating behavior in athletes, and finally,
2 to examine the relationship between attitudes towards doping and cheating behavior. Based
3 on previous findings, we hypothesized that all three personality traits of Dark Triad would
4 correlate with favorable attitudes towards doping and cheating behavior. Furthermore,
5 because being in favor of PEDs represents supporting cheating behavior (Kavussanu, 2019),
6 we also hypothesized that favorable attitudes towards doping would be associated with
7 cheating behavior.

8 **Method**

9 **Participants**

10 One-hundred and sixty-four athletes, who all took part in competitive sport,
11 participated in this study (female $n = 69$; male $n = 94$). Participants were aged between 18
12 and 41 years (M age = 21.34, $SD = 3.29$). The athletes competed beginner ($n = 18$), club ($n =$
13 59), county ($n = 44$), national ($n = 30$), or international standard ($n = 13$).

14 **Measures**

15 *The Dark Triad.* We used the 27-item Short Dark Triad (SD3; Jones & Paulhus, 2014)
16 to measure Machiavellianism (e.g., “I like to use manipulation to get my way” and “make
17 sure your plans benefit you, and not others”), narcissism (e.g., “people see me as a natural
18 leader” and “I have been compared to famous people”), and psychopathy (“it’s true that I can
19 be mean to others” and “payback needs to be quick and nasty”). All questions were answered
20 on a 5-point Likert-type scale, which was anchored at 1 = ‘not at all’ and 5 = ‘extremely.’
21 Previous research provided evidence for the validity of the SD3 with an athletic sample (i.e.,
22 Vaughan, Madigan, Carter, & Nicholls, 2019).

23 *Doping Attitudes.* We used the 8-item Short-Form Performance Enhancement
24 Attitude Scale (SF-PEAS; Nicholls, Madigan, & Levy, 2017) to measure athletes’ attitudes
25 towards doping. The SF-PEAS included items such as “doping is not cheating since everyone

1 does it” and “doping is unavoidable part of the competitive sport.” A 6-point Likert-type
2 scale, anchored at 1 = ‘*strongly disagree*’ and 6 = ‘*strongly agree*,’ was used to answer each
3 question. Previous research provided evidence for the validity of the SF-PEAS with adult
4 athletes (e.g., Nicholls, Madigan, & Levy, 2017).

5 *Cheating Behaviors.* In order to assess cheating behavior, we employed the number
6 matrix-task that Kouchaki and Smith (2014) and Roeser et al. (2016) used. Participants were
7 presented with 20 matrices and received the following instructions: “The purpose of this task
8 is to see whether number solving correlates to 1) athletic ability, 2) type of sport, and 3)
9 position played. You will be presented with 20 matrixes and have 15 seconds to solve each
10 matrix. You solve the matrix by finding 2 numbers that add up to 10.” Participants were
11 informed that they would receive a financial reward for each number matrix they solved.
12 This, however, was not true. Athletes indicated whether they solved each number grid by
13 circling ‘yes’ or ‘no’ on the following page. Seven of the matrices were unsolvable, and thus
14 provided the opportunity for the athletes to cheat.

15 **Procedure**

16 After obtaining ethical approval from a university departmental ethics committee, we
17 advertised the study to athletes. The study advertisement informed potential participants that
18 we were interested in the relationship between number solving abilities and athletic ability,
19 sport type, and position played. Athletes who wanted to participate received an information
20 letter and signed an informed consent form, based on the initial advertisement. The
21 experimental protocol involved all athletes completing the SD3 (Jones & Paulhus, 2014) and
22 the SF-PEAS (Nicholls, Madigan, & Levy, 2017). Athletes then completed the number
23 matrix task (see Kouchaki & Smith, 2014; Roeser et al., 2016), under the pretense that
24 problem-solving would be linked to skill level. This is because we wanted to conceal the fact
25 we were interested in how cheating is linked to the Dark Triad and attitudes towards doping.

1 Following this, we informed the participants we were conducting another study and asked
2 participants whether they would be interested in completing two additional questionnaires,
3 relating to their personality and feelings about PEDs. All participants agreed. Following the
4 completion of all three components, a trained researcher debriefed each participant about the
5 real aim of the study. That is, athletes were informed that we were not interested in the
6 relationship between number solving abilities and athletic ability, sport type, and position
7 played. We also told participants that only 13 of the matrices could be solved and there was
8 no financial reward for the number of matrices they completed. Participants were informed of
9 a prize draw and given the option of removing their data. No one opted to remove their data.
10 Finally, each participant was asked to not to mention the deception part of the study to other
11 people.

12 **Data Screening**

13 First, we inspected the data for missing values. There were no missing values. We
14 then computed Cronbach's alphas for our variables. All alphas were acceptable (see Table 1).
15 Finally, following recommendations by Tabachnick and Fidell (2007), we screened data for
16 multivariate outliers. One participant showed a Mahalanobis distance larger than the critical
17 value of $\chi^2(5) = 20.52$, $p < .001$. Therefore, this data was removed from further analyses.
18 This resulted in a final sample size of 163 athletes.

19 **Results**

20 **Bivariate Correlations**

21 Next, we inspected the bivariate correlations between all variables (see Table 1). As
22 in previous research (e.g., Jones & Paulhus, 2014), the Dark Triad dimensions showed strong
23 inter-correlations. Moreover, all the Dark Triad dimensions showed significant positive
24 correlations with attitudes towards doping and cheating behavior. Cheating behavior showed
25 a significant positive correlation with attitudes towards doping. All correlations were

1 medium-to-large sized.

2 **Multiple Regression Analyses**

3 We then conducted two multiple regression analyses (see Table 2). These analyses
4 controlled for the overlap between Dark Triad dimensions and examined the dimensions'
5 unique relationships with attitudes towards doping and cheating behavior respectively. For
6 this, all three Dark Triad dimensions were entered simultaneously into the regression models.
7 Results showed that the model explained 41% of the variance in attitudes towards doping.
8 Psychopathy emerged as a significant positive predictor of attitudes towards doping. Results
9 showed that the model explained 20% of the variance in cheating behavior. Narcissism
10 emerged as a significant positive predictor of cheating behavior.

11 **Discussion**

12 We examined the relationship between the Dark Triad and attitudes towards doping
13 and cheating behavior. We also examined whether attitudes towards doping were associated
14 with cheating behavior. All three traits comprising the Dark Triad correlated positively with
15 attitudes towards doping and cheating behavior. When controlling for the overlap between
16 traits, only psychopathy emerged as a positive predictor of attitudes towards doping, and only
17 narcissism emerged as a positive predictor of cheating behavior. Finally, attitudes towards
18 doping were positively associated with cheating behavior.

19 **The Dark Triad and Attitudes Towards Doping**

20 In agreement with Nicholls, Madigan et al. (2017), the present findings reiterate that
21 the Dark Triad is important in relation to athletes' attitudes towards doping. They also
22 reiterate that psychopathy may be the most important of the three traits. Athletes who score
23 high on psychopathy may have more favorable attitudes because they find it difficult to resist
24 an immediate reward, even when there is a risk of punishment (Crysel, Crosier, & Webster,

1 2014; Jones, 2014) and are less likely to feel guilty about transgressive behaviors (Trout,
2 2009). As PEDs may enhance performance, with almost immediate effect in some instances,
3 it is unsurprising that such individuals view PEDs favorably and with less guilt given the
4 possible rewards for success in sport (e.g., prestige, prize money, scholarships).

5 In contrast to previous work (Nicholls, Madigan et al., 2017), which found that
6 Machiavellianism was the strongest predictor of favorable attitudes towards doping, the path
7 between these constructs was nonsignificant in the current study. This finding may be related
8 to partialling, which is the partitioning shared variance. This is a common issue that arises
9 within research exploring the Dark Triad, and has been the subject of continued discussion in
10 the wider academic literature (Vize, Collison, Miller, & Lynam, 2018). These equivocal
11 findings therefore indicate that additional research is required to fully explore the Dark Triad
12 and attitudes towards doping relationship, and to identify factors that may explain these
13 equivocal findings.

14 **The Dark Triad and Cheating Behavior**

15 We provided the first examination of the relationships between the Dark Triad and
16 cheating behavior among athletes. Building on existing research among non-athletic samples
17 that found the Dark Triad was an important predictor of cheating (e.g., Williams et al., 2010),
18 we found that all three traits were important at a bivariate level. In addition, once the overlap
19 was controlled, narcissism emerged as the most important predictor. This is somewhat at
20 odds with previous research among a non-athletic sample, which suggests psychopathy is the
21 most important predictor in non-athlete samples (Jones & Paulhus, 2017). Given that athletes
22 spend numerous hours training, this may result in them developing a strong sense of self-
23 entitlement about winning. As such, narcissistic athletes appear prepared to cheat, in order to
24 win.

25 **Attitudes Towards Doping and Cheating Behavior**

1 The present study represents one of the first attempts to examine the relationship
2 between attitudes towards doping and an objective measure of cheating. Further, the
3 experimental protocol we utilized gave participants an incentive to cheat and was performed
4 in a time pressured situation, which is similar to competitive sport. Given that doping
5 represents a serious breach of the rules and is a clear example of cheating (Kavussanu, 2019;
6 WADA, 2018), it is unsurprising that the two were related. Although researchers have
7 assessed how attitudes towards doping are related to self-reported doping use (e.g., Lazuras
8 Barkoukis, & Tsorbatzoudis, 2015), they have not assessed whether athletes with favorable
9 attitudes towards doping would cheat across other domains. Here, we show that they are
10 indeed related. Pursuing this line of research and further understanding why athletes cheat
11 may be important in trying to reduce the frequency of dishonest behaviors in sport.

12 **Limitations and Future Research**

13 The present study has several limitations. First, we did not examine doping
14 prevalence in relation to either the Dark Triad or cheating behavior. Given this constellation
15 of personality traits is associated with substance abuse in other studies (e.g., Azizil et al.,
16 2016), it would be interesting to establish whether the Dark Triad is associated with past or
17 current use of PEDs and intentions to dope in the future. Second, we did not include factors
18 that have been found to moderate cheating behavior. For example, Jones and Paulhus (2017)
19 found that risk level of being punished, ego depletion, and the target of deception all
20 influenced the effects of the Dark Triad on cheating behavior. It would be interesting to see
21 whether these factors influence doping attitudes. Finally, our study, and other studies (e.g.,
22 Jones & Paulhus, 2017; Roeser et al., 2016) that have explored the relationship between the
23 Dark Triad and cheating behaviors, used the SD3 to assess the Dark Triad. The SD3 does not
24 allow for the examination of specific lower-order traits within narcissism (narcissistic
25 grandiosity and narcissistic vulnerability; Cain, Pincus, & Ansell, 2008). Given that

1 narcissism was important in this study, future scholarly activity could explore whether lower-
2 order traits are drivers of cheating behavior and attitudes towards doping.

3 **Conclusions**

4 The Dark Triad appears to be important in relation to attitudes towards doping and
5 cheating behavior among athletes. Psychopathy may be especially important in context of
6 doping. In addition, attitudes towards doping were found to be significantly associated with
7 cheating behaviors. The Dark Triad and attitudes towards doping could therefore be central to
8 future research and the development of anti-doping education interventions.

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Table 1

Descriptive Statistics, Cronbach's Alphas, and Bivariate Correlations

Variable	1	2	3	4	5
1. Machiavellianism					
2. Narcissism	.66***				
3. Psychopathy	.75***	.65***			
4. Cheating behavior	.39***	.41***	.37***		
5. Attitudes towards doping	.51***	.51***	.63***	.45***	
<i>M</i>	23.99	25.29	19.46	1.74	14.38
<i>SD</i>	7.27	7.10	7.62	1.91	9.07
Cronbach's alpha	.83	.82	.84	-	.94

Note. $N = 163$.

*** $p < .001$.

Table 2

Summary of Multiple Regression Analysis

	R^2	β
DV = Attitudes towards doping	.413***	
Machiavellianism		.04
Narcissism		.16
Psychopathy		.50***
DV = Cheating behavior	.198***	
Machiavellianism		.17
Narcissism		.24*
Psychopathy		.09

Note. $N = 163$. DV = dependent variable. β = standardized regression weight.

*** $p < .001$.