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I Just Don't Want to Hear It: A Look Into the Relationship Between the Dark Triad and Negative Criticism

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I JUST DON'T WANT TO HEAR IT: A LOOK INTO THE RELATIONSHIP BETWEEN THE DARK TRIAD AND NEGATIVE CRITICISM

A Master's Thesis

Presented to

The Graduate College of

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In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Experimental Psychology

By

Carson Hewitt

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Psychology

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Abstract

Three dark personality traits have been identified and grouped together to form what is known as the Dark Triad of personality. Narcissism, Machiavellianism, and Psychopathy are all connected by a lack of emotional empathy, and the presence of interpersonal hostility. When presented with negative stimuli, it is far from surprising to see an adverse reaction appear in participants scoring high in these traits. Little research has been conducted regarding the relationship between physiological response and dark triad personality traits. Even fewer so in the case of responses to criticism. This study aimed to examine the relationship between these dark personality traits and criticism response via physiological sampling. Participants were recruited from a midwestern university and were rewarded with class credit for participation in the study. It was found through linear regression analysis that all three parts of the dark triad did not see a significant change in cortisol concentration following negative criticism. This could be explained by the study design, as the criticisms were not tailored to the participant's demographic responses but were instead read from a pre-scripted set of criticisms. Additionally, these individuals often demonstrate a blunted response in the face of criticism and are likely used to being criticized.

Keywords: narcissism, machiavellianism, psychopathy, cortisol, criticism

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Introduction

The dark triad – composed of three sub constructs Narcissism, Machiavellianism, and Psychopathy, contributes to a multitude of abnormal thoughts and behaviors that can be problematic if not identified. A shared feature that connects these dark personalities is a deficit in empathy (Paulhus & Williams, 2002; Christie & Geis, 1970; Raskin & Hall, 1979; Hare et. al, 2000), accompanied by a tendency to form short term mating strategies, and a distaste for serious romantic relationships (Jonason et. al, 2012; Koladich & Atkinson, 2016). This pattern of choices is likely guided by a predisposition towards callousness and aggression (Jones & Paulhus, 2010; Jones & Neria, 2015) which most notably surfaces when personally threatened or insulted. These manipulative tendencies driven by self-interest often lead individuals high in the dark triad to have poor interpersonal relationships that are formed solely in the interest of personal gain (Jonason & Schmitt, 2012). Forming new social connections was found to be driven by personal feelings of enjoyment and shared intelligence (narcissists), social status (female Machiavellians), and mating efforts (male psychopaths). Research has shown that individuals scoring high in the dark triad also tend to predict future outcomes and prefer fast lifestyles (Jonason, Koenig, & Toast, 2010). Results indicated a significant positive correlation was shared among all three facets of the dark triad in response to one item: “I can often tell how things will turn out”. The strongest correlation was found when including all three facets of the dark triad, although Narcissism was similarly correlated. Participants also took the Mini-K - a test designed to assess a fast vs. slow lifestyle preference. Results revealed that those scoring high in the dark triad tend to adopt a fast lifestyle that was described as having diminished self-control, short term mating strategies, and other generally antisocial perspectives.

Related to fast lifestyles, it has been found that all three facets of the dark triad are also connected by a tendency to disagree with others (Jakobwitz & Egan, 2006). Given these tendencies towards antisocial views and behaviors, it seems likely that when presented with criticism, all subscales of the dark triad would respond negatively. Physiological stress response following criticism has not been studied for individuals scoring high in Machiavellianism and psychopathy, whereas minimal research has been conducted to look at this relationship for individuals scoring high in narcissism. However, these negative responses may not be outwardly expressed. For example, it has been shown that individuals scoring high in Machiavellianism are often skilled at affective-perspective taking and may fake empathetic response to negative stimuli (Barnett & Thompson, 1985; Massey-Abernathy & Byrd-Craven, 2016). These findings necessitate a further look into how participants scoring high in the dark triad might respond to criticism via physiological sampling, as this has never been studied before on such a broad and inclusive scale.

Narcissism

Narcissism is largely defined as an exaggerated admiration of the self, often reflected through a lack of empathy and a willingness to manipulate others for personal gain (Raskin & Terry, 1988; Atlas & Them, 2008; Freud, 1914). Individuals scoring high in narcissism often maintain a high self-esteem, but also one that is easily damaged (Bogart et. al, 2010). Research has shown that when presented with negative feedback of their performance, a narcissist may respond with aggression and hostility (Barry et. al, 2007; Edelstein et. al, 2010). Edelstein and her team looked at criticism response via cortisol collection with narcissistic participants and found that men showed higher cortisol responses to being criticized. Additionally, it was concluded that for men, higher narcissism scores predict larger cortisol reactivity and a

significant correlation with negative affect. No such correlations were found to be associated with women scoring high in narcissism. It was also concluded that idealized negative feedback was followed by a more adverse response than when the criticism was cited and validated by research. This indicates that the way feedback is given may have a large impact on the degree to which a narcissistic individual may respond.

Newer research has identified two different types of narcissism and behaviors associated with them (Zheng & Huang, 2005; Brookes, 2015). Overt narcissism is often noted as outwardly expressing feelings of superiority and authority, while covert narcissism is associated with vulnerability and self-deprecation, and can be more difficult to identify through outward behavior. Given that covert narcissism is better used as a measure for clinical diagnosis of narcissistic personality disorder and overt narcissism is better used in empirical contexts, we will just be looking at overt narcissism and its relationship to stress response.

In Wink's (1991) research, a principal component analysis was conducted across six MMPI narcissism scales; It was found that three factors (extraversion, aggression, and self-assurance) were associated with covert narcissism, while separate factors (introversion, anxiety, and defensiveness) were associated with overt narcissism. Another set of factors (conceit, self-indulgence, and disrespect of others) was found in both overt and covert narcissists, representing an overlap in the two groups.

Researchers have looked at narcissism and sensitivity to criticism and found that participants scoring high on the trait narcissism as measured by the narcissistic personality inventory were, on average, less sensitive to criticism and would seek feedback opportunities (Atlas & Them, 2008). Conversely, participants scoring high in covert narcissism would avoid feedback opportunities and would be much more sensitive to criticism. Other research has

indicated that participants scoring high in narcissism respond aggressively towards the source of criticism when provoked by insult or humiliation (Bushman et. al, 2009). Findings suggest that the highest levels of aggression were noted when the participant scored high in self-esteem and high in narcissism.

Machiavellianism

Machiavellianism first surfaced from the writings and worldview of Niccolo Machiavelli, a 16th century Italian author. Machiavelli perceived people as untrustworthy, covetous, and cowardly. Detailed in his book '*The Prince'*, published in 1513: Machiavelli favored power through any means necessary, regardless of how it is acquired or maintained, often justifying deceitful and exploitative actions. Many years later, in the 1960s, Richard Christie proposed that the tendency to adopt Machiavelli's worldview is a measurable construct of personality that would later be coined the term Machiavellianism (Christie & Geis, 1970). Christie (1970) would go on to create multiple scales used to measure this new construct, the most popular and widely utilized scale being the Mach-IV. Within this scale, as well as the Mach-V, three sub-constructs represent Machiavellianism: endorsement of manipulative tactics, a cynical worldview, and a disregard for morality.

Christie & Geis (1970) describe manipulative tactics used by high Machiavellians (Machs) as involving deceit, with an ambition to win your trust, and include items that touch on the nature of an individual's interpersonal tactics (e.g., "The best way to handle people is to tell them what they want to hear"). These items in the Mach-IV represent ideals that social connections should be made with the intention of personal gain, favoring flattery of important people with power (Christie & Geis, 1970). These items postulate that an individual scoring high in manipulative tactics believes that the acquisition of power is something that should be

maintained at the expense of others – a core belief detailed by Machiavelli in his publication '*The Prince'*. A disregard for morality can be measured as a tendency to adopt a callous, insensitive perception of people's wellbeing. These items reflect a lack of regard for human life and prosperity, as only those with influence to enact meaningful change should be preserved and allowed to succeed (Christie & Geis, 1970). A cynical worldview can be seen as a lack of trust and respect for all people. A commonality in these items is that poor behavior takes place everywhere, and you are a fool to not get ahead while others around you cut corners. Christie & Geis (1970) speculate that this facet of Machiavellianism represents the view that people are cowardly and should not be trusted in the interest of self-preservation (Christie & Geis, 1970).

Many factors have been found to be related to Machiavellianism (Fehr & Paulhus, 1992). It was noted that past research has found connections between Machiavellianism and various forms of hostility (Wrightsman & Cook, 1965). Similarly, high Machiavellian males were found to be more hostile than low Machiavellians (Jones et. al, 1979). This was contested by Richard Christie, who suggested that all individuals scoring high in Machiavellianism are hostile, and that low Machiavellians simply are less willing to admit to such perceptions. There has been no research to indicate how an individual scoring high in Machiavellianism would respond to receiving criticism. It could be speculated that those scoring high in Machiavellianism would give the impression that the criticism was taken in a positive light, however physiological sampling might give insight to what is happening beyond external cues.

Psychopathy

Psychopathy is widely known among researchers as demonstrating a lack of empathy, blunted emotional response, and a disposition towards antisocial behavior (Cleckley, 1976; Hare, 1993; Crego & Widiger, 2016). Research has found that a psychopath does not seek traditional

values of society such as good social friendships, and instead favor friends that can facilitate their mating efforts and will be easy to manipulate for personal gain (Jonason & Schmitt, 2012). It was first proposed by Karpman, 1941 that psychopathy should be measured as two unique clinical groups labeled primary and secondary psychopathy. Primary psychopathy has been defined as a lack of interest or respect for the needs and wishes of others while secondary psychopathy refers to the antisocial behaviors that are often seen with a psychopath (Blair et. al, 2005). While secondary psychopathy is more closely associated with an official diagnosis simply because the associated behaviors are much easier to identify, primary psychopathy might be more likely to show up in the general population without a diagnosis. For the sake of this study, our sample was evaluated without a clinical diagnosis, prompting the observation of individuals scoring high in primary psychopathy and their response to being criticized.

Psychometrically, psychopathy is often measured in two dimensions: affective-interpersonal and impulsive-antisocial, which translates to primary and secondary psychopathy, respectively (Hare, 1991; Bresin et. al, 2012). Most individuals that are diagnosed demonstrate secondary psychopathy, whereas those with primary psychopathy are more likely to show up in the general population. Primary psychopathy has been found to be related to better emotional regulation, as well as higher levels of psychological well-being, when compared to secondary psychopathy (Saltoğlu & Irak, 2020). It is speculated that those scoring high in secondary psychopathy choose poor coping strategies due to their tendency to act impulsively and deviate from societal norms on a behavioral front. Comparatively, primary psychopathy is often found to have a greater ability to control emotions, accompanied by low neuroticism and fearlessness (Hare et. al, 1990).

Research has indicated that Psychopaths and sadists are more likely to give criticism to an individual in response to both success and failure, when compared to other facets of the dark tetrad (Tortoriello et. al, 2019). In this study, the Dark Tetrad (expanded to include sadism) was correlated with perceived helpful intent when giving criticism. Those scoring high in psychopathy and sadism were more likely to give overt (ironic) and covert (direct) criticism to the hypothetical friend and non-friend. These results corresponded with greater perceived helpful intent from the perspective of the participant. While research has shown that psychopaths are quick to criticize others, there is a lack of research looking at how they respond to criticism. Much of what we can infer about how a psychopath might respond to criticism can be gathered from key defining traits of psychopathy: a lack of impulse control, the presence of egocentrism, and anxiousness which breaks down further into a fear of embarrassment and losing control (Crego & Widiger, 2014). While this can lead researchers to speculate that a psychopath may have a negative reaction to receiving criticism, it is also noted that psychopaths often do not feel remorse or guilt as a result of an immoral judgment or decision (Tangney et. al, 1992). This compiled with a lack of empathy would lead us to conclude that they simply do not concern themselves with the opinions of others, regardless of whether it is 'backed' by sources and citations.

Current Study

The current study aimed to look at the stress response presented by participants scoring high in the dark triad when confronted with negative criticism. Newer research suggests that the grandiosity and vulnerability dimensions of narcissism are related to altered stress-reactivity when presented with a stressor (Coleman et. al, 2018). Also worth noting is that this stress-reactivity is dependent on the type of stressor that is presented. While this specific relationship

has been minimally explored, there is no such indication as to the relationship between stress-reactivity and the other constructs that compose the dark triad: Machiavellianism and Psychopathy. This gap in the literature is what prompted the current study. From what is known about the dark triad, there is evidence to suggest that stress responses in both Machiavellians and psychopaths could go either way after receiving criticism. Cortisol (also known as the stress response hormone) has been used to study physiological changes in participants before and after a stressor was implemented (Atlas & Them, 2008; Massey-Abernathy & Byrd-Craven, 2016). The aim of this study is to determine the direction of cortisol concentration following negative criticism for individuals scoring high in the dark triad.

Hypotheses

I. It is predicted that when presented with criticism, participants scoring high in Machiavellianism will have an increased cortisol response.

II. It is predicted that participants scoring high in Narcissism will have an increased cortisol response to criticism.

III. It is predicted that participants with high scores in Psychopathy will demonstrate a lowered cortisol response to criticism.

Methods

Participants

This study was approved to be run by the Institutional Review Board (IRB) for Missouri State University September of 2023 (IRB-FY2023-554; See Appendix A). G*Power indicated that a total sample size of (n=55) was required. G*Power was run with an alpha of 0.05, and power set to 0.80. This analysis was run with one predictor for each linear regression of the dark

triad. Participants in this study were current students in an introductory psychology course at Missouri State University. A total of 71 males and 36 females (n = 109) were recruited for this study (see Table 1), with two participants who identified as non-binary. The mean age for participants is 19.51 years.

Table 1

Descriptive Statistics for Participants

	Number of Participants		
	Female	*Male*	*Non-Binary/ Third Gender*
Valid	71	36	2
Missing	0	0	0
Mode	18	19	20
Mean	19.41	19.53	23
Std. Deviation	4.26	3.95	4.24
Minimum	17	18	20
Maximum	43	42	26

Measures

While many researchers use the dark triad Dirty Dozen (DTDD) to study these 3 groups (Jonason & Webster, 2010; Rogoza et. al, 2021; Maples et. al, 2014), more recent research has suggested that the Dirty Dozen is better represented by a bi-factor model between Psychopathy and Machiavellianism, excluding Narcissism from the triad (Kajonius et. al, 2016; Jonason & Luévano, 2013). There has been disagreement among current researchers regarding whether the reduction in items seen in the Dirty Dozen impacts the measured dimensions of each construct. Some research has indicated that the greatest benefit of this test (a likely reduction in participant fatigue) is simultaneously its downfall, resulting in a loss of valuable data. Because of these findings, it was determined that individual measurements of each construct is the most accurate and reliable method of measuring the dark triad. With this, the measures for this study include

the Narcissistic Personality Inventory (Raskin & Hall, 1979), the Mach-IV (Christie & Geis, 1970), and the Hare Psychopathy Checklist – Revised (Hare, 1991). Saliva samples were also collected to indicate participant's cortisol response to the criticism on a physiological level.

Demographic & School Involvement Questionnaire

Participants were given a school and demographic questionnaire detailing their age, gender, ethnicity, relationship status, and religious practices. This was used to give criticism to the participants. Included in this questionnaire is five questions detailing the participant's school involvement. These questions ask about how many classes and school activities the student is involved in, as well as hobbies, hours spent studying a week, and time spent with friends. These five questions are open response format; the participants were free to respond in as much detail as they felt necessary. The responses to these questions may vary, however the criticisms given by the researchers were held constant and are detailed below.

Narcissistic Personality Inventory (NPI-40)

The NPI-40 contains 40 items presented in a dichotomous-choice format, with seven subscales: authority, exhibitionism, superiority, entitlement, exploitativeness, self-sufficiency, and vanity (del Rosario & White, 2005; Raskin & Terry, 1988). Research has indicated that narcissism can be further categorized into two distinct forms: overt and covert narcissism (Wink, 1991). While these two forms of narcissism have proven to be distinct from one another and measure two seemingly polarized forms of the same trait (Brookes, 2015) the NPI has shown sub-optimal construct validity when measuring covert narcissism (Soyer et. al, 2001). Because the measure of Overt narcissism is better used in empirical contexts, we used the NPI-40.

This test was created to measure non-clinical levels of narcissism and is regarded as one of the most widely utilized measures for examining this trait. Many researchers have explored factor loadings for the NPI-40; some have reported as few as three factors (Kubarych et. al, 2004), while others report that five factors accurately represent all items (Ackerman et. al, 2016). Kubarych and his team (2004) found adequate evidence for multiple-factor structures, however many researchers agree that a seven-factor structure is adequate. Construct validity was assessed by correlating three empathy questionnaires with the NPI, and it was found that a negative relationship was observed in two of the three cases (Watson et. al, 1984). Further, the exploitativeness/entitlement subscales were inversely related to all three empathy scales. Alpha levels are adequate ($\alpha = .83$) with subscale alpha's ranging from .50 - .73 (Raskin & Terry, 1988).

Mach-IV

The Mach-IV is heavily regarded as the most commonly used scale to measure Machiavellianism, and contains three subscales (abstract morality, views of human nature, and the tendency to implore manipulative tactics) as described by Christie & Geis, 1970. The Mach-IV contains 20 items scored in a five-point Likert format. Nine items are used to assess views, another nine for tactics, and two items assess abstract morality. Reliability was assessed via mean item – whole correlations, and was found to be adequate reported at .38, which is indicative of good discrimination between questions (Christie & Geis, 1970).

Newer research has reviewed the Mach-IV in terms of internal consistency and found an alpha value of $\alpha = .82$ (Rauthmann, 2012). Further, construct validity of the scale is assessed by correlating participant responses with various other measures, including narcissism and psychopathy. The Mach-IV showed weak correlations with two narcissism scales ($r = .35$), as well as a moderate correlation with psychopathy ($r = .60$), as should be expected. Other

researchers have found a similar overlap between Machiavellianism and psychopathy (Paulhus & Williams, 2002; Paulhus & Jones, 2009) indicating that a key shared factor between the two is behavior associated with revenge and betrayal. Indeed, one of the most important differentiations to be made between the two is the sociability that accompanies Machiavellianism, prompting them to form strong social relationships.

Psychopathy Checklist – Revised (PCL-R)

The PCL-R contains 20 questions scored on a three-point scale, where a rating of 0 does not apply at all, a rating of 1 is a partial match, and a rating of 2 is a fair match for the participant (Hare et. al, 1991). Convergent validity is assessed by correlating the PCL-R with other self-report psychopathy measures in criminal offenders (Poythress et. al, 2010). Specifically, the relationship with Levenson's Primary and Secondary Psychopathy scales was moderate (r = .30), as was for the Psychopathic Personality Inventory (r = .43). A test of reliability revealed adequate internal consistency for the entire scale (a = .82), factor 1 (a = .82), and factor 2 (a = .68) (Poythress et. al, 2010).

Researchers have concluded that many of the PCL-R items (13) are best represented by a three-factor hierarchical model, while the other seven items measure their own individual constructs (Cooke & Michie, 2001) Even so, there is still much debate regarding what the factor structure of the PCL-R is best represented as. In a two-factor model, the PCL-R items can be represented as (active/interpersonal) or (lifestyle/antisocial) (Boduszek & Debowska, 2016). In a sample involving patients with a history of substance abuse, and incarcerated individuals, evidence suggests that the PCL-R is best explained by a unidimensional model gathered from the total score of the test (McDermott et. al, 2000). The generalizability of the test was highest when measured as a single-factor model.

Salivary Cortisol Samples

Cortisol was measured via salivary samples collected from participants twice throughout the procedure. Because cortisol samples were used to identify a potential physiological response to criticism (Kirschbaum et. al, 1993), participants completed the study after noon so as to avoid cortisol peak times during early morning and late evening (Edwards et. al, 2001). Additionally, participants were asked to avoid using nicotine, caffeine, and hormonal treatment prior to the study, as this is known to have an impact on cortisol levels (Kudielka & Wust, 2010).

Following protocol, salivary samples were collected by having the participants passively drool through a straw into a small vial. After, the sample was stored at an appropriate temperature of -20°C to preserve the cortisol in the saliva for later testing. A baseline cortisol reading was collected prior to the criticisms taking place. A second sample was collected 15 minutes after the criticisms had taken place, which allowed enough time for the cortisol levels to reflect participant arousal, while also not allowing too much time to pass so we could confirm that experimental manipulations had effectively altered participants' physiological response.

Procedure

The researchers recruited participants via SONA (a research participation pool), and they were rewarded course credit for their participation. Participants that have been recruited via SONA and have signed up for a time slot met the researcher in a room on the Missouri State University campus that has been adequately controlled for external distractions. Prior to the study taking place, the participants were prompted not to eat, sleep, or ingest caffeine/nicotine for at least one hour preceding the study. Once the participant arrived, they were first handed an informed consent detailing the purpose of the study and potential risks and benefits that were

associated with their participation. They were then be given an identification number to categorize participant data and samples were collected without being able to identify the participant. Following the informed consent, a demographic & school involvement questionnaire was administered in paper format (See Appendix B). Once the questionnaire had been completed, the researchers took it into the next room to examine it. The participants were informed that the researchers are reviewing their responses so that they may be assigned to one of two groups based on their answers. These two groups were defined as azalea group, and peony group. This, however, is deceptive, as these groups do not exist. The researchers told the participant that their group assignment will determine the follow-up task that was given. The participant was then informed on how to passively drool into the collection tube. While the researchers then stepped out to the next room to evaluate the demographic response data and prepare the participant's criticisms/feedback, the participant gave their first salivary cortisol sample. This sample established the participant's baseline stress level for later comparisons. The researchers did not criticize the demographic responses of the participants (e.g., race, gender, religious status, etc…), but rather a set of questions attached to the survey that details their school involvement. These questions assessed the participant's involvement in school and social activities. Two criticisms were given to the participants, one by a female researcher and one by a male researcher (see below). After the criticisms had taken place, participants were told that their task was to play with fidget toys – this task was given to avoid arousing stress in the participant. The participant had 15 minutes to play with the toys, after which the participant gave another salivary cortisol sample. After this sample was given, the participant then completed an assortment of psychometric tests, including the Mach-IV, PCL-R, and the NPI-40. Following the completion of these tests, participants were debriefed and informed of the true nature of the

study, including all deceptions used. Participants were given a chance to ask any questions they may have that pertain to the study and were handed a counseling sheet before they left.

The following details the criticisms that were used by the researchers:

- Based on your responses, your peers were more well-rounded and involved in more activities than you.
- Other participants invested more time in school and took a more challenging course load.

I. Total scores on authority, exhibitionism, superiority, entitlement, exploitativeness, self-sufficiency, and vanity were used to predict total prevalence of narcissism. A linear regression was used to measure the cortisol change from baseline to stressor in narcissists after the criticism has taken place.

II. Scores were gathered on manipulative tactics, cynical worldview, and disregard for morality to analyze the total prevalence of Machiavellianism. A linear regression was used to look at the change in cortisol levels in participants scoring high in Machiavellianism after being criticized.

III. The two dimensions of psychopathy (as measured by the PCL-R) was scored to determine the total prevalence of psychopathy in participants. To test for significance, a linear regression was used.

Results

Narcissists overall showed a minimum score of three points, a maximum score of 32 points, and a standard deviation of 6.49. Overall scores in Machiavellianism showed a minimum score of 38, and a maximum score of 83, with a standard deviation of 7.61. Total scores on

Psychopathy showed a minimum score of zero, with a maximum score of 18, and a standard deviation of 4.61 (see Table 2).

A linear regression was used to examine the relationship between change scores in cortisol with total scores on the MACH-IV. Because the cortisol data showed extreme skew, logarithmic transformations were conducted to help normalize the data. Additionally, a change score was created for the cortisol data from baseline to post-criticism scores. The assumption of linearity was assessed via a Q-Q plot and passed the assumption as the data seemed to follow the predicted line of linearity. The overall model fit was not statistically significant; the regression analysis showed no association between scores on Machiavellianism and changes in cortisol ($F(1, 107) = 0.24$, $\beta = -.002$, $p = 0.62$) (see Table 3).

A linear regression was used to examine change scores in cortisol with total scores on the Narcissistic Personality Inventory – 40. Similar to previous analyses, the cortisol data showed extreme skew, and logarithmic transformations were conducted to help normalize the data. Along with this, a change score was created for the cortisol data between the baseline and post-criticism scores. The assumption of linearity was assessed via a Q-Q plot and the data appeared linear. The regression analysis revealed a non-significant association between narcissism scores and cortisol change levels ($F(1, 107) = 0.14$, $\beta = .002$, $p = 0.71$) (see Table 3).

A linear regression was used to examine change scores in cortisol concentration with total score on the Psychopathy Checklist – Revised. Because the cortisol data showed extreme skew, logarithmic transformations were conducted to help normalize the data. Additionally, a change score was created for the cortisol data between the baseline and post-criticism scores. The assumption of linearity was assessed via a Q-Q plot and passed the assumption, as the data appeared to follow a linear pattern. The regression analysis revealed a non-significant association

between psychopathy scores and cortisol change levels ($F(1, 107) = 1.37$, $\beta = .007$, $p = 0.25$) (see Table 3), indicating that higher psychopathy scores were not associated with a change in cortisol concentration.

Table 2

Descriptive Statistics for Cortisol Concentration

	Narcissism	*Psychopathy*	*Machiavellianism*
Valid	109	109	109
Missing	0	0	0
Mode	12	0	58
Mean	13.6	5.39	59.19
Std. Deviation	6.49	4.61	7.61
Minimum	3	0	38
Maximum	32	18	83

Table 3

Regression Output for Change in Cortisol Concentration

					95% CI	
Variable	*b*	*SE*	*t*	*p*	*LL*	*UL*
(Intercept)	0.01	0.03	0.38	0.71	-0.05	0.07
(Intercept)	-0.03	0.04	-0.65	0.52	-0.11	0.06
Psychopathy	0.01	0.01	1.17	0.25	-0.01	0.02
(Intercept)	0.01	0.03	0.38	0.71	-0.05	0.07
(Intercept)	0.12	0.22	0.54	0.59	-0.32	0.56
Machiavellianism	0.00	0.00	-0.49	0.62	-0.01	0.01
(Intercept)	0.01	0.03	0.38	0.71	-0.05	0.07
(Intercept)	-0.01	0.07	-0.18	0.86	-0.14	0.12
Narcissism	0.00	0.00	0.38	0.71	-0.01	0.01

Discussion

This study analyzed how total prevalence of dark triad personality traits impacted cortisol (stress) levels after being criticized. Beginning with the hypothesis that participants with higher scores in Machiavellianism would demonstrate an increased concentration in cortisol

following criticism, it was found that there was a non-significant decrease in cortisol after the criticism had taken place. It is possible that those scoring high in Machiavellianism dismissed the criticism as a strategic move by the researchers, or they could have employed cognitive reappraisal strategies to reinterpret negative feedback in a more favorable light. Ultimately, if they were able to reframe the meaning of the criticism, it would have a substantial impact on their cortisol levels following the criticism. They might have also misinterpreted the criticism to be constructive, as a challenge or invitation for self-improvement, rather than being perceived as negative criticism. The high self-esteem and confidence portrayed by individuals scoring high in Machiavellianism may act as a buffer against the negative effects of criticism.

Now looking at individuals scoring high in narcissism: it was found through linear regression analysis that these individuals displayed a non-significant decrease in cortisol concentration after the criticism took place, which goes against the hypothesis that those high in narcissism would have a significant increase in cortisol concentration following criticism. These results do not fall in line with previous research (Atlas & Them, 2008) indicating that participants high in narcissism would show an increase in cortisol concentration following criticism. It is likely that the individuals scoring high in narcissism that we did encounter were exceptionally skilled at externalizing the blame brought on by the criticisms. Narcissists may deflect responsibility or shift the blame onto other individuals to protect their self-esteem. In doing this, they likely maintain a sense of superiority and entitlement which would mitigate their physiological stress response. Individuals high in narcissism have also been shown to have exceptional emotional regulation strategies. These skills may allow them to manage negative emotions and maintain emotional stability in the face of criticism.

Moving now to the hypothesis that higher scores in psychopathy would demonstrate a decrease in cortisol concentration following criticism – we found that overall scores on the Psychopathy Checklist – Revised were not associated with a change in cortisol concentration following criticism. It is likely that even if these individuals were inclined to participate in research as a requirement for their class, they would not have chosen this study as it measures personality and physiological stress response. While the criticisms were not advertised in the listing of the study, it is possible that they would not want their personality picked apart by researchers as it could potentially lead to judgment and criticism. Although their lack of empathy would cause them to not care about the opinions of others, they probably would not want to waste their time in a research setting letting other people pass judgments that they already know will not influence their self-perception. Additionally, these individuals may not want to be recognized as psychopaths and may have faked their responses on the psychometric tests to appear as though they are not a part of the dark triad. Any combination of these factors might have influenced the lack of participants scoring high in psychopathy, and another demographic is recommended when conducting further research.

Limitations

One of the major limitations of this study is that the criticisms given to the participants by the researchers were not tailored to their demographic responses. In some cases, this led to participants being criticized on criteria that did not apply to their responses. For example, one of the scripted criticisms mentioned that other participants invested more time in school and took a more challenging course load. If the participant was in a large number of classes for that semester, it would be easy for them to deflect the criticism/ disregard its significance regardless of who it is coming from. For future research, it is recommended that researchers have a

predetermined list of criticisms, and those criticisms be carefully selected to correspond with the demographic & school involvement questionnaire.

Conclusion

It was determined that those scoring high in the dark triad did not show a physiological response to negative criticism via salivary cortisol samples. The most likely explanation for this is that these individuals maintain a blunted response to criticism. While we can not conclude that these individuals are criticized on a regular basis, we do know that they implement various coping mechanisms that shield them from personal attachment to criticism. As mentioned above, it is possible that these individuals generalize any criticism they receive so as to not take personal responsibility for what they are being accused of. Along with this, they might also internally shift the blame onto other people, or dismiss it all together. Ultimately, any of these explanations could shed some light on why we did not see any significant changes in cortisol concentration following negative criticism.

This study has potential to inform many individuals of the impact that negative criticism might have on people scoring high in the dark triad. While these results indicated that they did not have a physiological response to being criticized, they did tell us that those scoring high in the dark triad will not be significantly affected by criticism. This could inform individuals on how to better help people that identify with the dark triad when criticism is required, whether that be in the workplace or a social environment. Because those scoring high in the dark triad did not personally identify with the criticisms they received, it is suggested that another form of criticism be utilized in order to more accurately and effectively communicate what needs to be said.

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Appendix A

Missouri State
UNIVERSITY

To:
Amber Abernathy
Psychology

RE: Notice of IRB Approval
Submission Type: Initial
Study #: IRB-FY2023-554
Study Title: Nobody's Perfect: Examining the Relationship Between Parenting Traits and Perfectionism on Cortisol Regulation After Receiving Criticism.
Decision: Approved

Approval Date: September 28, 2023

This submission has been approved by the Missouri State University Institutional Review Board (IRB). You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects or others occur it must be reported immediately to the IRB.

This study was reviewed in accordance with federal regulations governing human subjects research, including those found at 45 CFR 46 (Common Rule), 45 CFR 164 (HIPAA), 21 CFR 50 & 56 (FDA), and 40 CFR 26 (EPA), where applicable.

Researchers Associated with this Project:
PI: Amber Abernathy
Co-PI:
Primary Contact: Olive Baron
Other Investigators: Carson Hewitt

Appendix B

DEMOGRAPHIC SURVEY

PLEASE SELECT THE ANSWERS THAT REPRESENT YOU CURRENTLY.

WHAT IS YOUR AGE?

WHAT IS YOUR BIOLOGICAL SEX?

- ◯ Female
- ◯ Male
- ◯ Intersex

WHAT GENDER DO YOU IDENTIFY AS?

- ◯ Female
- ◯ Male
- ◯ Non-Binary/ Third gender
- ◯ Other _____

RELATIONSHIP STATUS

- ◯ Married
- ◯ Cohabiting
- ◯ Divorced
- ◯ Widowed
- ◯ Commited
- ◯ Dating
- ◯ Single

ETHNICITY

- ◯ Caucasian
- ◯ American Indian
- ◯ African-American/ Black
- ◯ Biracial
- ◯ Hispanic/ Latino
- ◯ Asian/Asian-American
- ◯ Other

I FOLLOW AND PRACTICE THE RELIGION OF

- ◯ Christianity
- ◯ Juadaism
- ◯ Buddhism
- ◯ Spiritual but not religious
- ◯ Islam
- ◯ Hinduism
- ◯ Agnostic
- ◯ Atheist
- ◯ Other
- ◯ No religion

WHAT CLASSES ARE YOU TAKING THIS SEMESTER? (PROVIDE COURSE CODE AND NAME)

WHAT ACTIVITIES AND ORGANIZATIONS ARE YOU INVOLVED IN ON CAMPUS?

WHAT ARE YOUR HOBBIES?
WHAT DO YOU LIKE TO DO OUTSIDE OF SCHOOL?

HOW MANY TIMES A WEEK DO YOU MEET OR HANG OUT WITH FRIENDS?

HOW MANY HOURS PER WEEK DO YOU SPEND STUDYING?