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## UNDERSTANDING “EVIL”: A CLOSER LOOK AT THE DARK TETRAD’S RELATIONS WITH HEXACO AND BIG FIVE

Boban NEDELJKOVIĆ\*  
Lana TUCAKOVIĆ\*\*

*We aimed to explore to what extent the Dark Tetrad traits are represented by basic personality traits framed by HEXACO (Study 1; 150 participants,  $M_{age} = 32.15$ ,  $SD_{age} = 8.41$ ) and the Big Five model (Study 2; 215 participants,  $M_{age} = 35.59$ ,  $SD_{age} = 13.65$ ). Alongside correlation analysis, we employed a quasi-canonical analysis of covariance. The results showed that the core features of the Dark Tetrad are mapped on the negative poles of Agreeableness and Honesty-Humility from the HEXACO and Agreeableness from the Big Five. Despite the somewhat distinctive nature of Narcissism compared to other dark traits, the common features of the Dark Tetrad are partially represented in both models, but to a larger extent in HEXACO. In conclusion, we recommend using the HEXACO model as a proxy for assessing the core features of the Dark Tetrad in large-scale studies where measuring both basic and dark personality traits is not feasible.*

**KEYWORDS:** Dark Tetrad / HEXACO / Big Five / Honesty-Humility / Agreeableness

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\* Research Assistant at the Institute of Economic Sciences, Belgrade, Serbia  
boban.nedeljkovic@ien.bg.ac.rs

\*\* PhD Candidate at the Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia  
lana.tucakovic@f.bg.ac.rs

## 1. INTRODUCTION

The construct of the Dark Triad that encompasses Machiavellianism, Psychopathy, and Narcissism was introduced two decades ago (Paulhus & Williams, 2002) to describe the set of variables related to malevolent social behavior. Machiavellianism, named after the Italian political theorist Niccolò Machiavelli, refers to manipulateness and exploitative tendencies rooted in the idea that “the outcome justifies the deeds”. Psychopathy is characterized by disinhibited behavior, low anxiety, and lack of remorse. This dark trait represents the manifestation of personality features observed in antisocial personality disorder. Narcissism refers to grandiosity, superiority, unrealistically positive self-view, and a sense of psychological entitlement. This member of the Dark Triad represents the subclinical manifestation of narcissistic personality disorder. After years of research, Sadism was added to the construct to form the Dark Tetrad (Chabrol et al., 2009). Sadism is characterized by the tendency to punish, control, or humiliate others and, at the same time, experience pleasure in engaging in that behavior. There is no corresponding personality disorder for Sadism – although sadistic personality disorder was mentioned in DSM-III-R (Morey, 1998), it was removed in the later editions of the DSM. The cruel behavior, which is a marker of Sadism, can be found in individuals with antisocial personality disorder, sexual offenders, and children with conduct disorders (Bulut, 2017; Myers et al., 2010).

Although clearly distinctive, the dark traits have certain characteristics in common. Previous attempts to identify the common features of the Dark Triad pointed out that some of the core features of the Dark Triad are a lack of empathy (Jones & Paulhus, 2011), manipulateness and callousness (Jones & Figueredo, 2013), and exploitative, fast life history strategy (Jonason et al., 2012). Similarly, the tendency to exploit others could be considered the core feature of the Dark Tetrad (Book et al., 2016). Moreover, exploitative tendencies are considered to be crucial in the Dark Factor of Personality (Marcus et al., 2018; Moshagen et al., 2018) that frames the broad space of narrow aversive traits (e.g., Egoism, Greed, and Spitefulness) alongside the Dark Tetrad (Moshagen et al., 2020). A more detailed look at the broad spectrum of dark traits that underlie the Dark Factor of Personality provides evidence that callousness should be considered the heart of the dark traits (Dinić et al., 2021).

Numerous research conducted with the Dark Triad and Dark Tetrad stressed the importance of these traits for various socially undesirable outcomes. For example, the Dark Tetrad traits are associated with juvenile high-school delinquency in both males and females (Chabrol et al., 2009). The same pattern of association was found in a college student sample between the Dark Tetrad and antisocial behavior (Chabrol et al., 2017). The Dark Tetrad traits are also associated with traditional and cyberbullying in adolescents (van Geel et al., 2017), and with workplace bullying in adults (Fernández-del-Río et al., 2021). Besides, the Dark Tetrad traits are related to negative attitudes toward immigrants (Međedović & Bulut, 2017). There is also evidence that Psychopathy and Sadism are predictive of poor interpersonal, social,

and everyday functioning in male offenders and males from the general population (Oljača et al., 2021). Many studies showed that the Dark Triad or Dark Tetrad traits have an incremental contribution to socially undesirable outcomes prediction over the basic personality traits (e.g., Ellen et al., 2021; van Geel et al., 2017). Of course, those findings seem justified since the literature shows that dark traits are related but irreducible to basic personality traits (Book et al., 2015, 2016; Lee & Ashton, 2014).

The Big Five (Goldberg, 1990) is one of the most frequently used models to represent individual differences in basic personality traits. It is based on the lexical hypothesis and describes a broad hyperspace of personality variations framed by Extraversion, Neuroticism, Agreeableness, Conscientiousness, and Openness to experience (De Raad, 2000). Extraversion refers to the sociability of an individual, and the aspects of this trait are activity, friendliness, and the need for outer stimulation. Neuroticism reflects the individual differences in emotional stability, capacity to cope with stress, and tendencies to experience negative emotions and react impulsively. Agreeableness is the dimension that explains the individual differences in relations with others in terms of benevolence, interpersonal sensitivity, warmth, and tenderness on one side, contrary to egocentrism, selfishness, distrustful attitudes, and sometimes aggressive behavior on the other side. Conscientiousness is the dimension that reflects the ability of self-control, directedness toward planning and achievement, adherence to principles, and attitudes toward tasks and obligations. Openness to experience reflects intellectual and cultural aspirations, unconventionality, and resistance towards routine and dogmatic attitudes as opposed to closed-mindedness, conservatism, and traditionalism.

The HEXACO model of personality is developed on the base of the Big Five through the analyses of lexical studies that showed the existence of not only five but also the sixth factor (see Ashton & Lee, 2001). After a series of research, Ashton and Lee (2008) concluded that the broad space of individual differences in personality traits needs to be expanded for the sixth domain. Those six personality domains are Extraversion, Emotionality, Agreeableness, Conscientiousness, Openness to experience and Honesty-Humility. Needless to say, HEXACO domains are highly similar to those established in the Big Five. The most similar are Extraversion, Conscientiousness, and Openness to experience, that capture a large part of the variance of the same-labeled traits from the Big Five model assessed by various measures (Ashton et al., 2014; Gaughan et al., 2012; Međedović et al., 2019). However, Agreeableness and Emotionality differ from the Big Five. For example, the features of hostility, framed by Neuroticism in the Big Five, are part of (low) Agreeableness in HEXACO, while the sentimentality features of Agreeableness from the Big Five are part of the Emotionality domain of HEXACO. Looking at the differences in five traits shaped by HEXACO and Big Five, one could note the similarity between the same-labeled four traits. However, the domain of Emotionality vastly differs from Neuroticism in the Big Five by the content, not only the name. The main difference is that Neuroticism includes anger and impulsivity – which are framed by the low poles of Agreeableness and Conscientiousness in

HEXACO – while Emotionality mainly refers to timidity. The sixth domain, not comprised by the Big Five model, is Honesty-Humility. The positive pole of this dimension describes fair, modest people with little or no regard for wealth, luxuries, and social status. Conversely, the negative pole describes people who are ready to manipulate others and break the rules for the sake of their own goals, are motivated by material gains, and have an increased sense of self-importance.

Previous findings on the associations between basic and dark personality traits are quite consistent. Međedović and Petrović (2015) showed in their research, using an extension analysis approach on facet-level measures, that the Dark Tetrad traits are reasonably presented in the space of HEXACO traits (on the negative poles of Honesty-Humility, Agreeableness, Conscientiousness, and Emotionality domains). Their research showed that most Dark Tetrad facets have extension loadings to the Honesty-Humility dimension. Similar findings were obtained in Muris et al. (2017) meta-analytic research on relations between basic and the Dark Triad traits. Their research pointed out that dark traits are the most strongly related (negatively; low-to-moderate in magnitude) to Honesty-Humility and somewhat weaker related to Agreeableness, while the only positive association occurs between Narcissism and Openness. Their analysis also provided additional insight into associations between the Honesty-Humility facets and the Dark Triad traits: the strongest negative correlations for Machiavellianism and Psychopathy were found with Sincerity and Fairness, and for Narcissism with the Modesty facet. Notably, Psychopathy and Machiavellianism, in contrast to Narcissism, were also found to be crucial in antisocial tendencies together with low Honesty-Humility, Agreeableness, and Altruism (Pailing et al., 2014). Howard and Zandt (2020) reported almost the same meta-analytic findings as Muris et al. (2017): that the Dark Triad is strongly associated with Honesty-Humility, whereby Machiavellianism and Psychopathy are shown to have stronger associations with Honesty-Humility than Narcissism. In addition, their study showed that the Dark Triad is also associated with Agreeableness from both HEXACO and Big Five models, whereby correlations with this trait are reasonably weaker compared to Honesty-Humility. Although these associations are robust, Howard and Zandt (2020) showed that the magnitude of correlations varies depending on the measures (and their length) used for assessing both dark and basic personality traits. However, Narcissism seems to be substantially different compared to other dark traits, no matter of measures used. Petrović and Međedović (2016) provided evidence of the specific nature of Narcissism by showing that “dark” Narcissism (i.e., the shared variance with Machiavellianism and Psychopathy) is negatively associated with facet-measured Honesty-Humility and Agreeableness, while “light” Narcissism (i.e., the variance independent from Machiavellianism and Psychopathy) is associated negatively with Greed Avoidance and Modesty, but positively with all Agreeableness facets. Lazarević et al. (2021) reported similar findings, although they employed different measures (i.e., a facet-level measure of Narcissism, the Big Five model, and Disintegration – the measure of schizotypy). Their research showed that the subdomain of “bright” Narcissism is related positively to Extraversion, Openness, and Disintegration, and negatively to Conscientiousness, while the “dark”

Narcissism subdomain is associated positively with Disintegration, and negatively with Conscientiousness and Agreeableness.

A literature review of relations between the Big Five and dark traits shows reasonable consistency in findings despite the differences in measures used for assessing both sets of variables. Paulhus and Williams (2002) reported negative correlations of Agreeableness with all Dark Triad traits, Conscientiousness with Machiavellianism and Psychopathy, Neuroticism with Psychopathy, and positive correlations of Extraversion and Openness with Narcissism and Psychopathy. Jonason et al. (2013) showed that all Dark Triad traits are correlated negatively with Agreeableness, Conscientiousness, and Emotional Stability, whereby correlations with Agreeableness were found to be the strongest. Rogoza and Ciecuch (2020) applied a factorial approach to Big Five traits, facet-level measures of Dark Triad traits, and basic values. Their results showed that Narcissism features and self-oriented values loaded on the factor that includes Extraversion, Intellect and (negatively) Neuroticism, while facets of Machiavellianism and Psychopathy loaded on the factor that includes Agreeableness negatively together with positive cross-loading of Neuroticism. Paulhus et al. (2021) reported findings regarding the Dark Tetrad that also stress the difference between Narcissism and other dark traits. They reported that Narcissism was negatively related to Neuroticism, and positively to Extraversion, Openness and Conscientiousness, while Machiavellianism, Psychopathy, and Sadism were negatively associated with Agreeableness and Conscientiousness. Similarly, van Geel et al. (2017) showed that Agreeableness was negatively associated with all Dark Tetrad traits, Conscientiousness was negatively related to Psychopathy and Sadism, while Narcissism was negatively associated with Neuroticism but positively with Extraversion and Openness. Taken together, the aforementioned studies indicate that the relation between Agreeableness and dark traits (except for Narcissism) could be seen as the most robust regardless of measures or analytic approaches used. For that reason, it is not surprising some scholars argue that Antagonism (low Agreeableness) is the core of the Dark Triad (Crowe et al., 2019). In fact, Vize et al. (2020a) claim that specific facet-level features of Antagonism, such as low modesty and low honesty, lie at the core of the Dark Triad. This standpoint is supported by findings that NEO-based measures of Agreeableness are more strongly related to the Dark Triad due to the presence of Straightforwardness and Modesty facets, compared to Big Five domain-level measures, which lack the coverage of these facets (Miller et al., 2011; Vize et al., 2020b). Additional support for this point of view comes from the findings that the Dark Factor of Personality and Antagonism (i.e., low Agreeableness measured by the Five-Factor Model) are highly similar among themselves, and produce largely identical correlations with external criteria (such as antisocial behavior, aggression, and impulsivity), so thus could be seen as differently-labeled measures that cover the same variance (Rose et al., 2022). There is also evidence that Antagonism could have a key role not only in umbrella constructs such as the Dark Triad, Dark Tetrad, or Dark Factor of Personality but also in specific dark traits such as Psychopathy. For example, Van Til et al. (2022) showed that the NEO-based measure of Antagonism accounted for the common variance of facet-measured Psychopathy (Interpersonal

Manipulation, Callous Affect, Erratic Lifestyle, Antisocial Behavior) and thus could be seen as a crucial component of this dark trait.

Taken together, previous studies pointed out that the common features of dark traits are mostly mapped on the negative poles of Honesty-Humility and Agreeableness. For that reason, the HEXACO model could be considered as being advantageous compared to the Big Five since it contains the Honesty-Humility domain. Although the findings regarding the advantage of the HEXACO model compared to the Big Five are not entirely consistent, there is sizeable empirical evidence that supports the predictive advantage of the HEXACO model for various outcomes such as power striving, risk-taking, materialistic, and unethical behavior (see Feher & Vernon, 2021).

### 1.1. The aim of the research

The main aim of the research was to examine the extent of representation of the dark traits in the two most frequently used models for the assessment of basic traits. The research on the relations between dark and basic personality traits is of great importance since basic personality traits are often assessed for various practical purposes (e.g., in a clinical setting or professional selection), while at the same time, dark traits – neglected in practical purposes assessment – are essential for socially undesirable outcomes. Therefore, our research aimed to replicate previous findings on the relations between dark and basic personality traits, but also to provide additional insight into these associations when both dark and basic traits are taken together. To address this aim, we conducted two studies whereby we provided a detailed insight into the Dark Tetrad relations with HEXACO (Study 1) and the Big Five model (Study 2). Given the previous findings, we first hypothesized that the core features of four dark traits would be reasonably presented at the negative poles of Honesty-Humility and Agreeableness in the HEXACO model (Book et al., 2015, 2016; Međedović & Petrović, 2015), and at the negative pole of Agreeableness in the case of the Big Five (Paulhus & Williams, 2002; Vize et al., 2020b). Accordingly, we hypothesized that HEXACO would outperform the Big Five model in capturing the common features of the Dark Tetrad (Howard & Zandt, 2020). Second, we hypothesized Narcissism trait would produce a differential pattern of associations with basic traits from HEXACO and Big Five compared to the other three Dark Tetrad members (Furnham et al., 2013; Muris et al., 2017).

## 2. STUDY 1<sup>1</sup>

### 2.1. Method

#### 2.1.1. Participants and procedure

The sample consisted of 150 participants (aged 22 to 61,  $M_{\text{age}} = 32.15$ ,  $SD_{\text{age}} = 8.41$ , 56.7% females). Data was collected online using the *Google Forms* platform, and participants were recruited through invitations on social networks, using a snowball procedure. All participants joined the study anonymously and voluntarily, and provided informed consent. The study was conducted in accordance with the Declaration of Helsinki.

#### 2.1.2. Measures

We used the 60-item *HEXACO* Personality Inventory-Revised (HEXACO-60; Ashton & Lee, 2009) to assess individual differences in traits from the HEXACO model – Extraversion ( $M = 3.51$ ,  $SD = 0.54$ ;  $\alpha = .65$ ), Emotionality ( $M = 3.03$ ,  $SD = 0.70$ ;  $\alpha = .66$ ), Agreeableness ( $M = 3.20$ ,  $SD = 0.55$ ;  $\alpha = .58$ ), Conscientiousness ( $M = 3.70$ ,  $SD = 0.59$ ;  $\alpha = .70$ ), Openness to experience ( $M = 3.66$ ,  $SD = 0.77$ ;  $\alpha = .79$ ), and Honesty-Humility ( $M = 3.63$ ,  $SD = 0.63$ ;  $\alpha = .65$ ).

*The Short Dark Triad* (SD3; Jones & Paulhus, 2014), a 27-item measure, was used to assess Machiavellianism ( $M = 2.93$ ,  $SD = 0.68$ ;  $\alpha = .70$ ), Narcissism ( $M = 2.88$ ,  $SD = 0.68$ ;  $\alpha = .66$ ), and Psychopathy ( $M = 1.82$ ,  $SD = 0.59$ ;  $\alpha = .64$ ). To form the Dark Tetrad, we used a 7-item subscale of direct Sadism ( $M = 1.56$ ,  $SD = 0.55$ ;  $\alpha = .59$ ) from *Varieties of Sadistic Tendencies* (VAST; Paulhus & Jones, 2015). We decided to use only the direct Sadism subscale since previous research (see Dinić et al., 2020; Plouffe et al., 2019) showed that this measure represents the core features of sadistic tendencies in contrast to the other subscale (i.e., vicarious Sadism).

#### 2.1.3. Data analysis

To explore the relations between the variables, we employed correlation analysis. Additionally, we performed a quasi-canonical analysis of covariance (Knežević & Momirović, 1996) to comprehensively examine the associations between basic and dark traits. In contrast to some previous research that employed factor analysis (e.g., Međedović & Petrović, 2015) or principal component analysis (e.g., Pailing et al., 2014), we were not aimed at identifying the underlying structure in

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<sup>1</sup> The results from the Study 1 were presented at the conference: Nedeljković & Milankov (2020). The Dark Tetrad and HEXACO personality domains. *XXVI Scientific Conference Empirical Studies in Psychology*. Faculty of Philosophy, University of Belgrade. Book of Abstracts (p. 54–55)

a set of variables comprised of basic and dark traits. Instead, we aimed to find linear combinations that summarize the most correlations between two sets of variables by employing a special case of canonical correlation (i.e., quasi-canonical analysis of covariance). A canonical correlation analysis was also applied in previous research aimed at exploring the relations between basic and dark traits (e.g., Book et al., 2015, 2016). We decided to employ a quasi-canonical analysis instead of canonical correlation analysis since it has some advantages: it does not require the normal distributions of variables, is appropriate for smaller samples, and provides a lower-level maximization of correlations (i.e., more realistic) between two sets of variables compared to canonical correlation analysis (Knežević & Momirović, 1996).

### 3.1. Results

First, we calculated the bivariate correlations between the Dark Tetrad and HEXACO personality traits (Table 1).

Table 1. Bivariate correlations between the Dark Tetrad and HEXACO traits

Variable	Machiavellianism	Narcissism	Psychopathy	Sadism
Extraversion	.04	.39**	-.04	-.12
Emotionality	-.04	-.11	-.08	-.03
Agreeableness	-.27**	-.23**	-.32**	-.32**
Conscientiousness	.08	.15 <sup>#</sup>	-.12	-.01
Openness to experience	-.01	.14	.05	.02
Honesty-Humility	-.31**	-.42**	-.33**	-.36**

*Note.* \*\*  $p < .01$ . \*  $p < .05$ . #  $p < .06$ .

The correlation analysis showed that all dark traits are associated negatively with Agreeableness and Honesty-Humility. Besides these substantive relations, Narcissism was significantly associated with Extraversion and near-significantly with Conscientiousness, whereby both correlations were positive. To comprehensively explore the relations between two sets of personality traits, we conducted a quasi-canonical analysis of covariance in the next step (Table 2).

Table 2. Coefficients and factors of the quasi-canonical functions representing the Dark Tetrad and HEXACO traits’ relations

Variable	Quasi-canonical function 1		Quasi-canonical function 2	
	Coefficient	Factor	Coefficient	Factor
<i>Set 1</i>				
Extraversion	.01	.13	<b>-.30</b>	<b>-.46</b>
Emotionality	-.08	-.18	<b>-.60</b>	<b>-.67</b>
Agreeableness	<b>-.60</b>	<b>-.69</b>	-.18	-.10
Conscientiousness	.16	.20	<b>-.72</b>	<b>-.76</b>
Openness to experience	-.14	.00	.06	.27
Honesty-Humility	<b>-.76</b>	<b>-.84</b>	.05	-.08
<i>Set 2</i>				
Machiavellianism	<b>.44</b>	<b>.69</b>	-.09	-.12
Narcissism	<b>.55</b>	<b>.77</b>	<b>-.75</b>	<b>-.74</b>
Psychopathy	<b>.49</b>	<b>.70</b>	<b>.39</b>	<b>.44</b>
Sadism	<b>.51</b>	<b>.68</b>	<b>-.52</b>	<b>-.49</b>

*Note.* Values  $\geq .30$  are bolded.

The quasi-canonical analysis indicated two significant functions. The first quasi-canonical function ( $Rho = .60$ ,  $Rho^2 = .36$ ,  $F = 84.90$ ,  $p < .001$ ) pointed to the association of all dark traits with Agreeableness and Honesty-Humility. All Dark Tetrad traits loaded to this function almost equally. On the other side, Agreeableness and Honesty-Humility loaded negatively. This function showed that the core features of the Dark Tetrad are somewhat represented in low Honesty-Humility and Agreeableness. The second function ( $Rho = .47$ ,  $Rho^2 = .22$ ,  $F = 43.05$ ,  $p < .001$ ) comprised low levels of Conscientiousness, Emotionality, and Extraversion on one side, and low Narcissism followed by high Sadism and Psychopathy on the other side. This function pointed to the specific nature of Narcissism.

## 4. STUDY 2<sup>2</sup>

### 4.1. Method

#### 4.1.1. Participants and procedure

The sample consisted of 215 participants (aged 18 to 65,  $M_{\text{age}} = 35.59$ ,  $SD_{\text{age}} = 13.65$ , 67.3% females). We collected data using the same procedure as described in Study 1.

#### 4.1.2. Measures

The Big Five Inventory (BFI; John et al., 1991), a 44-item measure, was used to assess basic personality traits from the Big Five model: Extraversion ( $M = 3.47$ ,  $SD = 0.75$ ;  $\alpha = .80$ ), Neuroticism ( $M = 2.83$ ,  $SD = 0.85$ ;  $\alpha = .85$ ), Agreeableness ( $M = 3.65$ ,  $SD = 0.65$ ;  $\alpha = .75$ ), Conscientiousness ( $M = 3.82$ ,  $SD = 0.71$ ;  $\alpha = .84$ ), and Openness ( $M = 3.94$ ,  $SD = 0.65$ ;  $\alpha = .81$ ).

As in Study 1, we employed *the Short Dark Triad* (SD3; Jones & Paulhus, 2014) and *Varieties of Sadistic Tendencies* (VAST; Paulhus & Jones, 2015) to assess Machiavellianism ( $M = 2.93$ ,  $SD = 0.68$ ;  $\alpha = .70$ ), Narcissism ( $M = 2.88$ ,  $SD = 0.68$ ;  $\alpha = .66$ ), Psychopathy ( $M = 1.82$ ,  $SD = 0.59$ ;  $\alpha = .64$ ), and Sadism ( $M = 1.56$ ,  $SD = 0.55$ ;  $\alpha = .59$ ).

#### 4.1.3. Data analysis

We used the same approach for data analysis as described in Study 1.

## 4.2. Results

Pearson correlation coefficients were calculated to explore the relations between the dark traits and basic personality traits framed by the Big Five model (Table 3).

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<sup>2</sup> The results from the Study 2 were presented at the conference: Tucaković & Nedeljković (2020). The Dark Tetrad in the space of the Big Five model: Differential relations of the dark traits with agreeableness. *68th Congress of Serbian Psychologists*. Serbian Psychologists Society. Book of Abstracts (p. 76)

Table 3. Bivariate correlations between the Dark Tetrad and Big Five traits

Variable	Machiavellianism	Narcissism	Psychopathy	Sadism
Extraversion	-.06	.44**	-.02	-.06
Neuroticism	.04	-.14*	.06	.10
Agreeableness	-.23**	-.19**	-.46**	-.42**
Conscientiousness	.05	.18*	-.24**	-.18**
Openness	-.03	.38*	.05	.02

Note. \*  $p < .05$ ; \*\*  $p < .01$ .

The correlation analysis showed that Machiavellianism was inversely related to Agreeableness while unrelated to other Big Five traits. Psychopathy and Sadism were negatively associated with both Agreeableness and Conscientiousness, with the former correlations being moderate and the latter being low in magnitude. Narcissism was the only dark trait significantly associated with all basic traits. Interestingly, Narcissism was the most strongly associated with Extraversion and Openness to experience, with correlations being positive. Furthermore, this dark trait was negatively related to Agreeableness and Neuroticism but positively to Conscientiousness.

Table 4. Coefficients and factors of the quasi-canonical functions representing the Dark Tetrad and Big Five traits’ relations

Variable	Quasi-canonical function 1		Quasi-canonical function 2	
	Coefficient	Factor	Coefficient	Factor
<i>Set 1</i>				
Extraversion	.01	.09	<b>.69</b>	<b>.86</b>
Neuroticism	.10	.23	-.27	<b>-.61</b>
Agreeableness	<b>-.93</b>	<b>-.94</b>	.06	.03
Conscientiousness	-.27	-.29	<b>.39</b>	<b>.57</b>
Openness	.21	<b>.31</b>	<b>.54</b>	<b>.72</b>
<i>Set 2</i>				
Machiavellianism	.27	<b>.64</b>	-.10	-.07
Narcissism	<b>.32</b>	<b>.47</b>	<b>.94</b>	<b>.86</b>
Psychopathy	<b>.68</b>	<b>.91</b>	-.19	-.14
Sadism	<b>.60</b>	<b>.84</b>	-.24	-.27

Note. Values  $\geq .30$  are bolded.

Similar to Study 1, the quasi-canonical analysis also yielded two significant functions (Table 4). The first quasi-canonical function ( $Rho = .49$ ,  $Rho^2 = .24$ ,  $F = 66.50$ ,  $p < .001$ ) pointed to the association between low Agreeableness on one side, and high Psychopathy, Sadism, and Narcissism on the other side. Notably, Machiavellianism also had positive loading near the cut-off value and a high correlation with this function. We assume this result occurred due to the common variance with Psychopathy, which was more strongly related to (low) Agreeableness. Nevertheless, the first function indicated that the Dark Tetrad traits (in particular Psychopathy

and Sadism) are mapped in the space of low Agreeableness. The second function ( $Rho = .51$ ,  $Rho^2 = .26$ ,  $F = 75.17$ ,  $p < .001$ ) pointed to the association between Extraversion, Conscientiousness, and Openness on one side, and Narcissism on the other side. This function indicated the adaptive aspect of Narcissism. Importantly, Neuroticism was negatively associated with this function.

## 5. DISCUSSION AND CONCLUSIONS

In this research, we aimed to explore the relations between the dark traits framed by the Dark Tetrad construct and two of the most used models of personality that should, by theory, explain the broad space of individual differences in personality traits. Therefore, we conducted two studies to clarify the associations of the Dark Tetrad traits with the HEXACO and Big Five model. Since we were particularly interested in the Dark Tetrad because antisocial and criminal behavior can arise as the behavioral product of certain dark traits, we aimed to explore whether these traits are represented in the HEXACO and Big Five model.

In the first study, we explored the associations between dark traits and HEXACO. The first quasi-canonical function pointed to the general relation of the two sets of variables where all dark traits were related to the negative poles of Agreeableness and Honesty-Humility. This result largely corroborates Book et al. (2016) findings that Honesty-Humility is tapping the core features of the Dark Tetrad construct. However, compared to their findings, our results showed that the negative pole of Agreeableness also accounts for the substantial variance of the Dark Tetrad. That is not surprising if one considers the description of these two domains. On the one hand, the negative pole of Honesty-Humility indeed describes manipulative tendencies and inclination toward rule-breaking behavior; that is – the features captured by the Dark Tetrad. On the other hand, the negative pole of Agreeableness is tapping the critical evaluation of others, unforgiveness, and grudge toward others (Ashton & Lee, 2007; Lee & Ashton, 2004) – the features that theoretically could be expected to be found in the Dark Tetrad. Therefore, Honesty-Humility and Agreeableness could be seen as the complementary domains that capture the reasonable proportion of aversive features framed by the Dark Tetrad. A quasi-canonical analysis showed that the two sets of variables could be linked in more than one way. The second quasi-canonical function indicated that, if one’s Psychopathy and Sadism were to be low, Narcissism could be positively associated with Conscientiousness, Emotionality, and Extraversion. This result pointed to the specific nature of Narcissism, which is likely to be somewhat less maladaptive than other dark traits. This mainly stands true for the positive association with Conscientiousness. Individuals high in Narcissism could indeed have the tendency to seek order, pay attention to possible mistakes, and be directed toward personal achievement (Furnham et al., 2013). Besides that, those high in Narcissism could also have elevated Emotionality due to their dependence on social feedback (Miller et al., 2010). Of course, the relation with Extraversion is quite reasonable since individuals high in Narcissism tend to enjoy social interactions. In addition to what

was already mentioned, we need to note that Muris et al. (2017) reported findings that corroborate our results. According to their study, Narcissism is not merely a reflection of viciousness – it also has a vulnerable side which reflects in defensive grandiosity that serves as a mechanism to protect individuals’ sense of inadequacy and insecurity. As mentioned earlier, there is a notion in the literature that the global trait of Narcissism can be seen as “light/bright” Narcissism and “dark” Narcissism; that is – two subdomains of the trait differentially related to relevant constructs. Petrović and Međedović (2016) showed that individuals high in “dark” Narcissism, described as dishonest and arrogant, are likely to have more antisocial tendencies, while those high in “light” Narcissism are more likely to behave socially adaptive. Similarly, Lazarević et al. (2021) pointed out that “dark” Narcissism is associated with a proneness to experiencing psychotic-like phenomena, acting aggressively and impulsive, while “bright” Narcissism is primarily associated with higher Extraversion. Needless to say, our results are quite aligned with these findings, and thus the second quasi-canonical function could be seen as a product of the “bright” side of Narcissism.

In the second study, we explored the associations between Dark Tetrad and the Big Five traits. A quasi-canonical analysis also yielded two significant functions as in the case of the first study. The first quasi-canonical function pointed to the negative relation between Agreeableness and a canonical composite of Narcissism, Psychopathy, and Sadism. In this case, Machiavellianism contribution to the function was low (i.e., it dropped below the convenient level of .30). We could attribute this difference to stronger correlations of Agreeableness with Psychopathy and Sadism compared to Study 1, and the well-known partial overlap between Machiavellianism with Psychopathy (Miller et al., 2017). One of the possible explanations for this phenomenon is that the variance captured by Machiavellianism is not unique to the trait, at least when it comes to the measure we used. Certain tendencies that are hallmarks of Machiavellianism are somewhat presented in Psychopathy (e.g., willingness to do anything if it brings benefit), which, alongside stronger relation between Agreeableness and Psychopathy, consequently leads to a low contribution of Machiavellianism to the function. Nevertheless, this function indicated that the core features of the Dark Tetrad are mapped on the negative pole of Agreeableness. The second quasi-canonical function revealed almost the same relations between the two sets of variables as in Study 1. According to this function, individuals high in Narcissism are likely to have high Extraversion, Conscientiousness, and Openness to experience. Despite the different models of personality used, the results of the second quasi-canonical function are similar to those found in the first study. Similar findings were also obtained in previous research. For example, Lee and Ashton (2005) showed Narcissism is strongly related to Extraversion from both Big Five and HEXACO models, moderately related to Big Five Openness, and strongly related to Modesty and Greed avoidance facets of Honesty-Humility. Their research indicated that the nature of Narcissism is more reflected through psychological entitlement than exploitativeness. That particularly stands true for “light” Narcissism, which was shown to be moderately related to Greed avoidance and Modesty, but unrelated to the other two facets of Honesty-

Humility (Petrović & Međedović, 2016). This is not surprising since the empirical literature suggests that Narcissism could be seen as the “brightest” dark trait (see de Holanda Coelho et al., 2021; Nedeljković & Opačić, 2021). Moreover, some findings showed that individuals high in Narcissism are not necessarily less prosocial (Wertag & Bratko, 2019) and that they could behave prosocially under certain conditions (Malesza & Kalinowski, 2021). Despite the similarity of the second quasi-canonical function isolated in Study 1 and Study 2, there is a notable difference in Openness trait contribution – Big Five Openness contributed to the function, while that was not the case for HEXACO Openness. Moreover, Narcissism’s correlation with Big Five Openness was moderate but insignificant with HEXACO Openness, and the same result was obtained in Lee and Ashton’s (2005) study. One of the possible explanations for this result is that Big Five and HEXACO inventories differ in the coverage of the Openness trait (Ashton et al., 2019; Christensen et al., 2019) in a way that Big Five Openness captures a higher level of variance that is not unique to the trait (e.g., emotionality, adventurousness), especially if measured at facet level (Aluja et al., 2005; Kajonius & Johnson, 2019), which can produce differences in correlations with personality and affective variables (Tucaković & Nedeljković, 2022). Also, Big Five Openness covers the variance related to self-perceived intelligence (i.e., Intellect sub-domain), which is not included in HEXACO Openness (Ashton & Lee, 2007), and consequently, the presence of intellect-related content in Big Five Openness could influence that relation since individuals high in Narcissism are likely to overestimate their intelligence (Paulhus & Williams, 2002).

Our analyses showed that the common features of the Dark Tetrad are partially represented in both HEXACO and Big Five. However, when comparing the proportion of the shared variance in the first quasi-canonical functions in both studies, we could note that the core features of the Dark Tetrad are somewhat more represented in HEXACO than in the Big Five model. That is not surprising since the HEXACO model comprises Honesty-Humility and Agreeableness, two complementary domains whose negative poles tap the features related to the tendencies to exploit others and the tendency to prevent being exploited by having antagonistic behavior (Book et al., 2016). Although some scholars (e.g., Vize et al., 2020a, 2020b) argue that the negative pole of Agreeableness largely represents the core features of the dark traits, our results clearly indicated that this basic personality trait, whether from HEXACO or Big Five model, only partially represents those features. Having these results in mind, we could note there is a substantial advantage of HEXACO in capturing the features of the Dark Tetrad compared to the Big Five model. Of course, one of the reasons for HEXACO’s advantage is the nature of Agreeableness in the BFI. This domain-level operationalization captures the variance related to Altruism and Compliance sub-domains (Soto & John, 2009), but it lacks the coverage of Straightforwardness and Modesty, that is – two facets of NEO-based Agreeableness whose content is similar to the Honesty-Humility domain (Ashton & Lee, 2005). Notably, Miller et al. (2011) showed that BFI Agreeableness is more weakly related to the Dark Triad than NEO-PI-R Agreeableness (even if correlations are corrected for unreliability). However, we still assume that the HEXACO model could be advantageous in capturing the variance of the Dark Tetrad

even if Agreeableness is measured more comprehensively. Such an assumption is rooted in previous research. For example, Gaughan et al. (2012) showed that HEXACO-PI-R outperforms NEO-PI-R in predicting Psychopathy. The higher proportion of variance explained by HEXACO is not only the consequence of the Honesty-Humility contribution but also a contribution of the Emotionality domain, which is a strong predictor of Psychopathy, in particular, the Callous Affect facet. It is important to note that callousness is one of the features that could be considered as the core of the Dark Triad (Jones & Figueredo, 2013), and the common variance of the Dark Tetrad is represented by low Honesty-Humility, Agreeableness, Conscientiousness, and Emotionality (Book et al., 2016). Therefore, it seems reasonable to claim that the HEXACO model would outperform even NEO-based measures in capturing the variance of the Dark Tetrad. Future research is needed to confirm this assumption.

Since our studies showed that the Dark Tetrad traits are irreducible to either HEXACO or the Big Five model, we can recommend researchers to assess the dark traits alongside basic personality traits, especially when socially-relevant outcomes are of primary interest. Yet, if that is not possible, we encourage using the HEXACO model as a more appropriate proxy for assessing the core features of the Dark Tetrad, as Lee and Ashton (2014) recommended. This practical recommendation could be seen as a theoretical implication as well. Although some scholars (e.g., Wiernik et al., 2020) argue that there is no superior model of personality, so the researchers should choose the model which is more appropriate for their study, there are theoretical considerations supported by empirical findings (e.g., Lee & Ashton, 2020) that favor HEXACO model over the Big Five. In that sense, our findings could be seen as additional support for the standpoint that favors the HEXACO model, at least when assessing the aversive side of personality.

To conclude, we consider our research has a valuable contribution to the field. First, we replicated the robust findings on relations between dark and basic personality traits, measured by the two most frequently used models. Second, but maybe more important, we used a quasi-canonical analysis which pointed out that the relations between two datasets could be summarized in two ways. In other words, our results showed that the pattern of associations between dark and basic traits – measured either by HEXACO or Big Five – is not univocal and thus pointed to the specific nature of Narcissism. Third, apart from supporting the hypotheses, the results of our research can be seen in terms of the broadest practical implications. We see these results might be as helpful for practitioners and researchers to understand the meaning of low scores on Honesty-Humility and Agreeableness in the case of HEXACO and low scores on Agreeableness in the case of the Big Five model, and to be aware of substantive associations between those values and dark side of personality.

### 5.1. Limitations and future directions

Despite the fact our results are theoretically grounded and largely corroborate previous findings, we find it necessary to address the limitations. First, both studies were conducted on relatively small samples. Instead of collecting the data exclusively from easily accessible participants usually found in this type of research, such as university students, we aimed to increase the heterogeneity by inviting other groups besides students to participate (e.g., non-students, employed, and older participants). However, such an approach resulted in a sample size smaller than expected. Even though we detected robust associations between the variables and replicated previous findings from larger samples, we need to outline there is the possibility that certain subtle associations were not detected due to the sample size. Therefore, we highly recommend future studies be conducted on larger samples since there is some evidence that correlations become stable in a sample of at least 250 participants (Schönbrodt & Perugini, 2013). Second, the measures we used for basic and dark personality traits do not include facet-level assessment. As known from other research that employed more comprehensive measures, the relations between dark traits and various facets within the same domain of the basic trait can vastly differ (e.g., Jonason & McCain, 2012). Third, we used only one operationalization per construct to assess domain-level traits. Previous findings showed that the magnitude of correlations between basic and dark traits could differ depending on the measure used, either for basic or dark traits (e.g., Dinić et al., 2018; Howard & Zandt, 2020). Having this in mind, we need to stress that our findings are not only limited due to the sample size but also that the generalization of the findings is limited to the measures we used. Future studies should employ more comprehensive (i.e., facet-level) measures for both basic and dark traits – if aimed at nuanced exploration of their relations; or more than one measure per trait – if aimed to explore general associations between the constructs.

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## RAZUMEVANJE „ZLA“: BLIŽI POGLED NA ODNOS E MRAČNE TETRADE SA HEXACO-OM I VELIKIH PET

*Cilj je bio da ispitamo u kojoj meri su crte Mračne tetrade predstavljene bazičnim crtama ličnosti koje uokviruju modeli HEXACO (Studija 1; 150 ispitanika,  $M_{uzrast} = 32.15$ ,  $SD_{uzrast} = 8.41$ ) i Velikih pet (Studija 2; 215 ispitanika,  $M_{uzrast} = 35.59$ ,  $SD_{uzrast} = 13.65$ ). Pored korelacione analize, korišćena je kvazikanonička analiza kovarijanse. Rezultati su pokazali da se sržne karakteristike Mračne tetrade mapiraju na negativnim polovima Saradljivosti i Poštenja-skromnosti iz HEXACO modela i Saradljivosti iz modela Velikih pet. Uprkos donekle različitoj prirodi Narcizma u odnosu na druge mračne crte, zajedničke karakteristike Mračne tetrade su delimično zastupljene u oba modela, ali u većoj meri u HEXACO modelu. Zaključno, preporučujemo upotrebu HEXACO modela za grubu procenu sržnih karakteristika Mračne tetrade u obimnim studijama gde procena bazičnih i mračnih crta ličnosti nije izvodljiva.*

*KLJUČNE REČI: Mračna tetrada / HEXACO / Velikih pet /  
Poštenje-skromnost / Saradljivost*