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Dark Triad Traits and Health Outcomes: An Exploratory Study

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Abstract

On the sample of 637 participants (358 women and 279 men) we explored the relationship between Dark Triad traits (psychopathy, Machiavellianism and Narcissism) and various health indicators including subjective (positive and negative mood and perceived physical symptoms), protective health behaviors as well as some more objective health indicators (number of hospitalizations, number of diseases, having specific chronic diseases, injuries and addictions). Because of the moderate relations between Dark Triad and broad personality traits that also exert their influence on various health-related indices, we examined the unique effects of Dark Triad traits on health indicators above and beyond five-factor personality traits as well as sociodemographic variables related to health (gender, age and education).

When sociodemographic variables, as well as five-factor personality traits were controlled in hierarchical regression analyses, Dark Triad traits significantly improved the prediction of almost all subjective health indicators, protective health behaviors, number of hospitalizations and number of diseases. The effect sizes obtained were relatively low, and psychopathy was the most consistent predictor.

Regarding chronic diseases, injuries and addictions, the results of hierarchical binary logistic regressions showed that when sociodemographic variables were controlled, psychopathy was a positive predictor of the risk of digestive diseases, tobacco use and injuries, Machiavellianism negatively predicted the risk of injuries, while Narcissism negatively predicted the risk of skin diseases and tobacco use. When five-factor personality traits were controlled, psychopathy was also a positive predictor of digestive diseases, tobacco use and injuries. Machiavellianism was a positive predictor of high blood pressure, and negative predictor of cancer, spine and back diseases and injuries, while Narcissism was a negative predictor of skin diseases.

The results obtained are discussed in the context of possible mechanisms through which Dark Triad traits may exert negative, but also positive effects on various health outcomes.

Keywords: Dark Triad traits, five-factor personality traits, health, chronic diseases

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Introduction

The relevance of personality for health maintenance, illness onset, progression and recovery as well as its predictive value from early childhood to the health later in life has been well documented (Uchino, Vaughn, & Matwin, 2008). The study of personality-health relationship nowadays provides many models, tools and concepts necessary for understanding health. Several models explain mechanisms underlying the connections of personality traits to health outcomes such as their influence through the cognitive processes of perceiving and attending to the environment (e.g. the interpretation of health risk or attending to prescribed treatment), symptoms perception and reporting, health-related behaviors, seeking social support, exposure to and reactivity to the environmental stimuli, especially stressful situations, etc. (e.g. Goodwin & Friedman, 2006).

Numerous health-related personality traits have been examined in relation to health outcomes, most frequently Type A behavior pattern (e.g. Friedman & Booth-Kewley, 1987), hostility (e.g. Smith, 1992), optimism (e.g. Peterson & Bossio, 1991), anxiety (e.g. Shen et al., 2008), locus of control (e.g. Gale, Batty, & Deary, 2008), self-efficacy (e.g. O'Leary, 1985), hardiness (e.g. Kobasa, Maddi, & Kahn, 1982), and sense of coherence (e.g. Eriksson & Lindström, 2006).

Regarding comprehensive models of personality, Five-factor personality model was the one most frequently explored in relation to various health indices such as health behaviors, illnesses, disease onset, progression and recovery as well as mortality across the lifespan. Research confirms that each of the Five-factor personality traits, particularly conscientiousness, neuroticism, and extraversion, but also often agreeableness and openness has an impact on various and multiple health-related outcomes (Friedman & Kern, 2014; Goodwin & Friedman, 2006; Hampson, Goldberg, Vogt, & Dubanoski, 2006; Smith & Gallo, 2001). For example, conscientiousness is linked to better subjective and objective health, lower risk of cognitive impairment (Wilson, Schneider, Arnold, Bienias, & Bennett, 2007), and lower mortality (Friedman, 2000; Löckenhoff, Sutin, Ferrucci, & Costa, 2008), neuroticism is related to higher disease risk and other negative outcomes such as poorer reactions to illness, higher perception of physical symptoms, and less successful coping (David & Suls, 1999). High extraversion is associated to better mental health as evidenced by higher subjective well-being (Steel, Schmidt, & Shultz, 2008), lower rates of depression (Jylha & Isometsa, 2006), higher self-rated global health (Jerram & Coleman, 1999; Korotkov & Hannah, 2004) and higher availability of social support (Berkman, Glass, Brissette, & Seeman, 2000), while associations with physical health are less consistent across studies (Löckenhoff et al., 2008). Research on agreeableness and health outcomes show that it is linked to better mental health (Löckenhoff et al., 2008; Steel et al., 2008), but is also a positive predictor of cardiovascular disease (e.g. Miller, Smith, Turner, Guijarro, & Hallet, 1996), while higher openness is linked to cognitive, emotional, and physical well-

being (Jerram & Coleman, 1999; Steel et al., 2008), as well as lower mortality (Iwasa et al., 2008).

One personality domain that has aroused much scientific interest in the last two decades, but has been relatively rarely explored in the context of health is Dark Triad. Dark Triad personality is a constellation of three subclinical, but socially aversive traits - psychopathy, Machiavellianism and Narcissism. Psychopathy is characterized by impulsivity, interpersonal antagonism, sensation seeking as well as low empathy and anxiety, Machiavellianism by manipulativeness and glib social charm, while Narcissism by grandiosity, entitlement, superiority and dominance (Paulhus & Williams, 2002). To some extent all three traits share a number of undesirable features including malevolence, self-promotion, emotional coldness, hypocrisy and aggression. It has been repeatedly found that Dark Triad traits measured by nonclinical measures and on nonclinical populations positively correlate and, therefore, are sometimes combined into a global Dark Triad index (e.g., Jonason, Li, Webster, & Schmitt, 2009). Nonetheless, there is also plenty of evidence that they are distinct constructs that are to some extent conceptually and psychometrically related (Furnham, Richards, & Paulhus, 2013).

When examined in relations to the Five-factor personality traits, research shows that all Dark Triad traits are most consistently but modestly correlated with agreeableness. Narcissism and psychopathy correlate positively with extraversion and openness, Machiavellianism and psychopathy negatively with conscientiousness, while psychopathy negatively with neuroticism (Paulhus & Williams, 2002). Although there are inconsistencies in results across various studies, majority of them indicate that these two groups of variables are moderately interrelated. Also, behavioral genetic studies have found a considerable overlap in the genes influencing co-occurrence of Dark Triad and Five-factor personality traits, and moderate phenotypic correlations based on self-report which may indicate that these two groups of variables represent overlapping but distinct clusters of personality (Vernon,Villani, Vickers, & Harris, 2008). Regarding HEXACO model, all three of the Dark Triad traits correlated substantially and negatively with honesty-humility dimension (Lee & Ashton, 2005).

Research on the relationship between Dark Triad traits and health outcomes have been most often explored by analyzing mental than physical health indicators, and almost always by analyzing single or two of the Dark Triad traits. A few studies relating psychopathy and health have found that it positively predicts anxiety, depression, reduced perception of general health (Beaver et al., 2014) and higher self-reported reactivity to stress (Noser, Zeigler-Hill, & Besser, 2014). Also, persons scoring high on psychopathy have been found to be at risk for many compromising health behaviors that correlate with shorter life expectancy such as impulsive behavior (Jones & Paulhus, 2011), sensation seeking, risk taking (Adams, Luevano, & Jonason, 2014), substance abuse (Jonason, Li, & Teicher, 2010), risky sexual behavior (Hudek-Knežević, Kardum, & Krapić, 2007), and an exploitative mating

style (Jonason, Luévano, & Adams, 2012; Kardum, Hudek-Knežević, Schmitt, & Grundler, 2015). It was also found to be negatively related to problem-focused coping and social support seeking (Aghababaei & Błachnio, 2015). The results of the studies exploring psychopathy and some physiological indicators of health are somewhat conflicting. While some of them found that individuals higher on psychopathy show increased cardiovascular reactivity when exposed to negative stimuli (Casey, Rogers, Burns, & Yiend, 2012), a meta-analysis of psychophysiological studies of psychopathy shows that it is related neither to heart rhythm nor cardiovascular reactivity (Lorber, 2004). Regarding physical health, psychopathy has been found to correlate with the increased number of diagnoses, risk of chronic diseases (e.g. diabetes, hypertension, high cholesterol), neurological diseases (ADD/ADHD, migraines, stuttering and tinnitus) as well as to behavioral indices of health like increased number of missed days of school or work due to illness (e.g. Beaver et al., 2014).

Out of Dark Triad traits, Machiavellianism is the least investigated in the context of health. Generally, it seems that the associations between Machiavellianism and mental health indictors are weak and sometimes equivocal. For example, the review by Fehr, Samson, and Paulhus (1992) show consistent positive associations between Machiavellianism and anxiety, although some authors are sceptic that high anxiety is compatible with the concept of Machiavellianism (e.g. Wrightsman, 1991). However, more recent studies either confirmed this paradoxical result (e.g. Jakobowitz & Egan, 2006) or found no correlation between them (McNamara, Durso, & Harris, 2007; Paulhus & Williams, 2002). Furthermore, few studies that examined the links of Machiavellianism with mental health indices have found positive correlations with depression (e.g. Bakir, Yilmaz, & Yavas, 1996), paranoia (e.g. Christoffersen & Stamp, 1995), alexithymia (e.g. Wastell & Booth, 2003), perfectionism (e.g. Sherry, Hewitt, Besser, Flett, & Klein, 2006), and low self-esteem (e.g. Valentine & Fleischman, 2003), and negative correlations with problem-focused coping and support seeking (Aghababaei & Błachnio, 2015). Contrary to psychopaths, who are usually oriented towards short-term benefits, it has been found that persons high on Machiavellianism are sometimes focused on long-term benefits and a repetitive delay of gratifications (Jonason, Baughman, Carter, & Parker, 2015). While some authors assume that ability of Machiavellists to inhibit behaviors might lead to more positive effects on health (e.g. Jones & Paulhus, 2010), others suggest that a delay of gratification may be stressful and that stressful experience may mediate the relationship between Machiavellianism and negative health outcomes (Jonason et al., 2015).

Research results on the associations between Narcissism and health outcomes are inconsistent. On one hand, a number of studies have found that Narcissism is positively related to self-esteem (e.g. Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004), subjective well-being (Aghababaei & Błachnio, 2015; Egan, Chan, & Shorter, 2014) and healthy behaviors such as exercising (e.g. Jonason et al., 2015;

Spano, 2001). Also, Narcissism was found to be related to more functional coping strategies such as focusing on problem, planning, self-control, positive reappraisal and social support seeking (Aghababaei & Błachnio, 2015). It should be noted, though, that the associations of Narcissism with positive health outcomes seem to be the result of the overlap between Narcissism and self-esteem (Ng, Cheung, & Tam, 2014; Rose, 2002; Rosenthal & Hooley, 2010; Sedikides et al., 2004). On the other hand, Narcissism was found to exert negative effects on various health indices. For example, it has been documented that women who regularly use suntan salons, which is detrimental to health, have higher scores on one aspects of Narcissism called superiority (Fiala, Kopp, & Günther, 1997). Regarding physical health, it has been found that Narcissism was positively related to the increased cardiovascular reactivity in stressful situations in men (Kelsey, Ornduff, McCann, & Reiff, 2001) as well as in women (Kelsey, Ornduff, Reiff, & Arthur, 2002). Also, studies showed the increased basal levels of cortisol (Reinhard, Konrath, Lopez, & Cameron, 2012) and cortisol in stressful situations in men higher on Narcissism (Edelstein, Yim, & Quas, 2010).

The explanations of the possible mechanisms through which Narcissism exerts positive effects on health include socially oriented nature of Narcissists that may facilitate active and passive increase of the social network (e.g. Jonason & Schmitt, 2012), thus providing a buffer from the deleterious health outcomes (e.g. Jonason et al., 2015). The other explanation refers to the motivation of Narcissists to maintain attractive looks, which may facilitate behaviors with positive health effects (e.g. exercising, healthy eating), but also those behaviors that could be deleterious to health, such as excessive sun exposure (Fiala at al., 1997). Another assumption is that Narcissism might predict negative health outcomes through its associations to impulsivity (Campbell, Goodie, & Foster, 2004; Jones & Paulhus, 2011), sensation seeking (Crysel, Crosier, & Webster, 2013), risk-taking and substance abuse (Buelow & Brunell, 2014). Furthermore, one of the main characteristics of Narcissism, the use of defensive mechanisms for coping with ego threats, could also be related to deleterious physiological consequences (Rutledge, 2006).

Research by Jonason et al. (2015) is the only research dealing with the relationships between all three Dark Triad personality traits and various measures of mental, social and physical health. Their results are mainly in accord with previous studies. Namely, psychopathy was related to the range of health-outcomes such as increased depression, more risk-taking, lower life-expectancy, and a faster life-history strategy. Machiavellianism was linked to poorer mental health and well-being as well as to slower life-history strategy, while Narcissism to few negative as well as some positive health outcomes such as longer life expectancy and a slow life-history strategy.

In the present study we attempted to explore the relationship of Dark Triad traits with various health measures including subjective health indicators (positive and negative mood and perceived physical symptoms), protective health behaviors as

well as some more objective health indicators (number of hospitalizations, number of diseases, specific chronic diseases, injuries and addictions). Compared to the majority of previous studies, we included all three Dark Triad traits simultaneously and measured them by using standard personality questionnaires whose validity has been well documented in comparison to the briefer measures that have received less validation. Also, wide range of health indicators have been analyzed on a relatively large sample from middle age to elderly, who have greater risk of developing chronic disease.

Because Dark Triad traits are modestly related to some other broad personality traits that exert their influence on various health-related outcomes, we attempted to explore the unique effects of Dark Triad traits on health indicators above and beyond Five-factor personality traits. Furthermore, as it is well known, various sociodemographic variables are also related to health (Leclerc, Rahn, & Linden, 2006), and therefore, we also examined the effects of Dark Triad personality traits on health indices above and beyond three important sociodemographic variables - gender, age and education. Having in mind previously mentioned research, we hypothesized that each Dark Triad traits significantly predicts various indicators of health. Generally, we assumed that psychopathy will be the most consistent negative predictor of health indicators, while Machiavellianism and Narcissism will not be only negative, but also positive predictors of health indicators. Also, we expected the stronger effects of Dark Triad traits on the measures of subjective (mood, physical symptoms) than objective health outcomes (number of diseases, risk of having specific disease and number of hospitalizations).

Method

Participants and Procedure

The study was conducted on the sample of 637 participants (358 women and 279 men) from several towns in Croatia. In order to increase the probability of various diseases in the sample, the inclusion criteria for participating in this study was 39 years or older. Therefore, the age of participants ranged from 39 to 87 years (M=52.66; SD=9.88). The majority of participants finished high school (54.5%), 8.3% primary school, 12.7% had higher education, 20.6% of them finished university and 3.9% post-graduate study. Most of the participants were employed (56.5%) and married (72.2%).

Questionnaires were administered by well-instructed psychology students in the homes of the participants. Participation was voluntary and anonymous with no incentives offered. They were given as much time as needed to complete the questionnaires (approximately 45 minutes). All participants reviewed a letter of

information, were provided by informed consent and then completed the questionnaires.

Measures

For measuring Five-factor personality traits *Big Five Inventory* (BFI; Benet-Martinez & John, 1998) was used. Participants rated each of 44 items on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous research showed its appropriateness for measuring Five-factor model of personality in Croatian language (Hudek-Knežević & Kardum, 2009; Kardum & Hudek-Knežević, 2012).

Narcissism was assessed with the 40-item *Narcissistic Personality Inventory* (Raskin & Terry, 1988). For each item participants chose one of two statements they felt applied to them more. The total number of narcissistic statements the participants endorsed was used as an index of Narcissism. Machiavellianism was measured with the 20-item *MACH-IV* (Christie & Geis, 1970). Participants indicated how much they agreed (-3 = *strongly disagree*, +3 = *completely agree*) with each statement. The 31-item *Self-Report Psychopathy Scale-III* (Paulhus, Hemphill, & Hare, 2012; Williams, Paulhus, & Hare, 2007) was used to assess nonclinical psychopathy. Participants rated how much they agreed (1 = *strongly disagree*, 5 = *strongly agree*) with each statement. All three Dark Triad questionnaires were used as unidimensional measures. Also, all of them were validated and used on Croatian samples in previous studies (e.g. Kardum et al., 2015).

Health behaviors were measured by 23 items of the *health-protective behavior questionnaire* (Harris & Gutten, 1979). Participants rated the frequency of their behaviors (e.g. "Get enough sleep", "Avoid part of the town with a lot of pollution") using five-point rating scale (from 1 - *never* to 5 - *almost always*). This questionnaire was also used as unidimensional measure. The questionnaire was translated for the purpose of this study.

Perceived physical symptoms were measured by *Subjective Health Complaints Scale* (SHC, Eriksen, Ihlebaek, & Ursin, 1999) that comprises 29 items assessing musculoskeletal symptoms (e.g. backpain, neckpain), gastro-intestinal problems (e.g. stomach discomfort, diarrhoea), pseudoneurology symptoms (e.g. headache, dizziness), symptoms of allergy (e.g. breathing problems, chest pain), and flu (e.g. cold, coughing). The scale was used as unidimensional measure, and has previously been translated and validated on Croatian language (Krapić, Sušanj, & Ćoso, 2006).

Mood was assessed by a *Mood Scale* (Kardum & Bezinović, 1992), an adjective-type, 40-item scale composed of 2 higher-order mood factors (positive and negative mood). The positive mood factor consists of 3 components reflecting positive emotional states of happiness, acceptance and activation, while the negative mood factor comprises specific components of negative emotional states of sadness, anger, fear and rejection.

Diseases were assessed by a check-list constructed for the purpose of this study. It consists of 33 items for various diseases (e.g. cancer, cardiovascular disease, diabetes Type 2, injuries, addictions), and one for total number of hospitalizations. From the check-list of diseases we computed the total number of diseases and analyzed it in the first part of the study, while the analyses on the level of each disease are presented in the second part of the study. Descriptive statistics of the continuous variables used in this study are presented in Table1.

Table 1. *Descriptive Statistics of the Continuous Variables Used in this Study*

Variables		*M*	*SD*	α
Dark Triad Traits	Psychopathy	59.80	11.18	.82
	Machiavellianism	61.68	10.86	.68
	Narcissism	48.54	6.48	.88
Five-Factor Personality Traits	Extraversion	27.12	4.51	.82
	Agreeableness	33.63	4.63	.71
	Conscientiousness	34.17	4.98	.80
	Neuroticism	21.04	5.52	.82
	Openness	33.68	6.35	.83
Health Indicators	Positive mood	70.94	11.14	.92
	Negative mood	39.49	13.10	.94
	Physical symptoms	62.26	14.36	.89
	Health behaviors	73.41	12.71	.86
	Number of hospitalizations	1.39	1.15	-
	Number of diseases	2.35	1.98	-

Results

First, we computed the correlations between predictor variables (Table 2).

Correlations between predictor variables show that women have higher scores on agreeableness and neuroticism, and men on all three Dark Triad traits. Younger participants have higher education, higher scores on extraversion, openness, psychopathy and Narcissism and lower scores on agreeableness. Participants with higher education have higher scores on extraversion, openness and Narcissism and lower on Machiavellianism. Correlations between Five-factor personality traits are low to moderate indicating a relatively small overlap between them. Moderate intercorrelations between Dark Triad traits indicate that they are distinct concepts with some common features. Correlations of sociodemographic variables and personality traits with indicators of health are presented in Table 3.

Table 2. *Correlations Between Predictor Variables*

Variables	Age	Education	E	A	C	N	O	Psych.	Mach.	Narc.
Gender	-.04	-.00	.04	-.12**	-.00	-.12**	-.03	.26***	.14***	.12**
Age		-.16***	-.08*	.19***	.04	-.01	-.10*	-.19***	-.07	-.14***
Education			.10*	.04	.00	-.07	.29***	-.05	-.13**	.18***
Extraversion				.17***	.41***	-.42***	.36***	.15***	-.04	.43***
Agreeableness					.35***	-.39***	.23***	-.30***	-.35***	-.15***
Conscientiousness						-.41***	.27***	-.17***	-.13**	.13**
Neuroticism							-.29***	-.02	.14***	-.17***
Openness								.06	-.09*	.32***
Psychopathy									.41***	.38***
Machiavellianism										.25***

Note. 1 – Women, 2 – Men; E – Extraversion, A – Agreeableness, C – Conscientiousness, N – Neuroticism, O – Openness. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table 3. *Correlations of Sociodemographic Variables and Personality Traits with Health Indicators*

Variables	Positive mood	Negative mood	Physical symptoms	Health behaviors	Number of hospitalizations	Number of diseases
Gender	.04	-.14**	-.20**	-.16**	.01	-.09*
Age	-.06	-.08	-.03	.34**	.23**	.24**
Education	.07	-.02	-.17**	.03	-.03	-.10**
Extraversion	.50**	-.39**	-.21**	.11**	-.06	-.14**
Agreeableness	.35**	-.30**	-.22**	.24**	-.02	-.04
Conscientiousness	.36**	-.34**	-.25**	.23**	-.05	-.13**
Neuroticism	-.52**	.66**	.47**	-.17**	.13**	.23**
Openness	.33**	-.11**	-.11**	.16**	.04	-.04
Psychopathy	.02	.09*	.10*	-.24**	-.03	.06
Machiavellianism	-.22**	.17**	.10*	-.14**	-.07	.00
Narcissism	.17**	-.05	-.00	.00	-.10*	-.07

Note. 1 – Women, 2 – Men; *$p<.05$; **$p<.01$.

As expected, women reported more negative mood, physical symptoms and protective health behaviors as well as higher number of diseases. Older participants had higher number of hospitalizations and diseases and their health behaviors were more protective. More educated had less physical symptoms and diseases. As for Dark Triad traits, participants higher on psychopathy and Machiavellianism reported higher negative mood and physical symptoms and less protective health behaviors. Additionally, Machiavellianism was negatively related to positive mood, while Narcissism was positively related to positive mood and negatively with the number of hospitalizations. All Five-factor personality traits were significantly related to three more subjective health indices and health-protective behaviors in expected direction. Participants higher on neuroticism had higher number of hospitalizations and diseases, while those higher on extraversion and conscientiousness had lower number of diseases.

Further, in order to explore the contributions of Dark Triad traits to above mentioned health indices beyond and above traditional determinants of health such as sociodemographic variables (age, gender and education) and broad personality traits whose effects on various health outcomes have been previously confirmed, two sets of hierarchical regression analyses were performed. In the first set of regression analyses sociodemographic variables (Table 4), and in the second set Five-factor personality traits (Table 5) were entered in the first step, while Dark Triad traits were entered in the second step in both sets of regression analyses.

As could be seen from Table 4, Dark Triad traits as a group significantly improved the prediction of all indicators of health except number of hospitalizations beyond and above sociodemographic variables. Psychopathy significantly positively predicted negative mood, physical symptoms and the number of diseases, and negatively health behaviors. Machiavellianism was a significant positive predictor of negative and negative predictor of positive mood, while Narcissism predicted these two mood dimensions in opposite directions. Also, Narcissism positively predicted health-protective behaviors. Except for positive and negative mood, incremental validity of Dark Triad traits was quite low. Regarding sociodemographic variables, female gender predicted higher negative mood, physical symptoms, health-protective behaviors and the number of diseases, while older age predicted more health-protective behaviors, number of hospitalizations and diseases. Lower education predicted more physical symptoms.

Table 4. *Results of Hierarchical Regression Analyses with Sociodemographic Variables and Dark Triad Traits as Predictors of Health Indicators*

Predictor variables		Criterion variables					
		Positive mood	Negative mood	Physical symptoms	Health behaviors	Number of hospitalizations	Number of diseases
Step 1	Gender	.04	-.14***	-.20***	-.14***	.02	-.08*
	Age	-.05	-.09*	-.06	.35***	.23***	.23***
	Education	.06	-.04	-.18***	.09*	.01	-.07
	R	.09	.17***	.27***	.38***	.23***	.26***
	R^2	.01	.03	.07	.15	.05	.07
Step 2	Gender	.04	-.18***	-.24***	-.11**	.02	-.11**
	Age	-.04	-.07	-.03	.33***	.23***	.25***
	Education	-.02	.02	-.16***	.04	.02	-.04
	Psychopathy	.05	.09*	.12**	-.17***	.07	.17***
	Machiavellianism	-.31***	.19***	.06	-.06	-.06	-.02
	Narcissism	.22***	-.13**	-.02	.14***	-.08	-.08
	R	.33***	.28***	.30***	.42***	.25***	.30***
	R^2	.11	.08	.09	.18	.06	.09
	ΔR^2	.10***	.05***	.02**	.03***	.01	.02**

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table 5. *Results of Hierarchical Regression Analyses with Five-factor Personality Traits and Dark Triad Traits as Predictors of Health Indicators*

Predictor variables		Criterion variables					
		Positive mood	Negative mood	Physical symptoms	Health behaviors	Number of hospitalizations	Number of diseases
Step 1	Extraversion	.30***	-.16***	-.01	-.03	-.02	-.04
	Agreeableness	.15***	-.06	-.03	.15***	.03	.07
	Conscientiousness	.04	-.06	-.06	.15***	-.01	-.05
	Neuroticism	-.30***	.59***	.45***	-.03	.15***	.23***
	Openness	.10**	.15***	.05	.09*	.09*	.04
	R	.63***	.69***	.48***	.30***	.16**	.25***
	R^2	.40	.47	.23	.09	.02	.06
Step 2	Extraversion	.29***	-.20***	-.05	.00	.01	-.05
	Agreeableness	.12***	.00	.01	.10*	-.01	.09
	Conscientiousness	.06	-.04	-.05	.11*	-.01	-.02
	Neuroticism	-.30***	.60***	.46***	-.06	.15**	.25***
	Openness	.09*	.13***	.02	.10*	.11*	.03
	Psychopathy	.08*	.07	.08*	-.21***	.03	.13**
	Machiavellianism	-.14***	.05	-.02	.01	-.07	-.04
	Narcissism	.02	.07*	.07	.04	-.11*	-.04
	R	.65***	.70***	.49***	.35***	.19**	.27***
	R^2	.42	.49	.24	.12	.04	.07
	ΔR^2	.02***	.01***	.01*	.03***	.01*	.01*

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table 5 shows that Dark Triad traits as a group significantly improved the prediction of all of health indicators beyond and above Five-factor personality traits. Psychopathy was significant positive predictor of positive mood, physical symptoms and the number of diseases, and negatively health behaviors. Machiavellianism was a significant negative predictor of positive mood, while Narcissism positively predicted negative mood, and negatively the number of hospitalizations. Overall, incremental validity of Dark Triad traits was rather low. Regarding Five-factor personality traits, extraversion positively predicted positive mood and negatively negative mood, agreeableness positively predicted positive mood and health-protected behaviors, while conscientiousness positively predicted only health-protective behaviors. Neuroticism was the strongest predictor of health indicators. It was a positive predictor of negative mood, physical symptoms, number of hospitalizations and diseases, and negative predictor of positive mood. Openness positively predicted positive and negative mood, health behaviors and number of hospitalizations. Correlations of sociodemographic variables and personality traits with each disease are presented in Table 6.

Table 6 shows that out of socioeconomic variables older age is most frequently related to the risk of diseases. Personality traits have relatively low correlations with diseases. From Five-factor personality traits, neuroticism is the most frequently related, while from Dark Triad traits it is psychopathy.

To examine the contributions of Dark Triad traits to each disease beyond and above sociodemographic variables and Five-factor personality traits, two sets of hierarchical binary logistic regression analyses were performed. In the first set sociodemographic variables (Table 7), and in the second set Five-factor personality traits (Table 8) were entered in the first step, while Dark Triad traits were entered in the second step in both sets of analyses. In both Tables we presented the results of only those criteria variables (diseases) for which at least one of the Dark Triad traits was a significant predictor.

Table 7 shows that Dark Triad traits as a group significantly improved the prediction of tobacco use and digestive diseases beyond and above sociodemographic variables. Psychopathy was a significant positive and Narcissism significant negative predictor of tobacco use. Psychopathy was also a significant positive predictor of digestive diseases. Although Dark Triad traits in the second step did not significantly improve the prediction, psychopathy significantly positively, and Machiavellianism significantly negatively predicted injuries, while Narcissism significantly negatively predicted skin diseases.

Regarding sociodemographic variables it should be mentioned that female gender significantly predicted the risk of having digestive, head and neck, musculoskeletal, endocrinological disease and anemia, while male gender predicted the risk of injuries. Furthermore, older age predicted the risk of having higher blood pressure, cancer, Type 2 diabetes, cardiovascular, rheumatic, eye, spine and neck as well as musculoskeletal disease, while younger age predicted the risk of tobacco use. Lower education predicted only the risk of having a rheumatic disease.

Table 6. *Number and Percentage of Participants with a Specific Disease and Correlations of Sociodemographic Variables and Personality Traits with Each Disease*

Diseases	*N* (%)	Gender	Age	Education	E	A	C	N	O	Psych.	Mach.	Narc.
Cardiovascular	63 (9.9)	-.01	.24***	-.07	-.02	-.05	-.08*	.14***	-.03	-.01	.01	-.02
High Blood Press.	147 (23.1)	.01	.33***	-.10*	.00	.03	.02	.09*	-.06	-.05	.06	-.02
Cancer	47 (7.4)	-.02	.17***	-.03	-.04	.00	.00	.02	.01	-.06	-.09*	-.01
Type 2 Diabetes	27 (4.2)	-.01	.22***	-.04	-.00	-.01	.02	-.00	-.01	.01	.03	-.02
Respiratory	30 (4.7)	-.00	.02	-.05	.01	-.10*	-.06	.04	.04	.02	-.00	.03
Digestive	82 (12.9)	-.07	.05	-.01	-.01	-.07	-.01	.10**	.02	.10*	.05	.03
Rheumatic	59 (9.3)	-.07	.26***	-.17***	-.08*	.07	-.02	.05	-.09*	-.05	-.03	-.06
Skin	61 (9.6)	-.01	-.03	.03	.03	.04	-.03	.01	.03	-.01	-.04	-.08*
Eye	41 (6.4)	-.03	.09*	.02	.02	-.03	-.01	.01	.06	.03	-.00	.00
Otorhinolaring.	103 (16.2)	-.00	-.02	.03	-.06	-.05	-.06	.00	.00	-.01	-.05	-.05
Head and Neck	115 (18.1)	-.13***	.02	-.02	-.09*	.00	-.06	.15**	-.04	.00	.03	-.07
Spine and Back	161 (25.3)	-.03	.13***	-.09*	-.10*	-.04	-.02	.14***	-.11**	-.00	-.07	-.10*
Musculoskeletal	36 (5.7)	-.08*	.10*	-.06	-.07	-.06	-.06	.10*	-.04	-.02	.03	.02
Endocrinological	55 (8.6)	-.17***	.03	-.05	-.04	.01	-.05	.10*	-.02	-.01	.03	-.01
Obesity	61 (9.6)	-.04	.06	.02	-.09*	-.01	-.10*	.09*	.03	-.01	.02	-.02
Anemia	49 (7.7)	-.22***	-.06	.02	-.07	-.02	-.05	.08*	.01	-.02	-.05	-.06
Tobacco Use	155 (24.3)	.08*	-.10*	-.04	-.05	-.02	-.06	.08*	.05	.17***	.07	-.01
Injuries	113 (17.7)	.15***	-.01	-.01	-.02	.01	-.02	.01	-.06	.08*	-.04	-.00

Note. 1 – Women, 2 – Men; E – Extraversion, A – Agreeableness, C – Conscientiousness, N – Neuroticism, O – Openness.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table 7. *Results of Hierarchical Binary Regression Analyses with Sociodemographic Variables and Dark Triad Traits as Predictors of Diseases*

Predictors	*Tobacco use*			*Injuries*			*Digestive diseases*			*Skin diseases*		
	OR	95% CI	*p*	OR	95% CI	*p*	OR	95% CI	*p*	OR	95% CI	*p*
Gender	1.44	1.00 - 2.08	.049	2.24	1.48 - 3.39	< .001	.68	.42 - 1.10	.111	.94	.55 - 1.61	.829
Age	.97	.95 - .99	.010	1.00	.98 - 1.02	.894	1.01	1.00 - 1.04	.274	.99	.96 - 1.02	.443
Education	.88	.73 - 1.06	.174	.97	.79 - 1.19	.772	1.00	.79 - 1.25	970	1.07	.83 - 1.38	.598
Step 1	χ^2=12.34; *df*=3; *p*=.006			χ^2=14.97; *df*=3; *p*=.002			χ^2=3.99; *df*=3; *p*=.263			χ^2=1.07; *df*=3; *p*=.784		
Gender	1.24	.85 - 1.82	.271	2.16	1.41 - 3.33	< .001	.54	.33 - .90	.019	.98	.56 - 1.71	.951
Age	.98	.96 - 1.00	.043	1.00	.98 - 1.02	.983	1.02	1.00 - 1.04	.087	.99	.96 - 1.02	.347
Education	.94	.77 - 1.14	.535	.97	.78 - 1.20	.765	1.03	.82 - 1.31	.791	1.13	.86 - 1.47	.372
Psychopathy	1.04	1.02 - 1.06	< .001	1.02	1.00- 1.04	.047	1.03	1.01 - 1.06	.006	1.01	.98 - 1.04	.567
Machiavellianism	1.00	.98 - 1.02	.864	.98	.96 - 1.00	.039	1.00	98 - 1.03	.800	.99	.96 - 1.02	.546
Narcissism	.96	.93 - 1.00	.031	.99	.95 - 1.02	.504	1.00	.96 - 1.04	.877	.94	.89 - 1.00	.038
Step 2	χ^2=15.98; *df*=3; *p*=.001			χ^2=6.50; *df*=3; *p*=.089			χ^2=10.20; *df*=3; *p*=.017			χ^2=5.81; *df*=3; *p*=.121		
Model	χ^2=28.32; *df*=6; *p*<.001			χ^2=21.47; *df*=6; *p*=.002			χ^2=14.18; *df*=6; *p*=.028			χ^2=6.88; *df*=6; *p*=.332		

Note. OR - Odds Ratio; CI - Confidence Interval; χ^2 - Chi-square.

Table 8. *Results of Hierarchical Binary Regression Analyses with Five-Factor Personality Traits and Dark Triad Traits as Predictors of Diseases*

Predictors	*High blood pressure*			*Cancer*			*Digestive diseases*			*Skin diseases*		
	OR	95% CI	*p*	OR	95% CI	*p*	OR	95% CI	*p*	OR	95% CI	*p*
Extraversion	1.23	.83 - 1.82	.296	.70	.38 - 1.32	.270	1.12	.69 - 1.82	.646	1.10	.63 - 1.92	.732
Agreeableness	1.44	.96 - 2.16	.082	1.02	.53 - 1.97	.947	.76	.46 - 1.25	.273	1.46	.81 - 2.62	.206
Conscientiousness	1.21	.81 - 1.80	.349	1.18	.62 - 2.24	.618	1.22	.73 - 2.03	.446	.71	.41 - 1.23	.228
Neuroticism	1.60	1.16 - 2.21	.004	1.12	.67 - 1.87	.671	1.68	1.12- 2.50	.011	1.16	.74 - 1.82	.524
Openness	.78	.57 - 1.08	.137	1.19	.71 - 2.00	.510	1.25	.83 - 1.87	.279	1.22	.87 - 1.94	.388
Step 1	χ^2=12.11; *df*=5; *p*=.033			χ^2=1.90; *df*=5; *p*=.863			χ^2=10.28; *df*=5; *p*=.068			χ^2=3.50; *df*=5;*p*=.623		
Extraversion	1.27	.83 - 1.93	.269	.68	.35 - 1.33	.264	1.02	.60 - 1.74	.935	1.38	.75 - 2.52	.300
Agreeableness	1.54	.99 - 2.42	.056	.80	.39 - 1.62	.531	.88	.51 - 1.53	.647	1.22	.63 - 2.34	.554
Conscientiousness	1.16	.77 - 1.74	.484	1.10	.57 - 2.15	.773	1.35	.81 - 2.27	.249	.33	.42 - 1.30	.294
Neuroticism	1.57	1.14 - 2.18	.007	1.11	.66 - 1.87	.691	1.77	1.18- 2.66	.006	1.14	.72 - 1.81	.581
Openness	.80	.57 - 1.12	.187	1.13	.66 - 1.93	.655	1.23	.81 - 1.87	.339	1.42	.87 - 2.33	.163
Psychopathy	.99	.97 - 1.01	.241	.98	.95 - 1.02	.388	1.03	1.00- 1.05	.025	1.01	.98 - 1.04	.612
Machiavellianism	1.02	1.00 - 1.04	.040	.97	.94 - 1.00	.046	1.00	.97 - 1.02	.811	1.00	.97 - 1.02	.756
Narcissism	1.00	.97 - 1.04	.900	1.02	.97 - 1.08	.429	.99	.95 - 1.04	.775	.93	.88 - .99	.030
Step 2	χ^2=4.68; *df*=3; *p*=.200			χ^2=6.74; *df*=3; *p*=.080			χ^2=5.35; *df*=3; *p*=.148			χ^2=5.86; *df*=3; *p*=.119		
Model	χ^2=16.78; *df*=8; *p*=.032			χ^2=8.64; *df*=8; *p*=.373			χ^2=15.53; *df*=8; *p*=.048			χ^2=9.36; *df*=8; *p*=.313		

Note. OR - Odds Ratio; CI - Confidence Interval; χ^2 - Chi-square.

Table 8. – *Continued*

Predictors	*Spine and back diseases*			*Tobacco use*			*Injuries*		
	OR	95% CI	*p*	OR	95% CI	*p*	OR	95% CI	*p*
Extraversion	.83	.57 - 1.22	.341	.87	.59 - 1.28	.481	1.03	.67 - 1.59	.881
Agreeableness	1.05	.71 - 1.55	.815	1.05	.70 - 1.56	.821	1.14	.73 - 1.78	.567
Conscientiousness	1.37	.93 - 2.04	.114	.81	.55 - 1.20	.291	.93	.60 - 1.42	.727
Neuroticism	1.57	1.15 - 2.16	.005	1.27	.93 - 1.74	.134	.98	.68 - 1.40	.888
Openness	.74	.54 - 1.02	.064	1.42	1.03 - 1.95	.032	.76	.53 - 1.08	.124
Step 1	χ^2=19.02; *df*=5; *p*=.002			χ^2=9.38; *df*=5; *p*=.095			χ^2=2.84; *df*=5; *p*=.725		
Extraversion	.85	.56 - 1.28	.435	.82	.54 - 1.26	.360	.89	.56 - 1.43	.631
Agreeableness	.92	.59 - 1.42	.702	1.34	1.86 - 2.22	.198	1.24	.76 - 2.04	.383
Conscientiousness	1.48	.99 - 2.23	.059	1.97	.65 - 1.44	.879	1.05	.68 - 1.63	.824
Neuroticism	1.63	1.18 - 2.25	.003	1.38	1.00 - 1.91	.052	1.04	.72 - 1.49	.836
Openness	.75	.54 - 1.04	.090	1.46	1.04 - 2.05	.029	.71	.49 - 1.02	.065
Psychopathy	1.02	1.00 - 1.04	.072	1.05	1.03 - 1.07	<.001	1.03	1.01- 1.06	.003
Machiavellianism	.98	.96 - 1.00	.016	1.00	0.98 - 1.02	.702	.98	.96 - 1.00	.040
Narcissism	0.98	.94 - 1.01	.211	.97	0.93 - 1.00	.078	1.00	.96 - 1.04	.838
Step 2	χ^2=9.14; *df*=3; *p*=.027			χ^2=24.10; *df*=3; *p*<.001			χ^2=10.40; *df*=3; *p*=.015		
Model	χ^2=28.16; *df*=8; *p*<.001			χ^2=33.47; *df*=8; *p*<.001			χ^2=13.24; *df*=8; *p*=.104		

Note. OR - Odds Ratio; CI - Confidence Interval; χ^2 - Chi-square.

As could be seen form Table 8 Dark Triad traits as a group significantly improved the prediction of the risk of spine and back diseases, tobacco use and injuries. Machiavellianism was a significant negative predictor of spine and back diseases and injuries, while psychopathy positively predicted tobacco use and injuries. In the second step, Dark Triad traits as a group did not significantly improve the prediction, but psychopathy significantly positively predicted digestive diseases, Machiavellianism positively predicted high blood pressure and negatively cancer, while Narcissism negatively predicted skin diseases.

Concerning Five-factor personality traits, our results show that neuroticism positively predicted the risk of having high blood pressure, cardiovascular, digestive, endocrinological, head and neck as well as spine and back diseases. Agreeableness was a negative predictor of the risk of respiratory and positive predictor of rheumatic diseases, while openness was a positive predictor of tobacco use.

Discussion

When interpreting the results, we will stress only those effects of Dark Triad traits on health indices that are consistent across both sets of hierarchical regression analyses, one controlling for sociodemographic variables and the other for Five-factor personality traits. There are several reasons for this, although we are aware that sociodemographic variables and Five-factor personality traits may have diverse effects on health indices and are differentially related to Dark Triad traits that may result in their different effects on health outcomes when these two groups of predictors are controlled for. One of the reasons lies in the exploratory nature of the present study and its cross-sectional design which decreases its explanatory power, and thus it seemed appropriate to focus only on most prominent results. Second reason lies in the attempt to decrease Type 1 error, frequent in studies with relatively large sample of participants, which may result in low, yet statistically significant coefficients. Exclusive reliance on self-report measures may also increase Type 1 error, because common method bias inflates relationships between variables measured only by self-reports. Furthermore, robust effects of Dark Triad traits may be better indicators of potential mechanisms through which they exert their effects on health, which should be the topic of future, more detailed research.

Regarding more subjective health measures, the results show that psychopathy consistently positively predicted physical symptoms and the number of diseases, and negatively health-protective behaviors above and beyond socioeconomic variables (Table 4) and Five-factor personality traits (Table 5), thus confirming the hypothesis about psychopathy as a negative predictor of health indicators. On the other hand, Machiavellianism negatively predicted positive mood, while Narcissism proved to be the least consistent predictor of health indices, not predicting any of the health-

related criteria across both groups of variables that were controlled for in the first step.

Concerning the effects of Dark Triad traits on diseases, the results of hierarchical binary regression analyses in which socioeconomic variables (Table 7) and Five-factor personality traits (Table 8) were controlled for, show that psychopathy consistently increased the risk of digestive diseases, tobacco use and injuries. Machiavellianism consistently decreased only the risk of injuries, while Narcissism decreased only the risk of having skin diseases.

As expected, psychopathy proved to be the most consistent negative predictor out of the three Dark Triad traits. When compared to Machiavellianism and especially Narcissism, the effects of psychopathy on specific health indices were very similar notwithstanding which group of predictors were controlled for in the first step.

The results also support our assumption that Machiavellianism would not be only negative, but also positive predictor of health indicators. Additionally, Machiavellianism showed some inconsistent effects when predicting the risk of having various diseases depending on the group of variables controlled in the first step, while Narcissism turned out to be the only negative predictor of the risk of skin disease, but was also inconsistent in predicting more subjective health measures.

Generally, the results support our hypothesis that each Dark Triad traits will predict various indicators of health, which once again confirm that they are different constructs that should be measured separately. Dark Triad traits predicted subjective and objective health indices with almost even consistency, but usually low effect sizes were obtained.

Regarding psychopathy, contemporary evolutionary conceptualizations consider this trait as an adaptation designed by natural selection that is maintained in population by frequency-dependent selection (Quinsey, Harris, Rice, & Cormier, 1998). The number of individuals high on psychopathy is relatively small but stable because this characteristic is advantageous as long as it is relatively rare in population. For example, Barr and Quinsey (2004) suggested that psychopathy could be regarded as a strategy that includes short-term mating efforts, aggressive and risky way of acquiring social domination and frequent violation of social exchange norms. In the context of life-history theory psychopathy may be considered as a part of fast life-history strategy characterized by life-history and behavioral characteristics such as shorter life expectancy, precocious reproduction, high growth rate, lower level of parental care and sociability as well as higher aggressiveness and activity. This life-history strategy is also characterized by various physiological processes like low HPA axis reactivity, high sympathetic and low parasympathetic reactivity, high metabolism, high sensitivity to oxidative stress and low immune response (Reale et al., 2010). Obviously, individuals with these behavioral and physiological characteristics may have greater risk of various negative long-term health outcomes. More specifically, these behavioral tendencies can result in riskier health behaviors

which can lead to the greater number of injuries and, together with physiological predispositions mentioned, to the greater number of chronic diseases. Accordingly, there are diverse potential mechanisms through which psychopathy exerts its effects on health, among them unhealthy behaviors, low level of social support and maladaptive coping. When considered in the context of fast life-history strategy, the effects of psychopathy on health outcomes could be also understood within the Constitutional predisposition model (Wiebe & Fortenberry, 2006) in which psychopathy and negative physiological predispositions are common manifestations of the same constitutional factors. Consequently, early prevention as well as interventions aimed at promoting healthy habits may be especially important for persons high on psychopathy.

Machiavellianism generally exerted weaker effects on health indices compared to psychopathy, the most consistent being decreased positive mood and decreased risk of injuries. Negative consequences of Machiavellianism on positive mood are probably the result of inadequate social relationships. Previous studies show that Machiavellianism is associated with many variables indicating to the superficial relationships with others. For example, it is characterized by distancing from other people (Jonason, Wee, Li, & Jackson, 2014), refraining to help others and low empathy (Jonason & Krause, 2013; Jonason, Lyons, Bethell, & Ross, 2013). Also, they have serious disadvantage in forming cooperative alliances that depend on trust (Jones & Paulhus, 2009), and therefore, they are less favored as friends, confidants, and business partners (Wilson, Near, & Miller 1998). Additional analyses of our results concerning moods show that out of all components of positive mood, Machiavellianism had the highest negative correlation with acceptance (r=-.25; p<.001), and out of the components of negative mood, it had the highest correlation with anger (r=.20; p<.001), which indicate to the connections of Machiavellianism with interpersonal aspects of mood. Furthermore, as compared to psychopathy, Machiavellianism is related to less impulsive and less aggressive way of life (Jones & Paulhus, 2010). For example, out of the Dark Triad traits Machiavellianism have the lowest correlations with various risky sexual behaviors such as mate poaching (e.g. Kardum et al., 2015). As pointed out by Jonason et al. (2015), it seems that Machiavellianism is characterized by delayed approach to life rather than risk-taking or fast life-history strategy. Our results that consistently show its relation to the decreased risk of injuries are in accord with this interpretation of Machiavellianism. The results of the present study confirmed our hypothesis that Narcissism exerts positive as well as negative effects on various health outcomes. However, its effects on subjective health measures were inconsistent, while it consistently predicted only decreased risk of skin diseases. This corresponds with one explanation of the relationship between Narcissism and health based on the motivation of Narcissists to take care of their bodies and physical appearance. While this explanation may imply health-protective behaviors as a mechanism through which Narcissism influences health, our result showed that it is in zero correlation with scores on health-protective behavior questionnaire. It seems that the primary motivation of Narcissists is not

maintaining health, but physical attractiveness which could be attained by either health-protective (e.g. healthy diet, exercising) or harmful health behaviors (e.g. excessive sun exposure, excessively low caloric intake).

Although not a central problem of this study, our results show that out of sociodemographic variables, female gender and older age were more strongly related to negative health indicators, while out of Five-factor traits, it was neuroticism. These results were not unexpected and are in accordance with numerous previous results (Goodwin & Friedman, 2006; Pol & Thomas, 2013).

The major limitation of this exploratory study lies in its cross-sectional design that does not permit the conclusions about causal relationship between variables. Thus, although the results obtained may indicate the effects of Dark Triad traits on some health outcomes, they may also imply the reverse relationship (i.e. health outcomes may influence the manifestation of personality traits). For example, higher Narcissism may be related to the decreased risk of skin disease because person high on this trait may be preoccupied with their physical appearance. However, skin disease itself may lead to the decreased manifestation of behavior tendencies described in Narcissistic Personality Inventory (e.g. "I like to show off my body"). Additionally, all variables were measured by self-report instruments which increased the common method variance. Furthermore, a cross-sectional nature of the design of this study does not allow for the examination of the specific mechanisms through which these traits exert their effects on health outcomes. Nonetheless, the results obtained show some indications that their effect may be mediated through health behaviors. Some other mechanisms such as social support, exposure and reactivity to stress, cognitive appraisal and coping can also be potentially operative.

It should be noted that Dark Triad traits may also be related to some other diseases that were not examined here. For example, some diseases that occurred with relatively low frequency rate in this study (e.g. liver diseases, multiple sclerosis, venereal diseases) were not included into analyses because of too few outcome events per predictor variable (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996). Future studies should also analyze processes associated with health maintenance, illness onset and recovery as e.g. illness perception, progression, speed of recovery etc.

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Rasgos de la tríada oscura y efectos sobre la salud: Un estudio exploratorio

Resumen

En la muestra de 637 participantes (358 mujeres y 279 hombres) hemos investigado la relación entre los rasgos de la tríada oscura (psicopatía, maquiavelismo y narcisismo) y varios indicadores de saludos, incluidos los indicadores de salud subjetivos (estado de ánimo positivo y negativo y síntomas físicos notados), comportamiento de protección de la salud y algunos indicadores de salud objetivos (número de hospitalizaciones, número de enfermedades, enfermedades crónicas específicas, lesiones y adicciones). Por la relación moderada entre la tríada oscura y el modelo de los cinco grandes que también ejercen su influencia en diferentes índices relacionados con la salud, hemos investigado los efectos únicos de los rasgos de la tríada oscura sobre los indicadores de salud mucho más allá del modelo de los cinco grandes, tanto como las variables sociodemográficas relacionadas con la salud (sexo, edad y educación).

Cuando las variables sociodemográficas y el modelo de los cinco grandes se controlaron en el análisis regresivo jerárquico, los rasgos de la tríada oscura mejoraron significativamente la predicción de casi todos los indicadores de salud subjetivos, comportamientos de protección de la salud, número de hospitalizaciones y número de enfermedades. Los resultados obtenidos eran relativamente bajos y el predictor más consistente era psicopatía.

En cuanto a las enfermedades crónicas, lesiones y adicciones, los resultados del análisis regresivo jerárquico demostraron que en caso de controlar las variables sociodemográficas, psicopatía era el predictor positivo del riesgo de tener enfermedades digestivas, uso de tabaco y lesiones, maquiavelismo predecía negativamente el riesgo de las lesiones, mientras que narcisismo predecía negativamente el riesgo de las enfermedades de la piel y el uso de tabaco. Cuando se controló el modelo de los cinco grandes, psicopatía era también el predictor positivo de las enfermedades digestivas, uso de tabaco y lesiones. Maquiavelismo era el predictor positivo de la presión arterial alta y el predictor negativo del cáncer, enfermedades de la espina y la espalda y lesiones, mientras que narcisismo era el predictor negativo de las enfermedades de la piel.

Los resultados obtenidos se han discutido en el contexto de posibles mecanismos a través de los cuales los rasgos de la tríada oscura podrían ejercer efectos negativos, pero también positivos, sobre la salud.

Palabras claves: rasgos de la tríada oscura, modelo de los cinco grandes, salud, enfermedades crónicas

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